

## : Chapter -2:

### Cost terms, Concepts and Classifications

**01. Concepts and Classification:**

A product cost is any cost involved in the purchase or the manufacture of goods. In the case of manufactured goods, this cost consists of direct materials, direct labor and manufactured overhead. A period cost is a cost that is taken directly to the income statement as an expense in the period in which it is incurred.

02. Since product cost follow units of product into inventory, they are sometimes called inventoriable cost, the flow is from direct materials, direct labor and manufacturing overhead into work in process. As goods are completed, their cost is removed from work in process and transferred into finished goods. As goods are sold, their cost is removed from finished goods and transferred into cost of goods sold in an expense on the income statement.

03. A variable cost is a cost that varies, in total, in direct production to change in the level of activity. A variable cost is a constant per unit of product. A fixed cost is a fixed in total, but will vary inversely on a per unit basis with changes in the level of activity.

04. When fixed costs are involved, the cost of a unit of product will depend on the number of units being manufactured. As production increases, the cost per unit will fall as the fixed cost is spread over more units. Conversely, as production declines, the cost per unit will rise, since a constant fixed cost figure will be spread over fewer units.

05. A differential cost is a cost that differs between alternatives in a decision. An opportunity cost is the potential benefit that is given up when one alternative is selected over another. A sunk cost is a cost that has already been incurred and cannot be altered by any decision taken now or in the future.

06. Differential costs can be either variable or fixed. For example, the alternatives might consist of purchasing one machine rather than another in order to make a product. The difference in the fixed costs of purchasing the two machines would be a differential cost.

**07. Exercise-2.9**

A few of these costs may generate lively debate .for example, some may argue that the cost of advertising a Madonna rock concert is a variable cost since the number of people who come to the rock concert depends upon how much advertising there is .However, one can argue that if the price is within reason, any Madonna rock concert in New York City will be sold out and the function of advertising is simply to let people know the event will be happening. Moreover, while advertising may affect the number of persons who ultimately buy tickets, the advertising costs don't go up.

	Cost behavior	
	Variable	Fixed
1. X-ray film used in the radiology lab at Virginia Mason Hospital in Seattle .....		x
2. The cost of advertising a Madonna rock		

- Chapter 2: The  
4. The
- concert in New York city ..... x
  - 3. Depreciation on the Planet Hollywood restaurant building in Hong Kong ..... x
  - electrical costs of running a roller coaster at Magic Mountain ..... x
  - 5. Property taxes on your local cinema ..... x
  - 6. Commission paid to salespersons at Nordstroms ..... x
  - 7. property insurance on a Coca-Cola bottling plant ..... x
  - 8. The cost of synthetic materials used to make Nike running shoes ..... X
  - 9. The cost of shipping Panasonic televisions to retail stores ..... x
  - 10. The cost of leasing an ultra-scan diagnostic machine at the American hospital in Paris ..... X

08. Exercise-2.5

	Cost Behavior		Selling and Administrative Cost	Product Cost
	Variable	Fixed		
1. Hamburger burns at a McDonald's outlet .....		x		x
2. Advertising by a dental Office .....			x	
3. Apples processed and canned by a Del Monte Corporation. ....	x			x
4. Shipping canned apples from a Del Monte plant to customers. ....	x		x	
5. Insurance on a Bausch and lomb factory producing contract lenses .....			X	x
6. Insurance on IBM's corporate Headquarter .....			x	x
7. Salary of a supervisor overseeing production of computer board at Hewlett-Packard .....			x	x
8. Commissions paid to Encyclopedia Britannica salespersons .....		x		x
9. Depreciation of factory lunchroom facilities at a General Electric plant .....			x	x
10. Steering wheels installed in BMWs .....		x		x

09. Problem-2-14

Name of the Cost	Variable Cost	Fixed Cost	Product cost			Period (selling & adm. cost)	Opp. cost	Sunk cost
			Direct mat.	Direct labor	Mfg. O/H			
Rental revenue Foregone, \$30,000 Per year								X
Direct materials cost, \$ 80 per unit	X		X					
Rental cost of Warehouse, \$500 Per month		X				X		
Rental cost of Equipment, \$ 4000 per month		X			X			
Direct labor cost, \$60 per unit	X			X				
Depreciation of annex space, \$8000 per year		X			X			
X Advertising cost, \$50000 per year			X					X
Supervisors salary, \$1500 per month			X			X		
Electricity for machines, \$120 per unit	X					X		
Shipping cost, \$9 per unit	X							X
Return earned on investment, \$3000 per year								X

10. Problem: 2-20

Cost Item	Cost Behavior		Units of Product		
	Variable	Fixed	Direct	Indirect	
1. Electricity used in operating machines .....		X			X X
2. Rent on a factory building ...			X		
3. Cloth used in drapery production	X			X	X
4. Production superintendents salary			X		
5. Wages of labors assembling a product	X			X	
6. Depreciation air purification equipment used in furniture production .....			X		X X
7. Janitorial salaries .....			X		
8. Peaches used in canning fruit.....	X			X	X
9. Lubricants needed for machines .....	X			X	
10. Sugar used in soft drink production ...	X			X	X
11. Property taxes on the factory .....			X		
12. Wages of workers painting a product ...	X			X	X
13. Depreciation of cafeteria equipment			X		X
14. Insurance on a building used in producing TV sets .....			X		
15. Picture tubes used in TV sets .....	X			X	

Format of Schedule of Cost of Goods Manufacturer

Particulars	\$	\$
<b>Materials:</b>		
Raw Materials Inventory (Opening)-----		
Add Purchase of Raw Materials-----		

Raw Materials available-----		
Less Raw Materials Inventory (Closing) --		
<b>Raw Materials used or consumed-----</b>		
Direct Labor-----		
<b>Manufacturing Overhead:</b>		
Rent on facilities -----		
Insurance -----		
Utilities cost -----		
Indirect Labor -----		
Depreciation (Factory Equipment) -----		
Maintenance (Factory)-----		
Others if any -----		
<b>Total Manufacturing Costs</b>		
Add Work in Process (Opening) -----		
Less Work in Process (Closing)-----		
<b>Cost of Goods Manufactured</b>		

**Format of Income Statement**

Particulars	\$	\$
Sales -----		
Less Cost of Goods sold:		
Finished Goods Inventory (Opening)-----		
Add Cost of Goods Manufactured-----		
Goods Available for Sale-----		
Less Finished Goods Inventory (Closing)		
Gross Margin		
Less Operating Expenses (Office & Admin & selling & Distribution Exp.):		
Selling & Administrative Expenses -----		
Rent on Facilities -----		
Insurance -----		
Depreciation (Sales Equipment) -----		
Utilities Costs -----		
Advertising -----		
Others if any -----		
<b>Net Operating Income (N.O.I)</b>		

**Problem 2.20 (P.-82)**

**Skyler Company**

Schedule of Cost of Goods Manufacturer for the month ended June

Particulars	\$	\$
<b>Materials:</b>		
Raw Materials Inventory (June-01)-----	17,000/=	
Add Purchase of Raw Materials-----	1,90,000/=	

Raw Materials available-----	2,07,000/=	
Less Raw Materials Inventory (June-30) -	42,000/=	
<b>Raw Materials used or consumed-----</b>		<b>1,65,000/=</b>
Direct Labor-----		90,000/=
<b>Manufacturing Overhead:</b>		
Rent on facilities (80%) -----	32,000/=	
Insurance (75%) -----	6,000/=	
Utilities cost (90%) -----	45,000/=	
Indirect Labor -----	1,08,000/=	
Depreciation (Factory Equipment) -----	12,000/=	
Maintenance (Factory)-----	7,000/=	2,10,000/=
<b>Total Maintenance Costs</b>		<b>4,65,000/=</b>
Add Work in Process (June-01) -----		70,000/=
		5,35,000/=
		85,000/=
Less Work in Process (June-30)-----		<b>4,50,000/=</b>
<b>Cost of Goods Manufactured</b>		

**Income Statement for the month ended June**

Particulars	\$	\$
Sales -----		6,00,000/=
Less Cost of Goods sold:		
Finished Goods Inventory (June - 01)-----	20,000/=	
Add Cost of Goods Manufactured-----	4,50,000/=	
Goods Available for Sale-----	4,70,000/=	
Less Finished Goods Inventory (June -30)	60,000/=	4,10,000/=
Gross Margin		<b>1,90,000/=</b>
Less Operating Expenses:		
Selling & Administrative Expenses -----	35,000/=	
Rent on Facilities (20%) -----	8,000/=	
Insurance (25%) -----	2,000/=	
Depreciation (Sales Equipment) -----	10,000/=	
Utilities Costs (10%) -----	5,000/=	
Advertising -----	80,000/=	1,40,000/=
<b>Net Operating Income (N.O.I)</b>		<b>50,000/=</b>

~~STOP~~  
**Cost Behavior; Analysis and Use**

**01. Concepts;**

Cost behavior refers to how a cost will react or respond to changes in the level of business activity.

Cost Behavior Scenario		
------------------------	--	--

Type of cost	Total costs	Per unit cost
Fixed costs	No change	Increase or decrease
Variable costs	Increase / Decrease	No change

a) **Variable cost** ; A variable cost is one that remains constant on a per unit basis, but which changes in total indirect relation to change in volume.

b) **Fixed cost**; A Fixed cost is one that remains constant in total amount, but which changes, if expressed on a per unit basis, inversely with changes in volume .

c) **Mixed cost**; A mixed cost is a cost that contains both variable and fixed costs elements.

**Allocation of Mixed cost:**

**High-low Method**: Under this method the variable cost element is found out from the mixed cost by applying the following. The variable rate formula goes as follows:

$$\text{Variable rate} = \frac{\text{Change in cost}}{\text{Change in units}}$$

After finding out variable cost, fixed cost can be found out by deducting variable cost from total mixed cost

**Exercise 5-5:**  
Requirement 01.

	Units Produced and sold		
	\$60,000	\$80,000	\$100,000
Variable costs	150000	200000	250000
Fixed costs	360000	360000	360000
<b>Total cost</b>	<b>510000</b>	<b>560000</b>	<b>610000</b>
Cost per unit:			
Variable cost	2.50	2.50	2.50
Fixed cost	6.00	4.50	3.60
<b>Total cost per unit</b>	<b>8.50</b>	<b>7.00</b>	<b>6.10</b>

Requirement-02

Income statement for 9000 units	
Sales revenue (9000@7.5)	675000
Less: Variable cost (9000@2.50)	225000
Contribution Margin	450000
Less: Fixed Costs	360000
<b>Net Income</b>	<b>90000</b>

**Exercise 5-11**

1. Identification of Company's expenses

- Costs of goods sold ..... Variable
- Advertising expenses ..... Fixed
- Shipping expenses ..... Mixed
- Salaries and commission ..... Mixed
- Insurance expenses ..... Fixed
- Depreciation expenses ..... Fixed



2. Separation of Mixed Expenses under High-Low Method

	Units	Shipping Exp	Salary etc
High level of Activity	4500	56,000	143,000
Low level of Activity	3000	44,000	107,000
Change	1500	12000	36000

A. Valuable Cost Element:

Variable rate = Change in cost ÷ Change in units

- Shipping Expense:  $12000 \div 1500 = \$8$
- Salary expense:  $36000 \div 1500 = \$24$

B. Fixed Cost Element:

	Shipping Expense	Salary Expense
Cost of High level	56000	143000
less; VC		
4500 units @ \$8	36000	
4500 units @ \$24		108000
FC	20000	35000

C. Cost formula:

Shipping Expense: \$ 20000 plus \$8 per unit or  
 $Y = \$20000 + 8X$

Salary Etc: \$ 35000 plus \$24 per unit or  
 $Y = \$35000 + 24X$

Frankel Ltd  
 Income Statement for the month ended June

Sales in unit		<u>4500</u>
Sales revenue		\$ 630000
<b>Less: Variable costs:</b>		
Cost of goods sold	252000	
Shipping	36000	
Salary etc	<u>108000</u>	
<b>Contribution Margin</b>		<u>396000</u> <del>376000</del>
		234000
<b>Less: Fixed costs:</b>		
Advertising	70000	
Shipping	20000	
Salary etc	35000	
Insurance	9000	
Depreciation	<u>42000</u>	
<b>Net Income</b>		<u>176000</u> <del>176000</del> <u>\$58000</u>

2. Problem; 5-15

- |                        |       |          |
|------------------------|-------|----------|
| 1. Costs of goods sold | ..... | Variable |
| Advertising expenses   | ..... | Fixed    |
| Shipping expenses      | ..... | Mixed    |

Salaries and commission ..... Mixed  
 Insurance expenses..... Fixed  
 Depreciation expenses..... Fixed

2. Analysis of the mixed expenses;

	Unites	Shipping Expenses	Salary and Comm. Expenses
High level of activity .....	5000	A\$38000	A\$90000
Low level of activity .....	4000	34000	78000
Change .....	1000	A\$ 4000	A\$ 12000

A. Variable cost element;

Variable rate=  $\frac{\text{Change in cost}}{\text{Change in activity}}$

- Shipping expenses;  $\frac{A\$4000}{1000\text{units}}$   
=A\$4 per unit.
- Salaries and comm. expense;=  $\frac{A\$12000}{1000\text{units}}$   
=A\$12 per unit.

B. Fixed cost element;

	Shipping Expenses	Salary and Com. Expenses
Cost of high level of activity...	A\$38000	A\$90000
Less variable cost element;		
5000 units x A\$4 .....	20000	60000
5000 units x A\$12 .....		A\$30000
Fixed cost element .....	<u>A\$18000</u>	

C. The cost formulas are;

Shipping expense; A\$18000 per month plus \$ 4 per unit or  
 $Y = A\$18000 + A\$4X$   
 Salary and Com. Expenses; A\$30000 per month plus A\$12 per unit or  
 $Y = A\$30000 + A\$12X$

Morrisey & Brown, Ltd.  
 Income statement  
 For the month ended September 30

Sales in units .....		5000
Sales revenue (@A\$100) .....		A\$500000
Less variable expenses;		
Cost of goods sold (@A\$60) .....	A\$300000	
Shipping expenses (@A\$4) .....	20000	
Salary and Com. Expenses (@A\$12) .....	<u>60000</u>	<u>380000</u>
Contribution margin .....		120000
Less fixed expenses;		
Advertising expenses .....	21000	
Shipping expense .....	18000	
Salary and Com. Expenses .....	<u>30000</u>	

Insurance expenses .....	6000	
Depreciation expenses .....	15000	90000
Net income .....		<u>Δ\$30000</u>

**03. Problem:**

1. Maintenance cost at the 90000 machine-hour level of activity can be isolated as follows:

	<u>Level of activity</u>	
	60000M	90000MH
Total factory overhead cost .....	\$174000	\$246000
Deduct;		
Utilities cost @\$0.80/MH* .....	(48000)	(72000)
Supervisory salaries .....	<u>(21000)</u>	<u>(21000)</u>
Maintenance cost .....	<u>\$105000</u>	<u>\$153000</u>

\*\$48000/60000MH=\$0.80/MH

2. High-low analysis of maintenance cost:

	Machine hours	Machine cost
High activity level .....	90000	\$153000
Low activity level .....	<u>60000</u>	<u>105000</u>
Changes .....	<u>30000</u>	<u>\$48000</u>

$$\text{Variable rate: } \frac{\text{Change in cost}}{\text{Change in activity}}$$

$$= \frac{48000}{30000\text{MH}}$$

$$= \$1.60/\text{MH}$$

<u>Total fixed cost:</u>		
Total maintenance cost at the high activity level.....		\$153000
Less variable cost element (90000MHx\$1.60) .....		<u>144000</u>
Fixed cost element .....		<u>\$9000</u>

Therefore, the cost formula for maintenance is; \$9000 per month plus \$1.60 per machine-hour  
or

$Y = \$9000 + \$1.60X$

	Variable Rate per Machine-Hour	Fixed Cost
3. Maintenance cost .....	\$1.60	\$9000
Utilities cost .....	0.80	
Supervisory salaries cost .....		<u>21000</u>
Total	<u>\$2.40</u>	<u>\$30000</u>

Thus, the cost formula would be;  $Y = \$30000 + \$2.40X$ .

4. Total overhead cost at an activity level of 75000 machine-hours:	
Fixed costs .....	\$30000
Variable costs (\$2.40 x 75000MH) .....	<u>180000</u>
Total overhead costs .....	<u>\$210000</u>