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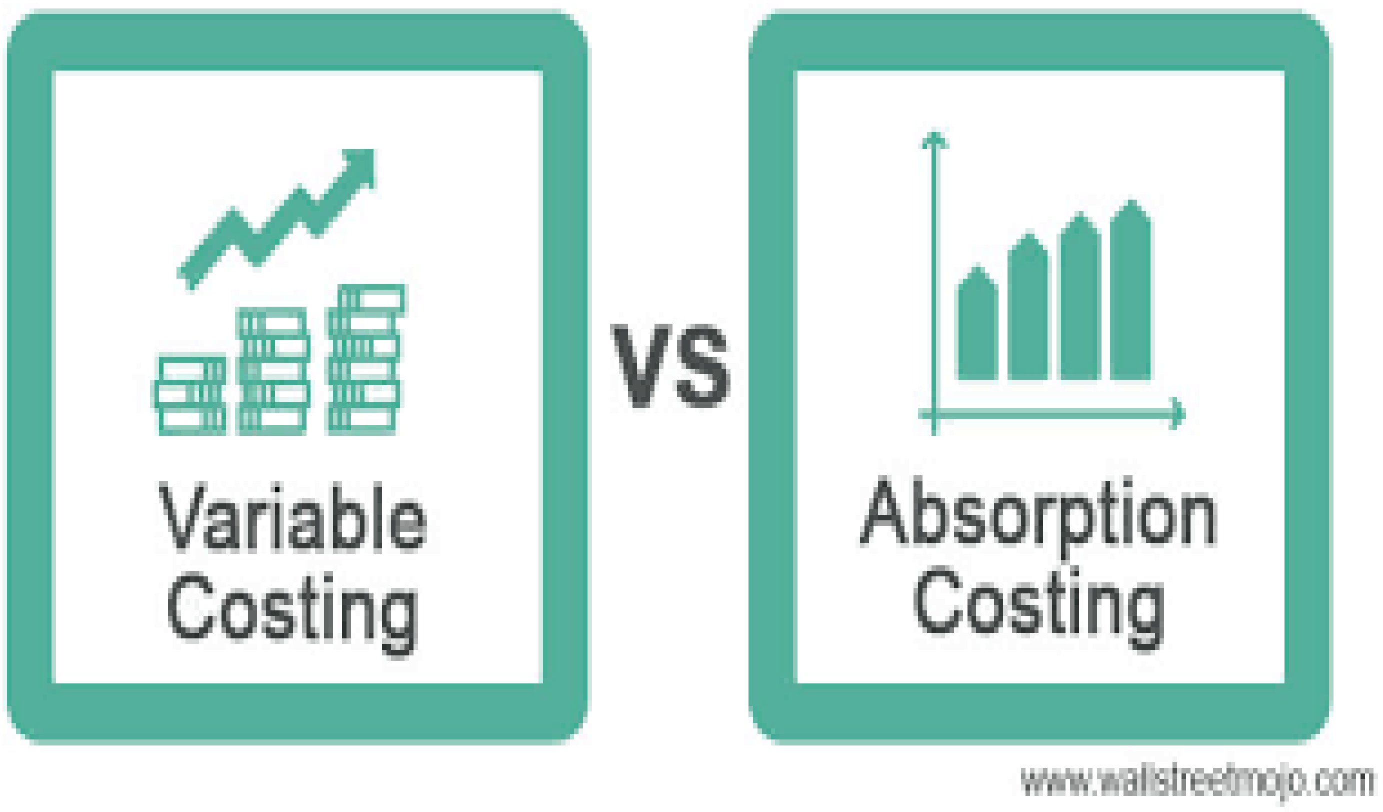
Absorption and Variable Costing


Variable Costing
VS
Absorption Costing
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Absorption and Variable Costing

1. Explain the difference between full (absorption) and variable costing.
2. Compute unit product costs under each method.
3. The benefits of variable costing for internal reporting purposes

- Manufacturing Firm have two different ways of calculating product cost.

1. The full **absorption costing**
2. The **Variable costing method**

Full Absorption Costing

- The full **absorption costing** is a method of Accounting **cost** which include the **full cost** of manufacturing or providing a service.
- It includes not just the **costs** of materials and labour, but also of all manufacturing overheads (whether 'fixed' or '**variable**').
- It called **Absorption** as it "absorbs" fixed overhead into Cost of Gods Sold

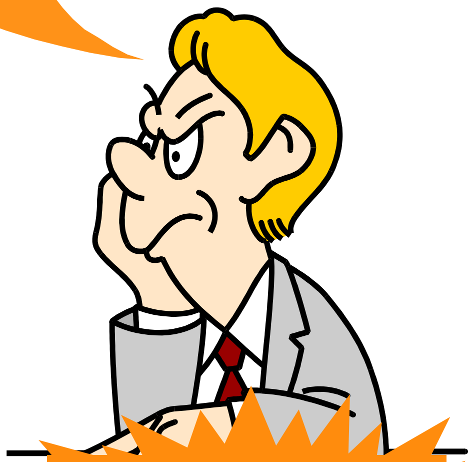
Variable Costing

- The **Variable costing** is also a method of Accounting **cost that applying** production costs to products.

- It includes the **costs** of materials, labour, and the (variable manufacturing) as product cost.

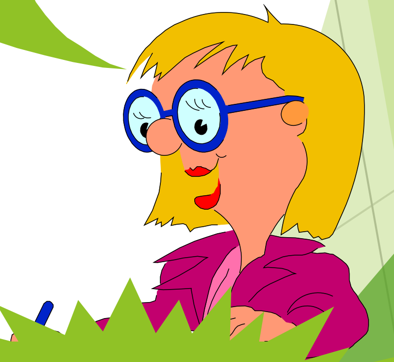
Variable versus Absorption Costing

Fixed manufacturing costs must be assigned to products to properly match revenues and costs.



Absorption Costing

Fixed manufacturing costs are capacity costs and will be incurred even if nothing is produced.



Variable Costing

Differences Between Full (Absorption) and Variable Costing

- **Variable costing** and **absorption** (full) **costing** are two **different** methods of applying (assigning) production costs to products or services.

- The **difference between** the two methods is **in the** treatment of fixed manufacturing overhead costs.

Differences Between Full (Absorption) and Variable Costing

Full (Absorption) costing	Variable Costing
Fixed manufacturing overhead is included	Fixed manufacturing overhead is NOT included
Fixed manufacturing costs, like depreciation, are inventoried until sold	Fixed manufacturing costs, like depreciation, are a period expense on the income statement
Used for external reporting as it is required by GAAP	Only used internally not used for financial statements reporting

Overview of Absorption and Variable Costing

Absorption Costing		Variable Costing
Product Costs	Direct Materials	Product Costs
Product Costs	Direct Labor	Product Costs
Product Costs	Variable Manufacturing Overhead	Product Costs
Product Costs	Fixed Manufacturing Overhead	Period Costs
Period Costs	Variable Selling and Administrative Expenses	Period Costs
Period Costs	Fixed Selling and Administrative Expenses	Period Costs

Full (Absorption) Costing

- Full (Absorption) Costing includes:
  a. Direct material
  b. Direct labor
  c. Manufacturing overhead (variable and fixed overhead)

- Decision making is difficult because of the mix of fixed and variable overhead.

- Required for GAAP.

Variable Costing

- Variable Costing includes:
  a. Direct material
  b. Direct labor
  c. Variable Manufacturing overhead

- Variable Costing lends itself well to decision making analyses.

- Not allowed for GAAP.

Example 1

- The following information belong to a company makes cars:

- Seals price of each car is 80,000$
- In quarter 1, the company manufactures 10 cars and sell 10.
- In quarter 2, the company manufactures 20 cars and sell10.

Cost:	**Q1**	**Q2**
D. M per unit: 25,000	25,000	25,000
D. L per unit: 10,000	10,000	10,000
VOH per unit: 2,000	2,000	2,000
FOH per quarter: 60,000	6,000	3,000
COGS per unit	**43,000**	**40,000**

Absorption Costing Income statement

		Q1		Q2
Sales (10 x 80,000)		800,000		800,000
COGS	(10x 43,000)	430,000	(10x 40,000)	400,000
Gross Margin		370,000		400,000

Total:

	Q1	Q2
D. M	250,000	250,000
D. L	100,000	100,000
VOH	20,000	20,000
FOH	60,000	30,000
COGS	430,000	400,000

Under absorption Method

- If production is greater than sales → increasing in inventory, end up deferring some fixed FOH

1. Sales didn’t change
2. Cost structure didn't change

- However, the profitability changed!
- This led to problems as it makes one period seem artificially better which give managers an incentive to produce more units in order to lower costs!!
- Which led to bullied up inventory that could not be sold soon, and as a result, may harm the company.

- So If absorption costing has disadvantages, why it used by companies?

- Answer:
- It is required for external reporting purposes (GAAP) (External financial statements) acceptable for auditors.

Example 2

- The following information belong to a company Manufactures cars:

- Seals price of each car is 80,000$
- In quarter 1, the company manufactures 10 cars and sell 10.
- In quarter 2, the company manufactures 20 cars and sell10.
-

Cost:	**Q1**	**Q2**
D. M per unit: 25,000	25,000	25,000
D. L per unit: 10,000	10,000	10,000
VOH per unit: 2,000	2,000	2,000
FOH per quarter: 60,000	------	-----
COGS per unit	37,000	37,000

Variable Costing Income statement

	Q1	Q2
Sales (10 x 80,000)	800,000	800,000
COGS (10x 37,000)	370,000	370,000
Contribution Margin	430,000	430,000
FOH	60,000	60,000
Net Income	370,000	370,000

Total:

D. M	250,000	250,000
D. L	100,000	100,000
VOH	20,000	20,000
FOH		
COGS	370,000	370000

Under Variable Method

1. Sales didn’t change
2. Cost structure didn't change

- And, the profitability also didn’t change! Which make more sense!
- This would NOT led to the problem of making one period seem artificially better than the other, as a result, will not give managers an incentive to produce more units in order to lower costs as both period look same in profitability.
- Which not led to bullied up inventory.

The advantages in the variable method

1. Managers will NOT spread the FOH over the producing units and capitalised it, and put some part of it in the inventory.

2. Managers will NOT produce extra units just to make the company look more profitable which is actually not.

- (will not be able to artificially make profitability seem higher)

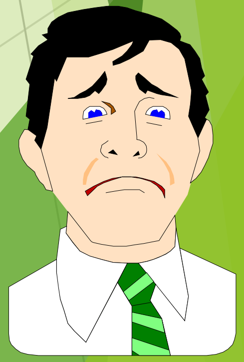
Full (Absorption) costing	Variable Costing
• External reporting (Seen as the accepted method and more comfortable for auditors)	• No artificial differences • Better info for managers (shows how profitable each period compare to the other one) help to make better decision. • Compatible with CVP • No incentive for managers to increase production to appear more profitable

External Reporting and Income Taxes

To conform to GAAP requirements, absorption costing must be used for external financial reports in the United States.

Under the Tax Reform Act of 1986, absorption costing must be used when filing income tax returns.

Since top executives are usually evaluated based on external reports to shareholders, they may feel that decisions should be based on absorption cost income.



Variable costing facilitates C-V-P analysis because:

1. It uses a “contribution” approach

2. Variable costing **minimizes** the effects of **earnings management** because **fixed manufacturing costs** are **not inventoried**. Thus, **merely** increasing **production volume** relative to sales will **not increase net income**.

Full (Absorption) costing	Variable Costing
1. Fixed overhead is calculated based on the units produced. 2. Gross margin is used instead of contribution margin. 3. All selling and Admin expenses are placed below the margin line.	1. Only variable costs are used to calculate the cost of goods sold. 2. Variable selling and Admin expenses is placed ABOVE the margin line. 3. All fixed costs are placed BELOW the contribution margin line.

Full (Absorption) Costing Income Statement

Sales		$100,000
Less COGS	30,000	
Gross Margin		70,000
Less Selling and Admin:		
Selling	18,000	
Admin	12,000	30,000
Net Income		40,000

Variable Costing Income Statement

Sales		**$100,000**
Less Variable Costs:		
Variable COGS	**$20,000**	
Variable Selling	**10,000**	
Variable Admin.	**5,000**	**35,000**
Contribution Margin		**65,000**
Less Fixed Costs:		
Fixed Mfg.	**10,000**	
Fixed Selling	**8,000**	
Fixed Admin	**7,000**	**25,000**
Net Income		**40,000**

Example 3: Production = Sales

<u>Facts:</u>

- 5,000 units produced and sold
- Selling Price: $2,000 per unit
- Variable Manufacturing:
  - Direct Materials: $600 per unit
  - Direct Labor: $225 per unit
  - Variable MFG: $75 per unit
- Fixed Manufacturing: $1,200,000 per year
- Selling Expense: $40 per unit variable plus $100,000 fixed.
- Administrative: $500,000 per year (fixed)

Required: prepare income statement (full & variable)

Full (Absorption) Costing Income Statement

Sales		**$10,000,000**
Less COGS		
D. Material	$3,000,000	
D. Labour	$1,125,000	
Variable Mfg	$375,000	
Fixed Mfg	$1,200,000	5,700,000
Gross Margin		**4,300,000**
Less Selling and Admin:		
Selling expenses	300,000	
Admin expenses	500,000	800,000
Net Income		**3,500,000**

Variable Costing Income Statement

Sales		**$10,000,000**
Less Variable Costs:		
D. Material	$3,000,000	
D. Labour	$1,125,000	
V. Mfg. (MOH)	$ 375,000	
Variable Selling	200,000	
Variable Admin.	0	4,700,000
Contribution Margin		**5,300,000**
Less Fixed Costs:		
Fixed Mfg.	1,200,000	
Fixed Selling	100,000	
Fixed Admin	500,000	1,800,000
Net Income		**3,500,000**

Example 4: Production > Sales

Facts:

- 6,000 units produced and 4,800 units sold
- Selling Price: $2,000 per unit
- Variable Manufacturing:
  - Direct Materials: $600 per unit
  - Direct Labor: $225 per unit
  - Variable MFG: $75 per unit
- Fixed Manufacturing: $1,200,000 per year
- Selling Expense: $40 per unit variable plus $100,000 fixed.
- Administrative: $500,000 per year (fixed)

Required: prepare income statement (full & variable)

Full (Absorption) Costing Income Statement

Sales		**$9,600,000**
Less COGS		
D. Material	**$2,880,000**	
D. Labour	**$1,080,000**	
Variable Mfg	**$360,000**	
Fixed Mfg	**$960,000**	**5,280,000**
Gross Margin		**4,320,000**
Less Selling and Admin:		
Selling expenses	**292,000**	
Admin expenses	**500,000**	**792,000**
Net Income		**3,528,000**

Variable Costing Income Statement

Sales		**$9,600,000**
Less Variable Costs:		
D. Material	**$2,880,000**	
D. Labour	**$1,080,000**	
V. Mfg. (MOH)	**$ 360,000**	
Variable Selling	**192,000**	
Variable Admin.	**0**	**4,512,000**
Contribution Margin		**5,088,000**
Less Fixed Costs:		
Fixed Mfg.	**1,200,000**	
Fixed Selling	**100,000**	
Fixed Admin	**500,000**	**1,800,000**
Net Income		**3,288,000**

Variable Costing Income Statement: Considerations-- Production > Sales

- Net income is higher under full costing than variable costing.

- $**3,528,000** vs. $**3,288,000** = $240,000

- The $240,000 difference is due to the 1,200 (6,000 – 4,800) additional units produced and unsold.

- Fixed manufacturing $1,200,000 / 6,000 units x 1,200 units remaining = $240,000

Summary of Key Insights

Relation between production and sales	Effect on inventory	Relation between variable and absorption NOI
Production > Sales	Inventory increases	Absorption > Variable
Production < Sales	Inventory decreases	Absorption < Variable
Production = Sales	No change	Absorption = Variable

NOI = net operating income

Quick Review Question #1

Which of the following lends itself well to C-V-P Analysis?

a. Full Costing
b. Absorption Costing
c. Variable Costing
d. Average Costing

Quick Review Question #2

Which of the following complies with GAAP for external reporting purposes?

a. Absolute costing
b. Variable costing
c. Fixed costing
d. Absorption costing

Quick Review Question #3

Which of the following lends itself well to internal decision making?

a. Full costing
b. Variable costing
c. Absorption costing
d. None of these

Quick Check ✓

Which method (full or variable costing) will produce the highest net operating income when production = sales?

a. Absorption costing.

b. Variable costing.

c. They produce the same values of NOI.

d. It depends.

Quick Check ✓

Which method (full or variable costing) will produce the highest net operating income when production > sales?

a. Absorption costing.

b. Variable costing.

c. They produce the same values of NOI.

d. It depends.

End of the Chapter