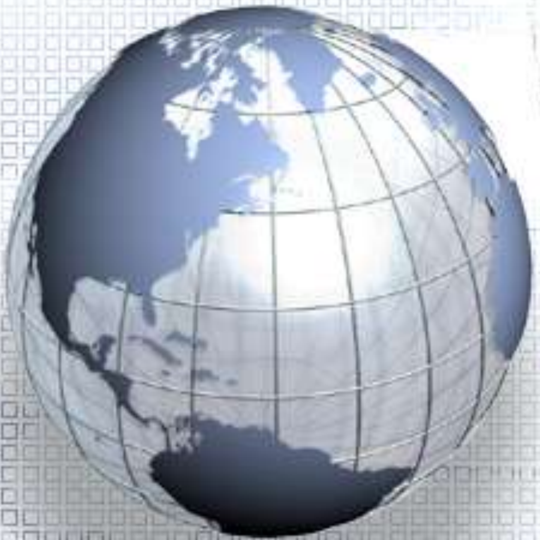

FUNDAMENTALS OF COSTING

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Some questions . . .

- **What is Costing? What is it all about? Is it different from Financial Accounting?**
- **What is its relevance in todays business?**
- **Will it be helpful to me as a Manager in improving operational efficiencies?**
- **What are different tools and techniques of costing?**

Contents

- Evolution of Costing & Cost Accounting
- Costing Concepts & Definitions
- Objectives of Costing / Cost Accounting
- Costing Systems
- Costing Methods and Techniques
- Classification of Cost
- Costing process
- Statement of Cost : Cost Sheet Formats
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Evolution of Cost Accounting

The accounting system of an organization is the most important segment of its information system. It broadly serves the three purposes:

1. To provide information to external parties viz., shareholders, creditors, Bankers, Money lenders, regulatory bodies, Government and others
   – Financial Accounting

2. To estimate cost of goods and services produced by the organization and to provide control mechanism
   – Cost Accounting

3. To provide information useful for planning, decision making and control
   - Management Accounting

Evolution of Cost Accounting

1. **Financial Accounting**
   - To know the financial Results, Position and Relation as on last day of the year
   - **Stewardship Accounting**

2. **Cost Accounting**
   - To know and control the cost with view to maximize efficiency and so profit of the Organization
   - **Control Accounting**

3. **Management Accounting**
   - To assist management in planning and decision making
   - **Decision Accounting**

Evolution of Cost Accounting

- Way back to 15th Century, no accounting system was in existence and it was the **barter system** prevailed.
- It was in the last years of 15th century Luca **Pacioli**, an Italian Mathematician found out the double entry system of accounting in the year **1494**.
- Later it was developed in England and all over the world upto 20th Century.
- During these 500 years, the purpose of Cost Accounting needs are served as a small branch of Financial Accounting.
- The period 1880 AD- 1925 saw the development of complex product designs and the emergence of multi-activity diversified corporations like Du Pont, General Motors etc.

Evolution of Cost Accounting

- It was during this period that scientific management was developed which led the accountants to **convert physical standards into Cost Standards**, the latter being used for variance analysis and control.
- During the World War I and II the social importance of Cost Accounting grew with the growth of each country's defense expenditure.
- In the absence of competitive markets for most of the material required for war, the governments in several countries placed **cost-plus contracts** under which the price to be paid was cost of production plus an agreed rate of profit.
- The reliance on cost estimation by **parties to defense contracts continued after World War II**.

Cost Accounting Concepts and Definitions

- **Cost:** Cost is a measurement, in monetary terms, of the amount of resources used for the purpose of production of goods or rendering services.
  - **Cost as a Noun**
    - An amount of expenditure (actual or notional) incurred on or attributable to a specified article , product or activity
  - **Cost as a verb**
    - To ascertain cost of a given thing
- Thus it is that which is given or in sacrificed to obtain something.
- Cost is a generic term and it is always advisable to qualify the word cost to show exactly what it meant, e.g., prime cost, factory cost, etc.
- Cost is also different from value as cost is measured in terms of money whereas value in terms of usefulness or utility of an article.

Cost Accounting Concepts and Definitions

- **Costing :** Costing is defined as the technique and process of ascertaining costs.
- **Cost Accounting** : Cost Accounting may be defined as "*Accounting for costs classification and analysis of expenditure as will enable the total cost of any particular unit of production to be ascertained with reasonable degree of accuracy and at the same time to disclose exactly how such total cost is constituted".*
- Thus Cost Accounting is classifying, recording an appropriate allocation of expenditure for the determination of the costs of products or services, and for the presentation of suitably arranged data for the purpose of control and guidance of management.

Cost Accounting Concepts and Definitions

- **Cost Accountancy** : Cost Accountancy is defined as '*the application of Costing and Cost Accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability'*. It includes the presentation of information derived there from for the purposes of managerial decision making.
- Thus, Cost Accountancy is the science, art and practice of a Cost Accountant.

(a) It is **science** because it is a systematic body of knowledge having certain principles which a cost accountant should possess for proper discharge of his responsibilities.

(b) It is an **art** as it requires the ability and skill with which a Cost Accountant is able to apply the principles of Cost Accountancy to various managerial problems.

(c) **Practice** includes the continuous efforts of a Cost Accountant in the field of Cost Accountancy. Such efforts of a Cost Accountant also include the presentation of information for the purpose of managerial decision making and keeping statistical records.

Cost Accounting Concepts and Definitions

Cost Object : Cost object is the technical name for a product or a service, a project, a department or any activity to which a cost relates. Therefore the term cost should always be linked with a cost object to be more meaningful. Establishing a relevant cost object is very crucial for a sound costing system. The Cost object could be defined broadly or narrowly.

At a broader level a cost object many be named :

(i) as a ***Cost Centre***,

(ii) where as at a lowermost level it may be called as a ***Cost Unit***

Cost Accounting Concepts and Definitions

- **Cost Centre :** *CIMA defines a cost center as "a location, a person, or an item of equipment (or a group of them) in or connected with an undertaking, in relation to which costs are ascertained and used for the purpose of cost control*".
- The determination of suitable cost centers as well as analysis of cost under cost centers is very helpful for periodical comparison and control of cost.
- In order to obtain the cost of product or service, expenses should be suitably segregated to cost center.
- The manager of a cost center is held responsible for control of cost of his cost center.
- The selection of suitable cost centers or cost units for which costs are to be ascertained in an undertaking depends upon a number of factors such as organization of a factory, condition of incidence of cost, availability of information, requirements of costing and management policy regarding selecting a method from various choices.

Cost Accounting Concepts and Definitions

- Cost centers are of two types-Personal and Impersonal Cost Centre. A personal cost center consists of person or group of persons. An impersonal cost center consists of a location or item of equipment or group of equipments.
- In a manufacturing concern, the cost centers generally follow the pattern or layout of the departments or sections of the factory and accordingly, there are two main types of cost centers as below :-

(i) **Production Cost Centre**: These centers are engaged in production work i.e engaged in converting the raw material into finished product, for example Machine shop, welding shops...etc

(ii) **Service Cost Centre**: These centers are ancillary to and render service to production cost centers, for example Plant Maintenance, Administration...etc

The number of cost centers are dependent upon the expenditure involved and the requirements of the management for the purpose of control.

Cost Accounting Concepts and Definitions

- ***Cost unit*** *can be defined as a 'Unit of product or service in relation to which costs are ascertained'.* The cost unit is the narrowest possible level of cost object.

Industry / Product	**Cost Unit**
Automobile	Number of vehicles
Cable	Metres / kilometers
Cement	Tonne
Chemicals / Fertilizers	Liter / Kilogram / tonne
Gas	Cubic Meter
Power - Electricity	Kilowatt Hour
Transport	Tonne-Kilometer, Passenger-Kilometer
Hospital	Patient Day
Hotel	Bed Night
Education	Student year
Telecom	Number of Calls
BPO Service	Accounts handled
Professional Service	Chargeable Hours

Cost Accounting Concepts and Definitions

- **Cost Control** *is defined as the regulation by executive action of the costs of operating an undertaking, particularly where such action is guided by Cost Accounting.*
- **Cost reduction** *may be defined as the real and permanent reduction in the unit costs of goods manufactured or services rendered without impairing their suitability for the use intended.*
  - Broadly speaking reduction in cost per unit of production may be affected in two ways viz.,

(i) By reducing expenditure, the volume of output remaining constant,

(ii) By increasing productivity, i.e., by increasing volume of output and the level of expenditure remains unchanged unchanged.

Objectives of Cost Accounting

(a) To **ascertain the Costs** under different situations using different techniques and systems of costing

(b) To **determine the selling prices** under different circumstances

(c) To **determine and control efficiency** by setting standards for Materials, Labour and Overheads

(d) To determine the **value of closing inventory** for preparing financial statements of the concern

(e) To provide a basis for operating policies which may be determination of Cost Volume relationship whether to close or operate at a loss, whether to manufacture or buy from market, whether to continue the existing method of production or to replace it by a more improved method of production....etc

Costing Systems

1.Historical Costing

- In this system, costs are ascertained only after they are incurred
- It is extremely useful for conducting post-mortem examination of costs, i.e. analysis of the costs incurred in the past.
- It may not be useful from cost control point of view but it certainly indicates a trend in the behavior of costs and is useful for estimation of costs in future.

2.Absorption Costing

- Costs are absorbed in the product units irrespective of their nature. In other words, all fixed and variable costs are absorbed in the products.
- It is based on the principle that all costs should be charged or absorbed and to be recovered through the Sales Price.

Costing Systems

3.Marginal Costing

- In Marginal Costing, only variable costs are charged to the products and fixed costs are written off to the Costing Profit and Loss A/c.
- The principle followed in this case is that since fixed costs are largely period costs, they should not enter into the production units. Naturally, the fixed costs will not enter into the inventories and they will be valued at marginal costs only.

4.Uniform Costing

- This is not a distinct method of costing but is the adoption of identical costing principles and procedures by several units of the same industry or by several undertakings by mutual agreement.
- Uniform costing facilitates valid comparisons between organizations and helps in eliminating inefficiencies.

Costing Methods & Techniques

Costing Methods and Techniques

The difference between the costing methods and techniques is:

- Costing methods are those which help a firm to compute the cost of production or services offered by it.
- Costing techniques are those which help a firm to present the data in a particular manner so as to facilitate the decision making as well as cost control and cost reduction.

Costing Methods

Job Costing :-

- **This costing method is used in firms which work on the basis of job work & produce according to the requirements and specifications of the consumers.**
- **Each job may be different from the other one. Production is only on specific order and there is no pre demand production.**

Costing Methods & Techniques

II. Batch Costing :-

- It is used in those firms where production is made on continuous basis. Each unit coming out is uniform in all respects and production is made prior to the demand, i.e. in anticipation of demand.
- One batch of production consists of the units produced from the time machinery is set to the time when it will be shut down for maintenance. The number of units produced in this period will be the size of one batch.
- The total cost incurred during this period will be divided by the number of units produced and unit cost will be worked out.
- Firms producing consumer goods like television, air-conditioners, washing machines etc use batch costing

III. Process Costing

- In case of continuous production process, process costing method is used to work out the cost of production.
- The meaning of continuous process is that the input introduced in the process I travels through continuous process before finished product is produced.
- The output of process I becomes input of process II and the output of process II becomes input of the process III and so on
- Cost per process is worked out and per unit cost is worked out by dividing the total cost by the number of units. Industries like sugar, edible oil, chemicals are examples of continuous production process and use process costing.

Costing Methods & Techniques

IV. Operating Costing

- This type of costing method is used in service sector to work out the cost of services offered to the consumers. e.g. hospitals, power generating units, transportation sector etc.
- A cost sheet is prepared to compute the total cost and it is divided by cost units for working out the per unit cost.

V. Contract Costing

- This method of costing is used in construction industry to work out the cost of contract undertaken. e.g. cost of constructing a bridge, commercial complex, residential complex, highways etc
- It is actually similar to job costing, the only difference being that in contract costing, one construction job may take several months or even years before they are complete while in job costing, each job may be of a short duration.
- In contract costing, as each contract may take a long period for completion, the question of computing of profit is to be solved with the help of a well defined and accepted method

Costing Methods & Techniques

Technique of Costing

The costing technique help to present the data in a particular format so that decision making becomes easy and also help for controlling and reducing the costs. The following are the techniques of costing.

I. Marginal Costing

- This technique is based on the assumption that the total cost of production can be divided into fixed and variable.
- Fixed costs remain same irrespective of the changes in the volume of production while the variable costs vary with the level of production, Variable cost per unit always remains the same.
- In this technique, only variable costs are taken into account while calculating production cost. Fixed costs are not absorbed in the production units. They are written off to the Costing Profit and Loss Account.
- This technique is effectively used for decision making in the areas like make or buy decisions, optimizing of product mix, key factor analysis, fixation of selling price, accepting or rejecting an export offer, and several other areas.

Costing Methods & Techniques

II. Standard Costing

- Standard costs are predetermined costs relating to material, labor and overheads. Though they are predetermined, they are worked out on scientific basis by conducting technical analysis.
- The main objective of fixation of standard cost is to have a benchmark against which the actual performance can be compared.
- This means that the actual costs are compared with the standards.
- The difference is called as ‘variance’. If actual costs are more than the standard, the variance is ‘adverse’ while if actual costs are less than the standard, the variance is ‘favorable’.
- The adverse variances are analyzed and reasons for the same are found out. Favorable variances may also be analyzed to find out the reasons behind the same.
- Standard costing, thus is an important technique for cost control and reduction.

Costing Methods & Techniques

III. Budgets and Budgetary Control

- **Budget** is defined as, ‘a quantitative and/or a monetary statement prepared to prior to a defined period of time for the policies during that period for the purpose of achieving a given objective.
- **Budgetary control** involves preparation of budgets and continuous comparison of actual with budgets so that necessary corrective action can be taken.
  - Budget and Budgetary Control is one of the important techniques of costing used for cost control and also for performance evaluation.
  - The success of the technique depends upon several factors such as support from top management, involvement of employees and coordination within the organization.

Cost Classification

The cost is classified differently to meet different purposes. The Classification of Cost is as follows:

1. **Based on Elements**
   - Material Cost
   - Labour Cost
   - Expenses
2. **Based on relationship with cost object** **
   - Direct Cost
   - Indirect Cost
3. **Based on Cost behavior pattern** **
   - Variable Cost
   - Fixed Cost
4. **Manufacturing Cost**
   - Direct material Cost
   - Direct Labour Cost
   - Factory Overhead .

Cost Classification

5. Non-manufacturing Costs

- Selling and Distribution Cost
- Research & development Cost
- Administrative cost
- Finance Cost

6. **Based on timing of recognition**

- Product cost
- Period cost

7. Costs for Management Decision making **

- Marginal Cost
- Differential Cost
- Opportunity Cost
- Relevant Cost
- Replacement Cost

** Explained in detailed subsequently

Cost Classification

2.Classification based on relationship with cost object:

- **Direct costs** are the costs which are identifiable with the product unit or cost center.
- **Indirect costs** are not identifiable with the product unit or cost center and hence they are to be allocated, apportioned and then absorb in the production units.
- All elements of costs like material, labor and expenses can be classified into direct and indirect.

They are mentioned below.

I. Direct and Indirect Material

- Direct material is the material which is identifiable with the product. For example, in a cup of tea, quantity of milk consumed, quantity of glass in a glass bottle etc.
- Indirect material cannot be identified with the product, e.g. lubricants, fuel, oil, cotton wastes etc cannot be identified with a given unit of product and hence these are the examples of indirect materials.

Cost Classification

II. Direct and Indirect Labor

- Direct labor can be identified with a given unit of product, e,g, when wages are paid according to the piece rate, wages per unit can be identified.
- Similarly wages paid to workers who are directly engaged in the production can also be identified and hence they are direct wages.
- Wages paid to workers like sweepers, gardeners, maintenance workers etc are indirect wages as they cannot be identified with the given unit of production.

iii. Direct and Indirect Expenses

- Direct expenses refers to expenses that are specifically incurred and charged for specific or particular job, process, service, cost center or cost unit. e.g. cost of drawing, design and layout, royalties payable on use of patents, copyrights etc, consultation fees paid to architects, surveyors etc.
- Indirect expenses on the other hand cannot be traced to specific product, job, process, service or cost center or cost unit. e.g. insurance, electricity, rent, salaries, advertising etc.

Cost Classification

It should be noted that the total of direct expenses is known as 'Prime Cost' while the total of all indirect expenses is known as 'Overheads**'** which are sub-grouped into Factory Overheads, Administrative Overheads and Selling & distribution overheads

3. Classification according to behavior

- ***Fixed Costs:*** Out of the total costs, some costs remain fixed irrespective of changes in the production volume. These costs are called as fixed costs.
- ***Variable Costs****:* These costs vary in proportion with production.
- ***Semi-variable Costs:*** Certain costs are partly fixed and partly variable. They contain the features of both types of costs. Maintenance costs, supervisory costs etc are examples of semi-variable costs. These costs are also called as 'stepped costs'

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Cost Classification

7. Costs for Management decision making

I. ***Marginal Cost:*** Marginal cost is the change in the aggregate costs due to change in the volume of output by one unit. Marginal cost is also termed as variable cost and hence per unit marginal cost is always same, i.e. per unit marginal cost is always fixed.

II. ***Differential Costs:*** Differential costs are also known as incremental cost. This cost is the difference in total cost that will arise from the selection of one alternative to the other. In other words, it is an added cost of a change in the level of activity. This type of analysis is useful for taking various decisions like change in the level of activity, adding or dropping a product, change in product mix, make or buy decisions, accepting an export offer and so on.

Cost Classification

III. Opportunity Costs: It is the value of benefit sacrificed in favor of an alternative course of action. It is the maximum amount that could be obtained at any given point of time if a resource was sold or put to the most valuable alternative use that would be practicable.

IV. Relevant Cost: The relevant cost is a cost which is relevant in various decisions of management. Decision making involves consideration of several alternative courses of action. In this process, whatever costs are relevant are to be taken into consideration. In other words, costs which are going to be affected matter the most and these costs are called as relevant costs. Relevant cost is a future cost which is different for different alternatives. It can also be defined as any cost which is affected by the decision on hand.

Costing Process

In a firm manufacturing just **one product**, it is fairly simple to determine the unit cost of production. Adding up all costs incurred during a defined period viz., material cost, labour cost, power cost, depreciation and so on gives total cost of manufacture and dividing it with number of units produced during that period gives per unit cost.

However in case of firm where **multiple products** are manufactured using different process / departments, the process of costing is more complicated and complex. It involves the following steps:

- Define cost object / cost unit
- Accumulate cost under different accounting heads
- Determine direct cost & indirect cost
- Allocate indirect cost to cost center and to cost unit
- Calculate total cost of production

Costing Process

Indirect costs also called overheads are costs that cannot be traced to cost objective economically. Hence they are to be allocated to cost object in some reasonable manner. The procedure is as follows:

1. Accumulate indirect cost for various production and service cost centers
2. Transfer service center cost to production cost center by direct charge or by allocation.
3. The cost of certain service centers may be allocated directly to production cost center on the basis of service provided e.g. cost of maintenance department.
4. The cost of other service centers cost is allocated to production centers on some reasonable or fair basis which are divided into two broad categories

Costing Process

1. Labour related basis: (Cost of personnel department is allocated to production cost center on the basis of No. of employees or total direct labour cost)
2. Material related basis: (Cost of stores department is allocated to production cost centers on the basis of volume or cost of material used.)

5. Divide the total cost of each production cost center by a measure of activity viz., direct labour hours, machine hours, or total direct cost to get overhead absorption rate.
6. Apply the overhead absorption rate to the product passing through that production center.

Statement of Cost / Cost Sheet

- **Cost Sheet** is a statement of cost showing the total cost of production and profit or loss from a particular product or service.

- A Cost Sheet shows the cost in a systematic manner and element-wise.
- A typical format of the Cost Sheet is given below.

[Cost Sheets Format.xlsx]()

Case Let: Operating Costing

- Cost Accounting has been traditionally associated with manufacturing companies. However in the modern competitive market, cost accounting has been increasingly applied in **service industries like**
  - Banks, insurance companies, transportation organizations
  - Electricity generating companies, hospitals, passenger transport
  - Railways, hotels, road maintenance,
  - Educational institutions, road lighting, canteens, port trusts etc.

The costing method applied in these industries is known as 'Operating Costing'.
According to the Institute of Cost and Management Accountants [UK] Operating Costing is, 'that form of operating costing which applies where standardized services are provided either by an undertaking or by a service cost center within an undertaking'.

Case Let: Operating Costing

Nature of Operating Costing

- The main objective of operating costing is to compute the cost of the services offered by the organization.
- Hence, it is necessary to decide the unit of cost in such cases. The cost units vary from industry to industry. e,g. in goods transport industry, **cost per ton kilometer** is to be ascertained while in case of passenger transport, **cost per passenger kilometer** is to be computed.
- The next step is to collect and identify various costs under different headings. The headings used are :
  - Fixed or standing charges
  - Semi-fixed or maintenance charges
  - Variable or running charges.

One of the important features of operating costing is that mostly such costs are fixed in nature while few costs like diesel and oil are variable and dependent on the kilometers run.

Case Let: Operating Costing

Transport Organization:

- Transport undertakings include goods transport organizations as well as passenger transport organizations.
- The cost unit is either ton kilometer or passenger kilometer.
- The meaning is cost of carrying one ton over a distance of one kilometer or cost of carrying one passenger for a distance of one kilometer.
- The costs are shown under the following heads.
  - **Standing Charges or Fixed Costs**: These are the fixed costs, which remain constant irrespective of the distance travelled. These costs include the following costs.
    - License fees and insurance
    - Salaries of drivers, cleaners and conductors
    - Garage costs which include garage rent and other relevant expenses
    - Depreciation of the vehicle and other assets
    - Taxes applicable
    - Any other fixed charge like administrative expenses

Case Let: Operating Costing

- **Variable Costs or Running Costs:**
  These costs include,
    - Petrol and diesel
    - Oil
    - Grease
    - Any other variable costs
- **Maintenance Charges:**
- These charges include expenses like
  - Repairs and maintenance, tyre,
  - other charges connected with maintenance e.g. servicing of the vehicle

- The A typical format of the Cost Sheet is given below.

Cost Sheets Format.xlsx

Case Let: Operating Costing

Case let: Examples 1, 2 & 3

Example 1. Manufacturing Unit   Example 1 Manufacturing Org.xlsx

Example 2 & 3 Transport Organization   Example 2 Transport Org.xlsx

Thanks