

CLASSIFICATION OF COSTS

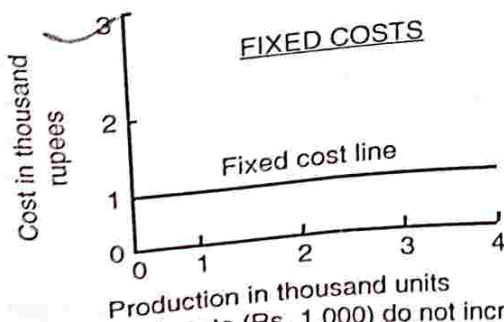
Fixed, variable, semi-variable and step costs

The cost which increases or decreases exactly in the same proportion in which the volume of output increases or decreases is known as 'variable cost.' The cost which remains static or constant irrespective of changes in output is regarded as fixed cost. As a matter of fact this concept of fixed and variable costs holds goods in short run and hence it is more a theoretical concept. In practice, no cost increases or decreases proportionately with the increase or decrease in output and no cost remains static for all volumes of output and for all times. Hence, those costs which tend to vary with output or those which have a major relation with output should be termed as 'variable costs' and those costs which tend to be constant at different volumes of output or which have no significant relation with output should be termed as 'fixed costs.' The fixed costs have relationship with time. The costs which neither vary proportionately nor remain stationary are called 'semi-variable' or 'semi-fixed costs.' If a cost varies more than proportionately, then also it is a semi-variable cost. Depreciation repairs supervision costs etc. are good examples of semi-variable costs. Rent, insurance charges, management salaries—which are examples of fixed costs, also vary with inflationary trends in the economy and change in market forces. Volume of output may also affect them but these are not the main influencing factors and hence such costs shall be termed as 'fixed costs'. Variable costs like wages of labourers, cost of direct material, power etc. also vary disproportionately with output because of the same reasons but here volume of output is the major influencing factor and hence these costs shall be termed as 'variable costs'.

Theoretically speaking, variable cost remains constant per unit of output and fixed cost remains constant in total or per unit of time.

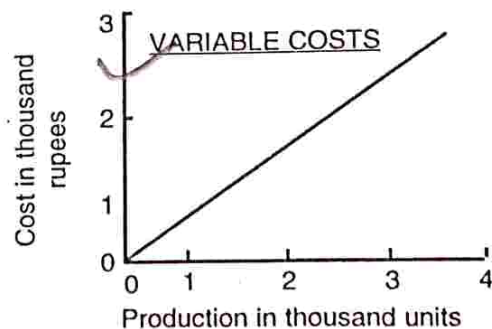
Fixed costs are sometimes referred to as "period costs" and variable costs as "direct costs" in the system of direct costing. Fixed costs can be further classified into (i) committed fixed costs and (ii) discretionary fixed costs. Committed fixed costs are unavoidable in short run if the organisation has to function. Examples of such fixed costs are depreciation, rent, pay and allowances of staff etc. Discretionary fixed costs are those which are set at a fixed amount for specific time periods by management in the budgeting process. Examples of such costs are research and development costs, advertisement and market research expenses etc. Certain costs remain fixed over a range of activity and then jump to a new level as activity changes. Such costs are treated as "step costs." For example, a foreman is in a position to supervise a given number of employees. Beyond this number it will be necessary to hire a second, then a third and so on. Similarly, rental cost of delivery vehicles will also follow a similar pattern. These costs may also be taken as a type of semi-variable costs.

The fixed, variable and semi-variable costs if depicted on a graph paper will appear as follows :



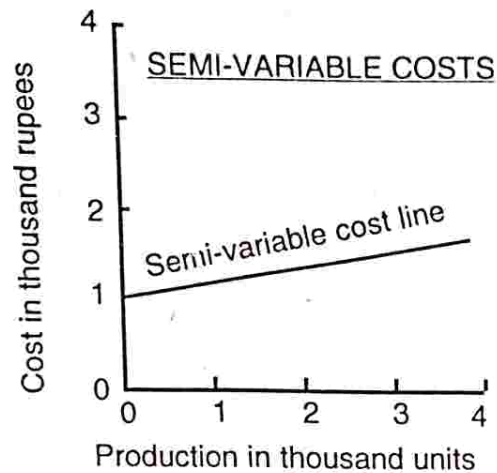
(a) Total fixed costs (Rs. 1,000) do not increase as the volume of production increases

Fig. 1.1



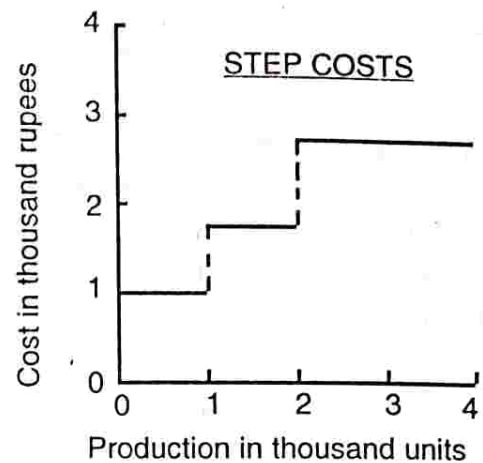
(b) Total variable costs (Rs. 50 per unit) increase as volume of production increases

Fig. 1.2



(c) Semi-variable costs contain a fixed and a variable element

Fig. 1.3



(d) Step costs remain constant over a range of activity

Fig. 1.4

Product costs and period costs

Costs which become part of the cost of the product rather than an expense of the period in which they are incurred are called as "Product costs". They are included in inventory values. In financial statements such costs are treated as assets until the goods they are assigned to are sold. They become an expense at that time. These costs may be fixed as well as variable e.g. cost of raw-materials and direct wages, depreciation on plant and equipment etc.

Costs which are not associated with production are called "Period costs". They are treated as an expense of the period in which they are incurred. They may also be fixed as well as variable. Such costs include general administrative costs, salesmen salaries and commission, depreciation on office facilities etc. They are charged against the revenue of the relevant period. Differences of opinion exist regarding whether certain costs should be considered as product costs or period costs. Some accountants are of the opinion that fixed manufacturing costs are more closely related to the passage of time than to the manufacturing of the product costs, while fixed manufacturing and other costs are period costs. However, their view does not seem to have been yet widely accepted.

The above explanation shows that the difference between the period and product costs in the opinion of the accountants is made depending upon the purpose for which the information is required by the accountants as explained below :

While calculating the marginal cost of a product, all variable manufacturing costs of the product are treated as product costs. However, while computing the cost of a product under absorption costing, all manufacturing costs whether fixed or variable are treated as product costs. In case a firm is following direct cost method, only direct costs will be considered as product costs while indirect cost will be taken as period costs.

In financial accounting, all costs whether fixed or variable which become part of the inventory values are considered as product costs. While all costs which do not become part of the inventory values are treated as period costs. The product costs are treated as assets until the products to which they are assigned are sold. While in period costs, the costs are treated as an expense in the period they are incurred.

Direct and indirect costs

The expenses on material and labour economically and easily traceable to a product, service or job are considered as direct costs. In the process of manufacture or production of articles, materials are purchased, labourers are employed and the wages are paid to them, certain other

expenses are also incurred directly. All of these take an active and direct part in the manufacture of a particular commodity, hence are called 'direct costs'.

The expenses incurred on those items which are not directly chargeable to production are known as indirect costs. For example, in production, salaries of timekeepers, storekeepers, foremen are paid, certain expenses for running the administration are incurred—all of these cannot be conveniently allocated to production and hence are called 'indirect costs.'

Decision making costs and accounting costs

Decision making costs are special purpose costs that are applicable only in the situation in which they are constructed. They have no universal application. "They need not tie into routine financial accounts. They do not and should not conform to the accounting rules".¹ Accounting costs are compiled primarily from financial statements. They have to be altered before they can be used for decision making. Moreover, they are historical costs and show what has happened under an existing set of circumstances. While, decision making costs are future costs, they represent what is expected to happen under an assumed set of conditions. For example, accounting costs may show the cost of the product when the operations are manual. While, decision making costs might be calculated to show the costs when the operations are mechanised.

Relevant and irrelevant costs

Relevant costs are those which would be changed by the managerial decision. While irrelevant costs are those which would not be affected by the decision. For example, if a manufacturer is considering closing down of an unprofitable retail sales shop, wages payable to the workers of the shop are relevant in this connection since they will disappear on closing down of the shop. But prepaid rent for the shop of unrecovered costs of any equipment which will have to be scrapped will be irrelevant costs which must be ignored.

Illustration 1.10. A company is considering a contract which requires among other things, 50 Kgs. of material *M*. 80 Kgs. of material *M* are in stock which were purchased for ₹ 2 per Kg. The replacement price is ₹ 2.15 per Kg. The material is in stock as a result of buying error and the company has no other use for it. If not used on this contract, it could be sold for ₹ 1.80 per Kg. What is the relevant cost of the material to be used in this contract. [B.Com (Pass), Delhi, 2004]

Solution :

The relevant cost of material is ₹ 1.80 per unit, i.e. the price at which it can be sold. The old purchase cost of ₹ 2 is a sunk cost. Similarly the replacement price of ₹ 2.15 is also irrelevant since the management cannot sell it at that price.

Shut-down and sunk costs

A manufacturer or an organisation rendering service may have to suspend its operations for a period on account of some temporary difficulties e.g. shortage of raw-material, non-availability of requisite labour etc. During this period though no work is done yet certain fixed costs, such as, rent and insurance of buildings, depreciation, maintenance etc. for the entire plant will have to be incurred. Such costs of the idle plant are known as *shut-down costs*.

Sunk costs are historical or past costs. These are costs which have been created by a decision that was made in the past that cannot be changed by any decision that will be made in the future. Investments in plant and machinery are prime examples of such costs. Since sunk costs cannot be

altered by later decision, they are irrelevant for decision making. For example, a departmental store is considering selling a fleet of trucks it owns. It wants to buy delivery services from an outside firm in their place. The sunk costs of the investment in delivery equipment (present book value minus present market value) is irrelevant in making this decision. Relevant costs in the decision are operating costs such as gasoline, repairs, and maintenance and the salaries of truck drivers that would be eliminated if a decision to buy delivery services is made.

Controllable and uncontrollable costs

Controllable costs are those costs which can be influenced by the action of a specified member of an undertaking. Costs which cannot be so influenced are termed as uncontrollable costs. A factory is usually divided into a number of responsibility centres each of which is in charge of a specified level of management. The officer-in-charge of a particular department or cost centre can control costs only of those matters which come directly under his charge, but not of other matters. For example, the expenditure incurred by the Tool Room is controllable by the Foreman-in-charge of that section but the share of the tool room expenditure which is apportioned to a machine shop cannot be controlled by a machine shop foreman. Thus, the difference between controllable and uncontrollable costs is only in relation to a particular individual or level of management. An expenditure which is controllable by one individual may be uncontrollable so far as another individual is concerned.

Avoidable or escapable costs and unavoidable or inescapable costs

Avoidable costs are those which will be eliminated, if a segment of the business (e.g. a product or department) with which they are directly related, is discontinued. Unavoidable costs are those which will not be eliminated with the segments. Such costs are merely reallocated if the segment is discontinued. For example, in case a product is discontinued, the salary of the factory manager or factory rent cannot be eliminated. It will simply mean that certain other products will have to absorb a higher amount of such overheads. However, salary of clerks attached to the product or bad debts traceable to the product would be eliminated. Certain costs are partly avoidable and partly unavoidable e.g. closing of one department of a store might result in decrease in delivery expenses but not in their altogether elimination.

It is to be noted that only avoidable costs are relevant for deciding whether to continue or eliminate a segment of the business.

Imputed or hypothetical costs

These are costs which do not involve cash outlay. They are not included in cost accounts but are important for taking into consideration while making management decisions. For example, interest on capital is ignored in cost accounts though it is considered in financial accounts. In case two projects require unequal outlays of cash, the management must take into consideration interest on capital to judge the relative profitability of the projects.

Differential, incremental or decremental costs

The difference in total costs between two alternatives is termed as differential costs. In case the choice of an alternative results in increase in total costs, such increased costs are known as incremental costs. While assessing the profitability of a proposed change the incremental costs are matched with incremental revenue. This is illustrated with the following example :

	Existing Situation		Proposed Situation		Incremental	
	₹	₹	₹	₹	Cost	Revenue
Sales		10,000		12,000		
Less : Variable costs	5,000		6,000			2,000
Fixed costs	4,000	9,000	4,000	10,000	1,000	
Profit		1,000		2,000		1,000

The table shows that under the proposed situation there will be a net increase in revenue of ₹ 1,000. Hence, the proposed situation is acceptable.

In case the choice results in decrease in total costs, such decreased costs are termed as decremental costs.

Out-of-pocket costs

Out-of-pocket costs means the present or future cash expenditure regarding a certain decision which will vary depending upon the nature of decision made. For example, a company has its own truck for transporting raw-materials and finished products from one place to another. It seeks to replace these trucks by employment of public carriers of goods. In making this decision, of course, the depreciation of the trucks is not to be considered, but the management must take into account the present expenditure on fuel, salary to drivers and maintenance. Such costs are termed as out-of-pocket costs.

Opportunity costs

Opportunity costs refers to the advantage, in measurable terms, which has been foregone on account of not using the facilities in the manner originally planned. For example, if an owned building is proposed to be utilised for housing a new project plant, the likely revenue which the building could fetch, if rented out is the opportunity cost which should be taken into account while evaluating the profitability of the project. Similarly, if a manufacturer is confronted with the problem of selecting any one of the following two alternatives :

- (a) selling a semi-finished product at ₹ 2 per unit, and
- (b) introducing it into a further process to make it more refined and valuable; alternative (b) will prove to be remunerative only when after paying the cost of further processing the amount realised by the sale of the product' is more than ₹ 2 per unit—the revenue which could have been otherwise realised. The revenue of ₹ 2 per unit is foregone in case alternative (b) is adopted. The term 'opportunity cost' refers to this alternative revenue foregone.

Traceable, untraceable or common costs

Costs which can be easily identified with a department, process or product are termed as traceable costs, e.g., the cost of direct material, direct labour etc. Costs which cannot be so identified are termed as untraceable or common costs. In other words, common costs are costs incurred collectively for a number of cost centres and are to be suitably apportioned for determining the cost of individual cost centres, e.g., overheads incurred for a factory as a whole, combined purchase cost for purchasing several materials in one consignment etc.

Joint costs are a sort of common costs. When two or more products are produced out of one and the same material or process, the costs of such material or process are called joint costs. For example, when cotton seed and cotton fibre are produced from the same raw-materials, the cost incurred till the split off or separation point will be "joint costs".

Expired cost and unexpired cost

Expired costs are those costs which relate to the current period as an expense or loss. For example, the cost incurred for rent paid or materials consumed in the current period are expired costs. While unexpired costs are those costs which relate to the future period and therefore will be charged as an expense or loss in the future period. For example, the cost of materials purchased for consumption in the next month is an unexpired cost as far as the current month is concerned.

Production, administration and selling and distribution, etc., costs

A business organisation performs a number of functions, e.g., production, administration, selling and distribution, research and development. Costs are to be ascertained for each of these functions. The Chartered Institute of Management Accountants, London has defined each of the above costs as follows :

(i) *Production cost*. The cost of the sequence of operations which begins with supplying materials, labour and services and ends with the primary packing of the product. Thus, it includes the cost of direct material, direct labour, direct expenses and factory overheads.

(ii) *Administration cost*. The cost of formulating the policy, directing the organisation and controlling the operations of an undertaking, which is not related directly to a production, selling, distribution, research or development activity or function.

(iii) *Selling cost*. The cost of seeking to create and stimulate demand (sometimes termed as marketing) and of securing orders.

(iv) *Distribution cost*. The cost of sequence of operations which begins with making the packed product available for despatch and ends with making the reconditioned returned empty package, if any, available for re-use.

(v) *Research cost*. The cost of searching for new or improved products, new application of materials, or new or improved methods.

(vi) *Development cost*. The cost of the process which begins with the implementation of the decision to produce a new or improved product or to employ a new or improved method and ends with the commencement of formal production of that product or by the method.

(vii) *Pre-production cost*. That part of development cost incurred in making a trial production run preliminary to formal production.

Conversion cost

The cost of transforming direct materials into the finished products, exclusive of direct material cost is known as the conversion cost.

It is usually taken as the aggregate of the cost of direct labour, direct expenses and factory overheads.

COST ASCERTAINMENT

The technique of costing involves : (i) collection and classification of expenditure according to cost elements and (ii) allocation and apportionment of the expenditure to the cost objects which may be cost centres or cost units; or both. The elements of costs have already been discussed in the previous pages. The meanings of the terms 'cost object', 'cost unit' and 'cost centre' are as follows :

Cost object

Cost object may be defined as any activity for which a separate measurement of cost is desired. It may be in the form of a cost unit or a cost centre. For example, cost may be calculated for a product, a process, a machine hour, a social welfare project or any conceivable activity.

irect or indirect costs. In case the cost item can be directly identified with the cost objects, the cost will be taken as direct. However, if this cannot be done, the cost item will be taken as an indirect or an overhead cost.

The following are typical cost objects :

- Products
- Services
- Units
- Batches
- Cases
- Jobs
- Projects
- Customers
- Customer groups
- Sales territories

Cost unit

In preparing cost accounts, it becomes necessary to select a unit with which expenditure may be identified. The quantity upon which cost can be conveniently allocated is known as a unit of cost or cost unit. The Chartered Institute of Management Accountants, London, defines a unit of cost as "a unit of quantity of product, service or time in relation to which costs may be ascertained or expressed." The examples of some cost units are given below :

- | | |
|----------------------------|---|
| (i) Brick Works | —per 1,000 bricks made |
| (ii) Collieries | —per tonne of coal raised |
| (iii) Textile Mills | —per yard or per lb. of cloth manufactured or yarn spun |
| (iv) Electricity Companies | —per unit of electricity generated |
| (v) Transport Companies | —per passenger-km., per tonne-km. |
| (vi) Steel Mills | —per tonne of steel made |
| (vii) Screws manufacturing | —per 1,000 screws |
| (viii) Gas | —per cubic metre |
| (ix) Car | —per unit manufactured |
| (x) Nickel plating | —per square metre |

Cost centre

According to the Chartered Institute of Management Accountants, London, cost centre means "a location, person or item of equipment or group of these for which costs may be ascertained and used for the purpose of cost control". Thus, cost centre refers to one of the convenient units into which the whole factory organisation has been appropriately divided for costing purposes. Each such unit consists of a department or a sub-department or an item of equipment or machinery or a group of persons.

Sometimes, closely associated activities are combined together and considered as one unit for costing purposes, but at other times these activities may be segregated. For example, in a laundry, activities such as collecting, sorting, marking and washing of clothes are performed. Each activity may be considered as a separate cost centre and all costs relating to a particular cost centre may be found out separately.

Cost centres may be classified as follows :

- (i) Productive, unproductive and mixed cost centres.
- (ii) Personal and impersonal cost centres.
- (iii) Operation and process cost centres.

Productive cost centres are those which are actually engaged in making the products. *Service or unproductive cost centres* do not make the products but are essential aids to the product centres. Examples of such service centres are those of administration, repairs and maintenance,

stores and drawing office departments. *Mixed cost centres* are those which are engaged one time on productive and the other time, on service jobs. For example, a tool shop serves as a productive cost centre when it manufactures dies and jigs to be charged to specific jobs or orders but serves as service cost centre when it does repairs for the factory.

Impersonal cost centre is one which consists of a department, plant or item of equipment. While, a *personal cost centre* is one which consists of a person or group of persons. In case a cost centre consists of those machines and/or persons which carry out the same operation it is termed as *operation cost centre*. If a cost centre consists of a continuous sequence of operations, it is called *process cost centre*.

In case of an operation cost centre all machines or operators performing the same operation are brought together under one centre. The objective of such an analysis is to ascertain the cost of each operation irrespective of its location inside the factory. In the process type cost centre the cost is analysed and related to a series of operations in sequence, such as in chemical industries, oil refineries and other process industries.

Difference between a Department and a Cost Centre. Cost centre may be a department or a sub-department. Even an item of equipment of machinery or a person may be a cost centre. Whereas, department is a distinct sphere of activity over which a manager is vested with distinct authority and responsibility.

Profit Centre

A centre whose performance is measured in terms of both the expenses it incurs and revenue it earns is called as profit centre. Thus, the profit centre is that segment of the activity of a business with which both the revenues and expenses are identified and profit or loss made by that particular segment of activity is ascertained.

Profit Centre is different from a cost centre as follows :

(i) A cost centre is created for accounting convenience for ascertaining and controlling costs; whereas a profit centre is created because of decentralisation of business operations.

(ii) A cost centre does not have target cost. Of course, efforts are made to minimise the costs. However, a profit centre has a profit target and it enjoys authority to adopt such policies which are necessary for achieving its target.

Cost estimation and cost ascertainment

Cost estimation is the process of pre-determining the costs of a certain product, job or order. Such pre-determination may be required for several purposes such as budgeting, measurement of performance efficiencies, preparation of financial statements (valuation of stocks, etc.) make or buy decision, fixation of the sale prices of products etc. Cost ascertainment is the process of determining costs on the basis of actual data. Hence, computation of historical costs is cost ascertainment while computation of future costs is cost estimation. Cost estimation as well as cost ascertainment both are inter-related and are of immense use to the management. In case a concern has a sound costing system, the ascertained costs will greatly help the management in the process of estimation of rational accurate costs which are so necessary for a variety of purposes stated above. Moreover, the ascertained costs may be compared with the predetermined costs on a continuing basis and proper and timely steps be taken for controlling costs and maximising profits.

Cost allocation and cost apportionment

Cost allocation and cost apportionment are the two processes which describe the identification and allotment of costs to cost centres or cost units. Cost allocation refers to "the allotment of whole items of cost to cost centres or cost units" while cost apportionment refers to "the allotment of proportions of items of cost to cost centres or cost units" (CIMA London). Thus, the former involves the process of charging direct expenditure to cost centres or cost units while the latter involves the process of charging indirect expenditure to cost centres or cost units. For example, the cost of labour engaged in a service department can be charged wholly and directly to it but the canteen expenses of the factory cannot be charged directly and wholly to it. Its proportionate share will have to be found out. Charging of costs in the former case will be termed as "Allocation of costs" while in the latter case as "Apportionment of costs."

INSTALLATION OF COSTING SYSTEM

The installation of a costing system requires careful consideration of the following two inter-related aspects :

(i) Overcoming the practical difficulties in introducing the system.

(ii) Main considerations that should govern the installation of such a system.

Practical difficulties. The important difficulties in the installation of a costing system and the suggestions to overcome them are listed below :

1. *Lack of support from top management.* Many a times the costing system is introduced at the behest of the managing director or the other director without first preparing the other members of the top management team. This results in opposition from the various managers as they consider it as an interference as well as uncalled for check on their activities. They, therefore, resist the additional work involved in the cost accounting system.

The difficulty can be overcome by taking the top management into confidence before installing the system. A sense of cost consciousness has to be installed in their minds.

2. *Resistance from the existing staff.* The existing financial accounting staff may offer resistance to the system because of a feeling of their being declared redundant under the new system.

This fear can be done away with by explaining to the staff that the costing system will not replace but strengthen the existing system. It shall open them new areas for development.

3. *Non-cooperation at other levels.* The foreman and other supervisory staff may resist the additional paper work and may not co-operate in providing the basic data which is so essential for the success of the system.

This needs re-orientation and education of employees. They have to be told the advantages that will accrue to them and to the organisations as a whole on account of efficient working under the new system.

4. *Shortage of trained staff.* Costing is a specialised job in itself. In the beginning there