CHAPTER 7

Variable Costing: A tool for Management

Variable Cost = Expense
Variable Costing = A Technique

Variable Costing

Under Variable Costing only the following cost elements are considered to calculate the cost of production:

1. Direct Material Cost (DMC)
2. Direct Labor Cost (DLC)
3. Variable Manufacturing Overhead

Absorption Costing

Under Absorption Costing only the following cost elements are considered to calculate the cost of production:

1. Direct Material Cost (DMC)
2. Direct Labor Cost (DLC)
3. Variable Manufacturing Overhead
4. Fixed Manufacturing Overhead

Variable cost is considered to assess regular activities.

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.
   a. Compute the unit product cost in each year.
   b. Prepare an income statement for each year.
2. Assume the company uses variable costing.
   a. Compute the unit product cost in each year.
   b. Prepare an income statement for each year.
3. 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:

	Year 1	Year 2
Direct materials	$11	$11
Direct labor	6	6
Variable manufacturing overhead	3	3
Fixed manufacturing overhead		
($120,000 ÷ 10,000 units)	12	
($120,000 ÷ 6,000 units)		20
Absorption costing unit product cost	$32	$40

b. The absorption costing income statements follow:

	Year 1	Year 2
Sales (8,000 units × $50 per unit)	$400,000	$400,000
Cost of goods sold (8,000 units × $32 per unit; (2,000 units × $32 per unit) + (6,000 units × $40 per unit)	256,000	304,000
Gross margin	144,000	96,000
Selling and administrative expenses (8,000 units × $4 per unit + $70,000)	102,000	102,000
Net operating income (loss)	$ 42,000	$ (6,000)

2. *a.* Under variable costing, only the variable manufacturing costs are included in product costs:

	Year 1	Year 2
Direct materials	$11	$11
Direct labor	6	6
Variable manufacturing overhead	3	3
Variable costing unit product cost	$20	$20

b. The variable costing income statements follow.

	Year 1		Year 2	
Sales (8,000 units × $50 per unit)		$400,000		$400,000
Variable expenses:				
Variable cost of goods sold (8,000 units × $20 per unit)	$160,000		$160,000	
Variable selling and administrative expenses (8,000 units × $4 per unit)	32,000	192,000	32,000	192,000
Contribution margin		208,000		208,000
Fixed expenses:				
Fixed manufacturing overhead	120,000		120,000	
Fixed selling and administrative expenses	70,000	190,000	70,000	190,000
Net operating income		$ 18,000		$ 18,000

3. The reconciliation of the variable and absorption costing net operating incomes follows:

	Year 1	Year 2
Variable costing net operating income	$18,000	$18,000
Add fixed manufacturing overhead costs deferred in inventory under absorption costing (2,000 units × $12 per unit)	24,000	
Deduct fixed manufacturing overhead costs released from inventory under absorption costing (2,000 units × $12 per unit)		(24,000)
Absorption costing net operating income (loss)	$42,000	$ (6,000)

Glossary

Absorption costing A costing method that includes all manufacturing costs—direct materials, direct labor, and both variable and fixed manufacturing overhead—in unit product costs. (p. 280)

Variable costing A costing method that includes only variable manufacturing costs—direct materials, direct labor, and variable manufacturing overhead—in unit product costs. (p. 280)

Questions

7–1 What is the basic difference between absorption costing and variable costing?

7–2 Are selling and administrative expenses treated as product costs or as period costs under variable costing?

7–3 Explain how fixed manufacturing overhead costs are shifted from one period to another under absorption costing.

7–4 What are the arguments in favor of treating fixed manufacturing overhead costs as product costs?

7–5 What are the arguments in favor of treating fixed manufacturing overhead costs as period costs?

7–6 If the units produced and unit sales are equal, which method would you expect to show the higher net operating income, variable costing or absorption costing? Why?

7–7 If the units produced exceed unit sales, which method would you expect to show the higher net operating income, variable costing or absorption costing? Why?

7–8 If fixed manufacturing overhead costs are released from inventory under absorption costing, what does this tell you about the level of production in relation to the level of sales?

7–9 Under absorption costing, how is it possible to increase net operating income without increasing sales?

7–10 How does Lean Production reduce or eliminate the difference in reported net operating income between absorption and variable costing?

Multiple-choice questions are provided on the text website at www.mhhe.com/garrison13e.

7-1 Absorption and variable costing differ in how they handle fixed manufacturing overhead. Under absorption costing, fixed manufacturing overhead is treated as a product cost and hence is an asset until products are sold. Under variable costing, fixed manufacturing overhead is treated as a period cost and is expensed on the current period's income statement.

7-2 selling and administrative expenses are treated as period costs under both variable

Costing and absorption costing.

7-3 Under absorption costing, fixed manufacturing overhead costs are included in product costs, along with direct materials, direct labor, and variable manufacturing overhead. If some of the units are not sold by the end of the period, then they are carried into the next period as inventory. When the units are finally sold, the fixed manufacturing overhead cost that has been carried over with the units is included as part of that period's cost of goods sold.

7-4 Absorption costing advocates argue that absorption costing does a better job of matching costs with revenues than variable costing. They argue that all manufacturing costs must be assigned to products to properly match the costs of producing units of product with the revenues from the units when they are sold. They believe that no distinction should be made between variable and fixed manufacturing costs for the purposes of matching costs and revenues.

7-5 Advocates of variable costing argue that fixed manufacturing costs are not really the cost of any particular unit of product. If a unit is made or not, the total fixed manufacturing costs will be exactly the same. Therefore, how can one say that these costs are part of the costs of the products? These costs are incurred to have the capacity to make products during a particular period and should be charged against that period as period costs according to the matching principle.

7-6 If production and sales are equal, net operating income should be the same under absorption and variable costing. When production equals sales, inventories do not increase or decrease and therefore under absorption costing fixed manufacturing overhead cost cannot be deferred in inventory or released from inventory.

7-7 If production exceeds sales, absorption costing will usually show higher net operating income than variable costing. When production exceeds sales, inventories increase and under absorption costing part of the fixed manufacturing overhead cost of the current period is deferred in inventory to the next period. In contrast, all of the fixed manufacturing overhead cost of the current period is immediately expensed under variable costing.

7-8 if fixed manufacturing overhead cost is released from inventory, then inventory levels must have decreased and therefore production must have been less than sales.

7-9 under absorption costing net operating income can be increased by simply increasing the level of production without any increase in sales. If production exceeds sales, units of product are added to inventory. These units carry a portion of the current period's fixed manufacturing overhead costs into the inventory account, reducing the current period's reported expenses and causing net operating income to increase.

7-10 Differences in reported net operating income between absorption and variable costing arise because of changing levels of inventory. In lean production, goods are produced strictly to customers' orders. With production geared to sales, inventories are largely (or entirely) eliminated. If inventories are completely eliminated, they cannot change from one period to another and absorption costing and variable costing will report the same net operating income.

- If ending inventory is more than beginning inventory, the profit under absorption costing is higher than variable costing.
- If ending inventory is less than beginning inventory, the profit under absorption costing is lower than variable costing.

Relation between Production and Sales for the Period	Effect on Inventories	Relation between Absorption and Variable Costing Net Operating Incomes
Units produced = Units sold	No change in inventories	Absorption costing net operating income = Variable costing net operating income
Units produced > Units sold	Inventories increase	Absorption costing net operating income > Variable costing net operating income*
Units produced < Units sold	Inventories decrease	Absorption costing net operating income < Variable costing net operating income†

EXERCISE 7–3 Reconciliation of Absorption and Variable Costing Net Operating Incomes [LO3]

Jorgansen Lighting, Inc., manufactures heavy-duty street lighting systems for municipalities. The company uses variable costing for internal management reports and absorption costing for external reports to shareholders, creditors, and the government. The company has provided the following data:

	Year 1	Year 2	Year 3
Inventories:			
Beginning (units)	200	170	180
Ending (units)	170	180	220
Variable costing net operating income	$1,080,400	$1,032,400	$996,400

The company's fixed manufacturing overhead per unit was constant at $560 for all three years.

Required:

1. Determine each year's absorption costing net operating income. Present your answer in the form of a reconciliation report as shown in Exhibit 7–4.
2. In Year 4, the company's variable costing net operating income was $984,400 and its absorption costing net operating income was $1,012,400. Did inventories increase or decrease during Year 4? How much fixed manufacturing overhead cost was deferred or released from inventory during Year 4?

Exercise 7-3 (20 minutes)

1.

	Year 1	*Year 2*	*Year 3*
Beginning inventories	200	170	180
Ending inventories	170	180	220
Change in inventories	(30)	10	40
Fixed manufacturing overhead in beginning inventories (@$560 per unit)	$112,000	$ 95,200	$100,800
Fixed manufacturing overhead in ending inventories (@$560 per unit)	95,200	100,800	123,200
Fixed manufacturing overhead deferred in (released from) inventories (@$560 per unit)	($ 16,800)	$ 5,600	$ 22,400
Variable costing net operating income	$1,080,400	$1,032,400	$ 996,400
Add (deduct) fixed manufacturing overhead cost deferred in (released from) inventory under absorption costing	(16,800)	5,600	22,400
Absorption costing net operating income	$1,063,600	$1,038,000	$1,018,800

2. Because absorption costing net operating income was greater than variable costing net operating income in Year 4, inventories must have increased during the year and hence fixed manufacturing overhead was deferred in inventories. The amount of the deferral is the difference between the two net operating incomes, or $28,000 = $1,012,400 – $984,400.

EXERCISE 7–1 Variable and Absorption Costing Unit Product Costs [LO1]

Ida Sidha Karya Company is a family-owned company located in the village of Gianyar on the island of Bali in Indonesia. The company produces a handcrafted Balinese musical instrument called a gamelan that is similar to a xylophone. The sounding bars are cast from brass and hand-filed to attain just the right sound. The bars are then mounted on an intricately hand-carved wooden base. The gamelans are sold for 850 (thousand) rupiahs. (The currency in Indonesia is the rupiah, which is denoted by Rp.) Selected data for the company's operations last year follow (all currency values are in thousands of rupiahs):

Units in beginning inventory	0
Units produced	250
Units sold	225
Units in ending inventory	25
Variable costs per unit:	
Direct materials	Rp100
Direct labor	Rp320
Variable manufacturing overhead	Rp40
Variable selling and administrative	Rp20
Fixed costs:	
Fixed manufacturing overhead	Rp60,000
Fixed selling and administrative	Rp20,000

Required:

1. Assume that the company uses absorption costing. Compute the unit product cost for one gamelan.
2. Assume that the company uses variable costing. Compute the unit product cost for one gamelan.

Exercise 7-1 (15 minutes)

1. Under absorption costing, all manufacturing costs (variable and fixed) are included in product costs. (All currency values are in thousands of rupiah, denoted by Rp.)

Direct materials	Rp100
Direct labor	320
Variable manufacturing overhead	40
Fixed manufacturing overhead (Rp60,000 ÷ 250 units)	240
Absorption costing unit product cost	Rp700

2. Under variable costing, only the variable manufacturing costs are included in product costs. (All currency values are in thousands of rupiah, denoted by Rp.)

Direct materials	Rp100
Direct labor	320
Variable manufacturing overhead	40
Variable costing unit product cost	Rp460

Note that selling and administrative expenses are not treated as product costs under either absorption or variable costing. These expenses are always treated as period costs and are charged against the current period's revenue.

EXERCISE 7–5 Variable and Absorption Costing Unit Product Costs and Income Statements [LO1, LO2]

Lynch Company manufactures and sells a single product. The following costs were incurred during the company's first year of operations:

Variable costs per unit:	
Manufacturing:	
Direct materials	$6
Direct labor	$9
Variable manufacturing overhead	$3
Variable selling and administrative	$4
Fixed costs per year:	
Fixed manufacturing overhead	$300,000
Fixed selling and administrative	$190,000

During the year, the company produced 25,000 units and sold 20,000 units. The selling price of the company's product is $50 per unit.

Required:

1. Assume that the company uses absorption costing:
   a. Compute the unit product cost.
   b. Prepare an income statement for the year.
2. Assume that the company uses variable costing:
   a. Compute the unit product cost.
   b. Prepare an income statement for the year.

Exercise 7-5 (30 minutes)

1. a. The unit product cost under absorption costing would be:

Direct materials	$ 6
Direct labor	9
Variable manufacturing overhead	3
Total variable costs	18
Fixed manufacturing overhead ($300,000 ÷ 25,000 units)	12
Absorption costing unit product cost	$30

b. The absorption costing income statement:

Sales (20,000 units × $50 per unit)	$1,000,000
Cost of goods sold (20,000 units × $30 per unit)	600,000
Gross margin	400,000
Selling and administrative expenses [(20,000 units × $4 per unit) + $190,000]	270,000
Net operating income	$ 130,000

2. a. The unit product cost under variable costing would be:

Direct materials	$ 6
Direct labor	9
Variable manufacturing overhead	3
Variable costing unit product cost	$18

b. The variable costing income statement:

Sales (20,000 units × $50 per unit)		$1,000,000
Variable expenses:		
Variable cost of goods sold (20,000 units × $18 per unit)	$360,000	
Variable selling expense (20,000 units × $4 per unit)	80,000	440,000
Contribution margin		560,000
Fixed expenses:		
Fixed manufacturing overhead	300,000	
Fixed selling and administrative expense	190,000	490,000
Net operating income		$ 70,000

EXERCISE 7–6 Inferring Costing Method; Unit Product Cost [LO1, LO4]

Sierra Company incurs the following costs to produce and sell a single product.

Variable costs per unit:	
Direct materials	$9
Direct labor	$10
Variable manufacturing overhead	$5
Variable selling and administrative expenses	$3
Fixed costs per year:	
Fixed manufacturing overhead	$150,000
Fixed selling and administrative expenses	$400,000

During the last year, 25,000 units were produced and 22,000 units were sold. The Finished Goods inventory account at the end of the year shows a balance of $72,000 for the 3,000 unsold units.

Required:

1. Is the company using absorption costing or variable costing to cost units in the Finished Goods inventory account? Show computations to support your answer.
2. Assume that the company wishes to prepare financial statements for the year to issue to its stockholders.
   a. Is the $72,000 figure for Finished Goods inventory the correct amount to use on these statements for external reporting purposes? Explain.
   b. At what dollar amount *should* the 3,000 units be carried in the inventory for external reporting purposes?

Exercise 7-6 (30 minutes)

1. The company is using variable costing. The computations are:

	Variable Costing	*Absorption Costing*
Direct materials	$ 9	$ 9
Direct labor	10	10
Variable manufacturing overhead	5	5
Fixed manufacturing overhead ($150,000 ÷ 25,000 units)	—	6
Unit product cost	$24	$30
Total cost, 3,000 units	$72,000	$90,000

2. a. No, $72,000 is not the correct figure to use because variable costing is not generally accepted for external reporting purposes or for tax purposes.

   b. The Finished Goods inventory account should be stated at $90,000, which represents the absorption cost of the 3,000 unsold units. Thus, the account should be increased by $18,000 for external reporting purposes. This $18,000 consists of the amount of fixed manufacturing overhead cost that is allocated to the 3,000 unsold units under absorption costing (3,000 units × $6 per unit fixed manufacturing overhead cost = $18,000).

EXERCISE 7–7 Variable Costing Income Statement; Reconciliation [LO2, LO3]

Whitman Company has just completed its first year of operations. The company's absorption costing income statement for the year appears below:

Whitman Company Income Statement	
Sales (35,000 units × $25 per unit)	$875,000
Cost of goods sold (35,000 units × $16 per unit)	560,000
Gross margin	315,000
Selling and administrative expenses	280,000
Net operating income	$ 35,000

The company's selling and administrative expenses consist of $210,000 per year in fixed expenses and $2 per unit sold in variable expenses. The $16 per unit product cost given above is computed as follows:

Direct materials	$ 5
Direct labor	6
Variable manufacturing overhead	1
Fixed manufacturing overhead ($160,000 ÷ 40,000 units)	4
Absorption costing unit product cost	$16

Required:

1. Redo the company's income statement in the contribution format using variable costing.
2. Reconcile any difference between the net operating income on your variable costing income statement and the net operating income on the absorption costing income statement above.

Exercise 7-7 (20 minutes)

1. Sales (35,000 units × $25 per unit)			$875,000
Variable expenses:			
Variable cost of goods sold (35,000 units × $12 per unit*)		$420,000	
Variable selling and administrative expenses (35,000 units × $2 per unit)		70,000	490,000
Contribution margin			385,000
Fixed expenses:			
Fixed manufacturing overhead		160,000	
Fixed selling and administrative expenses		210,000	370,000
Net operating income			$ 15,000
* Direct materials	$ 5		
Direct labor	6		
Variable manufacturing overhead	1		
Total variable manufacturing cost	$12		

2. The difference in net operating income can be explained by the $20,000 in fixed manufacturing overhead deferred in inventory under the absorption costing method:

Variable costing net operating income	$15,000
Add fixed manufacturing overhead cost deferred in inventory under absorption costing (5,000 units × $4 per unit in fixed manufacturing cost)	20,000
Absorption costing net operating income	$35,000

See 7-8, 7-11, 7-12