**Chapter 6 Variable Costing: A Tool for Management**

Two general approaches are used in manufacturing companies for costing products for the purposes of valuing inventories and cost of goods sold. One approach is the absorption costing. Absorption costing is generally used for external financial reports. The other approach, called variable costing, is preferred by some managers for internal decision making and must be used when an income statement is prepared in the contribution format. Ordinarily, absorption costing and variable costing produce different figures for net operating income, and the difference can be quite large. In addition to showing how these two methods differ, we will consider the arguments for and against each costing method and we will show how management decisions can be affected by the costing method chosen.

**Overview of Absorption and Variable Costing**

The contribution format income statement and cost – volume profit (CVP) analysis are valuable management tools. Both of these tools emphasize cost behavior and require that managers carefully distinguish between variable and fixed costs. Absorption costing assigns both variable and fixed manufacturing costs to products – mingling them in a way that makes it difficult for managers to distinguish between them. In contrast, variable costing focuses on cost behavior – clearly separating fixed from variable costs. One of the strengths of variable costing is that it harmonizes with both the contribution approach and the CVP concepts.

***Variable Costing***

Under **variable costing,** only those manufacturing costs that vary with output are treated as product costs. This would usually include direct materials, direct labor, and the variable portion of manufacturing overhead. Fixed manufacturing overhead is not treated as a product cost under this method. Rather, fixed manufacturing overhead is treated as a period cost and, like selling and administrative expenses, it is expensed in its entirety each period. Consequently, the cost of a unit of product in inventory or in cost of goods sold under the variable costing method does not contain any fixed manufacturing overhead cost. Variable costing is sometimes referred to as *direct costing* or *marginal costing.*

***Selling and Administrative Expense***

To complete this summary comparison of absorption and variable costing, we need to briefly consider the handling of selling and administrative expenses. These expenses are never treated as product costs, regardless of the costing method. Thus, under absorption and variable costing, variable and fixed selling and administrative expenses are always treated as period costs and are expensed as incurred.

Exhibit 6 – 1 summarizes the classification of costs under both absorption and variable costing.

***Exhibit 6 – 1*** Cost Classifications – Absorption versus Variable Costing

***Absorption Costing* *Variable Costing***

Direct materials

Direct labor

Variable manufacturing overhead

Variable selling and administrative expenses

Fixed selling and administrative expenses

Product costs Product costs

Fixed manufacturing overhead

Period costs

Period costs

***Unit Cost Computations***

To illustrate the computation of unit product costs under both absorption and variable costing, consider Boley Company, a small company that produces a single product and that has the following cost structure:

|  |  |
| --- | --- |
| Number of units produced each year | 6,000 |
| Variable costs per unit: |  |
| Direct materials | $2 |
| Direct labor | $4 |
| Variable manufacturing overhead | $1 |
| Variable selling and administrative expenses | $3 |
| Fixed costs per year: |  |
| Fixed manufacturing overhead | $30,000 |
| Fixed selling and administrative expenses | $10,000 |

Required:

1. Compute the unit product cost under absorption costing.
2. Compute the unit product cost under variable costing.

**Solution**

|  |  |
| --- | --- |
| **Absorption Costing** | |
| Direct materials | $ 2 |
| Direct labor | 4 |
| Variable manufacturing overhead | 1 |
| Total variable manufacturing cost | 7 |
| Fixed manufacturing overhead ($30,000/6,000 units of product) | 5 |
| Unit product cost | $12 |
| **Variable Costing** | |
| Direct materials | $ 2 |
| Direct labor | 4 |
| Variable manufacturing overhead | 1 |
| Unit product cost | $ 7 |
| (Under variable costing, the $30,000 fixed manufacturing overhead is a period expense along with selling and administrative expenses.) | |

Under the absorption costing method, *all* manufacturing costs, variable and fixed, are included when determining the unit product cost. Thus, if the company sells a unit of product and absorption costing is being used, then $12 (consisting of $7 variable cost and $5 fixed cost) will be deducted on the income statement as cost of goods sold. Similarly, any unsold units will be carried as inventory on the balance sheet at $12 each.

Under the variable costing method, only the variable manufacturing costs are included in product costs. Thus, if the company sells a unit of product, only $7 will be deducted as cost of goods sold, and unsold units will be carried as inventory on the balance sheet at only $7 each.

**Income Comparison of Absorption and Variable Costing**

Exhibit 6 – 2 displays income statements prepared under the absorption and variable costing approaches. In preparing these statements, we use the data for Boley Company presented earlier, along with other information about the company as given below:

|  |  |
| --- | --- |
| Units in beginning inventory | 0 |
| Units produced | 6,000 |
| Units sold | 5,000 |
| Units in ending inventory | 1,000 |
| Selling price per unit | $20 |
| Selling and administrative expenses: |  |
| Variable per unit | $3 |
| Fixed per year | $10,000 |

**Exhibit 6 – 2** Comparison of Absorption andVariable Costing – Boley Company

|  |  |  |
| --- | --- | --- |
| **Absorption Costing** | | |
| Sales (5,000 units × $20 per unit) |  | $100,000 |
| Cost of goods sold: |  |  |
| Beginning inventory | $ 0 |  |
| Add cost of goods manufactured (6,000 units x $12 per unit) | 72,000 |  |
| Goods available for sale | 72,000 |  |
| Less ending inventory (1,000 units x $12 per unit) | 12,000\* |  |
| Cost of goods sold |  | 60,000 |
| Gross margin |  | 40,000 |
| Selling and administrative expenses: (5,000 units x $3 per unit variable + $10,000 fixed) |  | 25,000 |
| Net operating income |  | $ 15,000 |
| **Variable Costing** | | |
| Sales (5,000 units x $20 per unit) |  | $100,000 |
| Variable expenses: |  |  |
| Variable cost of goods sold: |  |  |
| Beginning inventory | $ 0 |  |
| Add variable manufacturing costs(6,000 units x $7 per unit) | 42,000 |  |
| Goods available for sale | 42,000 |  |
| Less ending inventory(1,000 units x $7 per unit) | 7,000\* |  |
| Variable cost of goods sold | 35,000 |  |
| Variable selling and administrative expenses (5,000 units x $3 per unit) | 15,000 | 5 0,000 |
| Contribution margin |  | 50,000 |
| Fixed expenses: |  |  |
| Fixed manufacturing overhead | 30,000 |  |
| Fixed selling and administrative expenses | 10,000 | 4 0,000 |
| Net operating income |  | $ 10,000 |

\*Note the difference in ending inventories. Fixed manufacturing overhead cost at $5 per unit is included under the absorption approach. This explains the difference in ending inventory and in net operating income (1,000 units x $5 per unit = $5,000).

Several observations should be made concerning the income statements in Exhibit 6 – 2. First, the net operating incomes under the two costing methods are not the same. The net operating income under absorption costing is higher than under variable costing by $5,000. Why is this? Under absorption costing, each of the units produced during the period is assigned $5 of fixed manufacturing overhead cost. This is true of the 1,000 units in ending inventory as well as the 5,000 units that were sold. Consequently, the ending inventory under absorption costing contains $5,000 of fixed manufacturing overhead and the cost of goods sold contains $25,000 of fixed manufacturing overhead. In contrast, the entire $30,000 of fixed manufacturing overhead is expensed under variable costing. As a direct result, the net operating income under variable costing is $5,000 higher than under absorption costing. In effect, the $5,000 of fixed manufacturing overhead in ending inventory under absorption costing is deferred to the future period in which these units are sold. This $5,000 of fixed manufacturing overhead cost in the ending inventory is referred to as **fixed manufacturing overhead** **cost deferred in inventory.** In general, under absorption costing, when inventories increase, some of the fixed manufacturing costs of the current period are reported on the balance sheet as part of the ending inventories rather than on the income statement as part of cost of goods sold.

Second, the absorption costing income statement makes no distinction between fixed and variable costs – a distinction that is crucial for CVP analysis and for much of the planning and control concepts discussed in later chapters. It is difficult or even impossible to determine from an absorption costing income statement which costs are variable and which are fixed. In contrast, on a variable costing income statement the fixed and variable costs are explicitly identified – making CVP analysis far easier.

The difference between the absorption and variable costing approaches to accounting for fixed manufacturing costs centers on timing. Advocates of variable costing say that fixed manufacturing costs should be expensed immediately in total, whereas advocates of absorption costing say that fixed manufacturing costs should be charged against revenues gradually as units of product are sold. Any units of product not sold under absorption costing result in fixed manufacturing costs being inventoried and carried forward on the balance sheet *as assets* to the next period.

The following discussion of Emerald Isle Knitters expands on the discussion of the absorption and variable costing approaches to accounting for fixed manufacturing costs.

**Extended Comparison of Income Data**

**Exhibit 6 – 3** Basic Data for Absorption and Variable Costing Income Statements—Emerald Isle Knitters, Ltd.

|  |  |
| --- | --- |
| **Basic Data** | |
| Selling price per unit sold | $20 |
| Variable manufacturing cost per unit produced | $ 7 |
| Fixed manufacturing overhead costs per year | $150,000 |
| Variable selling and administrative expenses per unit sold | $ 1 |
| Fixed selling and administrative expenses per year | $90,000 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Three Years Together** |
| Units in beginning inventory | 0 | 0 | 5,000 | 0 |
| Units produced | 25,000 | 25,000 | 25,000 | 75,000 |
| Units sold | 25,000 | 20,000 | 30,000 | 75,000 |
| Units in ending inventory | 0 | 5,000 | 0 | 0 |
| **Unit Product Costs** | Year 1 | Year 2 | Year 3 |  |
| Under variable costing (variable manufacturing costs only) | $ 7 | $ 7 | $ 7 |  |
| Under absorption costing: |  |  |  |  |
| Variable manufacturing costs | $ 7 | $ 7 | $ 7 |  |
| Fixed manufacturing overhead costs($150,000 spread over the number of units produced in each year) | 6 | 6 | 6 |  |
| Total absorption cost per unit | $13 | $13 | $13 |  |

The basic data needed to prepare both income statements appear in Exhibit 6 – 3. The absorption costing income statements as reported to the bank for the last three years appear in the top half of Exhibit 6 – 4). The variable costing income statements that are prepared for the last three years appear in the bottom half of Exhibit 6 – 4.

**Exhibit 6 – 4** Absorption and Variable Costing Income Statements – Emerald Isle Knitters, Ltd.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Absorption Costing** | **Year 1** | | **Year 2** | | **Year 3** | | **Three Years Together** | |
|  | |  | |  | |  | |
| Sales |  | $500,000 |  | $400,000 |  | $600,000 |  | $1,500,000 |
| Cost of goods sold: |  |  |  |  |  |  |  |  |
| Beginning inventory | 0 |  | 0 |  | $65,000 |  | 0 |  |
| Add cost of goods manufactured (25,000 units x $13 per unit) | 325,000 |  | 3 25,000 |  | 325,000 |  | 9 75,000 |  |
| Goods available for sale | 325,000 |  | 325,000 |  | 390,000 |  | 975,000 |  |
| Less ending inventory (5,000 units x $13 per unit) | 0 |  | 65,000 |  | 0 |  | 0 |  |
| Cost of goods sold |  | 325,000 |  | 260,000 |  | 390,000 |  | 9 75,000 |
| Gross margin |  | 175,000 |  | 140,000 |  | 210,000 |  | 525,000 |
| Selling and administrative expenses |  | 115,000 \* |  | 110,000 \* |  | 120,000 \* |  | 345,000 |
| Net operating income |  | $60,000 |  | $30,000 |  | $90,000 |  | $180,000 |
| \*The selling and administrative expenses are computed as follows:  Year 1: 25,000 units x $1 per unit variable + $90,000 fixed = $115,000.  Year 2: 20,000 units x $1 per unit variable + $90,000 fixed = $110,000.  Year 3: 30,000 units x $1 per unit variable + $90,000 fixed = $120,000. | | | | | | | | |
| **Variable Costing** | | | | | | | | |
| Sales |  | $500,000 |  | $400,000 |  | $600,000 |  | $1,500,000 |
| Variable expenses: |  |  |  |  |  |  |  |  |
| Variable cost of goods sold: |  |  |  |  |  |  |  |  |
| Beginning inventory | $ 0 |  | $ 0 |  | $35,000 |  | $ 0 | $ 0 |
| Add variable manufacturing costs(25,000 units x $7 per unit) | 175,000 |  | 1 75,000 |  | 175,000 |  | 5 25,000 |  |
| Goods available for sale | 175,000 |  | 175,000 |  | 210,000 |  | 525,000 |  |
| Less ending inventory(5,000 units x $7 per unit) | 0 |  | 3 5,000 |  | 0 |  | 0 |  |
| Variable cost of goods sold | 175,000 \* |  | 140,000\* |  | 210,000 \* |  | 525,000 |  |
| Variable selling and administrative expenses ($1 per unit sold) | 25,000 | 200,000 | 2 0,000 | 160,000 | 30,000 | 240,000 | 75,000 | 600,000 |
| Contribution margin |  | 300,000 |  | 240,000 |  | 360,000 |  | 900,000 |
| Fixed expenses: |  |  |  |  |  |  |  |  |
| Fixed manufacturing overhead | 150,000 |  | 150,000 |  | 150,000 |  | 450,000 |  |
| Fixed selling and administrative expenses | 90,000 | 240,000 | 90,000 | 240,000 | 90,000 | 240,000 | 270,000 | 720,000 |
| Net operating income |  | $60,000 |  | $ 0 |  | $120,000 |  | $180,000 |
| \*The variable cost of goods sold could have been computed more simply as follows:  Year 1: 25,000 units sold x $7 per unit = $175,000.  Year 2: 20,000 units sold x $7 per unit = $140,000.  Year 3: 30,000 units sold x $7 per unit = $210,000. | | | | | | | | |

Note that Emerald Isle Knitters maintained a steady rate of production of 25,000 sweaters per year. However, sales varied from year to year. In Year 1, production and sales were equal. In Year 2, production exceeded sales due to the canceled order. In Year 3, sales recovered and exceeded production. As a consequence, inventories did not change during Year 1, inventories increased during Year 2, and inventories decreased during Year 3. The change in inventories during the year is the key to understanding how absorption costing differs from variable costing. Note that when inventories increase in Year 2, absorption costing net operating income exceeds variable costing net operating income. When inventories decrease in Year 3, the opposite occurs – variable costing net operating income exceeds absorption costing net operating income. And when inventories do not change as in Year 1, there is no difference in net operating income between the two methods. Why is this? The reasons are discussed below and are briefly summarized in Exhibit 6 – 5.

1. When production and sales are equal, as in Year 1 for Emerald Isle Knitters, net operating income will generally be the same regardless of whether absorption or variable costing is used. The reason is as follows: The *only* difference that can exist between absorption and variable costing net operating income is the amount of fixed manufacturing overhead recognized as expense on the income statement. When everything that is produced in the year is sold, all of the fixed manufacturing overhead assigned to units of product under absorption costing becomes part of the current year’s cost of goods sold. Under variable costing, the total fixed manufacturing overhead flows directly to the income statement as an expense. So under either method, when production equals sales (and hence inventories do not change), all the fixed manufacturing overhead incurred during the year flows through to the income statement as an expense. And therefore, the net operating income under the two methods is the same.
2. When production exceeds sales, the net operating income reported under absorption costing will generally be higher than the net operating income reported under variable costing (see Year 2 in Exhibit 6 – 4). This occurs because under absorption costing, part of the fixed manufacturing overhead cost of the current period is deferred in inventory. In Year 2, for example, $30,000 of fixed manufacturing overhead cost (5,000 units x $6 per unit) has been applied to units in ending inventory. These costs are excluded from cost of goods sold.

Under variable costing, however, *all* of the fixed manufacturing overhead cost of Year 2 has been immediately expensed. As a result, the net operating income for Year 2 under variable costing is $30,000 *lower* than it is under absorption costing. Exhibit 6 – 6 contains a reconciliation of the variable costing and absorption costing net operating incomes.

1. When production is less than sales, the net operating income reported under the absorption costing approach will generally be less than the net operating income reported under the variable costing approach (see Year 3 in Exhibit 6 – 4). This happens with absorption costing because fixed manufacturing overhead costs that were previously deferred in the prior period’s inventory are released as part of the current period’s cost of goods sold. This is known as **fixed manufacturing overhead cost released from** **inventory.** In Year 3, for example, the $30,000 in fixed manufacturing overhead cost deferred in inventory under the absorption approach from Year 2 to Year 3 is released from inventory because these units were sold. As a result, the cost of goods sold for Year 3 contains not only all of the fixed manufacturing overhead cost for Year 3 (since all that was produced in Year 3 was sold in Year 3) but $30,000 of fixed manufacturing overhead cost from Year 2 as well.

By contrast, under variable costing only the fixed manufacturing overhead costs of Year 3 have been charged against Year 3. The result is that net operating income under variable costing is $30,000 *higher* than it is under absorption costing. Exhibit 6 – 6 contains a reconciliation of the variable costing and absorption costing net operating incomes for Year 3.

1. Over an *extended* period of time, the cumulative net operating incomes reported under absorption costing and variable costing will tend to be the same. The reason is that over the long run sales can’t exceed production, nor can production much exceed sales. The shorter the time period, the more the net operating incomes will tend to differ.

**Exhibit 6 – 5** Comparative Income Effects – Absorption and Variable Costing

|  |  |  |
| --- | --- | --- |
| **Relation between**  **Production and Sales**  **for the Period** | **Effect on**  **Inventories** | **Relation between**  **Absorption and Variable Costing**  **Net Operating Income** |
| Production = Sales | No change in inventories | Absorption costing = Variable costing  net operating income net operating income |
| Production > Sales | Inventories increase | Absorption costing > Variable costing  net operating income net operating income \* |
| Production < Sales | Inventories decrease | Absorption costing < Variable costing  net operating income net operating income † |
| \*Net operating income is higher under absorption costing, since fixed manufacturing overhead cost is *deferred* in inventory under absorption costing as inventories increase.  †Net operating income is lower under absorption costing, since fixed manufacturing overhead cost is *released* from inventory under absorption costing as inventories | | |

**Exhibit 6 – 6** Reconciliation of Variable Costing and Absorption Costing – Net Operating Income Data from Exhibit 6 – 4

|  |  |  |  |
| --- | --- | --- | --- |
|  | Year 1 | Year 2 | Year 3 |
| Variable costing net operating income | $60,000 | $ 0 | $120,000 |
| Add fixed manufacturing overhead costs deferred in inventory  under absorption costing (5,000 units x $6 per unit) |  | 30,000 |  |
| Deduct fixed manufacturing overhead costs released from inventory under absorption costing (5,000 units x $6 per unit) | \_\_\_\_\_\_ | \_\_\_\_\_\_ | (30,000) |
| Absorption costing net operating income | $60,000 | $30,000 | $90,000 |

**Effect of Changes in Production on Net Operating Income**

In the Emerald Isle Knitters example in the preceding section, production was constant and sales fluctuated over the three – year period. Since sales fluctuated, the income statements presented in Exhibit 6 – 4 allowed us to see the effect of changes in sales on net operating income under both variable and absorption costing.

To further investigate the differences between variable and absorption costing let us put together the hypothetical example in Exhibit 6 – 7. In this hypothetical example, sales are constant and production fluctuates (the opposite of Exhibits 6 – 3 and 6 – 4). The purpose of Exhibit 6 – 7 and the income statements shown in Exhibit 6 – 8 is to illustrate the effect of changes in *production* on net operating income under both variable and absorption costing.

**Exhibit 6 – 7** Basic Data to Demonstrate the Sensitivity of Costing Methods to Changes in Production

|  |  |
| --- | --- |
| **Basic Data** | |
| Selling price per unit sold | $20 |
| Variable manufacturing cost per unit produced | $ 7 |
| Fixed manufacturing overhead costs per year | $150,000 |
| Variable selling and administrative expenses per unit sold | $ 1 |
| Fixed selling and administrative expenses per year | $90,000 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** |
| Units in beginning inventory | 0 | 0 | 5,000 |
| Units produced | 25,000 | 30,000 | 20,000 |
| Units sold | 25,000 | 25,000 | 25,000 |
| Units in ending inventory | 0 | 5,000 | 0 |
| **Unit Product Costs** | Year 1 | Year 2 | Year 3 |
| Under variable costing (variable manufacturing costs only) | $ 7.00 | $ 7.00 | $ 7.00 |
| Under absorption costing: |  |  |  |
| Variable manufacturing costs | $ 7.00 | $ 7.00 | $ 7.00 |
| Fixed manufacturing overhead costs($150,000 spread over the number of units produced in each year) | 6.00 | 5.00 | 7.50 |
| Total absorption cost per unit | $13.00 | $12.00 | $14.50 |

***Variable Costing***

Net operating income is *not* affected by changes in production under variable costing. Notice from Exhibit 6 – 8 that net operating income is the same for all three years under variable costing, although production exceeds sales in one year and is less than sales in another year. In short, a change in production has no impact on net operating income when variable costing is used.

***Absorption Costing***

Net operating income *is* affected by changes in production under absorption costing. As shown in Exhibit 6 – 8, net operating income under absorption costing goes up in Year 2 and then goes down in Year 3. Note particularly that net operating income goes up and down between these two years *even though the same number of units is sold in each year.* The reason for this effect can be traced to fixed manufacturing overhead costs that shift between periods under absorption costing as a result of changes in inventory.

As shown in Exhibit 6 – 7, production exceeds sales in Year 2, resulting in an increase of 5,000 units in inventory. Each unit produced during Year 2 is assigned $5 in fixed manufacturing overhead costs (see the unit cost computations in Exhibit 6 – 7). Therefore, $25,000 (5,000 units x $5 per unit) of the fixed manufacturing overhead costs of Year 2 are not expensed in that year but rather are added to the inventory account (along with the variable manufacturing costs). The net operating income of Year 2 rises sharply, because these costs are deferred in inventories, even though the same number of units is sold in Year 2 as in the other years.

The reverse effect occurs in Year 3. Since sales exceed production in Year 3, that year is forced to cover all of its own fixed manufacturing overhead costs as well as the fixed manufacturing overhead costs carried forward in inventory from Year 2. A substantial drop in net operating income during Year 3 results from the release of fixed manufacturing overhead costs from inventories despite the fact that the same number of units is sold in that year as in the other years.

**Exhibit 6 – 8** Absorption and Variable Costing Income Statements – Changes in Production Scenario.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Absorption Costing** | **Year 1** | | **Year 2** | | **Year 3** | |
|  | |  | |  | |
| Sales (25,000 units) |  | $500,000 |  | $500,000 |  | $500,000 |
| Cost of goods sold: |  |  |  |  |  |  |
| Beginning inventory | 0 |  | 0 |  | $60,000 |  |
| Add cost of goods manufactured (25,000 units x $13 per unit) | 325,000 |  | 360,000 |  | 290,000 |  |
| Goods available for sale | 325,000 |  | 360,000 |  | 350,000 |  |
| Less ending inventory (5,000 units x $13 per unit) | 0 |  | 60,000† |  | 0 |  |
| Cost of goods sold |  | 325,000\* |  | 300,000\* |  | 350,000\* |
| Gross margin |  | 175,000 |  | 200,000 |  | 150,000 |
| Selling and administrative expenses |  | 115,000 \* |  | 115,000 \* |  | 115,000 \* |
| Net operating income |  | $60,000 |  | $85,000 |  | $35,000 |
| \*Cost of goods manufactured:  Year 1: 25,000 units x $13.00 per unit = $325,000.  Year 2: 30,000 units x $12.00 per unit = $360,000.  Year 3: 20,000 units x $14.50 per unit = $290,000.  †Ending inventory, Year 2: 5,000 units x $12 per unit = $60,000. | | | | | | |
| **Variable Costing** | | | | | | |
| Sales (25,000 units) |  | $500,000 |  | $500,000 |  | $500,000 |
| Variable expenses: |  |  |  |  |  |  |
| Variable cost of goods sold: |  |  |  |  |  |  |
| Beginning inventory | $ 0 |  | $ 0 |  | $35,000 |  |
| Add variable manufacturing costs at $7 per unit produced | 175,000 |  | 210,000 |  | 140,000 |  |
| Goods available for sale | 175,000 |  | 210,000 |  | 175,000 |  |
| Less ending inventory(5,000 units x $7 per unit) | 0 |  | 3 5,000\* |  | 0 |  |
| Variable cost of goods sold | 175,000 |  | 175,000 |  | 175,000 |  |
| Variable selling and administrative expenses ($1 per unit sold) | 25,000 | 200,000 | 2 5,000 | 200,000 | 25,000 | 200,000 |
| Contribution margin |  | 300,000 |  | 300,000 |  | 300,000 |
| Fixed expenses: |  |  |  |  |  |  |
| Fixed manufacturing overhead | 150,000 |  | 150,000 |  | 150,000 |  |
| Fixed selling and administrative expenses | 90,000 | 240,000 | 90,000 | 240,000 | 90,000 | 240,000 |
| Net operating income |  | $60,000 |  | $ 60,000 |  | $60,000 |
| \*Ending inventory, Year 2: 5,000 units x $7 per unit = $35,000. | | | | | | |

**Exhibit 6 – 9** Reconciliation of Variable Costing and Absorption Costing – Net Operating Income Data from Exhibit 6 – 8

|  |  |  |  |
| --- | --- | --- | --- |
|  | Year 1 | Year 2 | Year 3 |
| Variable costing net operating income | $60,000 | $ 60,000 | $120,000 |
| Add fixed manufacturing overhead costs deferred in inventory  under absorption costing (5,000 units x $5 per unit) |  | 25,000 |  |
| Deduct fixed manufacturing overhead costs released from inventory under absorption costing (5,000 units x $5 per unit) | \_\_\_\_\_\_ | \_\_\_\_\_\_ | (25,000) |
| Absorption costing net operating income | $60,000 | $85,000 | $35,000 |

The variable costing and absorption costing net operating incomes are reconciled in Exhibit 6 – 9. This exhibit shows that the differences in net operating income can be traced to the effects of changes in inventories on absorption costing net operating income. Under absorption costing, fixed manufacturing overhead costs are deferred in inventory when inventories increase and are released from inventory when inventories decrease.

**Summary**

Variable and absorption costing are alternative methods of determining unit product costs. Under variable costing, only those manufacturing costs that vary with output are treated as product costs. This includes direct materials, variable overhead, and ordinarily direct labor. Fixed manufacturing overhead is treated as a period cost and it is expensed on the income statement as incurred. By contrast, absorption costing treats fixed manufacturing overhead as a product cost, along with direct materials, direct labor, and variable overhead. Under both costing methods, selling and administrative expenses are treated as period costs and they are expensed on the income statement as incurred.

Since absorption costing treats fixed manufacturing overhead as a product cost, a portion of fixed manufacturing overhead is assigned to each unit as it is produced. If units of product are unsold at the end of a period, then the fixed manufacturing overhead cost attached to those units is carried with them into the inventory account and deferred to a future period. When these units are later sold, the fixed manufacturing overhead cost attached to them is released from the inventory account and charged against income as part of cost of goods sold. Thus, under absorption costing, it is possible to defer a portion of the fixed manufacturing overhead cost from one period to a future period through the inventory account.

Unfortunately, this shifting of fixed manufacturing overhead cost between periods can cause erratic fluctuations in net operating income and can result in confusion and unwise decisions. To guard against mistakes when they interpret income statement data, managers should be alert to changes in inventory levels or unit product costs during the period.

Practically speaking, variable costing can’t be used externally for either financial or tax reporting. However, it may be used internally by managers for planning and control purposes. The variable costing approach works well with CVP analysis.

**Review Problem: Contrasting Variable and Absorption Costing**

Dexter Corporation produces and sells a single product, a wooden hand loom for weaving small items such as scarves. Selected cost and operating data relating to the product for two years are given below:

|  |  |
| --- | --- |
| Selling price per unit | $50 |
| Manufacturing costs: |  |
| Variable per unit produced: |  |
| Direct materials | $11 |
| Direct labor | $6 |
| Variable overhead | $3 |
| Fixed per year | $120,000 |
| Selling and administrative costs: |  |
| Variable per unit sold | $4 |
| Fixed per year | $70,000 |

|  |  |  |
| --- | --- | --- |
|  | Year 1 | Year 2 |
| Units in beginning inventory | 0 | 2,000 |
| Units produced during the year | 10,000 | 6,000 |
| Units sold during the year | 8,000 | 8,000 |
| Units in ending inventory | 2,000 | 0 |

***Required:***

1. Assume the company uses absorption costing.
2. Compute the unit product cost in each year.
3. Prepare an income statement for each year.
4. Assume the company uses variable costing.
5. Compute the unit product cost in each year.
6. Prepare an income statement for each year.
7. Reconcile the variable costing and absorption costing net operating incomes.

***Solution to Review Problem***

* 1. a. Under absorption costing, all manufacturing costs, variable and fixed, are included in unit product costs: