Cost & Management Accounting

Murshed Alam, Assistant Professor, Dept. of Business Administration,
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Course Code : 0411-312, 0411-714, 0411- 623	**Credits : 03**
Semester End Exam (SEE) Hours : 03	CIE Marks : 90 SEE Marks : 60

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Course Learning Outcomes: At the end of the Course, the Student will be able to-

CLO 1	**Understand the basic concepts of cost accounting, measurement, analysis, accumulation and control of various elements of cost.**
CLO 2	Analyze the financial statements of merchandising and manufacturing companies and give an elementary knowledge about preparation of cost sheet.
CLO 3	Enhance the abilities of learners to develop the concept of management accounting and its significance in the business.
CLO 4	Develop the students competence with their usage in managerial decision making, budgetary control and analyze the relevant costing.
CLO 5	Evaluate and analyze the break-even analysis and economic order quantity of an organization.

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Course Contents:

Sl.	Contents of Course	Hours	CLOs
01	Introduction to Cost Accounting	4	CLO 1
02	Cost Concepts, Classification and Preparation of Cost Sheets	12	CLO 2
03	Introduction to Management Accounting And Absorption costing & Variable costing	8	CLO 2 CLO 3
04	Budgeting & budgetary Control and Relevant costing	8	CLO 4
05	CVP analysis	10	CLO5

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Text Books:

- **Managerial Accounting 17th Edition** by Ray Garrison (Author), Eric Noreen (Author), Peter Brewer (Author)
- Milton F. Usryand Lawrence H. Hammer. *Cost Accounting: Planning & Control* (South-Western Publishing Co.).

Reference Books:

- **Principles of Accounting, Volume 2: Managerial Accounting** by Patty Gray Beal; Mitchell Franklin; and Dixon Cooper.
- C.T.Horngren,G.FosterandS.M.Datar.CostAccounting:AManagerialEmphasis (Prentice Hall).

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Course Plan specifying content, CLOs, Teaching Learning and assessment strategy mapped with CLOs.

Week	Topic	Teaching Learning Strategy	Assessment Strategy	Aligned to CLOs
1	**Introduction to Cost Accounting:** Definition and Objectives of Cost Accounting; Limitations of Financial Accounting; Importance of Cost Accounting; Cost Accounting vs. Financial Accounting; Cost Accounting vs. Management Accounting; Evolution of Cost Accounting.	Lecture Discussion	Question & Answer (Oral)	CLO 1

2	**Cost Concepts, Classification of Costs: Manufacturing costs-direct material, direct labor and manufacturing overhead, Non-manufacturing costs-Administrative costs and selling costs, Product costs and period costs, Fixed costs, Variable costs, Sunk cost and opportunity costs.**	**Lecture** **Discussion**	**Question & Answer (Oral)** **Class test**	**CLO2**
3	**Cost sheet:** Preparation of Cost sheet of the manufacturing company and exercise of cost sheet.	Lecture Discussion Problem Solving Exercise Home work	Question & Answer (Oral)	CLO2

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4	**QUIZ/ASSIGNMENT/CASE STUDY/PRESENTATION**	**Written exam** **MCQ test** **Assignment** **Presentation**	**Written exam** **MCQ test** **Oral test**	
5	**Cost sheet:** Preparation of Cost sheet of the manufacturing company and exercise of cost sheet	Lecture Discussion Exercise Assignment	Question & Answer (Oral)	CLO 2

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6	**Income Statement: Preparation of income statement of manufacturing company.**	▪ **Lecture** ▪ **Discussion** ▪ **Problem Solving** ▪ **Exercise** ▪ **Home work**	▪ **Question & Answer (Oral)**	**CLO2**
7	**Income Statement:** Preparation of income statement of merchandising company, Exercise of income statement of merchandising company and manufacturing company.	▪ Lecture ▪ Discussion ▪ Problem Solving ▪ Exercise ▪ Home work	▪ Question & Answer (Oral) ▪ Class Test	CLO2

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8	**Introduction to Management Accounting: Definition of management accounting, Objectives, Goals, Importance, Scopes, Functions, Limitation of management accounting, Management accounting vs. cost accounting, Financial accounting vs. Management accounting.**	▪ **Lecture** ▪ **Discussion**	▪ **Question & Answer (Oral)**	**CLO3**
9	**Absorption costing & Variable costing:** Definition of absorption costing, Objectives of absorption costing, Exercise of absorption costing, Definition of variable costing, Objectives of variable costing, Exercise of marginal costing	▪ Lecture ▪ Discussion ▪ Oral Presentation	▪ Question & Answer (Oral) ▪ Class Test	CLO3

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10	**Absorption costing & Variable costing: Exercise of absorption costing and variable costing.**	▪ **Lecture** ▪ **Discussion** ▪ **Problem Solving** ▪ **Exercise** ▪ **Home work**	▪ **Question & Answer (Oral)**	**CLO3**
11	**Budgeting and budgetary Control:** Budgetary control process steps, Prepare budget, Compare with actual, Corrective action, Types of Budget, Purchase and Sales budget, Cash budget, Preparation of different types of budget.	▪ Lecture ▪ Discussion ▪ Problem Solving ▪ Oral presentation	▪ Question & Answer (Oral) ▪ Class Test	CLO4

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12	**QUIZ/ASSIGNMENT/CASE STUDY/PRESENTATION**	▪ **Written exam** ▪ **MCQ test** ▪ **Assignment** ▪ **Presentation**	▪ **Written exam** ▪ **MCQ test** ▪ **Oral test**	
13	**Relevant costing:** Definition of relevant costing, Objectives of relevant costing, Mathematical exercise of relevant costing.	▪ Lecture ▪ Discussion ▪ Problem Solving ▪ Exercise	▪ Question & Answer (Oral) ▪ Class Test	CLO4

14	**CVP Analysis:** **Definition of CVP analysis, Objectives CVP analysis, Assumptions of break-even analysis, Mathematical analysis of CVP, Determination of break-even point.**	▪ **Lecture** ▪ **Discussion** ▪ **Problem Solving** ▪ **Exercise**	▪ **Question & Answer (Oral)** ▪ **Class Test**	**CLO5**
15	**CVP Analysis:** Mathematical analysis of CVP, Determination of break-even	▪ Lecture ▪ Discussion	▪ Question & Answer (Oral)	CLO5

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16	**Economic order Quantity (EOQ): Definition of EOQ, Objectives of EOQ, Calculation of EOQ, Mathematical exercise of EOQ.**	▪ Lecture ▪ Discussion ▪ Problem Solving ▪ Exercise ▪ Assignment	▪ Question & Answer (Oral) ▪ Class Test	CLO5
17	**Problem solving and revision class/ makeup class**	▪ Lecture ▪ Discussion ▪ Problem Solving ▪ Exercise	▪ Question & Answer (Oral)	CLO3 CLO4 CLO5

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ASSESSMENT PATTERN

Total Marks Per Credit 50 Marks	
3 Credits Course	150 Marks
2 Credits Course	100 Marks
CIE	60%
SEE	40%

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CIE- Continuous Internal Evaluation (90 Marks)

Bloom's Category	Quiz	Assignments	External Participation in Curricular/ Co-curricular activities	Test (45)
Marks (out of 90)	(15)	(15)	(15)	
Remember			Bloom's affective domain: (Attitude or Will) Attendance: 15 Copy or Attempt to copy: -10 Late Assignment: -10	10
Understand	05	05		05
Apply	05			10
Analyze		05		05
Evaluate	05	05		10
Create				05

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SEE- Semester End Examination (60 Marks)

Bloom's Category	*Test*
Remember	*10*
Understand	*10*
Apply	*10*
Analyze	*10*
Evaluate	*10*
Create	*10*

Cost and Management Accounting

Course Instructor:
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Cost Accounting

Week-1
Page No. 9-17

After studying this chapter, the students will able to learn…
- ❖ Define and functions of cost accounting
- ❖ Differentiate between financial accounting and cost accounting
- ❖ Describe the role of cost accounting

COST ACCOUNTING

- Cost accounting is concerned with determination of cost of product & controlling cost with a view to maximize profit.

- Cost accounting provides information for the guidance of the management for proper planning, operation, control & decision making.

FUNCTIONS OF COST ACCOUNTING

1. Determination of cost of product & services.

2. Controlling cost of products & services.

3. Measuring efficiency.

4. Supply financial & cost data.

FINANCIAL ACCOUNTING

- Financial accounting is concerned with external reporting of the status of assets, liabilities, equity, results of operation, changes in owner's equity & cash flow for an accounting period based on generally accepted accounting principles.

- Managers are responsible for the financial statements issued to investors, creditors, shareholders, govt. regulators & other interested parties outside the organization & these interested groups use financial accounting reports in decision making.

FINANCIAL ACCOUNTING VS COST ACCOUNTING

- Financial accounting is concerned with external reporting of the status of assets, liabilities, equity, results of operation, changes in owner's equity & cash flow for an accounting period for creditors, shareholders, potential investors, taxation authorities, trade union, financial analyst & other interested groups use financial accounting reports in decision making.

- Cost accounting is primarily concerned with accumulation & analysis of cost information for internal use by managerial hierarchy for planning, control & operation.

Financial Accounting	Basis of Comparison	Cost Accounting
External reporting of financial information	Purpose	Determination of unit cost & control of cost.
Mainly external users	Users of information	Internal Users like managers
Compliance with GAAP	Compliance	Compliance to cost concept & principles.
Historical cost	Basis of Valuation	Any form of monetary & physical unit.
All types of business organization	Applicability	Only the manufacturing organization
Current time period	Periodicity	Both current & future time period.
Mostly at the end of the period	Time of presentation of Reports	As & when required by Management.

ROLE OF COST ACCOUNTING

- Cost accounting provides management with necessary accounting information for planning & controlling activities, specially the collection, presentation & analysis of cost data should help managements accomplish the following tasks:

- Creating & executing plans & budgets for operating under expected competitive & economic condition.

- Establishing costing methods & procedures that control cost.

- Creating inventory values for costing & pricing purposes & at times controlling physical quantities.

- Determining company costs & profit for an annual accounting period or a shorter period in total or by segment as desired by management

Cost Accounting

Week-1

Page No. 18-26

After studying this chapter, The students will be able to learn….

*** Define cost accounting**

*** Explain the objectives of cost accounting**

*** Classify the different types of manufacturing costs**

*** Classify the different types of non-manufacturing costs**

What is Cost Accounting?

The branch of accounting that deals with calculation of cost per unit, management of cost per unit and control of cost per unit is called cost accounting

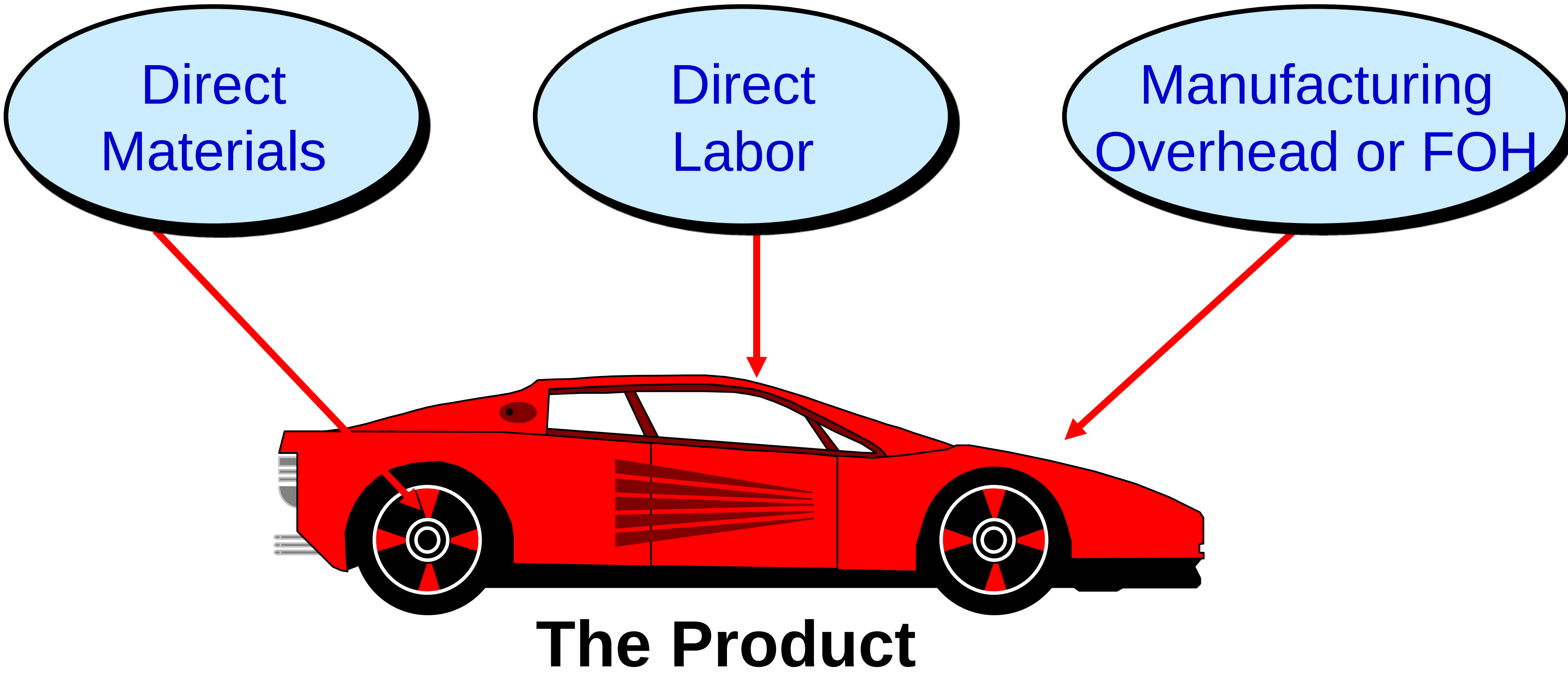
Objectives of Cost Accounting

1. To calculate accurate profit
2. To calculate correct value of ending inventories
3. To calculate correct value of Cost of Good Sold.
4. To calculate accurate price of Goods

Learning Objective 1

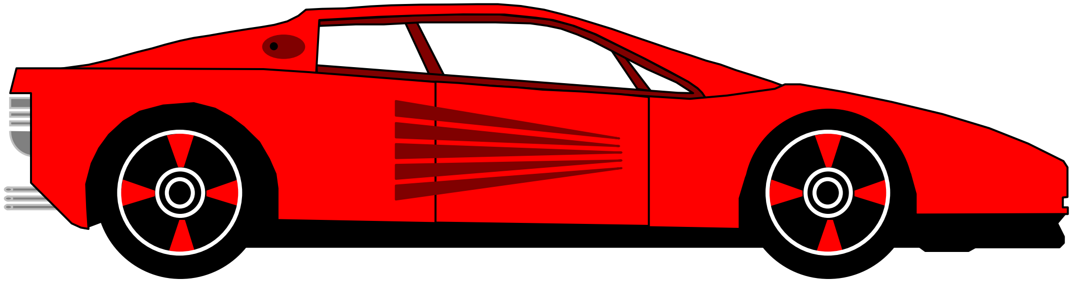
Identify and give examples of each of the three basic manufacturing cost categories.

Classifications of Manufacturing Costs



Direct Raw Materials

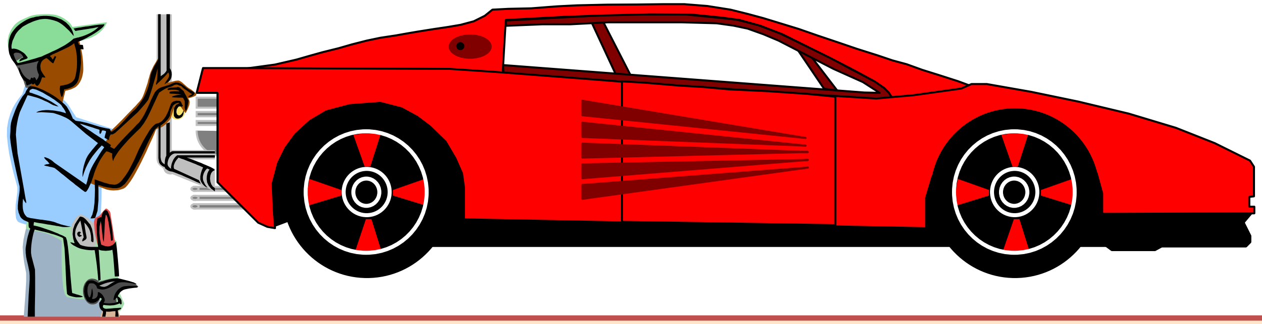
Raw materials that become an integral part of the product and that can be easily traceable



Example: **Tyres in an automobile**

Direct Labor

Those labor costs that can be easily traced to individual units of product.



Example: **Wages paid to automobile assembly workers**

Manufacturing Overhead

Manufacturing costs that cannot be easily traced directly to specific units produced.

Examples: Indirect materials and indirect labor

Materials used to support the production process.

Examples: lubricants and cleaning supplies used in the automobile assembly plant.

Wages paid to employees who are not directly involved in production work.

Examples: maintenance workers and security guards.

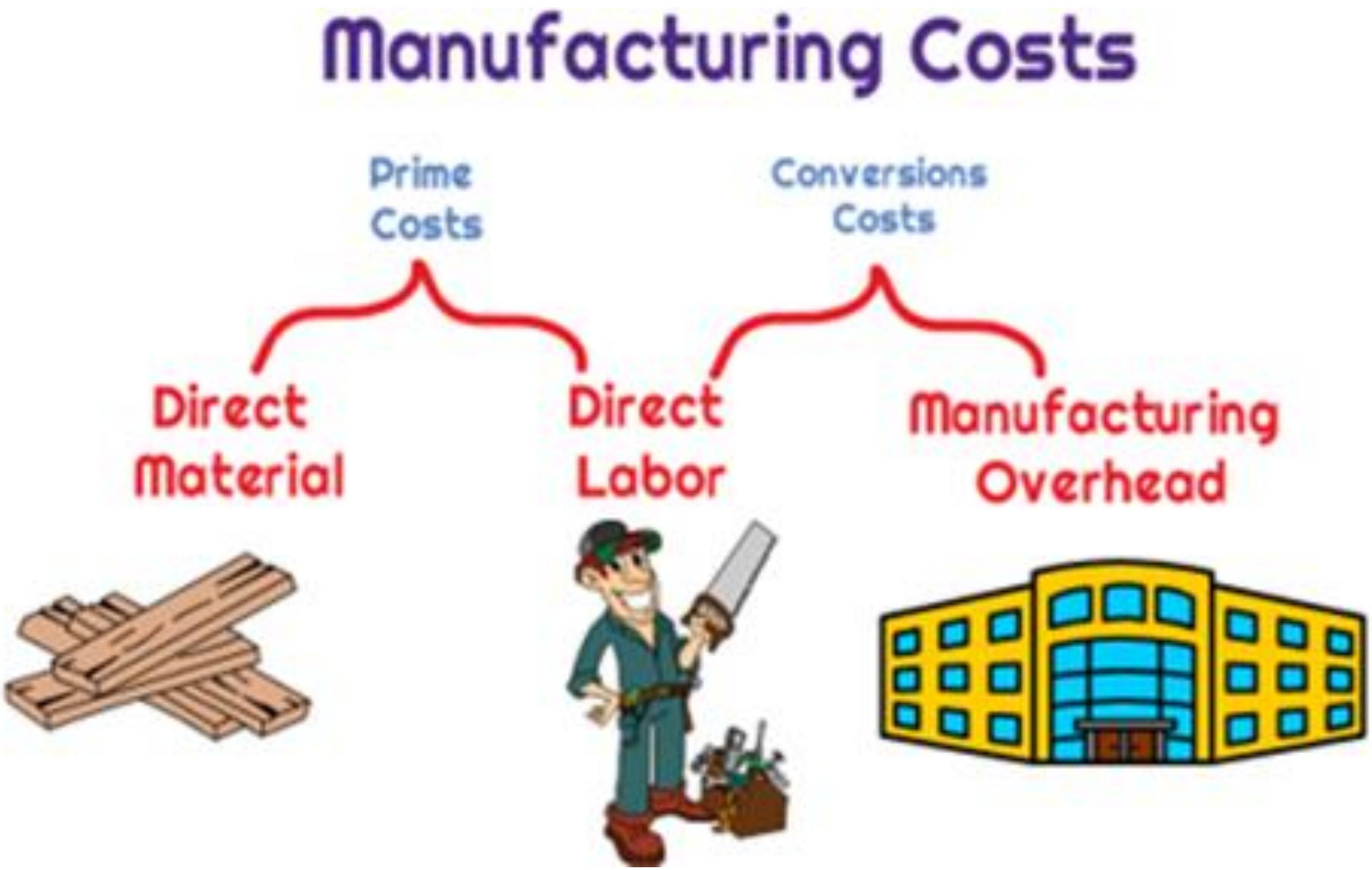
Nonmanufacturing Costs

Selling Costs

Costs necessary to secure the order and deliver the product.

Administrative Costs

All executive, organizational, and clerical costs.


Manufacturing Costs
Prime Costs
Conversions Costs
Direct Material
Direct Labor
Manufacturing Overhead

Cost Accounting

Week- 2

Page No. 27-38

After studying this chapter, the students will be able to learn….

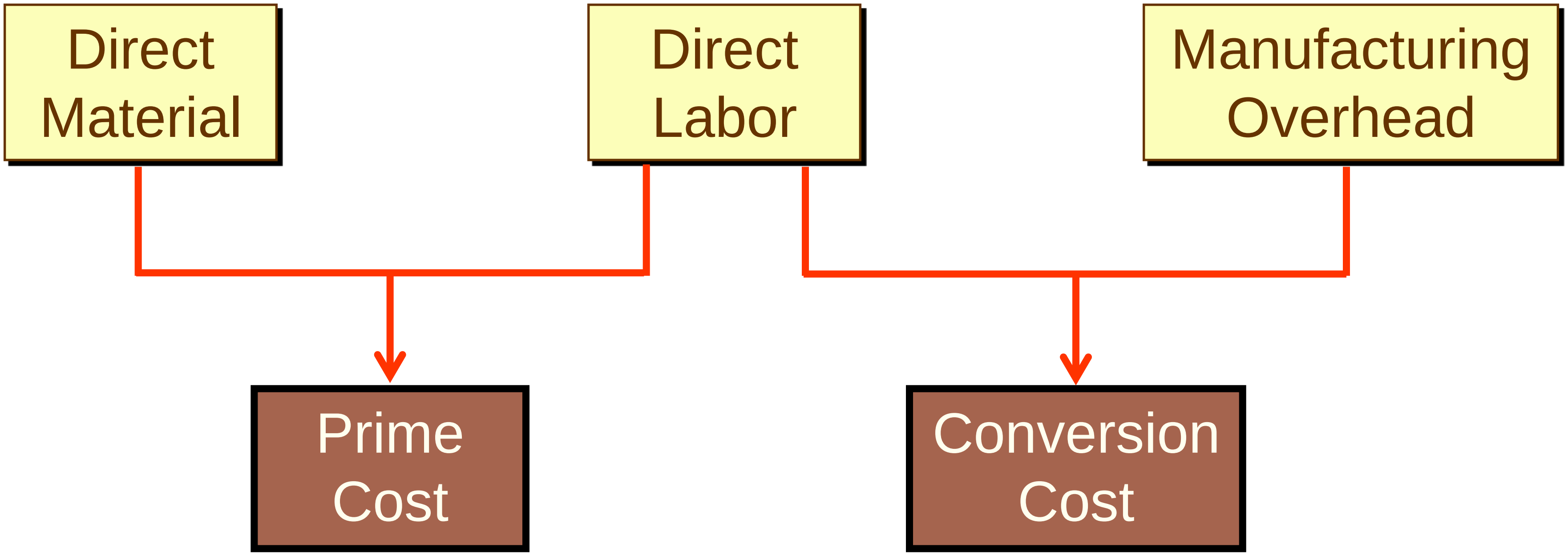
* Differentiate between product cost and period cost
* Define fixed cost and variable cost
* Compare the fixed cost and variable cost
* Define opportunity cost and sunk cost

Product Costs Versus Period Costs

Type of company	Inventoriable product costs	Period costs (Expenses)
Service company	None	Salaries, depreciation, utilities, advertising, insurance, property taxes
Merchandising company	Purchases plus freight in	Salaries, depreciation, utilities, advertising, insurance, property taxes and delivery expense
Manufacturing company	Direct materials, Direct labor and manufacturing overhead	Office salaries, depreciation, utilities, advertising, insurance, property taxes on office, selling expenses

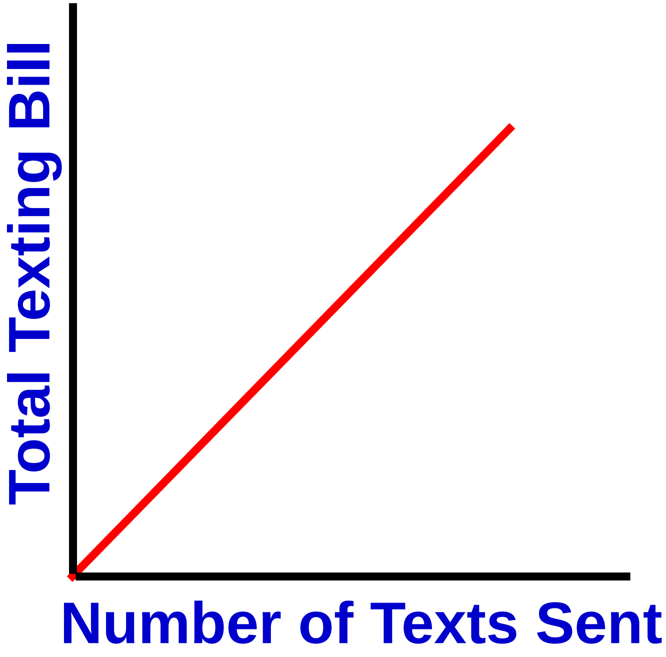
Classifications of Costs

Manufacturing costs are often classified as follows:



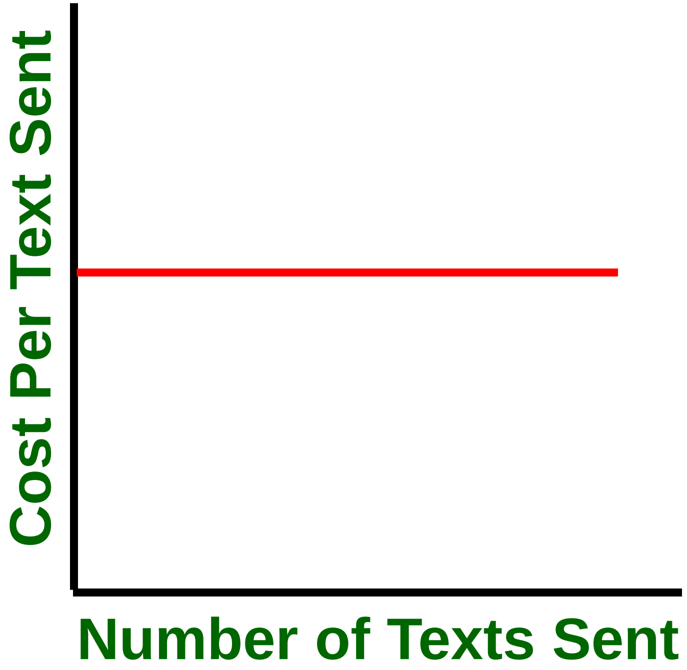
Variable Cost

A variable cost varies, in total, in direct proportion to changes in the level of activity. Your **total texting bill** is based on how many texts you send.



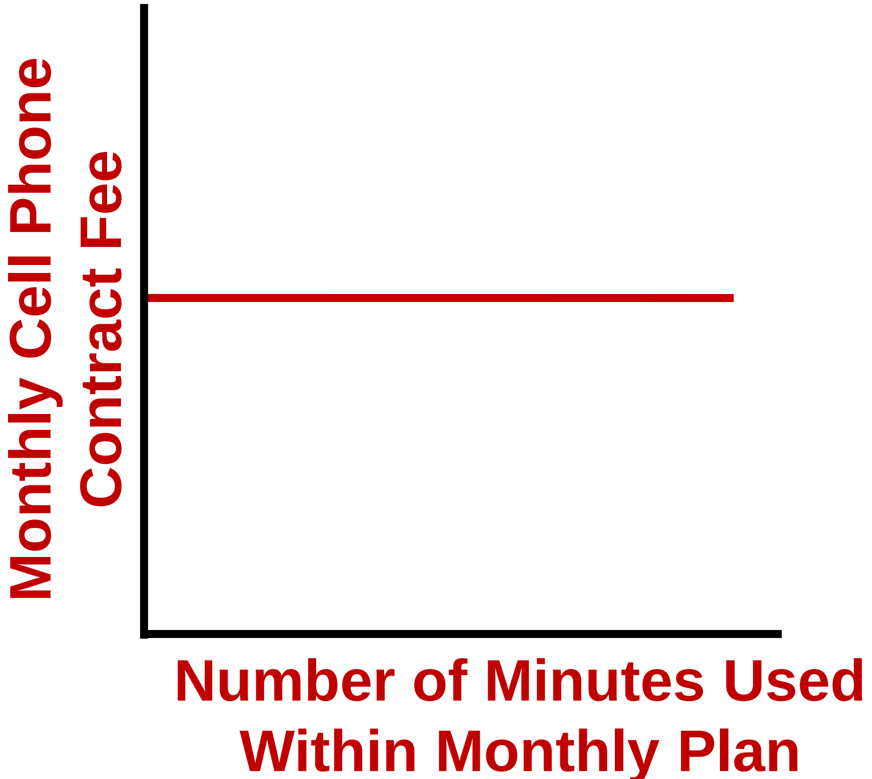
Variable Cost Per Unit

The **cost per text** sent is constant at Rs. 2 per text message.



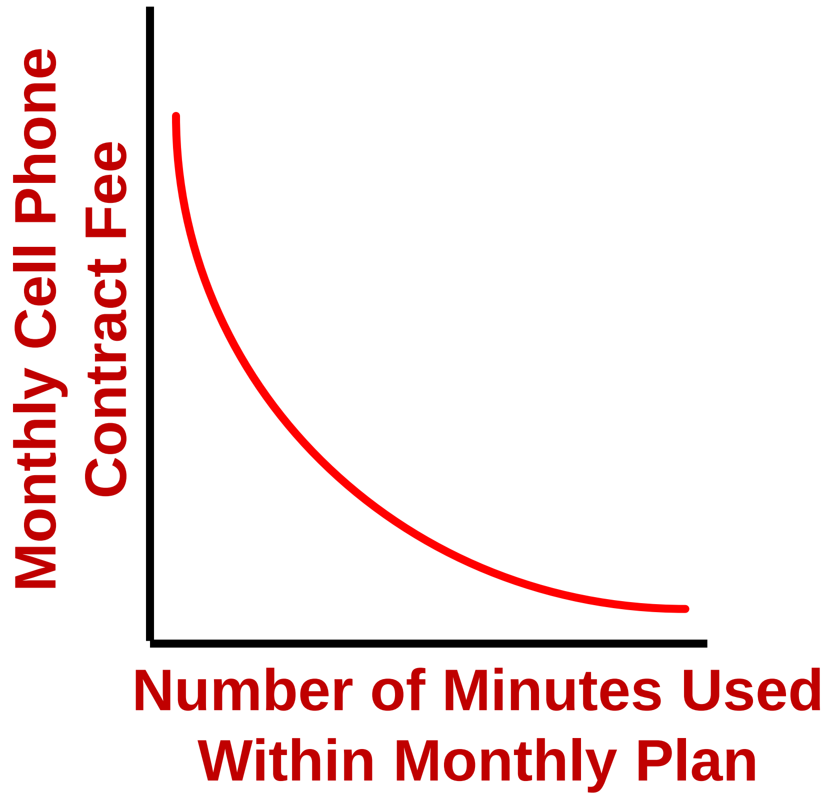
Fixed Cost

A fixed cost is constant within the relevant range. Your monthly contact fee for your cell phone is fixed for the number of monthly minutes in your contact. The monthly contact fee does not change based on the number of calls you make.



Fixed Cost Per Unit

Within the monthly contract allotment, the average fixed cost **per cell phone call made** decreases as more calls are made.



Fixed Costs and the Relevant Range

For example, assume office space is available at a rental rate of $30,000 per year in increments of 1,000 square feet.

Fixed costs would increase at a rate of $30,000 for each additional 1,000 square feet.

Cost Classifications for Predicting Cost Behavior

Behavior of Cost (within the relevant range)		
Cost	**In Total**	**Per Unit**
Variable	**Total variable cost Increase and decrease in proportion to changes in the activity level.**	**Variable cost per unit remains constant.**
Fixed	**Total fixed cost is not affected by changes in the activity level within the relevant range.**	**Fixed cost per unit decreases as the activity level increase and increases as the activity level falls.**

Opportunity Cost

The potential benefit that is given up when one alternative is selected over another.

Example: If you were not attending cost accounting class, you could be earning $25,00 per semester. Your opportunity cost of attending accounting class for one semester is $25,00.

Sunk Costs

Sunk costs have already been incurred and cannot be changed now or in the future. These costs should be ignored when making decisions.

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Identification of different costs

Week-2

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After studying this chapter, the students will be able to..

- Identify the costs
- Categorize the costs

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Mr. Rakib wants to produce the product ‘A’. The following cost information is available to produce the finished products.

Cost of raw materials………… tk. 1, 00,000

Wages of machine operator …. tk. 20,000

Factory Rent & lighting………… tk.10, 000

Coal, oil……………………….. …………tk. 5,000

Telephone in factory office…………..... tk. 2,000

Salary of factory office staff…………. tk. 10,000

Salary of factory inspector and supervisors..tk. 10,000

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Salary of factory inspector and supervisors …tk. 8,000

Salary of Managing Directors………. .tk. 40,000

Salary of office watchman & sweeper. ..tk. 10,000

Office rent, insurance of office building..tk. 15,000

Office lighting and power……………....tk. 5,000

Advertisement………………………..tk. 10,000

Samples and free gifts…………………..tk. 20,000

Salaries of salesmen……………………...tk. 20,000

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Requirement:

1. How much is direct material costs?
2. How much is indirect material costs?
3. How much is direct labor costs?
4. How much is indirect labor costs?
5. How much is manufacturing overhead?
6. How much is manufacturing costs?
7. How much is selling costs?
8. How much is administrative costs?
9. How much is non-manufacturing costs?
10. How much is prime cost?
11. How much is conversion costs?
12. How much is Total costs?

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Solution:

1. Direct materials:

Cost of raw materials tk.100000

2. Indirect materials:

Coal, oil tk.5000

3. Direct labor cost:

Wages of machine operator tk.20000

4. Indirect labor costs:

Salary of factory office staff	tk.10000
Salary of factory inspector and supervisors	10000
Salary of factory inspector and supervisors	8000
Total indirect labor costs	tk. 28000

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5. Manufacturing overheads:

Indirect materials	5000
Indirect labors	28000
Factory Rent & lighting	10000
Telephone in factory office	2000
Total manufacturing overheads	tk.45000

6. Manufacturing costs:

Direct materials	tk. 100000
Direct labors	20000
Manufacturing overhead	45000
Total manufacturing costs	tk. 165000

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7. Selling costs:

Advertisement	tk. 10,000
Samples and free gift	20,000
Salaries of salesmen	20,000
Total selling costs	tk. 50000

8. Administrative costs:

Salary of Managing Directors	tk. 40,000
Salary of office watchman & sweeper	10,000
Office rent, insurance of office building	15,000
Office lighting and power	5,000
Total administrative costs	tk. 70000

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9. Non manufacturing costs:

Selling costs	tk. 50000
Administrative costs	70000
Total non manufacturing costs	tk. 120000

10. Prime costs:

Direct materials	100000
Direct labors	20000
Total prime costs	120000

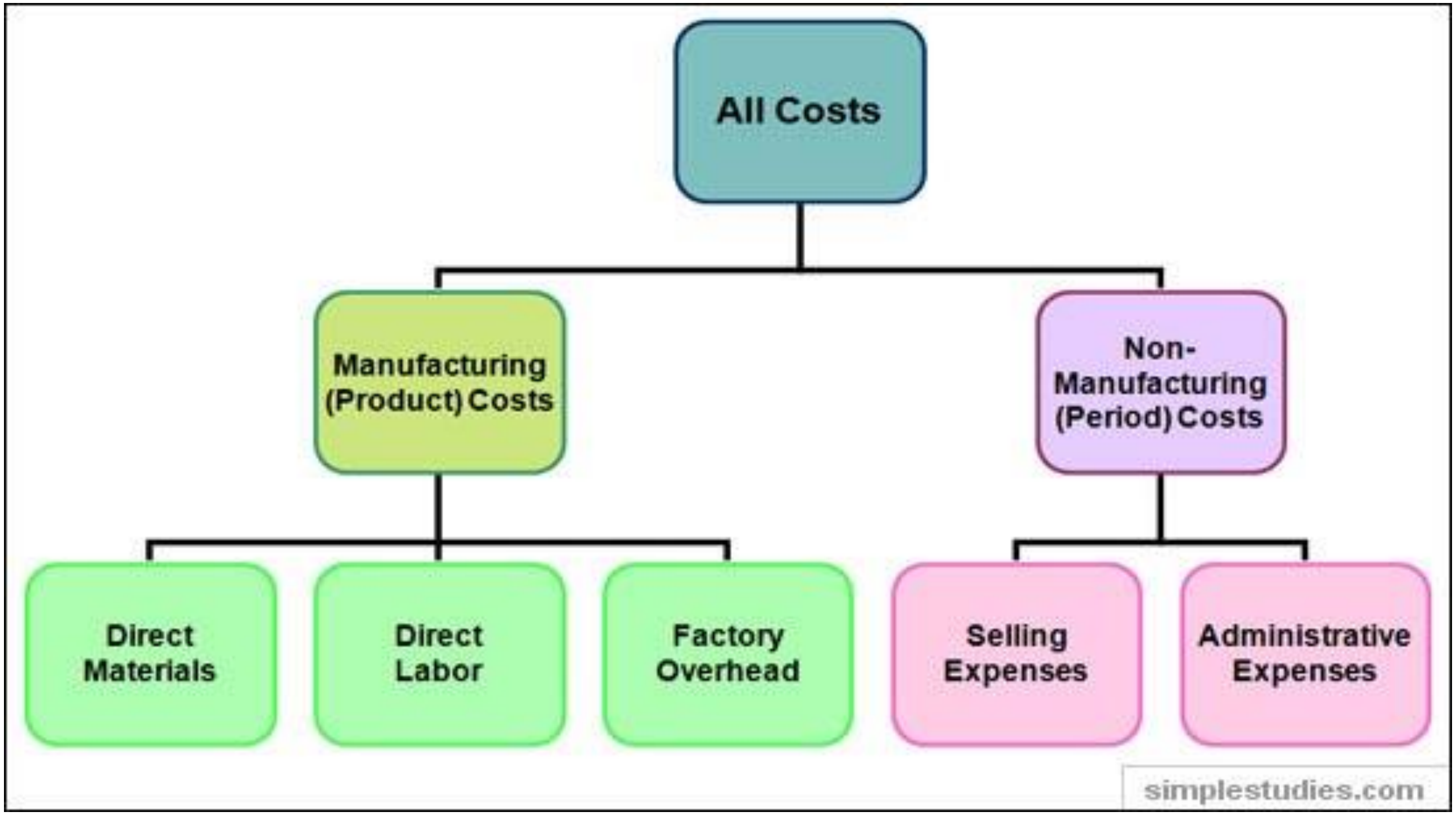
11. Conversion costs:

Direct labor	tk. 20000
Manufacturing overhead	45000
Total conversion costs	tk.65000

12. Total costs:

Manufacturing costs	tk.165000
Non manufacturing costs	120000
Total costs	tk. 285000

Cost Sheet



Week- 5

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After studying this chapter, the students will be able to..

- Define cost sheet
- Describe the component of cost sheet
- Explain the procedure of cost sheet
- Design the cost sheet

Cost Sheet

A **Cost Sheet** is a detailed statement that provides the breakdown of the costs involved in the production of goods or services. It helps businesses analyze their cost structure and identify areas for cost control and pricing decisions.

A cost sheet includes direct costs, indirect costs, and the final cost of goods manufactured (COGM) or the total cost of a product.

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Components of a Cost Sheet

A cost sheet typically includes the following components:

A. Direct Costs

These are costs that can be directly attributed to the production of goods or services. Direct costs are further divided into:

- **Direct Material Cost**:
  - The cost of raw materials used in the manufacturing of a product.
- **Direct Labor Cost**:
  - The wages or salaries paid to workers who directly work on the product.
- **Direct Expenses**:
  - Any other costs directly associated with the production process, such as royalties or special equipment needed for a specific order.

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B. Indirect Costs (Overheads)

These are costs that cannot be directly traced to a single product. Indirect costs are further divided into:

Factory or Manufacturing Overheads:

These include indirect costs related to the production process, such as utilities, factory rent, and machine depreciation.

Administration Cost:

These include indirect costs related to general administration, such as office supplies, salaries of administrative staff, and office rent.

Selling and Distribution Cost:

These are the costs incurred in promoting and distributing the product, such as advertising costs, shipping costs, and sales commissions.

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Total Cost of Production:

The total cost of production includes both direct and indirect costs associated with producing goods.

Total Cost of Production = Direct Costs + Indirect Costs

Cost of Goods Manufactured (COGM):

The cost of goods manufactured is the total cost of production for a given period, which includes both direct and indirect costs.

COGM=Opening Work in Progress (WIP)+Total Manufacturing Costs−Closing Work in Progress (WIP)

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Cost of Goods Sold (COGS):

The cost of goods sold is the cost incurred to manufacture the products that have been sold during the period.

COGS = Opening Finished Goods + COGM − Closing Finished Goods

Profit:

After calculating the total costs, we subtract the COGS from the sales revenue to find the profit.

Profit = Sales − COGS

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Exercise:

- Opening Stock of Raw Materials = tk. 5,000
- Purchases of Raw Materials = tk. 15,000
- Closing Stock of Raw Materials = tk. 4,000
- Direct Labor Cost = tk. 8,000
- Direct Expenses = tk. 2,000
- Factory Overheads: Rent, Utilities, Depreciation, etc. = tk. 3,000
- Opening Work in Progress (WIP) = tk. 1,000
- Closing Work in Progress (WIP) = tk. 500
- Opening Finished Goods = tk. 6,000
- Closing Finished Goods = tk. 7,000
- Sales Revenue = tk. 30,000

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Solutions:

Step 1: Direct Material Consumed:

Direct Material Consumed =
Opening Stock of Raw Materials + Purchases −
Closing Stock of Raw Materials = 5,000 +15,000 − 4,000 = 16,000

Step 2: Total Direct Costs:

Total Direct Costs = Direct Material Consumed + Direct Labor Cost + Direct Expenses

= 16,000 + 8,000 + 2,000 = 26,000

Step 3: Total Manufacturing Costs:

Total Manufacturing Costs = Total Direct Costs + Factory Overheads = 26,000 + 3,000 = 29,000

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Step 4: Cost of Goods Manufactured (COGM):

COGM =Total Manufacturing Costs + Opening WIP − Closing WIP

= 29,000 +1,000 − 500 = 29,500

Step 5: Cost of Goods Sold (COGS):

COGS = COGM + Opening Finished Goods − Closing Finished Goods

= 29,500+6,000−7,000=28,500

Step 6: Profit Calculation:

Profit = Sales Revenue − COGS

= 30,000−28,500=1,500

Prepare a cost sheet of AB Company for 31st December, 23

AB Company	Beginning of 2023	Ending of 2023
Direct materials inventory	80,000	70,000
Work-in-process inventory	15,000	18,000
Finished goods inventory	35,000	45,000
Purchases of direct materials		80,000
Direct manufacturing labor		40,000
Transportation in		2,000
Indirect manufacturing labor is 50% of direct labor		?
Factory rent		15,000
Salary of Factory supervisor		20,000
Depreciation of office building		15,000
Samples and free gift		50,000
Salary of office staffs		40,000
Cost of coal and oil		30,000
Sales revenue		3,00,000

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Income Statement of Merchandising and Manufacturing Company

Week-6 (Page No. 57- 60)
Week-7 (Page No. 61- 63)

After studying this chapter, the students will be able to..

- Procedure of preparing income statement
- Design the income statement of merchandising and manufacturing company.

Merchandising Company

ABC Company	Beginning of 2017	Ending of 2017
Inventory	30,000	40,000
Purchases of inventory		75,000
Depreciation of office building		5,000
Marketing and distribution costs		50,000
Salary of managing director		40,000
Advertisement and selling costs		65,000
Free gift and sample		10,000
Net sales revenues		3,20,000

Required:

1. Calculate the cost of goods sold for 2017.
2. Prepare the income statement for 2017.

Solution

a) Cost of Goods sold:

= Beginning inventory + Purchase - Ending inventory

= 30,000 + 75,000 - 40,000

= 65,000

ABC Company
Income Statement
For the year ended 31st December, 2017

Particulars	Amount	Amount
Income /Revenues:		
Net sales revenues		3,20,000
Less: Cost of goods sold		65,000
Gross profit		2,55,000
Less: Operating expenses:		
Administrative expenses:		
Depreciation of office building	5,000	
Salary of managing director	40,000	
Selling expenses:		
Marketing and distribution costs	50,000	
Advertisement and selling costs	65,000	
Free gift and sample	10,000	
Total administrative and selling expenses		1,70,000
Net income		85,000

Manufacturing Company

ABC Company	Beginning of 2016	Ending of 2016
Direct materials inventory	22,000	26,000
Work-in-process inventory	21,000	20,000
Finished goods inventory	18,000	23,000
Purchases of direct materials		75,000
Direct manufacturing labor		25,000
Indirect manufacturing labor		15,000
Factory insurance		9,000
Factory repairs and maintenance		4,000
Depreciation of factory equipment and building		11,000
Marketing and distribution costs		45,000
Salary of managing director		29,000
Advertisement and selling costs		48,000

Required:

I. Prepare a schedule for the cost of goods manufactured for 2016.

II. Revenues for 2016 were tk. 3, 00,000. Prepare the income statement for 2016.

Solution: ABC Company

Schedule of cost of goods manufactured

For the year ended December 31, 2016

Beginning work-in-process inventory			21,000
Direct materials:			
Beginning Direct material inventory	tk. 22,000		
(+) Purchases of direct materials	75000		
Cost of direct materials available for use	97,000		
(-) Ending Direct material inventory	(26,000)		
Direct materials used		71,000	
Direct manufacturing labor		25,000	
Manufacturing overhead costs:			
Indirect manufacturing labor	15,000		
Factory insurance	9,000		
Depreciation of Factory equipment and building	11,000		
Factory Repairs and maintenance	4,000		
Total indirect manufacturing costs		39,000	
Manufacturing costs incurred during 2016			135,000
Total manufacturing costs to account for			156,000
Less: ending work-in-process inventory, December 31, 2016			(20,000)
Cost of goods manufactured (to Income Statement)			tk. 136,000

ABC Company
Income statement
For the year ended December 31, 2016

Revenues		300,000
(-) Cost of goods sold:		
Beginning finished goods, January 1, 2009	18,000	
(+) Cost of goods manufactured	136,000	
Cost of goods available for sale	154,000	
(-) Ending finished goods, December 31, 2009	(23,000)	
Cost of goods sold		131,000
Gross profit		169,000
(-) Selling and administrative costs:		
Advertising and selling costs	48000	
Marketing and distribution costs	45,000	
Salary of managing Director	29,000	
Total selling and administrative costs		122,000
Net income		47,000

Management Accounting

Week-8

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After studying this chapter, the students will be able to learn..

- Define management accounting
- Explain the scopes and functions of management accounting
- Differentiate between financial accounting and management accounting
- Compare with management accounting and cost accounting
- Describe the limitation of management accounting

Definition of Management Accounting

Management accounting refers to the presentation of accounting information in such a way as to assist management to the creation of policy and the day to day operation of an undertaking"

Meaning & Definition

The American Accounting Association has defined as follows, "Management Accounting includes the methods and concepts necessary for effective planning, for choosing among alternative business actions and for control through the evaluation and interpretation of performances."

Objective of Management Accounting

- Its main objective is to provide selctive information to the management.
- To assist in planning.
- To assist in decision-making.
- To assist in controlling.
- To assist in co-ordination.
- Helpful in reporting.

Significance of Management Accounting

- Proper Planning
- Effective controlling
- Increased efficiency
- Maximizing profitability
- Performance appraisal
- Increase in productivity

Scope of Management Accounting

1. Financial Accounting: In this transactions are recorded in the books then they are classified and summarised. At the end of the year final accounts and statements are prepared.
2. Cost Accounting: It explains various techniques of cost analysis and it is that branch of accounting in which transactions related to cost are recorded, measured and reported.

Scope of Management Accounting

3. Budgetary Control: under this variances are measured by comparing actual amount with budgeted estimates through budgets.

4. Statistical Methods: At present, statistical figures are extensively used in management accounting. The main statistical techniques are Time Series Analysis, Regression analysis, correlation analysis.

Scope of Management Accounting

5. Tax Accounting: Management accounting proves to be useful in conditions of excessive tax liabilities, in the process of payment of taxes.

6. Data Interpretation: Management accounting provides various data's and figures to managers, which assist them in decision making process.

7. Management Information System: is a easy method of obtaining information, at various levels of management, in any organization.

Scope of Management Accounting

8. **Capital Budgeting**: It is very useful in proper planning of capital expenditure, development and expansion.Decisions related to capital investments are taken in capital budgeting.
9. **Reporting:** It is an important part of providing accounting information to managers.

Functions of Management Accounting

Two types of functions are performed in Management Accounting:

- Main or Primary Functions

1. Providing accounting information
2. Assistance in managerial activities

- Secondary Functions

1. Protection of Assets
2. Helpful in Financial Planning
3. Helpful in Tax determination
4. Strategic Function
5. Fixation of Accountability

Main or Primary Functions

1. Providing Accounting Information: The main function of management accounting is to provide necessary information to managers and other parties related to it: such as investors, Financers, Shareholders, etc.

(a) Forecasting: This is a primary function of management accounting, in which forecasts are made for activities at certain level of confidence.

Main or Primary Functions

(b) Recording Function: All the transactions are recorded in financial accounts & cost accounts within a definite period and then management arrives at conclusion after analyzing them.

(c) Interpretation and Appraisal Function: Management accounting evaluates all the activities in the interest of managers and organization.

(d) Reporting: Management accounting provides reports which are required by managers at different levels.

Main or Primary Functions

2. Assistance in Managerial Activities: Management accounting assists managers in their operations, management principles and practices. It includes six functions of management:

(a) Planning
(b) Organizing
(c) Directing
(d) Co-ordination
(e) Motivating
(f) Controlling

Secondary Functions

1. Protection of Assets: Management accounting projects a course of action for the long term viability and continuity of the enterprise. Under this strategy various profitable and good tasks are identified and investments are made in them.
2. Financial Appraisal: Management accounting uses various accounting techniques such as: Financial planning, cost control, Ratio analysis, etc. in financial appraisal.

Secondary Functions

3. Determination of Tax Policies: Management accounting formulates favorable Tax Policy with the proper use of capital. As a result of these policies efforts are made to make tax liabilities minimum.

4. Determination of Accountability: Management accounting ensures accountabilities of people through 'Reporting System' so that people are not able to shift their responsibility on other ignorantly.

Distinction Between Management Accounting & Financial Accounting

Basis	FA	MA
1. Objective	Recording , Classifying and Summarizing Financial transactions	To deliver various information to managers.
2. Users	External parties mainly Investors, Creditors.	Internal parties (Managers)
3. Importance	It is less important , as it is related to operational activities	It is more important. As it is related with managerial activities.

Distinction Between Management Accounting & Financial Accounting

Basis	FA	MA
4. Accounting Principles	It provides information on the basis of "Generally Accepted Accounting" Principles.	It does not adhere to any such principle.
5. Information	It provides historical information.	It provides future information based upon historical data.
6. Compulsory Vs Optional	It is compulsory as per Companies Act.	It is entirely optional.

Distinction Between Management Accounting & Financial Accounting

Basis	FA	MA
7. Methodology	Under this transactions are recorded on the basis of double entry system.	In MA after collection & analysis of information, it is divided between cost centres and responsibility centre.
8. Accuracy	More accuracy	Less accuracy
9. Reporting	Annual reporting	Reporting as per requirement.

Distinction Between Management Accounting & Cost Accounting

Basis	MA	CA
1. Nature	It is concerned with formulation of policies, improvement of productivity and profitability.	It is concerned with cost ascertainment and cost control.
2. Subject-matter	It involves considerations of both cost and revenue data.	It deals primarily with cost data

Distinction Between Management Accounting & Cost Accounting

Basis	MA	CA
3. Part	It is not a part of Cost Accounting.	It is a part of Management Accounting.
4. Tools	It involves- Ratio analysis , fund flow and cash flow statements, budget, budgeting, BEP, standard costing	It involves- unit cost, job costing, process costing, operating costing, contract costing, and standards costing.

Distinction Between Management Accounting & Cost Accounting

Basis	MA	CA
5. Qualification	MBA, CA and ICWAI	ICWAI (members), CA
6. Audit	Auditing is not compulsory for management accounting.	Auditing is compulsory for cost accounting.
7. Expenses Allocation	In management accounting expenses are allocated into two part fixed and variable.	In Cost accounting expenses are allocated as – Direct cost and Indirect cost.

Management Accountant -

A management Accountant is person who assist the management in decision-making by providing necessary accounting information.

Roles of Management Accounting

- It provides necessary accounting information to management.
- It coordinates with other departments for getting information.
- It controls the performance.
- It advices the management.
- It assist the management in decision-making.
- It preparing reports.
- and so on....

Limitations of Management Accounting

- Based on Accounting information - if wrong information provided then decision also became wrong.
- Lack of knowledge & understanding - if management have no proper knowledge about information decision may interrupted.
- Lack of continuity & coordination among different departments of organisation even management to management, it will effect the decision-making process.
- It is very expensive to set a management accounting system.
- It is much time consuming.
- It is based on historical data.

Absorption Costing and Variable Costing

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After studying this chapter, the students will be able to..

- Define absorption costing and variable costing
- Differentiate absorption costing and variable costing
- Design the income statement of both this systems

Variable costing

Variable costing includes direct materials; direct labor and the variable portion of manufacturing overhead are treated as product cost.

Fixed manufacturing overhead costs are not treated as product cost; it is treated as period cost.

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Absorption Costing

Absorption costing treats all manufacturing costs as product costs regardless of whether they are variable or fixed.

The product cost under absorption costing method consists of direct materials, direct labor, and both variable and fixed manufacturing overhead.

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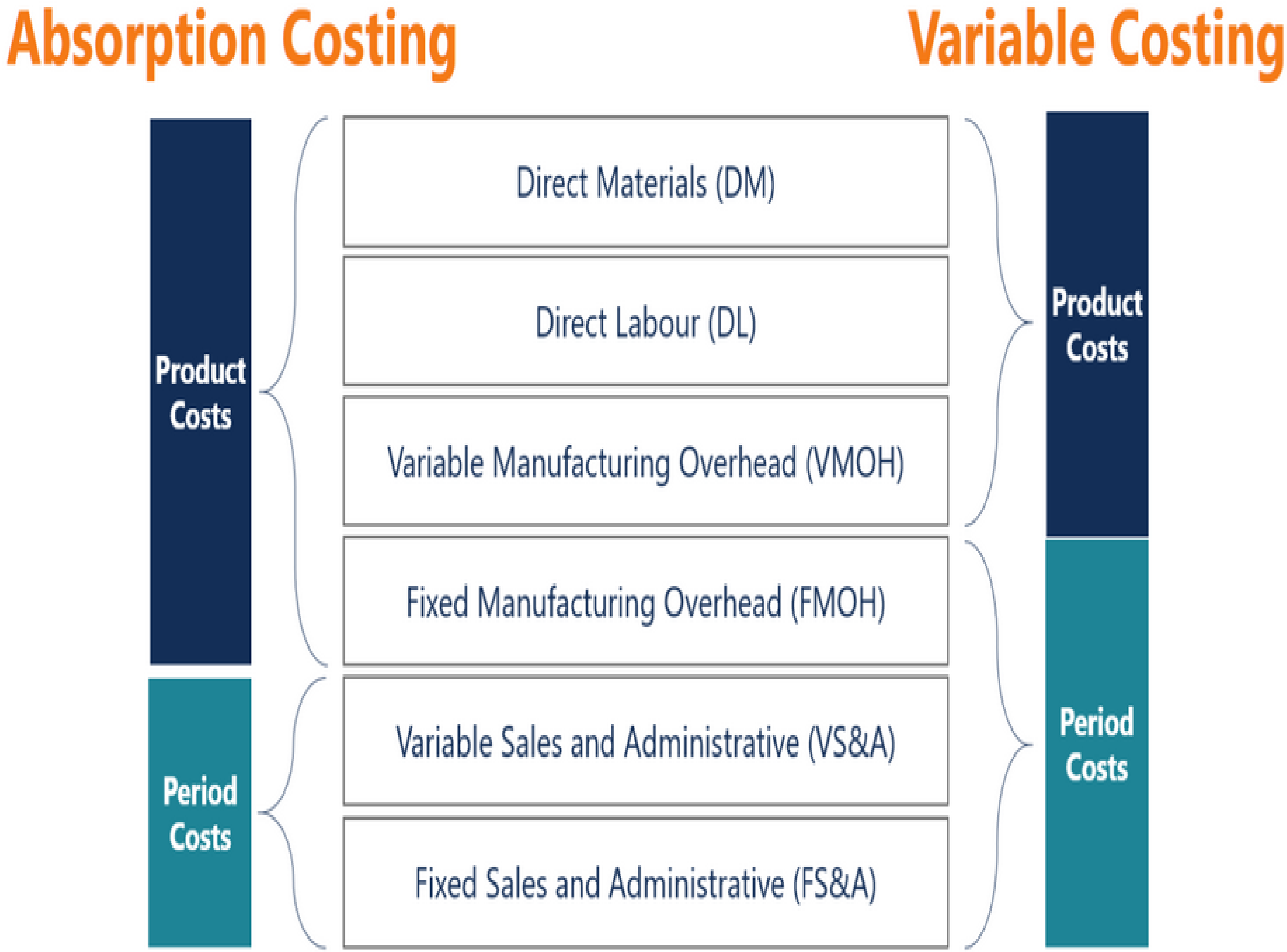

Difference between absorption costing and variable costing

Aspect	Absorption Costing	Variable Costing
Treatment of Fixed Costs	Fixed manufacturing costs are included in the cost of goods sold and inventory.	Fixed manufacturing costs are treated as period expenses and not included in inventory.
Cost of Goods Sold (COGS)	Includes both variable and fixed manufacturing costs in COGS.	Includes only variable manufacturing costs in COGS
Inventory Valuation	Inventory includes both variable and fixed manufacturing costs	Inventory includes only variable manufacturing costs.
Decision-Making Use	Primarily used for external reporting as per generally accepted accounting principles (GAAP).	More useful for internal decision-making, as it highlights the contribution margin and variable costs.
Profitability Reporting	Can show higher profits during periods of increased production due to fixed costs being spread over more units.	Profits may be lower since fixed costs are expensed immediately, regardless of production levels.

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Exercise

ZKB Company manufactures a unique device that is used by internet users to boost Wi-Fi signals. The following data relates to the first month of September:

- Beginning inventory: 0 units
- Units produced: 40,000 units
- Units sold: 35,000 units
- Selling price: Tk. 120 per unit

Marketing and administrative expenses:

- Variable marketing and administrative expense per unit tk. 4
- Fixed marketing and administrative expenses per month tk. 1,120,000

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Manufacturing costs:

- Direct materials cost per unit: tk. 30
- Direct labor cost per unit: tk. 14
- Variable manufacturing overhead cost per unit: tk. 4
- Fixed manufacturing overhead cost per month: tk. 12,80,000

Required:

1) Calculate unit product cost under variable costing or marginal costing system and absorption costing system.
2) Prepare income statement under variable costing or marginal costing system and absorption costing system.
3) Prepare a schedule to reconcile the net operating income under variable and absorption costing system.

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1. Solution: Calculation of unit product cost:

Particulars	Absor-ption costing (Tk.)	Variable costing (Tk.)
Direct materials	30	30
Direct labor	14	14
Variable manufacturing overhead	4	4
Fixed manufacturing overhead	*32	-
Unit product cost	Tk. 80	Tk. 48

Fixed manufacturing overhead = 12, 80,000 ÷ 40,000 units = tk. 32

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2) Income statements (Absorption Costing)

For the month ended of September

Particulars	Amount (Tk.)	Amount (Tk.)
Sales (35,000 units × tk.120)		42,00,000
Less: Cost of Goods sold:		
Opening inventory	0	
(+) cost of goods manufactured (40,000 units × tk. 80)	32,00,000	
Cost of goods available for sale	32,00,000	
Less: Closing inventory (5,000 units × 80)	4,00,000	28,00,000
Gross profit		14,00,000
Less: Marketing and administrative expenses		
Variable marketing and administrative expense (35,000 units × tk. 4)	1,40,000	
Fixed marketing and admin. expenses	11,20,000	
		12,60,000
Net operating income		Tk. 1,40,000

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ZKB Company
Income statement (Variable Costing)
For the month ended of September

Particulars	Amount (Tk.)	Amount (Tk.)
Sales (35,000 units × tk.120)		42,00,000
Less: Cost of Goods sold:		
Opening inventory	0	
(+) cost of goods manufactured (40,000 units × tk. 48)	19,20,000	
Variable Cost of goods available for sale	19,20,000	
Less: Closing inventory (5,000 units × 48)	2,40,000	
		16,80,000
Gross contribution margin		25,20,000
Less: Variable marketing and administrative expense (35,000 units × tk. 4)		1,40,000
Contribution margin		23,80,000
Less: Fixed expenses:		
Fixed manufacturing overhead expenses	12,80,000	
Fixed marketing and admin. Expenses	11,20,000	
		24,00,000
Net operating income		Tk. (20,000)

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3) Reconciliation Schedule:

Particulars	Amount (Tk.)
Net operating income (loss) under variable costing	(20,000)
Add: Fixed manufacturing overhead deferred in inventory (5,000 units * tk. 32)	1,60,000
Net operating income under absorption costing	Tk. 1,40,000

Budget and Budgetary Control

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After studying this chapter, the students will be able to..

- Define budget and Budgetary control
- Explain the types of budget
- Procedure of preparing cash budget
- Design the cash budget

Budget

A budget is a financial plan outlining expected revenues and expenditures for a specific period.

The budget sets financial goals, allocates resources, and guides future planning. The budget focuses on estimating future income and expenses.

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Budgetary Control

Budgetary control is a process that monitors actual performance against the budget, ensuring alignment with financial goals. It ensures operations stay within budget by monitoring performance and making adjustments.

Budgetary control involves ongoing comparison, review, and corrective actions.

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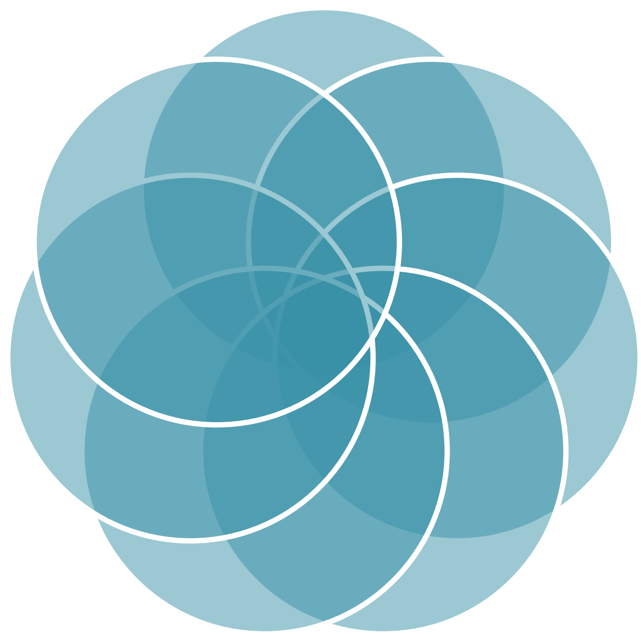
Types of Budget

Cash Budget

Zero Based Budget

Purchase Budget



Master Budget

Sales Budget

Operating Budget

Production Budget

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Cash Budget

Purpose: To forecast the cash inflows and outflows for a specific period.

Importance: Helps in managing liquidity by ensuring that there is enough cash for day-to-day operations, investments, and debt repayments.

Components: Cash inflows (e.g., sales, loans)

- Cash outflows (e.g., expenses, capital expenditures)
- Opening and closing cash balances

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Purchase Budget

Purpose: To estimate the expected expenditure on the purchase of raw materials or goods required for production or resale.

Importance: Helps in planning for procurement, managing inventory levels, and maintaining a balanced cash flow.

Components: Expected purchases

- Inventory needs
- Cost of goods sold (COGS)

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Sales Budget

Purpose: To forecast the expected revenue from the sale of goods or services over a specific period.

Importance: Assists in setting sales targets, aligning production with demand, and planning marketing activities.

Components: Sales volume or units

- Expected sales prices
- Sales revenue projections

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Production Budget

Purpose: To estimate the amount of goods that need to be produced to meet sales demands and inventory levels.

Importance: Helps coordinate manufacturing operations, optimize resource allocation, and avoid overproduction or shortages.

Components: Expected sales demand

- Beginning and ending inventory levels
- Production requirements

Operating Budget

Purpose: To plan and control daily business operations, covering revenues and expenses.

Importance: Helps in setting operational goals, controlling costs, and monitoring business performance.

Components: Revenue estimates

- Cost of goods sold (COGS)
- Operating expenses (e.g., rent, salaries)

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Master Budget

Purpose: A comprehensive budget that integrates all individual budgets into a single financial plan for the organization.

Importance: Provides an overall financial framework, ensuring that all departments or functions are aligned with organizational goals.

Components: Cash budget

- Sales budget
- Production budget
- Operating budget
- Capital budget

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Zero-Based Budget

Purpose: A budgeting method where every expense must be justified for each new period, starting from zero.

Importance: Ensures that only necessary expenses are approved, promoting cost efficiency and resource optimization.

Components:

- Justification of each cost
- Alignment with organizational priorities

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Cash Budget Exercise

ABC Company expects to have a cash balance of tk. 45,000 on January 1, 2017. Relevant monthly budget data for the first 2 months of 2017 are as follows-

- Collection from the customers: January tk.1, 00,000, February tk. 1, 60,000.
- Payment for direct materials: January tk. 60,000, February tk. 80,000.
- Direct Labor: January tk. 30,000, February tk. 45,000. Wages are paid in the month they are incurred.
- Manufacturing overhead: January tk. 26,000, February tk. 31,000. These costs include depreciation of tk. 1,000 per month. All other overhead costs are paid as incurred.

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- Selling and administrative expenses: January tk. 15,000, February tk. 20,000. These costs are exclusive of depreciation. They are paid as incurred.
- Sales of marketable securities in January are expected to realize tk. 10,000 in cash. ABC Company has a line of credit at a local bank that enables it to borrow up to tk. 25,000. The company wants to maintain a minimum monthly cash balance of tk. 25,000.

Required: Prepare a cash budget for January and February.

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ABC Com. Cash Budget for two month ending Feb 28, 2017

Particulars	January	February
Beginning cash balance	45,000	25,000
Add: Receipts:		
Collections from customers	1,00,000	1,60,000
Sale of marketable securities	10,000	0
Total receipts	1,10,000	1,60,000
Total available cash	1,55,000	1,85,000
Less: Disbursement:		
Direct materials	60,000	80,000
Direct labor	30,000	45,000
Manufacturing overhead	25,000	30,000
Selling and administrative expenses	15,000	20,000
Total Disbursement	1,30,000	1,75,000
Excess (Deficiency) of available cash over cash disbursements	25,000	10,000
Financing:		
Borrowings	0	15,000
Repayments	0	0
Ending cash balance	25,000	25,000

Relevant Costing

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After studying this chapter, the students will be able to..

- Define relevant costing
- Explain the key characteristics of relevant costing
- Use of relevant costing in decision making
- Exercise of relevant costing

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Definition

Relevant Costing refers to the costs that are directly applicable to a specific decision and will change depending on the outcome of that decision.

These costs are used to evaluate different alternatives and support decision-making, as they focus on future costs that are avoidable or incremental.

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Key Characteristics of Relevant Costs:

Future Costs: Only costs that will be incurred in the future are considered. Past costs (sunk costs) are irrelevant for decision-making.

Avoidable Costs: Costs that can be eliminated if a certain decision is made. For example, discontinuing a product line might save direct material and labor costs.

Incremental Costs: Costs that are incurred as a result of a specific decision, such as additional expenses for producing extra units.

Use of Relevant Costing in Decision Making

Make-or-buy decisions: Whether to produce in-house or purchase from an external supplier.

Special orders: Accepting a one-time order at a special price.

Discontinuing a product or segment: Determining if it's financially beneficial to stop selling a product.

Pricing decisions: Setting prices based on cost and competitive factors.

By focusing on relevant costs, businesses can make more informed and profitable decisions.

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Exercise

Pran RFL Company manufactures 30,000 parts of a specialized product. At this level of activity the cost per parts is as follows-

Particulars	Tk.
Direct materials	20
Direct labor	11
Variable overhead	9
Fixed overhead	10
Cost per parts	50

At outside supplier has offered to sell 30,000 parts each year to Pran RFL Company for tk. 43 per unit.

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If Pran RFL Company accepts this offer, the released facilities from manufacturing process could be rented to another Company at an annual rental of Tk. 48,000 and present fixed overhead will reduce by tk. 2, 07,000.

Required:

Should the parts be purchased from outside or continue to produce in the factory?

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Solution: Pran RFL Company
Comparative cost statement

Particulars	Make	Buy
Buy: ……………………(30,000 * 43)		12,90,000
Make:		
Direct materials……(30,000 * 20)	6,00,000	
Direct Labor ……..(30,000 * 11)	3,30,000	
Variable overhead…(30,000 * 9)	2,70,000	
Fixed overhead……..(30,000 * 10)	3,00,000	*93,000
Opportunity cost (Rental Facilities)	48,000	
Total costs…………….	15,48,000	13,83,000
Savings……………………		1,65,000

Workings: Calculation of fixed cost deferent (10,000* 10) = 3, 00,000 – 2, 07,000 = 93,000.

Comment: Pran RFL Company should be purchased the parts from outside because net income will increase by tk. 1, 65,000.

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CVP/Breakeven Analysis

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After studying this chapter, the students will be able to..

- Define CVP/Breakeven analysis
- Explain the objectives of CVP analysis
- Demonstrate the assumptions of breakeven analysis
- Exercise of breakeven analysis

CVP Analysis

Definition: Break even analysis is a technique for studying the relationship among fixed costs, variable cost, sales volume and profits. It is also called the cost/ volume/ profit (CVP) analysis.

Breakeven point is the level of sales at which the company's earnings before interest and Taxes or net income is zero. In other words, breakeven point is the sales level at which all fixed and variable costs are covered.

Objectives of Breakeven analysis

The main objectives of break-even analysis are:

- To calculate the break-even point (BEP).
- To aid pricing, production, and profitability decisions.
- To assess the financial viability of new products or services.
- To evaluate risk and margin of safety.
- To guide cost control, budgeting, and strategic planning.
- To support decisions on financing, investments, and expansion.

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Assumptions of break-even analysis

1. Selling price is constant. The price of a product or service will not change as volume changes.
2. The variable cost is constant per unit, and the fixed cost is constant in total over the entire relevant range.
3. In multi-product companies, the sales mix is constant.
4. In manufacturing companies, inventories do not change. The number of units produced equals the number of units sold.

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Formula of breakeven point:

Break-even point $= \dfrac{Total\ Fixed\ cost}{Sales\ price\ per\ unit - Variable\ cost\ per\ unit}$

Example-1:

RPG locks, a lock producer, has fixed cost of taka 45000, it sales per unit lock is taka 120, and is variable expense per unit is taka 60. Find out the breakeven point both in units and in taka.

Solution:

We know, breakeven point =

$$\frac{Total\ Fixed\ cost}{Sales\ price\ per\ unit - Variable\ cost\ per\ unit} = \frac{45{,}000}{120-60}$$

= 750 units.

Breakeven point in taka = 750 units×120 taka = 90000 taka.

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Example-2

Information of Thermax textiles is given below:

Per unit sales price= tk. 400

Per unit variable cost= tk. 200

Total fixed cost= tk. 500000

a) Calculate the breakeven point in units and in taka.

b) If the company wants to make a profit tk. 200000 what should be the sales in unit.

Solution:

a. Break-even point $= \dfrac{\boldsymbol{Total\ Fixed\ cost}}{\boldsymbol{Sales\ price\ per\ unit - Variable\ cost\ per\ unit}}$

$= \dfrac{\mathbf{5{,}00{,}000}}{\mathbf{400-200}}$

= 2,500 Units

Breakeven point in taka = 2,500 units × 400 taka = 10,00,000 taka.

b. Desired sales in units $= \dfrac{\boldsymbol{Total\ Fixed\ cost + Target\ profit}}{\boldsymbol{Sales\ price\ per\ unit - Variable\ cost\ per\ unit}}$

$= \dfrac{\mathbf{5{,}00{,}000 + 2{,}00{,}000}}{\mathbf{400-200}}$

$= \dfrac{\mathbf{7{,}00{,}000}}{\mathbf{200}}$

= 3,500 units

If company sales 3,500 units, then they will earn 2, 00,000 taka profit.

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Formula:

1. Contribution margin ratio (CMR) or Profit Volume Ratio (PVR) = $\frac{Sales - Variable\ cost}{Sales} \times 100$

   or $\frac{Contribution\ margin}{Sales} \times 100$ or

   $\frac{Changes\ in\ profits}{Change\ in\ sales} \times 100$

2. Margin of safety = Total sales – Break-even point

   or $\frac{Profit}{CMR\ or\ PVR}$

3. Margin of safety ratio = $\frac{\text{Margin of safety}}{Sales} \times 100$

4. Break-even point (BEP) = $\frac{\text{Fixed cost}}{CMR}$

   or Total sales – margin of safety

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5. Fixed cost = (Sales × CM ratio) – profit or contribution margin – profit

6. Variable cost = Sales – Contribution margin

7. Profit = (Sales × CM ratio) – Fixed cost or Contribution margin – fixed cost

8. Sales = VC + FC + Profit

9. Target sales = $\frac{Fixed\ cost + Target\ profit}{Contribution\ margin\ ratio}$

10. Target profit = (Target Sales × CM Ratio) – Fixed cost

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Example:

The operating results of Padma Company Ltd. for the last two years were as follows:

Year	Sales	Profits
2014	2,00,000	20,000
2015	3,00,000	40,000

Based Upon the above information calculate the following:

a) PV ratio or CM ratio
b) Fixed cost
c) Break even sales
d) Target sales when profit tk. 30,000
e) Target profits when sales tk. 2,00,000
f) Margin of safety when profit of tk. 60,000
g) Margin of safety ratio
h) Variable cost for each year.

Economic Order Quantity

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After studying this chapter, the students will be to learn..

- Define EOQ
- List ordering costs and Holding costs
- Advantages of EOQ
- Explain the assumptions of EOQ Model
- Describe Re-Oder point
- Exercise of EOQ

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Economic order quantity (EOQ) model

The economic order quantity model is the best known approach for establishing an optimal inventory level. Having an inventory less than the demand leads to the dissatisfaction of customers. On the other hand, it is equally a bad practice to have an inventory that is much more than what is needed.

So, an optimal level of inventory has to be maintained. EOQ model helps us determine that optimal level of inventory. It tells us how much to order and when the order needs to be placed.

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Carrying cost:

Carrying or holding costs are the costs of maintaining the inventory warehouse and protecting the inventoried item.

Ordering cost:

The costs associated with placing and receiving orders, such as shipping, handling, and order processing.

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Formula of EOQ:

- EOQ

$$= \sqrt{\frac{2 \times \text{annual demand} \times \text{ordering cost per order}}{\text{carrying cost per unit}}}$$

- Average daily usages $= \dfrac{Annual\ demand}{360\ days}$

- Number of order $= \dfrac{Annual\ demand}{EOQ}$

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Assumptions of the EOQ Model:

To use the EOQ formula effectively, the following assumptions are made:

Constant Demand: The demand for the product is known and remains constant throughout the year.

Constant Ordering Cost: The cost to place an order does not change, no matter how many orders are placed.

Constant Holding Cost: The cost to store each unit in inventory remains constant.

No Stock outs: The model assumes that there will be no shortage or stock out of inventory.

Instantaneous Delivery: Orders are delivered immediately when placed.

Advantages of EOQ

Cost Efficiency: EOQ minimizes the total inventory cost by finding the optimal order size.

Reduces Stock outs: Proper inventory levels help prevent stock outs and avoid lost sales.

Simplifies Inventory Management: EOQ helps streamline ordering and inventory processes, making it easier to manage.

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Example:

Find out the Economic order quantity, number of order per year and Average daily usages from the following information:

Annual consumption 36000 units

Purchase price per unit tk. 54

Ordering cost per order tk. 150

Inventory carrying cost is 20% of the purchase price.

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Solution:

EOQ = $\sqrt{\frac{2 \times \text{annual demand} \times \text{ordering cost per order}}{\text{carrying cost per unit}}}$

$= \sqrt{\frac{2 \times 36{,}000 \times 150}{54 \;\times 20\%}}$

$= \sqrt{\frac{10800000}{10.8}}$

= 1,000 Units

Number of order = $\frac{Annual\ demand}{EOQ}$

$= \frac{36{,}000}{1000}$

= 36 times

Average daily usages = $\frac{Annual\ demand}{360\ days}$

$= \frac{36{,}000}{360}$

= 100 units

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Re-Order Point (ROP):

While EOQ helps in determining the order quantity, the **Re-Order Point (ROP)** helps in determining the point at which a new order should be placed.

The re-order point is based on lead time (the time taken from placing an order to receiving it) and demand during that lead time.

ROP = Demand per day × Lead Time in days

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Where:

- **Demand per day** = D/365
- **Lead time** = Number of days required to receive the order

For example, if the demand is 10,000 units per year and the lead time is 5 days

ROP =10,000/365× 5 =136.99 units

So, a new order should be placed when there are approximately **137 units** left in inventory.

Week-17

Problem solving and revision class/ makeup class

Thanks with regards,

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