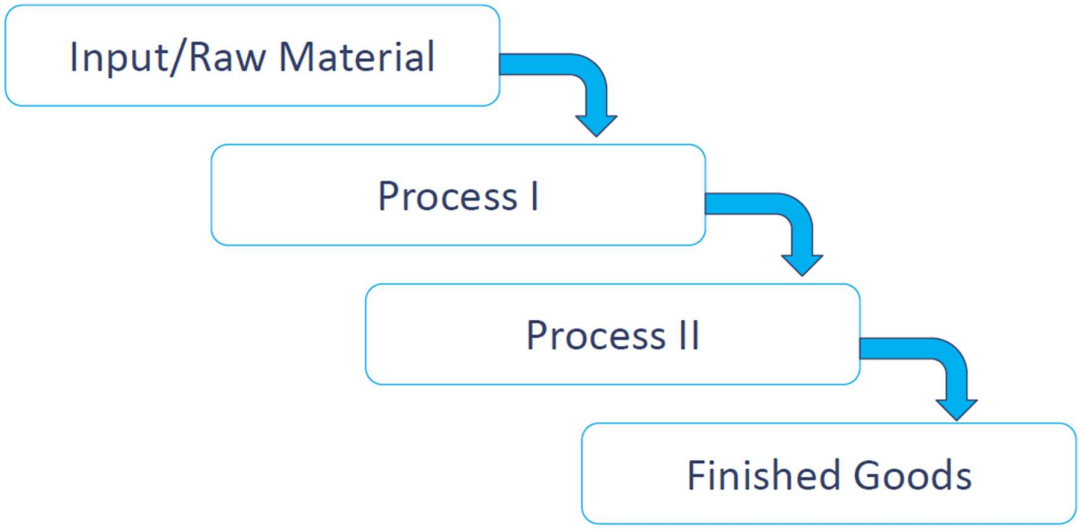
Chapter 02

Process and Service Costing

Process costing:

Introduction:

Process costing is used where the production moves from one process or department to the next until its final completion and there is a continuous mass production of identical units through a series of processing operations. It is applied for a various industry like chemicals and drugs, oil refining, food processing, paints & varnish, plastics, soaps, textiles, paper etc.



Meaning:

CIMA defines process costing as, "The costing method applicable where goods or services result from a sequence of continuous or repetitive operations or processes. Costs are averaged over the units produced during the period."

Features of Process Costing:

Features: The distinctive features of process costing are as follows:

- The process cost centres are clearly defined and costs relating to each process cost centre are accumulated.
- The stock records for each process cost centre are maintained accurately. The records give clear picture of units introduced in the process or received from the preceding process cost centre and also units passed to the next process.
- The total costs of each process are averaged over the total production of that process, including partly completed units.
- The cost of the output of one process is the raw materials input cost of the following process.
- Appropriate method is used in absorption of overheads to the process cost centres.
- The process loss may arise due to wastage, spoilage, evaporation etc.

- Since the production is continuous in nature, there will be closing work-in-progress which must be valued separately.

Applications of Process Costing:

Manufacturing Industries: Process costing is extensively used in industries such as chemicals, textiles, food processing (like confectionery and beverages), and pharmaceuticals. These industries involve continuous or mass production of homogeneous products where costs need to be averaged out over large volumes.

Petroleum Refining: Oil refineries use process costing to determine the cost of refining crude oil into various petroleum products like gasoline, diesel, and jet fuel. Each product goes through multiple refining stages, and process costing helps in allocating costs to each product accurately.

Steel and Metals: Industries involved in smelting and refining metals (like steel, aluminium) apply process costing. It helps in tracking costs through various stages of production, from raw materials to finished goods, ensuring accurate cost allocation per unit produced.

Utilities: Companies providing utilities such as electricity, water, and gas use process costing to determine the cost per unit (like kilowatt-hour for electricity) provided to consumers. Costs are accumulated over a period and then averaged out per unit of output.

Cement Manufacturing: Cement production involves several continuous processes like mixing raw materials, baking, grinding, and packaging. Process costing helps in calculating the cost per ton of cement produced by accumulating costs across different production stages.

Paper Industry: Process costing is applied in the paper manufacturing industry where processes like pulping, drying, and finishing are involved. It helps in determining the cost per ton of paper produced by averaging costs incurred during each stage of production.

Breweries and Distilleries: Beverage production industries such as breweries and distilleries use process costing for products like beer, wine, and spirits. Each batch undergoes similar production processes (fermentation, aging, bottling), making process costing suitable for cost allocation.

Pharmaceuticals: Pharmaceutical companies use process costing for manufacturing drugs where each batch follows specific production stages (mixing, encapsulating, packaging). Process costing ensures accurate cost allocation to each batch produced.

Procedure for Process Costing

1. Each process is separately identified. Separate process account is opened for each process.

2. Along with 'Particulars Column', two columns are provided on both sides of the process account – units (quantity) and amount (Rupees).

3. All the expenses are debited in the respective process account. Process Account transferred to finished stock. Prepare various process accounts from the following information.

4. Wastage, sale of scrap, by-products etc are reordered on the credit side 0f the process account.

5. The difference between debit and credit side shows the cost of production and output of that particular process which is transferred to the next process.

6. The cost per unit in every process is calculated by dividing the net cost by the output.

7. The output of last process is transferred to the Finished Stock Account.

8. Incomplete units at the end of each period ion every process s converted in terms of completed units.

Comparison between job costing and process costing:

Distinguish between: Job Costing & Process Costing

Points	Job Costing	Process Costing
Meaning	Job costing is form of specific order costing which applies where work is undertaken to customer's specific requirement. It is the process of assigning costs to products or services.	The costing method applicable where goods or services result from a sequence of continuous or repetitive operations or processes.
Costs	Costs are traced to individual jobs, and production overhead is allocated.	Costs are averaged over the units produced during the period.
Unit	It may be related to single unit or a batch of similar units.	It is applied to a large number of units.
Product	A job is carried out or a product is produced to meet the specific requirements of the order.	All the products are identical and there is a continuous flow of production.
Work-in-progress	Work-in-progress may or may not exist at the end of accounting period.	Normally, there will be opening and closing work-in-progress for the accounting period.
Control	Standardization of controls is comparatively difficult as each job differs and more detailed supervision and control is necessary.	Proper control is relatively easy as there are standard applied for costs, process loss, time of production, etc.

Advantages and disadvantages of process costing:

Advantages of Process Costing

1. **Simplifies Cost Assignment**: Process costing simplifies the assignment of costs to products since it aggregates costs at each process or department level rather than tracking costs for individual items.
2. **Uniform Product Costs**: It is ideal for industries where products are homogeneous, ensuring uniformity in product cost estimation.
3. **Efficiency in Production**: By tracking costs at each stage of production, companies can identify inefficiencies and areas for improvement, leading to better management of production processes.
4. **Ease of Cost Control**: It facilitates easier cost control and budgeting, as managers can compare actual costs with standard costs at each process level.
5. **Benchmarking and Performance Measurement**: It allows for effective benchmarking and performance measurement across different production processes, helping in identifying best practices.
6. **Simple Accounting Procedures**: The accounting procedures are straightforward, involving fewer transactions compared to job costing, making it less time-consuming and less complex.

Disadvantages of Process Costing

1. **Less Detailed Cost Information**: It provides less detailed information on individual product costs, which can be a disadvantage if detailed cost tracking is required.
2. **Not Suitable for Custom Products**: It is not suitable for industries producing customized products, as it assumes uniformity in production.
3. **Difficulty in Tracking Overhead Costs**: Allocating overhead costs accurately can be challenging, as they need to be divided among different processes or departments.
4. **Complexity in Handling By-Products and Waste**: Handling costs related to by-products, waste, and spoilage can be complex and may require additional accounting adjustments.
5. **Inflexibility**: It can be inflexible in adapting to changes in production processes or product lines, which may require significant adjustments in the costing system.
6. **Potential for Cost Distortion**: There is a risk of cost distortion if there are significant differences in production costs across processes, leading to inaccurate product costing.

Treatment of process losses and gains in cost accounts:

In many process industries some loss or wastage is inevitable. Such a loss may be the result of an evaporation, shrinkage, chemical change, change in moisture content or spoilage. The process loss may be normal or abnormal.

(1) Normal Loss: This is the loss which is un-avoidable because of the nature of raw materials for the production technique and is inherent in the normal course of production. Such loss can be estimated in advance on the basis of past experience or chemical data.

The normal loss is recorded only in terms of quantity and the cost per unit of usable production is increased accordingly. Where the scrap possesses some value as a waste product or as raw material for an earlier process, the value there of is credited to the process account. This reduces the cost of normal output and process loss is shared by usable unit.

(2) Abnormal Loss: Any loss caused by unexpected or abnormal conditions such as sub-standard materials, carelessness, accident or loss in excess of the margin anticipated for normal process loss is regarded as abnormal process loss. Abnormal loss is not expected to arise, when operation are carried on efficiently according to norms relating to manufacturing operations. Cost of normal loss is shared by good units of production in the process, but the same cannot be given to abnormal loss. Units representing abnormal loss are valued like good units produced and the value of unit representing

abnormal loss is debited to a separate account, which is known as abnormal loss account.

The value of abnormal loss is calculated with the help of the following formula:

$$\frac{\text{Normal cost of normal output}}{\text{Normal output}} \times \text{Units of abnormal loss}$$

If the abnormal loss has got any scrap value, it should be credited to abnormal loss account and the balance is ultimately written off to the costing profit and loss account.

(3) Abnormal Gain: If the quantum of loss is less than the determined percentage of normal loss, the difference is called abnormal gain or effectives. The presence of abnormal effectives should not affect the cost of goods units in the normal circumstances. The value of abnormal effective is debited to the concerned process account. This value is calculated at the rate at which the effective output would have been valued if normal wastage had taken place according to expectation. The value of abnormal effective is calculated as follows:

$$\frac{\text{Normal cost of normal output}}{\text{Normal output}} \times \text{Units of abnormal gain}$$

Specimen of Process Account

Process Account

Particulars	Units	₹	Particulars	Units	₹
To Direct Materials			By Normal Loss		
To Direct Wages			By Sale of Scrap		
To Direct Expenses			By Abnormal Loss		
To Indirect Expenses			By Next Process Account (Transfer)		
To Other Expenses					
To Abnormal Gain					
	XXX	XXX		XXX	XXX