

UDHNA COLLEGE
SYBCOM – SEMESTER III
ADVANCED ACCOUNTING & AUDITING-1

Chapter : Unit Costing

THEORY

1. Introduction

Every manufacturer wants to know : what does it cost to produce **one unit** of my product? When a factory produces only one type of standard product continuously — like cement, sugar, paper, cloth, bricks — the simplest and most natural method is to divide the total cost by the total number of units produced. This method is called **Unit Costing**. It is the most basic method of costing, therefore it is taught first in cost accounting.

2. Meaning and Definition

Unit costing (also called **output costing or single output costing**) is that method of costing under which the cost of production of a period is divided by the number of units produced during that period to find the cost per unit. Cost is also expressed in suitable cost units such as per tonne, per kg, per metre, per litre or per number.

$$\text{Cost per unit} = \text{Total cost of production in the period} \div \text{Total number of units produced}$$

This is not only a method of costing but also the basis of preparing the **cost sheet**, because a cost sheet simply classifies total cost into elements and then shows per-unit cost.

3. Features / Characteristics

- Production is of one single product or a few standard varieties of the same product.
- Production is on a large scale and continuous (regular flow).
- The product is homogeneous — all units are identical in size, shape and quality.
- The unit of output is physical and easy to measure (tonne, kg, metre, litre, number).
- Cost of each unit is almost the same, so per-unit cost is only an average cost.
- A separate cost sheet is prepared periodically (weekly, monthly, annually).

4. Industries where Unit Costing is Used

Industry	Cost unit used
Cement	Per tonne / per bag
Sugar	Per quintal / tonne
Paper mills	Per kg / per ream
Textile / cloth	Per metre
Coal and mining	Per tonne
Steel	Per tonne

Brick works	Per 1,000 bricks
Dairy / milk	Per litre
Biscuit / food products	Per kg / per packet
Soap / chemical	Per kg / per litre
Paint / oil	Per litre / per kg

5. Advantages of Unit Costing

- **Simple and easy** : even small industries can use it because the calculation is simple.
- **Helpful in fixing selling price** : cost per unit gives a clear base for price fixation.
- **Stock valuation** : closing stock can be valued at cost per unit easily.
- **Control of cost** : period-wise cost per unit helps management to check wasteful expenses.
- **Comparison** : costs of different periods can be compared to judge efficiency.
- **Basis of standard costing** : past unit costs are used to set cost standards and prepare estimates.
- **Tenders & quotations** : helps in quoting tender price with required profit.

6. Limitations of Unit Costing

- Not suitable where two or more different products are made in the same factory.
- Not useful for job or contract type of work where each job is different.
- Fixed overheads make per-unit cost fall with higher output — comparing different output levels needs care.
- Per-unit cost is only an average cost; it may hide inefficiency in a particular process.
- Wastage and losses (normal/abnormal) need separate treatment.

7. Place of Unit Costing among Methods of Costing

Different methods are used for different situations :

Method	Used for
Unit / Output costing	Single, standard, homogeneous products produced continuously (cement, sugar, paper)
Job costing	Each job is different (printing press, repair work)
Contract costing	Big construction contracts (buildings, bridges)
Process costing	Continuous process industries where product passes through processes (chemicals, textiles)
Operating costing	Service undertakings (transport, hospital, hotel)

Unit costing is the simplest and is generally used together with a cost sheet.

8. Cost Unit and Cost Centre in Unit Costing

- **Cost Unit** : the unit in which cost per unit is expressed, e.g. tonne, kg, metre, litre.
- **Cost Centre** : the department or section for which costs are collected — e.g. 'Kiln' department of a brick factory, 'Melting' section of a steel plant. Production cost centres help in locating where cost is incurred.

Point	Cost Unit	Cost Centre
Meaning	Unit of product/service for cost measurement	Location/segment where costs are collected
Question answered	Cost of how much output?	Where (in which department) is cost incurred?
Example	Per tonne of cement	Bottling plant, packing department
Basis	Related to output	Related to place/activity

9. Elements of Cost

The total cost of a product is built from three basic elements :

9.1 Material

- **Direct (raw) material** : material which becomes a part of the finished product, e.g. cement clinker and gypsum in cement, sugarcane in sugar, pulp in paper.
- **Indirect material** : material which cannot be traced to the product, e.g. lubricants, cotton waste, stationery.

9.2 Labour

- **Direct labour (wages)** : wages of workers directly engaged in production, e.g. wages of machine operators, weavers, packers.
- **Indirect labour** : wages of workers who help but do not directly make the product, e.g. supervisor, storekeeper, watchman.

9.3 Expenses

- **Direct expenses** : expenses directly connected with production, e.g. hire charges of special machine, cost of special patterns/designs, royalty.
- **Indirect expenses (overheads)** : all other indirect expenses like rent, power, repairs, depreciation, selling and administration expenses.

Prime Cost = Direct material consumed + Direct wages + Direct expenses

Note : prime cost is also called '*direct cost*' or '*first cost*'. It is the first stage of the cost sheet.

10. Classification of Cost (Quick Recap)

Basis	Types
By element	Material, labour, expenses
By nature (behaviour)	Fixed, variable, semi-variable
By function	Production, administration, selling, distribution
By identifiability	Direct, indirect
By controllability	Controllable, uncontrollable
By time	Historical (actual), predetermined (estimated/standard)

11. Cost Sheet — Meaning and Definition

Cost sheet is a statement which shows, for a given period, the total cost and cost per unit of output, classified under the different elements of cost (material, labour and expenses) in a logical order. It is the heart of unit costing.

Simple definition : A cost sheet is a statement showing the cost of production in a classified form under different elements for a particular period and for a particular output.

12. Objectives / Uses of a Cost Sheet

- To know the total cost and cost per unit of production.
- To show the division of total cost into elements (material, labour, expenses) and sub-totals (prime cost, works cost, cost of production, cost of sales).
- To compare current period costs with past period costs and with budgeted costs.
- To help management fix the selling price and profit.
- To help in preparing tenders and quotations for future orders.
- To help in valuing the closing stock of finished goods.
- To provide a basis for cost control and cost reduction.
- To help the management in taking decisions like make or buy, accept or reject an order.

13. Pro-forma of a Cost Sheet

Every cost sheet has two amount columns : **(1) Total amount (Rs)** and **(2) Per unit amount (Rs)**. The standard form is given below. You must learn this layout by heart.

Particulars	Total (Rs)	Per unit (Rs)
Opening stock of raw material	XXX	
Add : Purchases of raw material	XXX	
Add : Carriage inwards / expenses on purchases	XXX	
Less : Closing stock of raw material	(XXX)	
(1) Materials consumed	XXX	XXX
Add : Direct wages (labour)	XXX	XXX
Add : Direct (chargeable) expenses	XXX	XXX
(2) PRIME COST	XXX	XXX
Add : Factory / works overheads	XXX	XXX
Add : Opening work-in-progress (WIP)	XXX	
Less : Closing work-in-progress (WIP)	(XXX)	
(3) FACTORY / WORKS COST	XXX	XXX
Add : Office / administration overheads	XXX	XXX
(4) COST OF PRODUCTION (of goods produced)	XXX	XXX
Add : Opening stock of finished goods	XXX	
Less : Closing stock of finished goods	(XXX)	

(5) COST OF GOODS SOLD (of goods sold)	XXX	XXX
Add : Selling & distribution overheads	XXX	XXX
(6) COST OF SALES / TOTAL COST	XXX	XXX
Add : Profit	XXX	XXX
(7) SALES	XXX	XXX

(In many simple problems, there is no stock; then the same sheet simply becomes : Prime cost → Factory cost → Cost of production → Cost of sales.)

14. Explanation of Each Heading

- **Materials consumed** : value of raw material actually used = Opening stock + Purchases + Carriage – Closing stock.
- **Prime Cost** : direct material + direct labour + direct expenses. It is the cost of all direct inputs.
- **Factory (Works) Cost** : prime cost + factory overheads (+ opening WIP – closing WIP). It is also called 'works cost'. This is the cost of making goods inside the factory.
- **Cost of Production** : factory cost + office/administration overheads. It is the total cost of producing finished goods.
- **Cost of Goods Sold** : cost of production adjusted for finished goods stock — i.e. cost of the units actually sold.
- **Cost of Sales (Total Cost)** : cost of goods sold + selling & distribution overheads. It is the total cost up to delivery to the customer.
- **Sales** : cost of sales + profit (or – loss). When sales are given, profit is the balancing figure.

15. Treatment of Stocks in a Cost Sheet

Stocks are of three types and each is adjusted at a different stage :

Type of stock	Where adjusted	Rule
Raw material stock	In computing materials consumed	Opening + ; Closing –
Work-in-progress (WIP)	In computing factory (works) cost	Opening + ; Closing –
Finished goods stock	In computing cost of goods sold	Opening + ; Closing –

Logic : opening stock belongs to the previous period but is sold/used this period, so it is added; closing stock belongs to this period but remains unsold/unused, so it is deducted.

Important note : closing stock is always valued at **cost**, never at selling price. If profit on sale or percentage of selling price is given, we cannot use it to value stock.

Special note on finished goods : per-unit selling & distribution expenses are charged only on the units *sold*, whereas factory/office overheads are charged on the units *produced*. This is why cost of production is computed on goods produced, while selling overheads and profit relate to goods sold.

16. Treatment of Overheads Given as Percentages

Very often overheads are not given in rupees but as percentages. The base on which the percentage is applied must be identified first :

Given overhead	Base
Factory overheads	Percentage of direct wages OR direct material OR prime cost — as stated in question
Office / administration overheads	Percentage of factory (works) cost
Selling & distribution overheads	Percentage of cost of production OR cost of goods sold OR per unit sold
Profit	Percentage of cost of sales (cost) OR of selling price (sales)

Example : If factory cost is Rs 1,30,000 and office overheads are 10% of factory cost, then office overheads = Rs 13,000. If selling overheads are Rs 1 per unit and 5,000 units are sold, selling overheads = Rs 5,000. If profit is 20% on cost of sales and cost of sales = Rs 1,48,000, then profit = $20\% \times 1,48,000 = \text{Rs } 29,600$.

17. How to Prepare a Cost Sheet — Step by Step

Step 1 : Write the heading — name of company/factory, product and the period.

Step 2 : Compute materials consumed (adjusting raw material stock and carriage).

Step 3 : Add direct wages and direct expenses to get Prime Cost.

Step 4 : Add factory overheads; adjust opening and closing WIP to get Factory/Works Cost.

Step 5 : Add office/administration overheads to get Cost of Production (of goods produced).

Step 6 : Adjust opening and closing finished goods stock to get Cost of Goods Sold.

Step 7 : Add selling & distribution overheads to get Cost of Sales.

Step 8 : Add profit (given or balancing) to arrive at Sales; alternatively deduct sales from cost of sales to get profit.

Step 9 : Compute per-unit figures by dividing each total by the number of units produced (or sold, as appropriate).

18. Solved Example 1 (Simple Cost Sheet)

From the following data of a factory producing 5,000 units during the year, prepare a Cost Sheet and show cost per unit and profit :

Particulars	Rs
Opening stock of raw material	10,000
Purchases of raw material	85,000
Carriage on purchases	5,000
Closing stock of raw material	20,000
Direct wages	30,000
Direct expenses	2,000
Factory overheads	20,000
Office overheads (10% of works cost)	—

Selling overheads (Re 1 per unit)	—
Sales	1,80,000

Solution

Particulars	Rs	Rs
Materials consumed = 10,000+85,000+5,000–20,000		80,000
Direct wages		30,000
Direct expenses		2,000
PRIME COST		1,12,000
Add : Factory overheads		20,000
WORKS / FACTORY COST		1,32,000
Add : Office overheads (10% × 1,32,000)		13,200
COST OF PRODUCTION (5,000 units)		1,45,200
Add : Selling overheads (5,000 × 1)		5,000
COST OF SALES		1,50,200
Add : Profit (balancing)		29,800
SALES		1,80,000

Cost per unit (production) = $1,45,200 \div 5,000 = \text{Rs } 29.04$; Cost of sales per unit = $1,50,200 \div 5,000 = \text{Rs } 30.04$; Profit per unit = $29,800 \div 5,000 = \text{Rs } 5.96$

19. Solved Example 2 (With WIP and Finished Goods Stock)

A company gives the following data for the year. Units produced = 10,000; units sold = 9,000. Prepare a Cost Sheet :

Particulars	Rs
Materials consumed	90,000
Direct wages	60,000
Factory overheads	45,000
Office overheads (20% of works cost)	—
Selling & distribution overheads (Rs 2 per unit sold)	—
Opening WIP	12,000
Closing WIP	18,000
Opening finished goods stock (600 units)	13,200
Closing finished goods stock (1,600 units)	at cost
Sales (9,000 units)	3,00,000

Solution

Particulars	Rs	Rs
Materials consumed		90,000
Direct wages		60,000
PRIME COST		1,50,000
Add : Factory overheads		45,000
Add : Opening WIP	12,000	

Less : Closing WIP	(18,000)	
WORKS COST		1,89,000
Add : Office overheads (20% × 1,89,000)		37,800
COST OF PRODUCTION (10,000 units)		2,26,800
Cost per unit of production = $2,26,800 \div 10,000 = \text{Rs } 22.68$		
Add : Opening finished stock (600 × 22.68)		13,608
Less : Closing finished stock (1,600 × 22.68)		(36,288)
COST OF GOODS SOLD (9,000 units)		2,04,120
Add : Selling & distribution overheads (9,000 × 2)		18,000
COST OF SALES		2,22,120
Add : Profit (balancing)		77,880
SALES		3,00,000

Check : Closing stock of finished goods = 1,600 units × Rs 22.68 = Rs 36,288 (valued at cost of production per unit, not at selling price).

20. Items Not Included in Cost Sheet

Certain items appear in the profit & loss account but are **not included in the cost sheet** because they are either purely financial, capital or appropriation items. Their exclusion keeps the cost sheet purely for cost items :

- **Purely financial expenses** : interest on loan/debentures, bank charges, loss on sale of investments/assets, income tax, donation.
- **Capital items** : purchase of land/building/machinery, expenses on new projects, capital profit or loss.
- **Fictitious & intangible items written off** : goodwill written off, preliminary expenses written off, discount on issue of shares/debentures.
- **Appropriation of profits** : dividends, transfer to reserves, provision for income tax, general reserve, deferred revenue expenses.

Note : if such items are given in the problem, they are simply ignored while preparing the cost sheet.

21. Selling Price and Profit Calculations

The relation between cost and selling price must be handled carefully :

- **Profit as % of cost (on cost)** : Profit = % × Cost of sales; Sales = Cost of sales + Profit.
- **Profit as % of selling price (on sales)** : then Cost of sales = (100 – %) of selling price. Example : profit 20% on sales means if sales = 100, cost = 80. So profit = $(20/80) \times \text{cost} = 25\% \text{ on cost}$.

If	Means in Rs	Equivalent
Profit 25% on cost	Cost 100, Profit 25, Sales 125	Profit = $25/125 = 20\% \text{ on sales}$

Profit 20% on sales	Sales 100, Profit 20, Cost 80	Profit = $20/80 = 25\%$ on cost
Loss 10% on sales	Sales 100, Loss 10, Cost 110	Loss = $10/90 = 11.11\%$ on cost

Remember : 'on cost' or 'on selling price' decides the denominator (base). Always ask : percentage of what?

22. Estimated Cost Sheet and Tender Price

Meaning : when a manufacturer wants to quote a price for a future order, he prepares an **Estimated (Tender) Cost Sheet** based on the expected costs of material, labour and overheads and adds the desired profit. The price quoted is called the **Tender price or Quotation**.

Steps in preparing tender price : (1) estimate materials required and their cost; (2) estimate direct wages and direct expenses; (3) add estimated factory, office and selling & distribution overheads as per given percentages; (4) get estimated total cost; (5) add required profit (on cost or on selling price as given).

22.1 Worked Example on Tender Price

A company expects to produce 2,000 units of a product. Estimated cost per unit : material Rs 30; wages Rs 20. Factory overheads 40% of wages; office overheads 20% of works cost; selling expenses Rs 4 per unit. If the company wants a profit of 25% on cost, find the tender price per unit and total price.

Solution (per unit)

Particulars	Rs
Material	30.00
Wages	20.00
Prime cost	50.00
Factory overheads ($40\% \times 20$)	8.00
Works cost	58.00
Office overheads ($20\% \times 58$)	11.60
Cost of production	69.60
Selling expenses	4.00
Cost of sales (total cost)	73.60
Profit (25% on cost = $25\% \times 73.60$)	18.40
TENDER PRICE per unit	92.00

Total tender price for 2,000 units = $2,000 \times \text{Rs } 92 = \text{Rs } 1,84,000$

Note : if profit is given 'on selling price', first take cost as $(100 - \%)$ and find profit accordingly (see section 21).

23. Quick Revision Points

- Unit costing = output costing = single output costing; used for one standard homogeneous product.
- Per unit cost = Total cost $\div$ Units produced (an average cost).
- Cost sheet flow : Prime cost $\rightarrow$ Works cost $\rightarrow$ Cost of production $\rightarrow$ Cost of goods sold $\rightarrow$ Cost of sales $\rightarrow$ Sales.
- Opening stock increases the relevant cost; closing stock decreases it.

- Raw material stock at material stage; WIP at works cost stage; finished goods at cost of production stage.
- Factory overheads on goods produced; selling overheads on goods sold.
- Closing stock always at cost price.
- When percentage overheads are given, apply on the stated base (wages/prime cost/works cost/cost of production).
- Profit is balancing figure when sales are given; sales = cost + profit.
- Financial items (interest, tax, dividends, goodwill etc.) are excluded from the cost sheet.

24. Formula Summary

Materials consumed = Opening stock + Purchases + Carriage on purchases – Closing stock

Prime Cost = Direct material + Direct wages + Direct expenses

Factory (Works) Cost = Prime cost + Factory overheads + Opening WIP – Closing WIP

Cost of Production = Factory cost + Office & administration overheads

Cost of Goods Sold = Cost of production + Opening finished stock – Closing finished stock

Cost of Sales = Cost of goods sold + Selling & distribution overheads

Sales = Cost of sales + Profit (or – Loss)

Cost per unit = Total of that element ÷ Units produced (or sold)

Tender price = Estimated total cost + Required profit