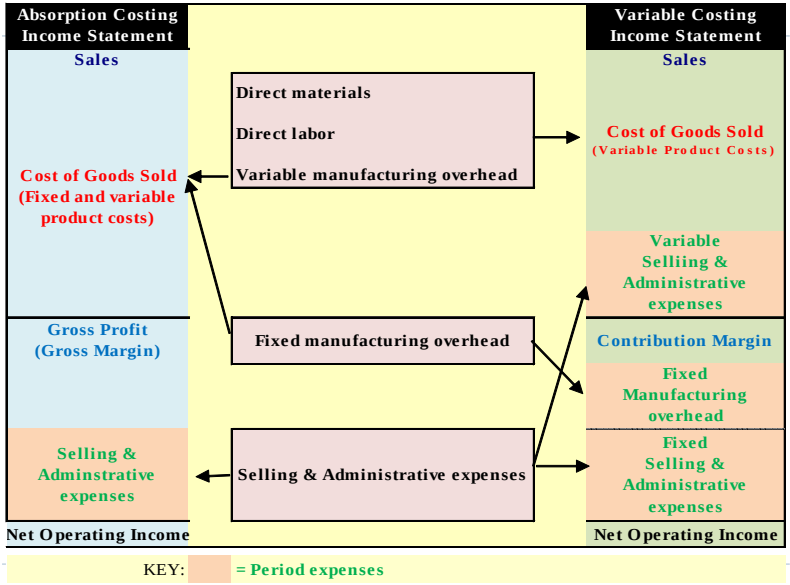
Absorption Costing and Variable Costing

Chapter 5

Objective 1: **How variable costing differs from absorption costing. Compute unit product costs under each method.**

Overview of Absorption and Variable Costing



Objective 1: **How variable costing differs from absorption costing. Compute unit product costs under each method.**

Unit Cost Computations

Harvey Company produces a single product with the following information available:

Number of units produced annually		25,000
Variable costs per unit:		
Direct materials, direct labor, and variable mfg. overhead	$	10
Selling & administrative expenses	$	3
Fixed costs per year:		
Manufacturing overhead		$150,000
Selling & administrative expenses		$100,000

Objective 1: **How variable costing differs from absorption costing. Compute unit product costs under each method.**

Unit Cost Computations

Unit product cost is determined as follows:

	Absorption Costing	Variable Costing
Direct materials, direct labor, and variable mfg. overhead	$ 10	$ 10
Fixed mfg. overhead ($150,000 ÷ 25,000 units)	6	-
Unit product cost	$ 16	$ 10

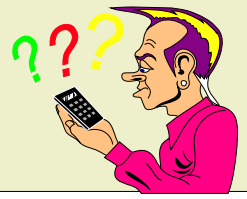
Under absorption costing, all production costs, variable and fixed, are included when determining unit product cost. Under variable costing, only the variable production costs are included in product costs.

Income Comparison of Absorption and Variable Costing

Let's assume the following additional information for Harvey Company.

- 20,000 units were sold during the year at a price of $30 each.
- There is no beginning inventory.

Now, let's compute net operating income using both absorption and variable costing.



Absorption Costing

		Absorption Costing
Sales (20,000 × $30)		$600,000
Less cost of goods sold:		
Beginning inventory	$ -	
Add COGM (25,000 × $16)	400,000	
Goods available for sale	400,000	
Ending inventory (5,000 × $16)	80,000	320,000
Gross margin		280,000
Less selling & admin. exp.		
Variable (20,000 × $3)	$ 60,000	
Fixed	100,000	160,000
Net operating income		$120,000

Fixed manufacturing overhead deferred in inventory is 5,000 units × $6 = $30,000.

Variable Costing

		Variable Costing
Sales (20,000 × $30)		$600,000
Less variable expenses:		
Beginning inventory	$ -	
Add COGM (25,000 × $10)	250,000	
Goods available for sale	250,000	
Less ending inventory (5,000 × $10)	50,000	
Variable cost of goods sold	200,000	
Variable selling & administrative expenses (20,000 × $3)	60,000	260,000
Contribution margin		340,000
Less fixed expenses:		
Manufacturing overhead	$150,000	
Selling & administrative expenses	100,000	250,000
Net operating income		$ 90,000

Comparing the Two Methods

	Cost of Goods Sold	Ending Inventory	Period Expense	Total
Absorption costing				
Variable mfg. costs	$200,000	$ 50,000	$ -	$250,000
Fixed mfg. costs	120,000	30,000	-	150,000
	$320,000	$ 80,000	$ -	$400,000
Variable costing				
Variable mfg. costs	$200,000	$ 50,000	$ -	$250,000
Fixed mfg. costs	-	-	150,000	150,000
	$200,000	$ 50,000	$150,000	$400,000

Comparing the Two Methods

We can reconcile the difference between absorption and variable income as follows:

Variable costing net operating income	$ 90,000
Add: Fixed mfg. overhead costs deferred in inventory (5,000 units × $6 per unit)	30,000
Absorption costing net operating income	$ 120,000

$$\frac{\text{Fixed mfg. overhead}}{\text{Units produced}} = \frac{\$150{,}000}{25{,}000 \text{ units}} = \$6 \text{ per unit}$$

Extended Comparisons of Income Data Harvey Company – Year Two

Number of units produced	25,000
Number of units sold	30,000
Units in beginning inventory	5,000
Unit sales price	$ 30
Variable costs per unit:	
Direct materials, direct labor variable mfg. overhead	$ 10
Selling & administrative expenses	$ 3
Fixed costs per year:	
Manufacturing overhead	$ 150,000
Selling & administrative expenses	$ 100,000

Unit Cost Computations

	Absorption Costing	Variable Costing
Direct materials, direct labor, and variable mfg. overhead	$ 10	$ 10
Fixed mfg. overhead ($150,000 ÷ 25,000 units)	6	-
Unit product cost	$ 16	$ 10

Since the variable costs per unit, total fixed costs, and the number of units produced remained unchanged, the unit cost computations also remain unchanged.

Absorption Costing

	Absorption Costing	
Sales (30,000 × $30)		$ 900,000
Less cost of goods sold:		
Beg. inventory (5,000 × $16)	$ 80,000	
Add COGM (25,000 × $16)	400,000	
Goods available for sale	480,000	
Less ending inventory	-	480,000
Gross margin		420,000
Less selling & admin. exp.		
Variable (30,000 × $3)	$ 90,000	
Fixed	100,000	190,000
Net operating income		$ 230,000

Fixed manufacturing overhead released from inventory is 5,000 units × $6 = $30,000.

Variable Costing

	Variable Costing	
Sales (30,000 × $30)		$900,000
Less variable expenses:		
Beg. inventory (5,000 × $10)	$ 50,000	
Add COGM (25,000 × $10)	250,000	
Goods available for sale	300,000	
Less ending inventory	-	
Variable cost of goods sold	300,000	
Variable selling & administrative expenses (30,000 × $3)	90,000	390,000
Contribution margin		510,000
Less fixed expenses:		
Manufacturing overhead	$150,000	
Selling & administrative expenses	100,000	250,000
Net operating income		$260,000

Comparing the Two Methods

We can reconcile the difference between absorption and variable income as follows:

Variable costing net operating income	$ 260,000
Deduct: Fixed manufacturing overhead costs released from inventory (5,000 units × $6 per unit)	30,000
Absorption costing net operating income	$ 230,000

$$\frac{\text{Fixed mfg. overhead}}{\text{Units produced}} = \frac{\$150{,}000}{25{,}000 \text{ units}} = \$6 \text{ per unit}$$

Comparing the Two Methods

Net Operating Income			
Costing Method	1st Period	2nd Period	Total
Absorption	$ 120,000	$ 230,000	$350,000
Variable	90,000	260,000	350,000

Summary of Key Insights

Relation between production and sales	Effect on inventories	Relation between variable and absorption income
Units produced = Units sold	No change In inventories	Absorption = Variable
Units produced > Units sold	Inventories Increase	Absorption > Variable
Units produced < Units sold	Inventories decrease	Absorption < Variable

CVP Analysis, Decision Making and Absorption costing

Absorption costing does not dovetail with CVP analysis, nor does it support decision making. It treats fixed manufacturing overhead as a variable cost. It assigns per unit fixed manufacturing overhead costs to production.

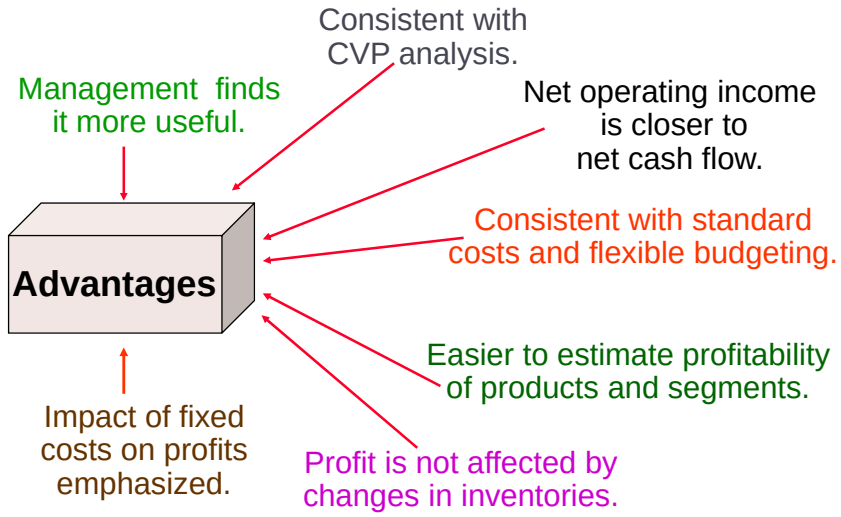
Treating fixed manufacturing overhead as a variable cost can:

- Lead to faulty pricing decisions and faulty keep-or-drop decisions.

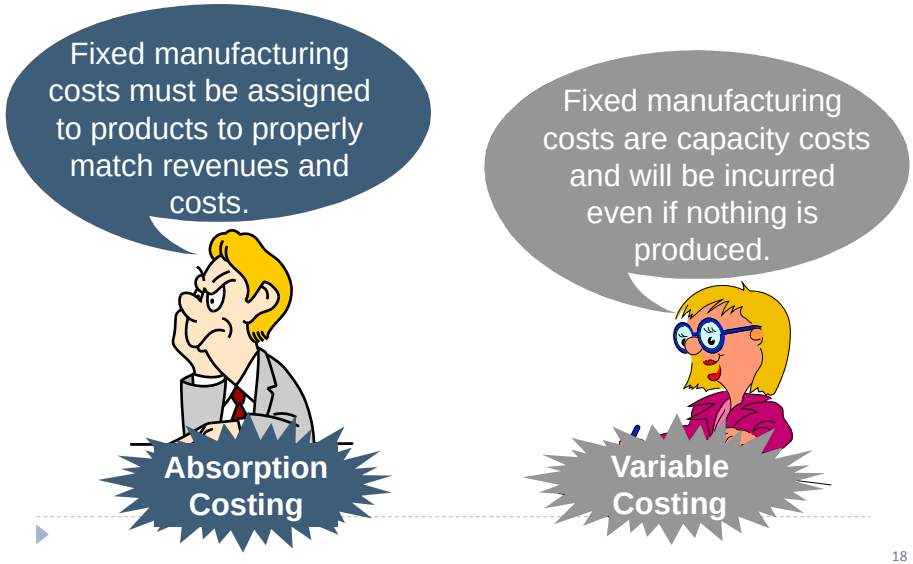
Assigning per unit fixed manufacturing overhead costs to production can:

- Potentially produce positive net operating income even when the number of units sold is less than the breakeven point.

Advantages of Variable Costing and the Contribution Approach



Variable versus Absorption Costing



Creating Extra Profit Without Increase In Sales

Continue with the Harvey Fresh example (slides 54, and 58 to 64). Assume the company had the same sales, revenue and cost structure but produced 35,000 units (instead of 25,000 units) to increase ending

Absorption Costing (Year 1)	Original		New	
	Produced 25,000 units		Produced 35,000 units	
Sales (20,000 × $30)		$ 600,000		600,000
Less cost of goods sold:				
Beginning inventory	$ -		$ -	
Add COGM (25,000 × $16)	400,000		560,000	
Overapplied adjustment	(30,000)		(90,000)	
Goods available for sale	370,000		470,000	
Ending inventory (5,000 × $16)	80,000	290,000	240,000	230,000
Gross margin		310,000		370,000
Less selling & admin. exp.				
Variable (20,000 × $3)	$ 60,000		$ 60,000	
Fixed	100,000	160,000	100,000	160,000
Net operating income		$ 150,000		$ 210,000

Profit increased by $60,000 without extra sales and revenue!

Objective 8: **Explain the potential problems of using absorption costing.**

Use of Variable Costing

Continue with the Harvey Fresh example but present the results using the variable costing format.

Variable Costing (Year 1)	Original		New	
	Produced 25,000 units		Produced 35,000 units	
Sales (20,000 × $30)		$600,000		600,000
Less variable cost of goods sold:				
Beginning inventory	$ -		$ -	
Add COGM (25,000 × $10)	250,000		350,000	
Overapplied adjustment	-		-	
Goods available for sale	250,000		350,000	
Ending inventory (5,000 × $10)	50,000	200,000	150,000	200,000
Less variable selling & admin. exp. (20,000 × $3)		60,000		60,000
Contribution Margin		340,000		340,000
Less Fixed Manufacturing overhead	$ 120,000		$ 120,000	
Fixed selling & Admin exp.	100,000	220,000	100,000	220,000
Net operating income		$120,000		$ 120,000

Profits remain the same despite changing quantity in production and ending inventory

Use of Variable Costing can avoid Profit inflation through producing more inventories

Objective 8: **Explain the potential problems of using absorption costing.**

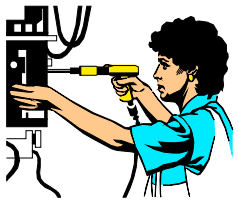
Value of Ending Inventory

Absorption Costing (Year 1)	Original	New
	Produced 25,000 units	Produced 35,000 units
Overapplied adjustment	(30,000)	(90,000)
Ending inventory (5,000 × $16)	$ 80,000	
(15,000 x $16)		$ 240,000
Net Operating Income (Absorption Costing)	$150,000	$210,000
Predetermined fixed manufacturing overhead rate = $6 per unit		
Beginning Inventory (in unit)	-	-
Ending Inventory (in unit)	5,000	15,000
Increase in inventory (in unit)	5,000	15,000
Predetermined overhead rate	$6	$6
Same value as the overapplied	$ 30,000	$ 90,000
(= difference in the profit using variable costing)		
Net Operating Income (Variable Costing)	$ 120,000	$ 120,000

Objective 4: **Understand the advantages and disadvantages of both variable and absorption costing**

Impact of Lean Production

When companies use Lean Production . . .



Production tends to equal sales . . .

So, the difference between variable and absorption income tends to disappear.

End of Chapter 5