Management Accountancy

Unit 3

Income Recognition, Measurement and Reporting

Lecturer: Dr. Jeetendra Dangol

Contents

- Concept of variable and absorption costing
- Income statement under variable and absorption costing methods
- Profit reconciliation between variable and absorption costing approaches

Learning Objectives

- Understand the meaning of absorption costing and variable costing
- Appreciate the method of inventory valuation technique under variable and absorption costing
- Differentiate between variable and absorption costing
- Prepare the profit reconciliation between variable and absorption costing approaches, and explain the possible reasons

Variable Costing and Absorption Costing

- Variable costing enables the management to measure the profitability of an undertaking by stressing the difference between variable and fixed cost.
  - It is also known as direct costing or marginal costing

- Absorption costing is a conventional method. It is a technique of ascertaining cost of goods or services manufactured under which both variable and fixed costs are taken into consideration.
  - It is also termed as Traditional or Full cost method.

Differences between Variable Costing and Absorption Costing

S.N.	Variable Costing	Absorption Costing
1.	Inventorial cost for inventory valuation Direct Materials Cost + Direct Labour Cost + Variable Manufacturing Overheads Cost (VMOH) = Total Variable Manufacturing Cost	Inventorial cost for inventory valuation Direct Materials Cost (DM) + Direct Labour Cost (DL) + Variable Manufacturing Overheads Cost (VMOH) + Fixed Manufacturing Overhead Cost (FMOH) = Total Manufacturing Cost

Differences between Variable Costing and Absorption Costing (Contd.)

S.N.	Variable Costing		Absorption Costing	
2.	Income Statement		Income Statement	
	Sales Revenue	XXX	Sales Revenue	XXX
	Less: Total Variable Cost (VC)	XXX	Less: Total Manufacturing Cost	XXX
	Contribution Margin (CM)	XXX	Gross Margin (GM)	XXX
	Less: Fixed Cost (FC)	XXX	Less: Total Non-Manufacturing Cost	XXX
	Profit	XXX	Profit	XXX

Differences between Variable Costing and Absorption Costing (Contd.)

S.N.	Variable Costing	Absorption Costing
3.	Contribution Margin = Sales Revenue – Variable Cost	Gross Margin = Sales Revenue – Manufacturing Cost
4.	Variable costing is suitable for internal reporting.	Absorption costing is suitable for external reporting.
5.	Profit is result of only sales volume.	Profit is result of both production and sales volume.
6.	Over and under absorption of fixed manufacturing overhead does not arise as only variable manufacturing cost is charged to product.	As it includes fixed manufacturing cost in stock valuation, the problem of over and under absorption of fixed manufacturing overhead arises.

Relationship between Production, Sales and Profit

S.N.	Conditions	Inventory Level	Profit Between Absorption Costing and Varaible Costing
1.	Sales is equal to production	No change in inventory level	No difference in profit
2.	Sales less than production	Increase in inventory level	Absorption costing reports more profit than Variable costing
3.	Sales exceed to production	Decrease in inventory level	Absorption costing reports lesser profit than Variable costing

Case 1: Production Units = Sales Units (Inventory Level No-changed)

Production units	**21,000**
sales units	**21,000**
Opening stock	**2,000 units**
Normal capacity	**20,000 units**
Selling price	**$ 55 per unit**

Manufacturing costs	
Direct materials	**$ 10 per unit**
Direct Labour	**$ 15 per unit**
VMOH	**$ 5 per unit**
FMOH	**$ 200,000**

Non-manufacturing costs

Variable selling	$ 5 per unit
Fixed selling/Administrative	$ 100,000

Required

(i) Income statement using Variable costing approach

(ii)Income statement using Absorption costing approach

Working Notes

Working Note (1)

Opening stock	**2,000 units**
Add: Production units	21,000 units
Goods available for sales	23,000 units
Less: Sales units	21,000 units
Closing stock	2,000 units

Inventory level
No-changed

Working Note (2)

$$\text{FMOH Absorption (Recovery) Rate} = \frac{\text{Total FMOH}}{\text{Normal Capacity}} = \frac{\$2{,}00{,}000}{20{,}000 \text{ units}} = \$\ 10 \text{ per unit}$$

Income Statement under Variable Costing		
Production units		21,000
Sales units		21,000
Sales Revenue	(21,000 units X $ 55)	1,155,000
Less: Cost of goods sold		
Direct Materials	(21,000 units X $ 10) = 210,000	
Direct Labour	(21,000 units X $ 15) = 315,000	
VMOH	(21,000 units X $ 5) = 105,000	
Total production cost	(21,000 units X $ 30) = 630,000	
Add: Opening stock	(2,000 units X $ 30) = 60,000	
Goods available for sale	= 690,000	
Less: Closing stock	(2,000 units X $ 30) = 60,000	630,000
Gross Contribution Margin		525,000
Less: Variable selling cost	(21,000 units X $ 5) =	105,000
Net Contribution Margin		420,000
Less: Fixed Costs		
FMOH	200,000	
Fixed Selling/Adm.	100,000	300,000
Profit		120,000

Income Statement under Absorption Costing		
Production units		21,000
Sales units		21,000
Sales Revenue	(21,000 units X $ 55)	1,155,000
Less: Cost of goods sold		
Direct Materials	(21,000 units X $ 10) = 210,000	
Direct Labour	(21,000 units X $ 15) = 315,000	
VMOH	(21,000 units X $ 5) = 105,000	
FMOH*	(21,000 units X $ 10) = 210,000*	
Total production cost	(21,000 units X $ 40) = 840,000	
Add: Opening stock	(2,000 units X $ 40) = 80,000	
Goods available for sale	920,000	
Less: Closing stock	(2,000 unit X $ 40) = 80,000	840,000
GM before Adjustment		315,000
Add: Overabsorption of FMOH	/200,000 – 210,000*/	10,000
GM after Adjustment		325,000
Less: Non-manufacturing cost		
Less: Variable selling cost	(21,000 units X $ 5) = 105,000	
Fixed Selling/Adm.	100,000	205,000
Profit		120,000

Conclusion

If production units are equal to sales units (inventory level no-changed), then Variable and Absorption costing approaches report equal profits.

Case 2: Production Units > Sales Units (Inventory Level Increased)

Production units	**21,000**
Sales units	**20,000**
Opening stock	**2,000 units**
Normal capacity	**20,000 units**
Selling price	**$ 55 per unit**

Manufacturing costs	
Direct materials	**$ 10 per unit**
Direct Labour	**$ 15 per unit**
VMOH	**$ 5 per unit**
FMOH	**$ 200,000**

Non-manufacturing costs

Variable selling	$ 5 per unit
Fixed selling/Administrative	$ 100,000

Required

(i) Income statement using Variable costing approach

(ii)Income statement using Absorption costing approach

Working Notes

Working Note (1)

Opening stock	**2,000 units**
Add: Production units	21,000 units
Goods available for sales	23,000 units
Less: Sales units	20,000 units
Closing stock	3,000 units

Inventory level increased by 1,000 units

Working Note (2)

$$\text{FMOH Absorption (Recovery) Rate} = \frac{\text{Total FMOH}}{\text{Normal Capacity}} = \frac{\$2{,}00{,}000}{20{,}000 \text{ units}} = \$\ 10 \text{ per unit}$$

Income Statement under Variable Costing		
Production units		21,000
Sales units		20,000
Sales Revenue	(20,000 units X $ 55)	1,100,000
Less: Cost of goods sold		
Direct Materials	(21,000 units X $ 10) = 210,000	
Direct Labour	(21,000 units X $ 15) = 315,000	
VMOH	(21,000 units X $ 5) =105,000	
Total production cost	(21,000 units X $ 30) = 630,000	
Add: Opening stock	(2,000 units X $ 30) = 60,000	
Goods available for sale	= 690,000	
Less: Closing stock	(3,000 units X $ 30) = 90,000	600,000
Gross Contribution Margin		500,000
Less: Variable selling cost	(20,000 units X $ 5) =	100,000
Net Contribution Margin		400,000
Less: Fixed Costs		
FMOH	200,000	
Fixed Selling/Adm.	100,000	300,000
Profit		100,000

Income Statement under Absorption Costing		
Production units		21,000
Sales units		20,000
Sales Revenue	(20,000 units X $ 55)	1,100,000
Less: Cost of goods sold		
Direct Materials	(21,000 units X $ 10) = 210,000	
Direct Labour	(21,000 units X $ 15) = 315,000	
VMOH	(21,000 units X $ 5) = 105,000	
FMOH*	(21,000 units X $ 10) = 210,000*	
Total production cost	(21,000 units X $ 40) = 840,000	
Add: Opening stock	(2,000 units X $ 40) = 80,000	
Goods available for sale	920,000	
Less: Closing stock	(3,000 unit X $ 40) = 120,000	800,000
GM before Adjustment		300,000
Add: Overabsorption of FMOH	/200,000 – 210,000*/	10,000
GM after Adjustment		310,000
Less: Non-manufacturing cost		
Less: Variable selling cost	(20,000 units X $ 5) = 100,000	
Fixed Selling/Adm.	100,000	200,000
Profit		110,000

Conclusion

If production units are more than sales units (inventory level increased), Absorption Costing ($110,000) reports higher profit than that of Variable Costing ($100,000).

Profit Reconciliation Statement

Profit under Variable Costing	**100,000**
Profit under Absorption Costing	$110,000
Profit difference between AC and VC	$10,000

Opening stock	**2,000 units**
Closing stock	3,000 units
Increased inventory level	1,000 units
FMOH Rate (working note 2)	$ 10
Profit difference between AC and VC	$ 10,000

Conclusion: Inventory level is increased by 1,000 units, so that Absorption Costing is reported higher profit than Variable Costing by $ 10,000 (=>1,000 units @ $ 10 per unit).

Case 3: Production Units < Sales Units (Inventory Level Decreased)

Production units	**19,000**
Sales units	**20,000**
Opening stock	**2,000 units**
Normal capacity	**20,000 units**
Selling price	**$ 55 per unit**

Manufacturing costs	
Direct materials	**$ 10 per unit**
Direct Labour	**$ 15 per unit**
VMOH	**$ 5 per unit**
FMOH	**$ 200,000**

Non-manufacturing costs

Variable selling	$ 5 per unit
Fixed selling/Administrative	$ 100,000

Required

(i) Income statement using Variable costing approach

(ii)Income statement using Absorption costing approach

Working Notes

Working Note (1)

Opening stock	2,000 units
Add: Production units	19,000 units
Goods available for sales	21,000 units
Less: Sales units	20,000 units
Closing stock	1,000 units

Inventory level decreased by 1,000 units

Working Note (2)

$$\text{FMOH Absorption (Recovery) Rate} = \frac{\text{Total FMOH}}{\text{Normal Capacity}} = \frac{\$2{,}00{,}000}{20{,}000 \text{ units}} = \$\ 10 \text{ per unit}$$

Income Statement under Variable Costing		
Production units		19,000
Sales units		20,000
Sales Revenue	(20,000 units X $ 55)	11,00,000
Less: Cost of goods sold		
Direct Materials	(19,000 units X $ 10) = 190,000	
Direct Labour	(19,000 units X $ 15) = 285,000	
VMOH	(19,000 units X $ 5) = 95,000	
Total production cost	(19,000 units X $ 30) = 570,000	
Add: Opening stock	(2,000 units X $ 30) = 60,000	
Goods available for sale	= 630,000	
Less: Closing stock	(1,000 units X $ 30) = 30,000	600,000
Gross Contribution Margin		500,000
Less: Variable selling cost	(20,000 units X $ 5) =	100,000
Net Contribution Margin		400,000
Less: Fixed Costs		
FMOH	200,000	
Fixed Selling/Adm.	100,000	300,000
Profit		100,000

Income Statement under Absorption Costing		
Production units		19,000
Sales units		20,000
Sales Revenue	(20,000 units X $ 55)	11,00,000
Less: Cost of goods sold		
Direct Materials	(19,000 units X $ 10) = 190,000	
Direct Labour	(19,000 units X $ 15) = 285,000	
VMOH	(19,000 units X $ 5) = 95,000	
FMOH*	(19,000 units X $ 10) = 190,000*	
Total production cost	(19,000 units X $ 40) = 760,000	
Add: Opening stock	(2,000 units X $ 40) = 80,000	
Goods available for sale	840,000	
Less: Closing stock	(1,000 unit X $ 40) = 40,000	800,000
GM before Adjustment		300,000
Lee: Underabsorption of FMOH	/200,000 – 190,000*/	10,000
GM after Adjustment		290,000
Less: Non-manufacturing cost		
Less: Variable selling cost	(20,000 units X $ 5) = 100,000	
Fixed Selling/Adm.	100,000	200,000
Profit		90,000

Conclusion

If production units are lesser than sales units (inventory level decreased), Absorption Costing ($ 90,000) reports lesser profit than that of Variable Costing ($ 100,000).

Profit Reconciliation Statement

Profit under Variable Costing	**$100,000**
Profit under Absorption Costing	$90,000
Profit difference between AC and VC	$10,000

Opening stock	**2,000 units**
Closing stock	1,000 units
Decreased inventory level	1,000 units
FMOH Rate (working note 2)	$ 10
Profit difference between AC and VC	$ 10,000

Conclusion: Inventory level is decreased by 1,000 units, so that Absorption Costing is reported lesser profit than Variable Costing by $ 10,000 (=>1,000 units @ $ 10 per unit).

Summary Results of Case 1, 2 and 3

Case	Conditions	Inventory Level	Profit Reporting	Profit Diff. = Inventory changed @ FMOH Rate
1	Production units = Sales units (21,000 units = 21,000 units)	No-changes (0 units)	AC (profit) = VC (profit) ($ 120,000 = $ 120,000)	0 units @ $ 10 = $ 0
2	Production units > Sales units (21,000 units > 20,000 units)	Increased (1,000 units)	AC (profit) > VC (profit) ($ 110,000 > $ 100,000)	1,000 units @ $ 10 = $ 10,000
3	Production units < Sales units (19,000 units < 20,000 units)	Decreased (1,000 units)	AC (profit) < VC (profit) ($ 90,000 < $ 100,000)	1,000 units @ $ 10 = $ 10,000

Variable Costing

Profit is Results only Sales Volume

Sales	20,000 units	Sales	21,000 units
S/R @$ 55	$ 1,100,000	S/R @$ 55	$ 1,155,000
Less: VC @(10+15+5+5) = 35	700,000	Less: VC @(10+15+5+5) =35	735,000
CM @ 20	400,000	CM @20	420,000
Less: FC (200,000+100,000)	300,000	Less: FC (200,000+100,000)	300,000
Profit	100,000	Profit	120,000

Over/Under-Absorption of FMOH

Conditions	Capacity Utilization	Remarks
Production units = Normal capacity (20,000 units = 20,000 units)	At par	No over/under absorption of FMOH
Production units > Normal Capacity (21,000 units > 20,000 units)	Excess utilization (1,000 units)	Over-absorption of FMOH 1,000 units @ $10 = $10,000 (Case 1 and 2)
Production units < Normal capacity (19,000 units < 20,000 units)	Under utilization (1,000 units)	Under-absorption of FMOH 1,000 units @ $10 = $10,000 (Case 3)

Question

The direction manufacturing company produced 80,000 units of new product during 2021 A.D. and sold 60,000 units at $ 50 each. Cost for 2021 A.D. were as follows:

	Fixed Cost ($)	Variable Cost ($)
Direct Materials	–	200,000
Direct Labour	–	160,000
Manufacturing Overhead	440,000	320,000
Selling and Adm. Expenses	280,000	80,000

There was no ending work-in-process inventory.

Required:

(a) Prepare comparative income statements for the year 2021 using: (i) variable costing method (ii) absorption costing method.

(b) Give the reasons for the differences in reported net income or net loss in requirement (i) and (ii) in (a).

Working Notes

Working Note (1)

Opening stock	**0 units**
Add: Production units	80,000 units
Goods available for sales	80,000 units
Less: Sales units	60,000 units
Closing stock	20,000 units

Inventory level increased by 20,000 units

Working Note (2)

FMOH Absorption (Recovery) Rate = $\frac{\text{Total FMOH}}{\text{Normal Capacity}}$, Normal capacity is not given

FMOH Absorption (Recovery) Rate = $\frac{\text{Total FMOH}}{\text{Production Units}} = \frac{\$440{,}000}{80{,}000 \text{ units}}$ = $ 5.50 per unit

Income Statement under Variable Costing		
Production units		80,000
Sales units		60,000
Sales Revenue	(60,000 units X $ 50)	3,000,000
Less: Cost of goods sold		
Direct Materials	(80,000 units @ $ 2.50) = 200,000	
Direct Labour	(80,000 units @ $ 2.00) = 160,000	
VMOH	(80,000 units @ $ 4.00) = 320,000	
Total production cost	(80,000 units @ $ 8.50) = 680,000	
Add: Opening stock	0	
Goods available for sale	= 680,000	
Less: Closing stock	(20,000 units X $ 8.50) = 170,000	510,000
Gross Contribution Margin		2,490,000
Less: Variable selling/Adm. cost		80,000
Net Contribution Margin		2,410,000
Less: Fixed Costs		
FMOH	440,000	
Fixed Selling/Adm.	280,000	720,000
Profit		1,690,000

Income Statement under Absorption Costing		
Production units		80,000
Sales units		60,000
Sales Revenue	(60,000 units X $ 50)	3,000,000
Less: Cost of goods sold		
Direct Materials	(80,000 units @ $ 2.50) = 200,000	
Direct Labour	(80,000 units @ $ 2.00) = 160,000	
VMOH	(80,000 units @ $ 4.00) = 320,000	
FMOH*	(80,000 units @ $ 5.50) = 440,000	
Total production cost	(80,000 units @ $ 14.00) = 1,120,000	
Add: Opening stock	0	
Goods available for sale	1,120,000	
Less: Closing stock	(20,000 units @ $ 14.00) = 280,000	840,000
Gross Margin		2.160,000
Less: Non-manufacturing cost		
Less: Variable selling cost	80,000	
Fixed Selling/Adm.	280,000	360,000
Profit		1,800,000

Profit Reconciliation Statement

Profit under Variable Costing	**$1,690,000**
Profit under Absorption Costing	$1,800,000
Profit difference between AC and VC	$110,000

Opening stock	**80,000 units**
Closing stock	60,000 units
Increased inventory level	20,000 units
FMOH Rate (working note 2)	$ 5.50
Profit difference between AC and VC	$ 110,000

Conclusion: Inventory level is increased by 20,000 units, so that Absorption Costing is reported higher profit than Variable Costing by $110,000 (=>20,000 units @ $5.50 per unit).

Profit Reconciliation Statement (Alternative Method)

Alternative 1		Alternative 2	
Profit under variable costing	1,690,000	Profit under absorption costing	1,800,000
Add: Profit diff. (working note)	110,000	Less: Profit diff. (working note)	110,000
Profit under absorption costing	1,800,000	Profit under variable costing	1,690,000

Working Note: Calculation of profit difference between AC and VC

Opening stock	80,000 units
Closing stock	60,000 units
Increased inventory level	20,000 units
FMOH Rate (working note 2)	$ 5.50
Profit difference between AC and VC	$ 110,000

Conclusion:

Inventory level is increased by 20,000 units, so that Absorption Costing is reported higher profit than Variable Costing by $110,000 (=>20,000 units @ $5.50 per unit).

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Thank You