EIILM UNIVERSITY
SIKKIM

ELEMENTS OF COSTING

Subject: ELEMENTS OF COSTING **Credits: 4**

SYLLABUS

Basic Concepts
Concept of Cost and Its Ascertainment, Nature and Scope

Materials and Labour
Inventory Control, Pricing the Issue of Materials, Labour, Procurement, Storage and Issue

Overheads
Treatment of Other Overheads, Absorption of Factory Overheads, Classification and Distribution of Overheads

Methods of Costing
Reconciliation of Cost and Financial Accounts, Job and Contract Costing, Process Costing, Unit Costing

Suggested Readings:

1. Anthony B. Manning, Elements of cost accounting, McGraw-Hill.
2. George R. Glover, Robert Glynne Williams, The Elements Of Costing, Gregg Pub. Co.
3. Walter Scott, The Principles and Practice of Cost Accounting, Law Book Company of Australasia

CHAPTER 1
BASIC CONCEPTS

Lesson 1 – Concept of Cost and Its Ascertainment

Learning Objectives

- To explain Understand the importance of cost and ascertainment.
- To analyse the necessity for Methods involved in ascertainment of costs.
- To recognise the types of costing.
- Understand the scope of cost accounting.
- To identify how the benefits of using IS may be measured and assessed, and contrast with existing practice.

1.1 Introduction

Costing is defined as the method and process of ascertaining the costs. Its main objectives are Ascertainment of costs. It is basically cost per unit which is one of the main functions of cost accounting. In case of every economic activity in order to measure and expressed in identifiable units for costing purpose, certain units are explained as:

(i) Unit of product

(ii) Unit of time

(iii) Unit of weight

(iv) Unit of measurement

(v) Operating unit of service

So, cost unit is the unit of product, service or time in terms of which cost is ascertained or expressed. But the selection of cost unit must be proper and appropriate. It is seen that an ideal cost unit should be

(a) suitable for cost ascertainment

(b) easier to associate expenses

(c) in accordance to the nature and practice of business.

1.2 Types of Costing

In case of ascertaining cost, following types of costing are used:

1.2.1 Uniform Costing

It is seen that if a number of firms in an industry agree among themselves to follow the same pattern or system of costing in details by adopting common terminology for various items and processes, in such cases they are said to follow a system of uniform costing. Under such circumstances, a comparison of the performance of each of the firms can be made with that of another, or with the average performance in the industry. With the effect of particular system it is also promising to find the cost of production of goods which is best and true for the industry in total. It is found useful when tax-relief or protection is sought from the Government.

1.2.1 Marginal Costing:

Marginal Costing is such type of costing where the ascertainment of marginal cost is differentiated in the midst of the fixed cost and in variable costs. It is used to ascertain effect of changes in volume or type of output on profit.

It is believed that the marginal cost at each level of production includes an additional costs required to produce the unit. If in era of producing extra vehicles requires, for example, in lien of building a new factory, the marginal cost of those *extra* vehicles are covered whose cost is required for the new factory. In practice, it is analysed that the cost is segregated into small and long-run cases, and over the long run, all costs are marginal. At every stage of production and time period being taken into consideration, marginal costs should cover all costs that vary with the level of production, and other costs are considered fixed costs. Basically if the cost function which is differentiable by joining and the cost of the next unit produced which is called as the basic volume, the formula used can be:

$$\frac{\mathrm{d}\,C}{\mathrm{d}\,Q}$$

If on the other hand, the cost function is not differentiable, then the marginal cost can be written and explain as follows.

$$\frac{\Delta C}{\Delta Q}$$

In this, various factors that affect marginal cost and its applicability to real world problems covers market failures. These include information related to:

- Asymmetries
- presence of negative or positive externalities
- transaction costs

- price discrimination

1.2.3. Standard Costing and variance analysis

Standard Costing and variance analysis is the method or the tool where the standard costs are pre-determined and afterward compared with the recorded actual costs. Under such technique of cost ascertainment and cost control, can be used in conjunction with any method of costing if it is required. On the other hand, it is especially fitted where the manufacturing method uses production of standardized and quality goods of repetitive nature.

It may also be defined as a technique of cost accounting which compares the "standard cost" of each product or service with the real cost in order to determine the efficiency of the operation, so that any remedial action may be taken immediately. It is a programmed cost which determines and calculates what each product or service should cost under given circumstances.

It should therefore be seen that the standard costing involves:

- Setting of standards
- Ascertaining actual results
- Comparing standards and actual costs to determine the variances
- Investigating the variances and taking appropriate action where necessary.

1.3 Types of Standards

- Ideal
- Expected Actual
- Normal
- Basic

1.4 Advantages

- It provides a yardstick beside which the actual costs can be measured.
- It can set standards that involve determining the good materials and methods, which may further lead to economies.
- It focus on the efficiency that is set for employees in order to reach, and cost consciousness can be stimulated.
- It helps in calculating the variances which enables the principle of management by exception that can be operated.
- It carries the simple costing procedures for simplification.

- It carries a valuable aid for the management in order to determine the prices and formulating policies.
- Evaluation of stock is facilitated.
- Operation of cost centers defines responsibilities.

1.5. Historical Costing

This is basically the ascertainment of costs once they have received. Such type of costing has limited utility. While criticising the historical cost for its inaccuracy, it remains in use in most of the accounting systems. Over there various corrections to historical cost are used out of which many of which requires the use of management judgment and can be difficult to implement or verify. It is seen that the trend in many accounting standards is a way to move more accurate in terms of reflection of the fair or market gain, although the historical cost principle remains in use, particularly for assets of little importance.

Reduction affects the carrying value of an asset on the balance sheet. It is proposed that the historical cost will equal the carrying value if there has been no change recorded in the value of the asset since attainment. Further the improvements may be added to the cost basis of an asset. In this, the cost does not directly reflect the current market valuation. Alternative measurement bases are there to measure the historical cost, which may be applied for some types of assets for which market values are readily available, require that the carrying value of an asset be updated to the market price or some other estimate of value that better approximates the real value. As per accounting standards, different methods are required or allowed evenly for different types of balance sheet variable real value and non-monetary assets or liabilities as to how the final total change in terms of value of an asset or liability is recorded, as a part of income or as a direct change to shareholders' equity.

1.6 Direct Costing

Direct Costing is the common practice that involves charging of all direct costs to operations, processes or products by leaving behind all indirect cost that can be written off against the profits in which they originate.

1.7 Uses

It is seen that the direct costing is of great use which involves the use of direct costs as an inputs to the decision models. They contain no allocations of overhead, which are not only irrelevant for many short-term decisions, but which can be difficult to explain to someone not trained in accounting.

1.7.1. Automation investments.

In case of company investment, automated production equipment lowers the amount it pays to its direct labor staff. Under direct costing, the main information is to gather and collect the incremental labour cost of any employees which will be terminated, along with the new period costs to be received as part of the equipment purchase that led to occurrence of depreciation on the equipment and maintenance costs.

1.7.2 Cost reporting.

It was observed that direct costing is useful for controlling variable costs as it can create a variance analysis report which can be compared with the actual variable cost to what the variable cost per unit should have been. Under this, fixed costs are not included in this analysis, as they are associated with the period in which they are received, and so therefore are not covered under the direct costs.

1.7.3 Customer profitability.

It is seen that some customers require a great deal of support, but also place such large orders that a company still earns a considerable profit from the relationship. If there are such resource-intensive situations, it gives the meaning to calculate how much money the company actually gains or earned from each customer. This analysis may revealed that the company would be at better side in order to eliminate certain customers, even if this results in a way of noticeable revenue declination.

1.7.4 Internal inventory reporting.

Usually accepted accounting principles and international financial reporting standards require that a company allocate indirect costs to its inventory asset for external reporting purposes. In this the overhead allocation requires a long-drawn-out amount of time to complete, so that it should be relatively common for company controllers to avoid updating the overhead by sharing during reporting periods when there will be no external reporting. Instead, they believe mostly on direct cost updates, and either avoid all changes to the overhead allocation, or make an estimated guess at the correct overhead allocation based on a proportion of direct costs, and make a more accurate adjustment when a reporting period arrives for which the company must report monetary statements to outside parties.

1.7.5 Profit-volume relationship.

It is seen that direct costing is of much use in plotting changes in profit levels as sales volumes change. It is easy and simple to create a direct costing table that points out the

volume levels at which additional direct costs will be received, so that management can find or estimate the amount of profit at various levels of corporate activity.

1.7.8 Outsourcing.

Direct costing is useful for deciding the manufacturing of items, whether the item can be manufactured in-house or to maintain a capability in-house, or whether to outsource the production. If the decision involves manufacturing in-house or elsewhere, it is crucial to determine how many staff and inventory which includes machineries will actually be required in certain cases, these resources are simply shifted elsewhere within the company, so there is no net profit improvement by shifting production to a supplier.

1.8 Problems

The tool is used to analyse, but it is only usable for certain types of analysis. In some situations, it can provide incorrect results. This section describes the key issues with direct costing that you should be aware of. They are:

1.8.1 External reporting.

Direct costing is not allowed for the reporting of account costs as per generally accepted accounting principles and international financial reporting standards. It covers the cost of inventory as though it only included in the direct costs which further includes proper allocation of indirect costs. In case of direct costing for external reporting, the lesser costs would be included in the inventory asset in the balance sheet, which can result in more costs that can be charged to expense for the current period.

1.8.2 Increasing costs.

Direct costing is mostly highlighted at whether to increase production by a specific amount in order to accept an additional customer order. For the purposes of this specific decision, the analyst usually assumes that the direct cost of the decision will be the same as the historical cost. Nevertheless, the cost may actually increase. As see in the example, if a machine is already running at 80% of its capacity and a proposed decision will increase its use to 90%, this incremental difference may results in inaccuracy and there will be a disproportionate increase in the maintenance cost of the machine. Thus, be aware that a specific direct costing scenario may contain costs that are only relevant within a narrow range; outside of that range, costs may be substantially different.

1.8.3 Indirect costs.

Direct costing is not related with indirect costs as it is designed for short-term decisions where indirect costs are not expected to change. Though, all costs change over the long

term, which means that a decision that can impact a company over a long period of time should address long-term changes in indirect costs. As a result of this, if a company uses an ongoing series of direct cost analyses to drive its pricing decisions, it may end up with an overall pricing structure that is too low to pay for its overhead costs.

1.8.4 Relevant range.

A direct costing analysis is usually only valid within the constraints of the current capacity level. It requires a more stylish form of direct costing analysis to account for changes in costs as sales volumes or production volumes increase.

Direct costing is used to create a model to answer a question about what actions management should take. It is found that it is not a costing methodology for constructing financial statements, but could be of accounting standards that specifically exclude direct costing from financial statement reporting. It does not fulfill the role of a standard costing, process costing, or job costing system, which contributes to real changes in the accounting records. Instead, it is used to extract relevant information from a variety of sources and combined the information to assist management with any number of tactical decisions. It is most useful for small decisions and is less useful when a longer-term time frame is involved - especially in situations where a company must generate sufficient margins to pay for a large amount of overhead. Despite the fact that, direct costing information is problematic in situations where incremental costs may change significantly, it can also highlight where an indirect costs may be applicable to the decision.

1.9 Absorption Costing

This costing is the practice of charging all costs, that includes variable and fixed to operations, processes or products. It is different from the marginal costing in case where a fixed cost is excluded. It means that all of the manufacturing costs are wrapped up by the units produced. In other words, the cost of a finished unit in inventory may cover:

- direct materials
- direct labor
- variable and fixed manufacturing overhead

The result is that, absorption costing is also referred to as full costing or the full absorption method.

Absorption costing is often similar with the variable costing or direct costing. Under variable or direct costing, the fixed manufacturing overhead costs are not allocated or

assigned to the products manufactured. It is found that the variable costing is often useful for management's decision-making. However, absorption costing is required for external financial reporting and for income tax reporting.

1.10 Classification of Costs

Cost classifications is useful in determining the development of cost date that is useful to management. It is can be classified as:

a. By nature.
b. By product.
c. By period.
d. By behavior.
e. By departments.
f. Common or joint costs.
g. For planning and control.
h. For analytical processes.
i. Natural Classification of Costs:

It is seen that the process of classifying costs and expenses begin with total cost, which may be thought of as all costs or deduction from sales before income tax calculation. In a manufacturing unit, total operating cost is divided into:

(a) manufacturing cost
(b) commercial cost.

Manufacturing cost, refers to the production cost or factory cost which is basically the sum of three elements such as:

- direct material
- direct labor
- factory overhead

Commercial expenses are further classified into two categories; marketing expenses and administrative expenses.

1.10.1 Classification by Product:

The elements of manufacturing costs includes:

- direct material
- direct labor
- factory overhead.

Direct material and direct labour are combined into another classification which is called prime cost. Direct labour and factory overhead can be combined into a classification named as conversion cost, that represents the cost of converting direct materials into finished products. Certainly, direct materials are those materials that form an integral part of the finished product which can be used to calculate the cost of the product. Direct labor is the labor applied directly to the materials comprising the finished products. Factory overhead may be defined as the cost of indirect materials, indirect labor and all of the other manufacturing costs that cannot be charged to specified units, products or jobs.

1.10.2 Classification with respect to Accounting Period:

In this, expenditures can be divided into two broad categories:

(a) Capital expenditures

(b) Revenue expenditures.

A capital expenditure can gain much in future and is classified as an asset. On the other hand, revenue expenditure benefits the current period and is known as expense. An expenditure classified originally as an asset will ultimately flow into the expense when the asset is either consumed or charged off.

1.10.3 Classification by Behavior:

It is seen that some costs vary directly in relation to changes in volume of output while others, as they received in relation to time, remain more or less fixed in amount. Unless a cost system pays due regard to this distinction, costs accumulated and reported for planning the company's strategy or for costing individual products or services will not be of material value to management.

1.10.4 Classification by Departments:

It is seen that normally factories are organized along departmental lines for production purposes. This factory departmentalization is the basis for the important classification and subsequent accumulation of costs by department to achieve:

1. cost budgeting with responsibility accounting
2. a great degree of reliable costing.

The departments in a factory fall in two categories namely:

(1) Producing departments

(2) Service departments.

1.10.4.1 Common or Joint Costs:

It was found that a lot of confusion exists with respect to correct usage of both these costs classifications. Common costs are costs of facilities or services employed in two or more accounting periods, operations, commodities or services, As seen, a capital expenditure, intended to benefit future periods is classified as an assert. Afterward, the cost of the asset flows into the expense stream as the asset is consumed or charged off. Since the asset benefits several accounting periods, the cost must arbitrarily be allocated or shared among the periods. Depreciation of a building is a good example.

1.10.4.2 Costs for Planning & Control:

It was observed that a company cost information system provides the data that is required for the preparation and operation of the budget and for establishing standard costs. In many companies, predetermining or estimating factory overhead constitutes the initial step towards a budget program. Standard costs comprise the basic accounting tool which aids in the solution of managerial problems. The measurement of variances provides management with necessary information and to complete standard costs services to management should include systematic, day by day reports relaying deviation information which requires the attention of the management.

1.10.4.3 Costs for Analytical Purposes:

Costs as the base for the analysis and can estimate the costs which may be received if any under the several alternative courses of actions which can be adopted. Different type of costs involves varying kinds of considerations in managerial analysis for decision making. When management will face problem related to abandoning one product and substituting another product, then the decision will demand for the consideration of opportunity costs.

1.11 Unit Cost

The use of breakeven and minimum-cost-point formulas requires the collection of unit costs. Unit costs can be further divided into subunits, each of which measures the cost of a certain part of the total. The formula can be written as:

$$X = a + b + c$$

Where:

X is the cost per unit volume

a, b, c shows distance, volume, area, or weight.

In this the subunits are to be selected carefully in order to express the factors controlling costs which are an important aspect.

1.11.1 Cost Equations

Now is the time to see the equation of cost. Imagine that the cost of harvesting from felling to loading on trucks is seen as shown, then the variable X can be assumed as cost per cubic meter of wood that is loaded on the truck. So the required cost equation can be written as:

$$X = A + B + Q + L$$

Where:

A is the cost per unit of felling

B is the cost of bucking

Q is the cost of skidding

L is the cost of loading.

To find the cost per subunit for felling, bucking, skidding, and loading, the factors which determine production and cost must be specified. Examples for felling and skidding follow.

While discussing the equation of felling, tree diameter is an important explanatory variable. In a given felling method, the time required to fell the tree can be written and expressed as

$$T = a + b\,D^2$$

Where:

T is the time to fell the tree

b is the felling time required per cm of diameter

D is the tree diameter

a represents the felling time

In this the production rate is equal to the tree volume which is divided by the time per tree. Here the unit cost of felling is equal to the cost per hour of the felling operation which is divided by the hourly production as seen:

$$A = C/P = C/(V/T) = C\ (a + B\ D^2)/V$$

Where:

C is the cost per hour for the felling method being used

P is the production per hour

V is the volume per tree

T is the time per tree

The hourly cost of operation is referred to as the machine rate and is the combined cost of labor and equipment required for production.

1.11.2 Example

As seen in the example, calculate the felling unit cost for a 60 cm tree if the cost per hour of a man with power saw is 6.00, the tree volume is 3 cubic meters, and the time to fell the tree is 3 minutes plus 0.005 times the square of the diameter.

Let:

$T = 3 + .005\ (60)\ (60)$

$= 21$ min

$= .35$ hr

$P = V/T$

$= 3.0/.35$

$= 8.57\ m^3/hr$

$A = C/P$

$= 6.00/8.57$

$= 0.701/m^3$

In a case if logs were being skidded straight to a road, the distance skidded will be important and the stump to truck unit cost can be written as:

$X = A + B + Q + L$

$X = A + B + F + C(D/2) + L$

Where:

Q = skidding subunit that has been replaced by symbol F representing fixed costs of skidding

C(D/2) = represents skidding cost that varies with distance.

C = cost of skidding a unit distance such as one meter

D/2 = shows the average skidding distance in similar units.

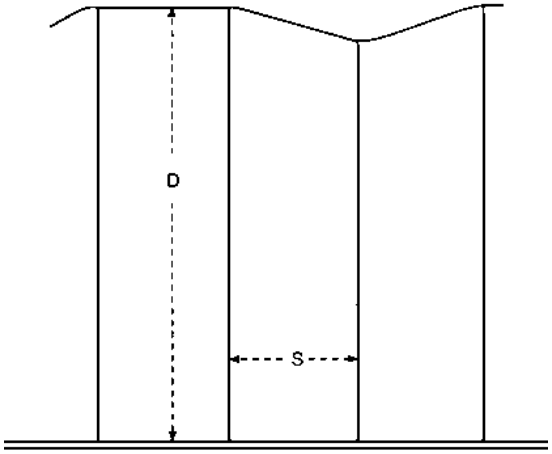
It is important to note that the average skidding cost occurs at the average skidding distance only when the skidding cost, C does not vary with distance. In this, if C varies with distance along with animal skidding where the animal can become increasingly tired with distance, the average skidding cost will not occur at the average skidding distance and substantial errors in unit cost calculations can occur if the average skidding distance is used.

It was found that if logs were being skidded to a series of secondary roads running into a primary road, then the expression C(D/2) can be replaced by the expression C(S/4) and the cost of truck haul on the secondary roads would appear as a separate item. In the expression shown as C(S/4)

S represents the spacing of the secondary roads

S/4 is the average skidding distance if skidding takes place in both directions.

So in case of expression C(S/4) the variable skidding cost can be defined in terms of spacing of the secondary roads.



Further an expression for calculating the cost of logs on trucks at the primary road under these circumstances can be expressed mathematically as:

$$X = A + B + F + C(S/4) + L + H(D/2)$$

Where:

D/2 = average hauling distance along the secondary road

H = variable cost of hauling per unit distance.

The mathematical expression can be further extended in order to include the cost of the secondary road system by explaining the road construction cost per meter R, and the volume per square meter, V. Again the expression can be mathematically written as:

$$X = A + B + F + C(S/4) + L + H(D/2) + R/(VS)$$

1.11.2.1 Applications of Cost Equations

As seen in above equation, if the spacing between skidding roads increases, the skidding unit costs will also increase so the road unit costs will decrease. In the total cost equation, mathematically, we can see at the cost tradeoffs which are between skidding distance and road spacing. The expression can be written mathematically as:

$dX/dS = C/4 - R/(VS^2) = 0$

or

$S = (4R/CV)^{.5}$

1.5.3 Example

In a table showing unit costs, what will be the effect of alternative spur road spacing on the total cost of wood delivered to the main road if 50 m^3 per hectare is being cut and the average length of the spur road is 2 km. In this the cost of spur roads includes landings.

Activity	**Unit**	**Cost**
Fell	Rs/m^3	0.50
Buck	Rs /m^3	0.20
Skid	Rs /m^3	2.00 (fixed cost)
Skid	Rs /m^3-km	2.50 (variable cost)
Load	Rs /m^3	0.80
Transport	Rs /m^3-km	0.15
Roads	Rs /km	2000

It was found that from the above data only the skidding costs and spur road costs are affected by the road spacing, so the total unit cost can be expressed mathematically as

$$X = A + B + F + C(S/4) + L + H(D/2) + R/(VS)$$

$$X + 0.50 + 0.20 + 2.00 + C(S/4) + 0.80 + .15\ (1) + R/(VS)$$

$$X = 3.65 + C(S/4) + R/(VS)$$

To evaluate different road spacings, we will vary the spur road spacing S and then calculate the total unit costs. It is important to use dimensionally consistent units. It means that if the left side of the equation is in Rs /m^3, then the right side of the equation must also be in Rs /m^3. This can be easily done if all volumes, costs and distances are expressed in meters; such as volume cut per m^2, skidding cost per m^3 per meter, and road cost per meter.

It is seen that the total cost for a spur road spacing of 200 meters can be expressed mathematically as 3.65 + (2.5/1000) (200/4) + (2000/1000)/[(50/10000) (200)] or Rs 5.78 per m^3.

Spur Road Spacing, m	**Total Unit Cost,** Rs **/m^3**
200	5.78
400	4.90
600	4.69
800	4.65
1000	4.68
1200	4.73
1400	4.81
1600	4.90
1800	5.00
2000	5.10

The road spacing which minimized total cost could be interpolated from the table or calculated from the formula

$S = (4R/CV)^{.5}$

$$S = \frac{[4 \times 2000/1000]^{.5}}{(2.5/1000)(50/10000)}$$

S = 800 m.

When costs have been collected in a form which allows unit costs to be developed from them, not only is it possible to predict costs, it is also possible to adjust conditions so that minimum cost can be achieved. Often, recorded costs are only "experience figures". It is seen that they are mainly available in the form which can be used to judge the costs only under conditions that closely conform to those existing where and when the recorded

costs were collected. This is not true of unit costs, which can be fitted into the framework of many different harvesting situations and can be made to tell the story of the future as well as that of the past.

A wide range of cost control formulas can be derived whose problems shows:

1. Economic location of roads and landings. – In this the calculation of the optimal spacing in between the spur roads and landings are subject to one-way skidding, two-way skidding, skidding on slopes, linear and nonlinear skidding cost functions.
2. Economic service standard for roads. – Here the comparison of the benefits of lower haul costs and road maintenance costs as a function of increased initial investment. It carries the calculation of the optimal length of swing roads which is the function of the tributary volume.
3. Economic selection of equipment for road systems fixed by topography or other factors. - The recognition of the breakeven points found in between the alternative skidding methods have different fixed and variable operating costs.
4. Economic spacing of roads which will be served by two types of skidding machines. – Under this the machines are used to skid saw timber and to relog for fuel wood.
5. Economic spacing of roads which will be reused in future time periods.

1.11.2.2 Example:

Ina forest, the forest office is developing an area and is trying to decide between harvesting methods. He has two options of skidding systems, two choices of road standards and two choices of trucks. According to him if he selects larger skidding equipment to bring the logs to the landing that he can still has choose to buck them into smaller logs on the landing. In this assume that bucking on the landing will not affect log quality.

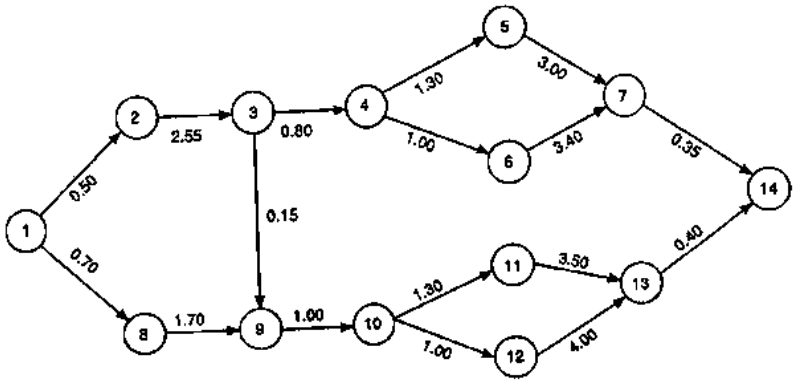
	Small Equipment	**Large Equipment**
	Rs/**m**^{3}	Rs /**m**^{3}
Fall, buck	0.70	0.50
Skid	1.70	2.55
Load	1.00	0.80
Transport	1/	1/

Unload	0.40	0.30
Process	-	0.05 2/

In a table a unit costs for road and transport is shown along with small and large equipments.

	Small Equipment Rs /m^3	**Large Equipment** Rs /m^3
Road		
High Standard	1.30	1.30
Low Standard	1.00	1.00
Transport		
High Standard	3.50	3.00
Low Standard	4.00	3.40

To view these choices, consider a network diagram as shown. It can be verified by determining the least cost path, which can be obtained by using the larger skidding equipment and trucks and constructing the higher standard road. Here we can see that the total unit cost amounts to Rs 8.50 per m^3. A key point is the ease at which these problems can be analyzed, once the unit costs have been derived.



Review Questions

1. Why is Costing?
2. State the different types of Costing Methods?
3. What is Cost Equation? Express it mathematically?
4. What is Unit Costing? Explain with example?

Discussion Questions

Discuss the Benefits of Costing? Explain about Cost Productivity with example?

Application Exercises

1. Interview an Accounts Manager about the Costing standards prevailing in his Company and prepare a report?
2. Using the Cost resources available with the junior accountant prepare a comparative chart describing the Costing Methods?
3. Prepare an annual Cost analysis report of a Company as a freelancer accountant and suggest the scope of Costing to be applied in the Company?

Lesson 2 – Nature and Scope

Learning Objectives

- To study the scope of accounting.
- To analyse about Activity Based Management.
- To study about costing.
- Understand the scope of cost control.
- To identify the benefits of cost analysis.

2.1 Scope

Cost accountancy is the name which has much wider explanation and meaning in terms of costing. In Management and Financial Accountancy the meaning as explained by Chartered Institute of Management Accountants, London, cost accountancy indicates, "application of costing and cost accounting principles along with methods and techniques to science, art and practice of cost control." Moreover it includes the presentation of information resulting from the purpose of managerial decision making.

2.1.1 Cost Accounting

We can further say that cost accounting is the method of accounting for costs. It embraces the accounting procedures that relates to recording of all income and expenditure and the preparation of periodical statements and reports with the aim of ascertaining and controlling costs. It is the official mechanism by means of which costs of products or services are ascertained and controlled.

It can be explained as an internal reporting system that can be used in terms of management planning, control, in making routine and no routine decisions, along with external reporting to the extent that its product-costing function satisfies external reporting requirements for reporting to shareholders, government, creditors, investors and various outside interested parties. The development in the fields of cost accounting is so quick and covers ideas related to magnitude for the management to laying down management policies, in order to guide management decisions or in evaluating operating management performance with information provided by financial accounting.

It is believed that the cost is the measurement of the sacrifice of economic resources, which has already been made or is to be made in the future, in order to achieve a specific objective. Cost management deals with estimated future or planned costs as well as with past, historical costs.

2.1.1.1 Cost of natural resources.

It is believed that the cost of natural resources includes all costs necessary to acquire the resource and prepare it for extraction. If the property must be restored after the natural resources are removed, the restoration costs are also measured to be part of the cost.

Further, companies that search for new natural resources determine cost using one of two approaches: the successful-efforts approach or the full-cost approach. It was found that under the successful-efforts approach, exploration costs are considered as the part of the cost of natural resources in such situation when a productive natural resource is found. Unsuccessful exploration costs are treated as overhead expenses in the period during which they occur. In case of a full-cost approach, all exploration costs are covered in the cost of natural resources. The approach that a company selects should be disclosed in the notes that accompany the financial statements.

2.1.1.2 Depletion.

Depletion is the tool or a process of allocating the depletable cost of natural resources to expense as individual units of the resource are extracted. Depletable cost is equal to the total cost of natural resources and is the less salvage value remaining after the company finishes extraction. Depletion expense is generally calculated using the units-of-activity method. Under this method, a per-unit cost of depletion is found by dividing the depletable cost by the estimated number of units the resource contains. The per-unit cost times the actual number of units extracted and sold in one year equals the amount of depletion expense recorded for the asset during that year.

2.1.2 Activities

It comprises of following basic activities:

1. Cost recording and reporting that includes:
    - Classifying
    - Summarizing
    - Communicating

- Interpreting

Some of the most important reasons for reporting are:

- To maintain documentation is fundamental to good management.
- To make results and scores which include the participants themselves, the media, parents and family, spectators, sponsors etc.
- To have an idea of what equipment and supplies cost in the past. It could be of high value when shopping around is done for the best price when renewing or replacing old and worn out equipment, or supplies that have run out.
- To control the finances of the club or organisation.
- To keep a track of the membership.
- To provide the information required during monthly or annually in meetings.
- To ensure that the history of the club can be recorded and maintained.
- To furnish proof to courts in the event of a court case.
- To avoid bad decisions and practices of the past.
- To maintain accident and injury records.
- To maintain adequate insurance cover

2. Cost measurement or estimation for specific products, services, or subunits of the organization. It was found that cost measurement is an important function of any organization. Without the use of measuring costs, it is difficult to decide and to take decision. Finding ways to work out the cost of goods and services is an essential part of decision making that every manager must strive to achieve.

It is classified as:

- Variable Cost:

Variable costs are those cost that has a correlation with the level of consuming activities. This is mostly assumed to be of a linear relationship.

- Semi-variable Cost:

This cost is mixed in nature where both elements of fixed and variable costs can be found in them. Some techniques like; high-low method, regression analysis, algebraic method, etc can be used to separate costs in their various degrees.

- Fixed Cost:

This is such costs that cannot be changed within a range. This is to say that fixed cost rarely exist in the long run as all costs behaves like variable or at least stepped cost in the long-run.

- Stepped Cost:

It is found that in times when expansion or time and other factors requires a particular expense that has been fixed for a period of time, it can be changed to reflect economic reality. It further explains that in above situation where cost after some period experience a sharp move.

3. Cost planning deeply involves selecting the goals for the organization and its subunits that expresses the objectives and can identify the means of accomplishing them. Plans are summarized in budgets which are expressed in terms of money measurements. For example, a cost budget should be prepared so as to plan for expected expenditures. The case of a profit budget outlines the planned revenues and expenses of during the coming time period. The production and cost of goods manufactured budget shows planned inventory levels, units of product which the company plans to make, and the costs of the various types of inputs which will be needed in carrying out the production plans. A budget also achieves control through the comparison of actual and budgeted costs resulting variance determination and analysis.

4. Cost control, which is the predetermined standards by which performance can be measured. It then reports differences between planned and actual performances to direct attention to what went wrong. Furthermore, cost control aids in fixing responsibility for departures from a plan so that corrective actions can be taken. In case of a cost accounting report shown to the production department manager, the department manager will show and highlight the cost of manufacturing of a single unit of output which is significantly higher than the standard cost. Investigation may reveal that the higher cost is due to the inefficient labor, excessive spoilage of materials, or use of faulty equipment and improper production methods.

5.Cost analysis is done to obtain the accurate product-costing data and managing it to assist managers in making critical decisions such as pricing, product mix, and process technology decisions and analyzing cost data, translating them into the information useful for managerial planning and control, and for making short-term and long-term decisions. This phase involves measurement of accurate and relevant cost data and analyzing them for decision making.

2.1.3 Activity-base costing (ABC) and Activity-base Management (ABM*)*

It is seen that activity-based costing and *a*ctivity-based management are the two new developments that improves the product costing accuracy. It was found that decision making, which can be described as problem solving, is largely a matter of choosing among alternative courses of action. The questions that arise from time to time are many and varied. Should the new product be introduced? Should one of the products or services in a line be dropped? Should a special order be accepted at below the normal selling price? Should parts now being manufactured be purchased? Should the present equipment be replaced? Should equipment be purchased or leased? Should production capacity be expended? Overall a cost management system is used to support management's needs for better decisions about the required product in terms of design, pricing, marketing, mixing, and in encouraging continual operating improvements. Quantitative methods may be used in various phases of cost analysis to determine costs and their financial effects, correlations, and the financial feasibility of adopting alternatives.

In case of cost allocation, Activity Based Costing initially works with apportioning an organization's expenses to a set of cost pools, which is usually classified by activity rather than by organizational unit or department. It uses statistics to determine which transactions cause these pools to vary in size. These are called activity drivers, resource drivers, or cost drivers. Examples include:

- number of inspections
- raw materials receipts
- number of components in inventory
- machine setups
- change orders

It was believed that, ABC is a by-product of quality management which can be the basic elements of statistical process control, customer feedback, participative management, and supplier cooperation. In supervision of quality management, It can be used to distinguish between activities that add value to the final product and those that do not results in inspection, rework, and scrap, which arise out of defects in the service delivery process. In case of quality management deployed important operating decisions down to the

lowest levels of the organization, cost measures and cost estimates are needed at the lowest levels, that can measure rework, activity cycle time, customer satisfaction, etc. It was estimated that standards are also required for cost/performance measures. Standards can be based on the best an organization has achieved over time, the best practice currently being achieved somewhere, or an engineering standard in target costing, for example, price targets are set by the market.

In terms of better known estimates of total cost of government regulation, the use of ABC applies at an extremely aggregate level. The EPA has used a similar method to figure how much it costs to adopt a new rule -- if it is pushing to get the rule out promptly -- two years and about Rs 2 million. The study of costs of alternative approaches to environmental standard setting also used activity based methods to estimate the costs and benefits of controlling total suspended particulates. It is seen that such estimates were used to determine the total suspended particulate levels under least cost, where incentive based policies are designed to achieve prescribed regulatory standards and command and control methods and to identify the marginal costs and benefits associated with each of these alternatives. What they found is that, when command and control methods were designed with at least one objective being cost savings, the over control that makes them more expensive may also make them more efficacious.

Activity based costing has also been applied nowadays to the problem of estimating the costs which includes the regulatory costs. The studies confirm the weakness of existing accounting systems for purposes of measuring the cost of actions. It was believed that existing accounting systems tends to focus on direct labor costs and to assign overheads on the basis of labor hours or machine time.

2.1.2 Costing

As the name suggest, Costing is the art, technique or the process of ascertaining costs. Cost accounting is different from costing in the way that the earlier provides only the basis and information for ascertainment of cost. Previously the information is made available that the costing can be carried out arithmetically by way of memorandum statements or by method of integral accounting.

On the other hand, both the terms costing and cost accounting are often used interchangeably. It was observed that the meaning of costing after expanding the ideas

contained in the definitions of the terms relates to both ‘costing and cost accounting’. It was further believed that costing is, classifying recording and appropriate allocation of expenditure for the determination of the costs of products or services and the relation of these costs to sales values and ascertainment of profitability.

The term cost is used in a wide variety of ways. In ordinary speech, we equate costs with effort, regardless of whether there is a rupees component. Sometimes, we say that it costs a lot to run a marathon, meaning that it takes a lot of energy measured in gallons of sweat and sore, aching muscles afterwards. Economists like to equate the term with opportunity costs. In this approach, costs are defined by alternative actions. By choosing action A one has chosen not to take action B. The cost of choosing A, economists say, is the value of the benefit that one could have enjoyed from choosing B.

Example: By electing to come to school, one has chosen not to be a full-time employee. The opportunity cost of being in school is the salary you could have been earning.

Accountants focus their concentration on the rupee cash costs of an activity. Earlier, they ignore the personal costs associated with the pain of learning, staying up late before an examination, and the like. They would ignore the salary that a full-time student foregoes. The only costs that the accountant tracks are the tuition and fees that one pays.

Instead of making alternative B, the road not taken, a cost of alternative A, accountants tend to list the two alternatives side by side and to see which dollar costs change as one considers one alternative and then the other. Such costs that change are called differential costs. Those costs that increase are called incremental costs.

In financial accounting, costing relates to the costs that the accountant tracks by recognising when received. An expanded system of accruing revenues and expenses is set up to do this. In case of managerial accounting, for reasons that are not entirely clear, there is a tendency to focus on cash costs only i.e., on receipts and disbursements. This makes things a little easier but, as we shall see later, is not necessary. Even though it is unusual, one can handle accrued costs in managerial accounting just like cash costs.

Financial accounting is inclination more towards the past than is managerial accounting. In case of depreciation expense on a machine acquired years ago that is included in the calculation of net income. Managerial accountants tend to exclude past costs on grounds that they are sunk costs, meaning that they are done and gone and have no effect on a decision. All decisions should be based upon future costs, not past costs. Sunk costs are irrelevant.

Example: A meal plan, once paid for, is a sunk cost. Its cost should have no effect on one's decision to eat a hamburger in the school canteen rather than a breadroll. The cost of the meal plan should have no bearing on whether one chooses to eat a hamburger or a breadroll off campus either. In fact, since the decision to eat on or off campus will have absolutely no effect on the cost of the meal plan already paid for, that decision too is independent of the initial cost. The meal plan is in every way a sunk cost.

It is often convenient in accounting to distinguish between direct costs and indirect costs. Direct costs are those that can be traced directly to a product, a service, a person, a business department, and activity or more generally a cost object, which is an accounting term for the "object" that one is trying to cost. The ingredients that go into a meal are a direct cost of that meal as is the labour of the chef. Indirect costs are costs that are associated with a product or service but only indirectly.

For financial accounting reasons, more than managerial accounting reasons, accountants distinguish between product costs and period costs. Essentially, product costs are those that are associated with making a product or preparing a service; period costs are those that are associated with administering the business or selling the product or service. Advertising is a classic period cost; the raw material that goes into a product is a classic product cost. The terms product and period as well as direct and indirect derive from the world of manufacturing. The goal is to produce an income statement that has a cost of goods sold, consisting of all product costs, segregated from selling, administrative and financial expenses, making up all the period costs.

As a general rule, all manufacturing costs are product costs i.e., all costs received inside the factory are product costs. This includes the labor of all factory employees, including

the Vice-President of Manufacturing; all the materials and supplies that are used; the cost of trucking materials to the factory; insurance, light, rent and so on for the factory. It also includes things like cafeteria costs in the factory and the salaries of managerial accountants employed in the factory. All costs that are received in the business but outside the walls of the factory are period costs. The salaries of financial accountants, for instance, are period costs and part of administrative expenses.

The result of such classifications results as 2 x 2 which is a product versus period costs and direct versus indirect costs. The material used in designing and making a product is a direct, product cost as is the labor of the worker who actually shapes the product. The salary of a factory foreman is an indirect product cost. Mostly the period costs are by definition are indirect costs although the advertizing associated with a specific product is a direct cost as is the commission paid to a sales person for selling a specific product. They are represented as:

- Direct material = It is cost of material used in making a product3
- Direct labour = It is the cost of labour of a person making a product
- Indirect labour = It is the cost of labor of a person supervising the making of products
- Indirect material = It is the cost of supplies used making products e.g., cleaning rags
- Overhead = It is all the indirect costs, typically referring just to manufacturing costs

In this, direct material and direct labor are called as prime costs. Direct labor and manufacturing overhead, that is all the costs includes in turning raw material into finished goods, and are called as conversion costs. Direct materials, direct labor and manufacturing overhead constitute what accountants call the full cost of a product and are all charged to inventory. They are therefore, called as inventoriable costs. Inventoriable costs makes their way into the income statement at the time a product is sold in the form of cost of goods sold.

2.1.3 Cost Control

The Institute of Cost and Works Accountants of India highlight cost control as "act of power of controlling or regulating or dominating or commanding costs through the application of management tools and techniques in order to perform any operation to most predetermined objectives related to quality, quantity, value and time oat an optimum outlay".

2.3.1 Limitations

No clear idea of operating efficiency.

- Weakness not spotted out by collective results.
- No helpful in price fixation.
- No classification of expenses and accounts.
- No data for comparison and decisionmaking.
- No control on cost.• No standards to access the performance.
- Provides only historical information.
- No analysis of losses.
- Inadequate information for reports.
- No answer for certain questions.

2.2 Objectives

The objectives behind cost accounting are as follows:-

1. Ascertaining Costs: - The first and foremost objective of cost accounting is to judge the cost of a product, process or service. Other objectives which have been mentioned hereafter scan be achieved only when the costs have been ascertained.
2. Determining Selling Price: - It is found that the business enterprises functions on a profit making basis. It is required that the revenue should be greater than the costs received in producing goods and services from which the revenue is to be derived. Cost accounting supply information in respect to the cost to make and sell certain products or services.
3. Measuring and Increasing Efficiency:- It is analysed that the cost accounting deals with the study of the various operations that are used in manufacturing a

product or providing a services. The study facilitates measuring of the efficiency of the organisation as a whole as well as of the departments besides devising means of increasing the efficiency.

4. Cost Control and Cost Reduction:- Cost accounting directs and control the cost through the techniques that involves budgetary control, standard costing etc. for controlling costs. Budgets are prepared will in advance. The standards for each item of cost are determined, the actual costs are compared with the standard costs and variances are found out as to their causes. It will increase the operating efficiency of the enterprise. Besides it, cost is required to be reduced also constant research and development activities help in reduction of costs without compromising with the quality of goods or services.
5. Cost Management: - Mostly, the cost management carried activities related to managers that can be utilized by them in short-run and long-run planning and control of costs. It has a broad focus that includes both cost control and lost reduction. Infact, cost management is invariably linked with revenue and profit planning. In order to improve revenue and profits, the management should deliberately incurs additional costs for advertising and product modifications.
6. Ascertaining Profits:- Cost accounting aims to ascertain the profits of each and all related activities. It produces statements at such intervals as the management may require. The financial statements proposed and prepared under financial accounting, once a year or half year, are placed too far apart in time to meet the needs of the management. In order to operate the business at a high level of efficiency, it is essential for the management to have a frequent review of production, sales and operating results. Cost accounting highlights daily, weekly or monthly volumes of units that are produced along with accumulated costs together with the appropriate analysis so that quantum of profit and profitability is known.
7. Providing Basis for Managerial Decision Making: - Costs accounting helps the management in formulation operative policies such as:
    (i) Determination of cost – volume – profit relationship.
    (ii) Shutting down or operating at a loss.
    (iii) Making or buying from outside supplies.

(iv) Continuing with the existing plant and machinery or replacing them by improved and economical means.

2.2.1 Objectives and Principle of Cost Control

2.2.1.1 Introduction

It is seen that cost is an important to all industry. It can be divided into two general classes; absolute costs and relative costs. Absolute cost is the loss in value of assets, whereas the Relative cost shows a comparison between the chosen course of action and the course of action that was rejected. This cost of the alternative action - the action not taken - is often called the "opportunity cost".

The accountant is primarily concerned with the absolute cost. However, the forest engineer, the planner, the manager needs to be concerned with the alternative cost - the cost of the lost opportunity. Management has to be able to make comparisons between the policy that should be chosen and the policy that should be rejected. Such comparisons require the ability to predict costs, rather than merely record costs.

Cost data are normally required in case of predicting the cost involved. However, the form in which much cost data are recorded limits accurate cost prediction to the field of comparable situations only. It was observed that this limitation of accurate cost prediction may not be serious in industries where the production environment changes slowly from month to month or year to year. In case of harvesting, identical production situations are the exception rather than the rule. Unless the cost data are broken down and recorded as unit costs, and correlated with the factors that control their values, they are of little use in deciding between alternative procedures. Overhere, the approach to the problem of useful cost data is that of identification, isolation, and control of the factors affecting cost.

Costs are divided into two types:

- variable costs
- fixed costs.

Variable costs may vary per unit of production. As in case, they may be the cost per cubic meter of wood yarded, per cubic meter of dirt excavated, etc. Fixed costs, on the other hand, are received only once and as additional units of production are produced, the unit costs fall. Examples of fixed costs would be equipment move-in costs and road access costs.

2.2.1.2 Total Cost and Unit-Cost Formulas

In case of harvesting operations that are becoming more complicated and involves both fixed and variable costs, there is usually more than one way to achieve the required work. It is easy and possible to change the quantity of one or both types of cost, and to arrive back at minimum total cost. Mathematically, the relationship between volume of production and costs can be written as:

$$\text{Total cost} = \text{fixed cost} + \text{variable cost} \times \text{output}$$

$$\text{Unit cost} = \frac{\text{fixed cost}}{\text{output}} + \text{variable cost}$$

In case of above expression, if we can write this symbolically, then the first letters of the cost elements and N for the output or number of units of production can be written as

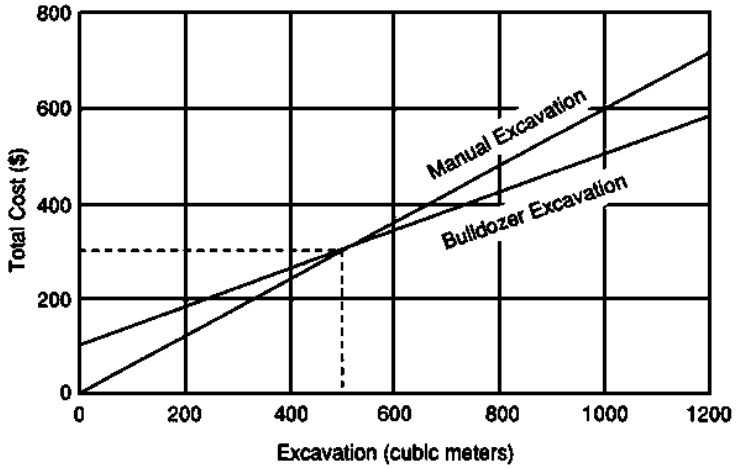
$$C = F + NV$$

$$UC = F/N + V$$

2.2.1.3 Breakeven Analysis

Breakeven analysis describes the point at which one method becomes superior to another method by accomplishing some task or objective. It is common and important part of cost control. In this one illustration of a breakeven analysis would compare two methods of road construction for a road that involves a limited amount of cut-and-fill earthwork. In this it is possible to do earthwork by hand or by bulldozer. If the manual method were adopted, the fixed costs would be low or non-existent. Payment would be done on a daily basis and would call for direct supervision by a foreman.

In this the cost can be calculated by estimating the time required and multiplying this time by the average wages of the men employed. Over this, the men could also be paid on a piece-work basis. Similarly, this work could be done by a bulldozer which would have to be moved in from another site. Let us imagine that the cost of the hand labor would be Rs0.60 per cubic meter and the bulldozer would cost Rs0.40 per cubic meter and would require Rs 100 to move in from another site. The move-in cost for the bulldozer is a fixed cost, and is independent of the quantity of the earthwork handled.



If we have to plot the graph by using rupees on one coordinate and unit of production on another coordinate, then we see that the fixed cost for a process by a horizontal line which is parallel to x-axis. If variable cost per unit output is constant, then the total cost for any number of units of production will be the sum of the fixed cost and the variable cost multiplied by the number of units of production, or F + NV. If we see that the cost data for two processes or methods are plotted, one of which has a higher variable cost, but lower fixed cost than the other are plotted on the same graph, the total cost lines will intersect at some point. At this point the levels of production and total cost are the same. This point is known as the "breakeven" point, since at this level one method is as economical as the other.

In the figure shown, the breakeven point at which quantity alternative and the manual labour alternative become equal is nearly at 500 cubic meters. It is found that this result can also be written and expressed as F + NV = F' + NV' where F and V are the fixed and variable costs for the manual method, and F' and V' are the corresponding values for the bulldozer method. Since all values are known except N, we can express mathematically by solving for N using the formula as N = (F' - F) / (V - V')

$$N = \frac{100 - 0}{0.6 - 0.4} = 500$$

2.2.1.4 Minimum Cost Analyses

We can determine the point of minimum total cost by balancing two methods with different fixed and variable costs. The aim is to bring the sum of two costs to a minimum. It is assumed that a clearing crew of 20 men is clearing road right-of-way and the following facts are available:

1. Men are paid at the rate of Rs0.40 per hour.

2. Time is measured from the time of leaving camp to the time of return.
3. Total walking time per man is increasing at the rate of 15 minutes per day.
4. The cost to move the camp is Rs 50.

If the trip is moved each day, no time is lost walking, but the trip cost is Rs50 per day. If the trip is not moved, on the second day 15 crew-minutes are lost or Rs2.00. On the third day, the total walking time has increased 30 minutes, the fourth day, 45 minutes, and so on. How often should the trip be moved assuming all other things are equal? We generally will be able to derive an algebraic expression using the sum of an arithmetic series if we wanted to solve this problem a number of times, but for demonstration purposes we can simply calculate the average total trip cost. In this, the average total trip cost is the sum of the average daily cost of walking time plus the average daily cost of moving trip. If we moved trip each day, then average daily cost of walking time would be zero and the cost of moving trip would be Rs 50.00.

Review Questions

1. Why is the scope of costing?
2. What are the main objectives of cost accounting?
3. What are some of the features of cost control?
4. What is Activity Based Costing?

Discussion Questions

Discuss the Benefits and Demerits of Activity Based Costing and Management Techniques?

Application Exercises

1. In an agriculture land, crops of Wheat and Barley production are to be accessed? How will you able to calculate the Unit Price per tractor of each production?
2. If you are a teacher of accounts, how will you study the idea of controlling cost so that your students should be able to prepare a chart?
3. In your library. based on the data available, calculate the buying price of books available?

Chapter 2

Materials and Labour

Lesson 3 – Inventory Control

Learning Objectives

- To know more about inventory.
- To analyse the necessity for inventory cost.
- Methods to Manage Inventory

3.1 Inventory

Inventory defines in various ways by various scholars; Inventories are the stocks of the product a company is manufacturing for sale and components that make up the product. It is a raw material, work-in progress or finished goods that constitute various forms of inventory in a manufacturing firm. Inventory is the total amount of goods and/or materials contained in a store or factory at any given time. Store owners need to know the precise number of items on their shelves and storage areas in order to place orders or control losses. Factory managers need to know how many units of their products are available for customer orders.

It was seen that, inventories serves as stocks or finished goods which a company keeps in hope of demand or consumption. In the past, inventory management was not seen to be necessary. Excess of inventories were considered as sign of wealth. Management by then considered over stocking beneficial. In today's time firms have started to embrace effective inventory control. It was observed that, there is the need for the firms to undertake effective inventory control with the aims of:

a. Ensuring a continuous supply of materials to facilitate

b. Maintaining sufficient stocks of raw materials in periods of short supply and anticipate price changes.

The turnover of Inventory is the measure of how fast is the inventory sold. The formula is: Inventory Turnover = average costs of goods sold/average inventories.

A small figure shows that it is taking longer for that company to sell their inventory, while a higher figure will mean the inventory is selling fast.

3.2 Classifications:

- Base stock: Is the stock, that is held to fulfill normal customer demands during an order cycle
- Buffer stock: It is the stock that is held in addition to cycle stock in case of uncertainties in demand or lead time
- Pipeline stock: It is the stock that is on its way
- Speculative stock: It is the stock held as a result of seasonal demand, potential shortages of the said product, and possible price increases of the product.
- Companies prefer to keep lower levels of inventory as its carrying cost increases

3.2.1 Inventory Costs:

1. Inventory controlling costs are determined by many factors. Unpreserved items lose their value much faster over time, while a box of pencils losses value much slower. But in general, almost all products lose value over time.

ii. Inventory reduction is concerned when more items are entering a facility then leaving it. Could be caused by damage, loss, or theft

iii. Storage costs is the costs that is related with the space taken by items in the facility. In this some items have special storage requirements

iv. Handling costs involves hiring people to receive, store and move inventory. It requires machinery for handling.

v. Inventory insurance costs: insure inventory against fire, flood, theft and other issues.

a. Taxes on inventory
b. Special inventory such as live stock have special needs, and may cause extra costs.

3.2.2 Stockout Costs

To calculate stockout costs the customers are divided in three categories

- Brand loyal customers: It involves, if a good is not available to purchase at the moment, the customer will come back when the item arrives

- Switches and comes back: Under this, certain customers when possess stockouts, will change their place of purchase but only temporary
- Lost customer: customer is forever lost
- There are tradeoffs between carrying costs and stockout costs
- It is noted that a firm should keep safety of his stock in order to avoid stockouts. The monetary value of stockout should be equal or more than the additional carrying costs received from keeping this safety stock on inventory.

3.2.2.1 Ordering Time

i. Fixed order quantity system: It should be corrected that the time of the order may fluctuate, but the same quantity is always ordered.

ii. Fixed order interval system: It involves time interval fixed, quantity ordered fluctuates

iii. Reorder point: It is the level of inventory at which a new order is placed. The ROP is calculated as ROP=DDxRC,

where:

DD = daily demand for the product

RC = replenishment cycle.

The formula tells about at what level the inventory must fall, in order to reorder that item. This formula is used in fixed order quantity system. While considering safety stock, the formula would becomes: ROP=(DDxRC)+SS

Where:

SS stands for safety stock.

The disadvantage is that, it requires fixed monitoring of inventory in order to see when the inventory equals ROP and to know when to record.

3.2.2.2 How much to reorder

It is seen that in case of Economic Order Quantity (EOQ) the need for calculation is involved by calculating the size of the order with respect to costs of carrying the inventory and costs of ordering the inventory. Under such case, if there were no costs of carrying inventory, companies would not care for how much inventory they have to keep, Likewise, if there were not costs associated with ordering goods, companies would not

worry about the frequency of sending orders, and as a result they will keep low or no inventories. Instead, they would just order whenever needed. It was seen that, EOQ determines the point at which carrying costs and ordering costs are at minimum

EOQ=√ 2AB/C

Where:

A = annual value of goods used

B = costs per order

C = carrying costs of inventory

It was seen that the mathematical expression of the result of the formula tells about the optimum quantity of goods to be ordered.

EOQ=√ 2DB/IC

Where:

D = annual demand

B = costs per order

C = carrying costs

I = rupee value of the inventory per unit

The result is expressed as the optimum quantity to be ordered (in terms of units).

3.3 Methods to manage inventory

The analysis shows that inventories of a company are not of equal importance. Items sold by a company can be categorized in 3 categories.

- A= items are of essential importance to the business
- B= items are less important than A items
- C= items are slightly important.

There is a standard way to categories these items:

a. if 90% of the revenues come from 30% of items than those items contained in that 30% can be categorized as A items
b. if 5% of revenues come from 32% of items than those items contained in that 35% are B items
c. if 5% of revenues come from 38% of items than those items contained in that 38% can be categorized as C items.

It was found that the different item groups have different importance to the company, than that company should treat each item or item group differently depending on its importance.

3.3.1 Just in time Method

Just in time method should be used to reduce safety stock, and need to have the required materials that arrive exactly when they are needed at the production facility. This approach views inventory as waste. In order for this approach to work, the shipment of materials from suppliers to the production facility must be free from defects cause otherwise the production will fail.

It was found that, under this method, inventory levels either low or zero, orders will be send very often to suppliers. This requires that suppliers have their ordering systems capable of receiving frequent orders from the customer in an error free fashion. Lastly, in order for this particular method to work, the suppliers of the company should be placed close to the facility of the customer. This avoids the possible delays that could be caused by long distance traveling. Since the method requires frequent smaller shipments, and close supplier location, this type of inventory management requires trucking service in order to function properly.

3.3.2 Vendor-management Inventory

Vendor-management Inventory is another type of method which involves the manufacturer is responsible with taking care of the size and timing of replenishment orders. In this, inventory tracking is done with latest technological and advances have been made to make it easier in order to keep track of inventory. The main advantages in this is of the RFID chips, which contains more data about a product than a barcode, which makes it possible to monitor inventory without opening the package of a good. The high cost of RFID, prevents it from having mass adoption.

3.4 Inventory management

It is a special concern as it deals in:

a. Matching products: Under this, some goods only go with some other goods.
   Example: for razors to sell, you need to also keep razor blades
b. Dead inventory: it is particularly those items which doesn't sell

c. Deals: Under this suppliers might make unsellable items attractive to retailers, like lowering the price. These types of good are a burden to the retailer.
d. Defining SKUs: It is noted that, SKUs must be defined similarly in between supply chain members, otherwise problems may arise. If the suppliers defines a SKU as 12pcs of cola and the retailer defines it as 24pcs of cola, than we can imagine the problems this will cause.
e. Informal agreements outside the distribution channel
f. Repair and replacement parts: Items are of serious importance to the customers. Though they do not sell much or often, when they are needed they are really needed. This will create a problem for companies as they find it difficult to know what quantity of such items should be kept with how many facilities.
g. Reverse logistics: In this items flying back from the customer to the producer/retailer. These include returned items, refurbished items
h. Substitute products: example: when cola is missing, it is important to have a close substitute such as Pepsi in order to avoid customer dissatisfaction.

3.5 Inventory Costing Methods

In a company it was seen that the value of the shares of stock often moves significantly with information about earnings. This happens as the inventory measurement bears straight on the determination of income. The small adjustment to inventory in this will cause a corresponding change in an entity's reported income.

In this case, once the unit cost of inventory is determined through the preceding logic, then the specific costing methods must be adopted. Over here, each unit of inventory will not have the same cost, and an assumption must be done to maintain a systematic approach to assigning costs to units on hand.

Example

A hardware company has a nail storage drum. The drum was filled three times. The first filling consisted of 100 pounds costing Rs1.01 per pound. The second filling consisted of

80 pounds costing Rs1.10 per pound. The net restocking was 90 pounds at Rs1.30 per pound. The drum was never allowed to empty completely and customers have picked all around in the drum as they bought nails. It is hard to say exactly which nails are physically still in the drum. As one might expect, some of the nails are probably from the first filling, some from the second, and some from the final.

3.5.1 First In, First Out

In the first in, first out method the closed items are approximates to the natural-world purchasing cycle and parallels the actual flow of inventory from procures to sale in a wide range of businesses. Under this method, the oldest costs are assigned to inventory items sold, regardless of whether the sold items were actually purchased at that cost. When the number of inventory items purchase at the oldest cost is sold, the next oldest cost is assigned to sales.

This method assumes that inventory purchased or manufactured first is sold first and newer account remains unsold. So the cost of older inventory is assigned to cost of goods sold and that of newer account is assigned to ending record. The actual flow of inventory may not exactly match the first-in, first-out pattern.

First-In, First-Out method can be applied in both the periodic inventory system and the perpetual inventory system. The following example illustrates the calculation of ending inventory and cost of goods sold under FIFO method:

Example

In the data shown, by using the information, calculate the value of inventory on hand on Dec 31 and cost of goods sold during December in FIFO periodic inventory system and under FIFO perpetual inventory system.

Dec 1	Beginning Inventory	60 units @ Rs15.00 per unit
5	Purchase	140 units @ Rs 15.50 per unit
14	Sale	190 units @ Rs 19.00 per unit
27	Purchase	70 units @ Rs 16.00 per unit
29	Sale	30 units @ Rs 19.50 per unit

<u>As per</u> FIFO Periodic

Units Available for Sale = 60 + 140 + 70 = 270

Units Sold	= 190 + 30	= 220
Units in Ending Inventory	= 270 − 220	= 50

Cost of Goods Sold	**Units**	**Unit Cost**	**Total**
Sales From Dec 1 Inventory	60	Rs 15.00	Rs900
Sales From Dec 5 Purchase	140	Rs 15.50	Rs 2,170
Sales From Dec 27 Purchase	20	Rs 16.00	Rs320
	220		Rs **3390**

Ending Inventory	**Units**	**Unit Cost**	**Total**
Inventory From Dec 27 Purchase	50	Rs 16.00	Rs 800

In case of FIFO Perpetual

Date	**Purchases**			**Sales**			**Balance**		
	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Dec 1							60	Rs 15.00	Rs 900
5	140	Rs 15.50	Rs 2,170				60	Rs 15.00	Rs 900
							140	Rs 15.50	Rs 2,170
14				60	Rs 15.00	Rs 900	10	Rs 15.50	Rs 155
				130	Rs 15.50	Rs 2,015			
27	70	Rs 16.00	Rs 1,190				10	Rs 15.50	Rs 155
							70	Rs 16.00	Rs 1,120
29				10	Rs 15.50	Rs 155	50	Rs 16.00	Rs 800
				20	Rs 16.00	Rs 320			
31							50	Rs 16.00	Rs 800

3.5.2 Last In, Last Out

Under this last in, last out method, the method is exactly opposite to the FIFO method, where the most recent inventory costs is assigned to items sold. Last in, last out is less practical in most businesses, but there are a few specific situations in which LIFO more closely approximates the actual flow of supply. Last-In, First-Out is one of the common techniques used in the valuation of inventory on hand at the end of a period and the cost

of goods sold during the period. LIFO assumes that goods which made their way to inventory later are sold first and those which are manufactured or acquired early are sold last. Thus LIFO assigns the cost of newer inventory to cost of goods sold and cost of older inventory to ending supply account.

This method is used differently under periodic inventory system and perpetual inventory system. Let us use the same example that we used in FIFO method to illustrate the use of last-in, first-out method.

Example

While considering the following information, calculate the value of ending inventory and the cost of goods sold in the month of January by using LIFO methods.

Jan 1	Beginning Inventory	60 units @ Rs15.00
5	Purchase	140 units @ Rs 15.50
14	Sale	190 units @ Rs 19.00
27	Purchase	70 units @ Rs 16.00
29	Sale	30 units @ Rs 19.50

Solution

While considering the LIFO Periodic

Units Available for Sale	= 60 + 140 + 70	= 270
Units Sold	= 190 + 30	= 220
Units in Ending Inventory	= 270 − 220	= 50

Cost of Goods Sold	**Units**	**Unit Cost**	**Total**
Sales From Jan 27 Inventory	70	Rs 16.00	Rs 1,120
Sales From Jan 5 Purchase	140	Rs 15.50	Rs 2,170
Sales From Jan 1 Purchase	10	Rs 15.00	Rs 150
	220		Rs **3440**

Ending Inventory	**Units**	**Unit Cost**	**Total**
Inventory From January 27 Purchase	50	Rs 15.00	Rs 750

While considering LIFO Perpetual

Date	**Purchases**	**Sales**	**Balance**

	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Jan 1							60	Rs 15.00	Rs 900
5	140	Rs 15.50	Rs 2,170				60	Rs 15.00	Rs 900
							140	Rs 15.50	Rs 2,170
14				140	Rs 15.50	Rs 2,170	10	Rs 15.00	Rs 150
				50	Rs 15.00	Rs 750			
27	70	Rs 16.00	Rs 1,190				10	Rs 15.00	Rs 150
							70	Rs 16.00	Rs 1,120
29				30	Rs 16.00	Rs 480	10	Rs 15.00	Rs 150
							40	Rs 16.00	Rs 640
31							10	Rs 15.00	Rs 150
							40	Rs 16.00	Rs 640

3.5.3 Average Cost Method

The average cost method assign supply costs by calculating a moving average of all supply purchase costs. This method can be ideal for companies that sell non-perishable inventory in a non-sequential manner, such as video game retailers. The average cost method can also provide a steadier, reliable cost recognition structure than other methods, assuming costs do not swing wildly up and down for inventory items. Average cost method is able to calculates the cost of ending inventory and cost of goods sold for a period on the basis of weighted average cost per unit of inventory. By considering the following formula, the weighted cost can be calculated as:

$$\text{Weighted Average Unit Cost} = \frac{\text{Total Cost of Inventory}}{\text{Total Units in Inventory}}$$

This method is also applied differently in periodic supply system and perpetual inventory system. In case of periodic supply system, weighted average cost per unit is calculated for the entire class of supply. It is then multiplied with number of units sold and number of units in ending inventory to arrive at cost of goods sold and value of ending inventory respectively. In perpetual supply system, we have to calculate the weighted average cost per unit before each sale transaction.

Example

By using AVCO method, find the supply valuation, by first in periodic supply system and then in perpetual supply system in order to determine the value of supply on hand for July 31 and cost of goods sold during July month.

July 1	Beginning Inventory	60 units @ Rs15.00 per unit
5	Purchase	140 units @ Rs 15.50 per unit
14	Sale	190 units @ Rs 19.00 per unit
27	Purchase	70 units @ Rs 16.00 per unit
29	Sale	30 units @ Rs 19.50 per unit

Solution

While considering for Periodic inventory

Units Available for Sale	= 60 + 140 + 70	= 270
Units Sold	= 190 + 30	= 220
Units in Ending Inventory	= 270 − 220	= 50

Weighted Average Unit Cost	**Units**	**Unit Cost**	**Total**
Mar 1 Inventory	60	Rs15.00	Rs 900
Mar 5 Purchase	140	Rs 15.50	Rs 2,170
27 Purchase	70	Rs 16.00	Rs 1,120
	270	* Rs **15.52**	Rs 4,190

* Rs 4,190 ÷ 270

Cost of Goods Sold	220	Rs 15.52	Rs 3,414
Ending Inventory	50	Rs 15.52	Rs 776

While considering for Perpetual inventory

Date	**Purchases**			**Sales**			**Balance**		
	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
July 1							60	Rs 15.00	Rs 900
5	140	Rs 15.50	Rs 2,170				60	Rs 15.00	Rs 900
							140	Rs 15.50	Rs 2,170

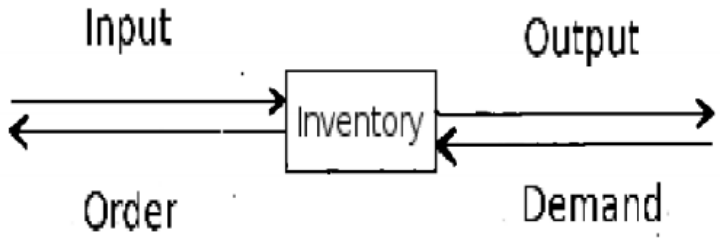
								200	Rs 15.35	Rs 3,070
	14				190	Rs 15.35	Rs 2,916	10	Rs 15.35	Rs 154
	27	70	Rs 16.00	Rs 1,190				10	Rs 15.35	Rs 154
								70	Rs 16.00	Rs 1,120
								80	Rs 15.92	Rs 1,274
	29				30	Rs 15.92	Rs 478	50	Rs 15.92	Rs 796
	31							50	Rs 15.92	Rs 796

3.5.4 Specific Identification Method

The specific identification method perfectly matches inventory costs with units sold, assigning the exact cost of each sold supply item when the specific item is sold. This method is not suited for businesses that sell high volumes of relatively homogenous products, such as food producers, but it can be ideal for companies that sell high-rupee items with relatively low volume, such as automobiles or yachts. Consider a car lot, for example. When a salesperson sells a scooter, he can forward the exact VIN or invoice number of the scooter to the accounting department along with the sales information, allowing accountants to look up exactly how much the dealership paid for the scooter.

3.6 Inventory Control

Inventory Control is the volitional break of the operative material flow which is a collected stock developed. Inventory Control needs a storage that comprises of a room, building or area to store items. In this the in-pouring items are called storage input, the outpouring items storage output.



So supply control contains all activities and are considers as all consequences, which are connected with the storage of items. On the other hand there is a small technical and

logistical aspect of supply control as believed to be the storage layout. The general questions arise in terms of the total supply of a company.

An important decision was laid regarding the quantity of inventories is that a lot of mathematical models have been developed, which are summarized under the concept of supply Control inside the scope of Operations Research. In case of stock of a retail market, the outflow is induced through customer demand and the refill is secured through orders. It was believed that the stock disposal consists of ordering the right quantity at the right time. Small orders results in less production costs; but for a higher level of order quantity the storage costs increases. The advantage of a great inventory is that there is a high level of service and most customer requirements can be fullfilled. Real inventory problems are those, who deal with order costs, storage costs and the service level. Problems of long term supply control do not belong to this issue, because the order costs are considered international and not for each order.

In case of middle storages, there are strongly bound in production as it was difficult to talk of a proper supply problem. As the results of supply control theory, it can be used for the discarding of intermediate storages. The areas of application are all inventories of the retail market. But also the inventories of industrial purchasing and selling are pliable to the models of inventory control. Following to the inventory of finished items from industrial selling there is a system of distribution. The disposal of such hierarchical systems is in the domain of multi-echelon supply control; that is an extension of real supply control theory. It was seen that the problems of inventory control are characterised through the following:

1. Several items are managed in one stock as a result of order handling and storage, that occur collectively. Every item is singular disposed.
2. Demand and delivery time are often stochastic or not known.
3. Not only the disposal of costs has to be considered, but also non-monetary and non-quantitative aspects.

3.6.1 Example

In an office, a Department Z has an stock of maintenance supplies. The department purchases 40 cans of floor chemical at Rs 6.00 per can, and pays Rs 4.00 in freight (Rs .10 per can) on the purchase. Total cost of the purchase is Rs 244.00.

Debit	Inventory, Program FOPPS - account 0400xx	Rs 244.00	
Credit	Cash (affected via PO/SPO voucher)		Rs 244.00

Department Z used four cans of chemical. A journal entry is prepared to remove the four cans that were used from the inventory in a departmental FOPPS. The cost of each can includes the added burden for freight: Rs 244.00/40 cans = Rs 6.10 per can. Thus, the total cost for the four cans is Rs 24.40.

Debit	Expense, Program FOPPS - account 515109	Rs 24.40	
Credit	Inventory, Program FOPPS - account 0400xx		Rs 24.40

The new inventory balance is Rs 219.60. This is comprised of 36 cans at Rs 6.10 each.

Department Z now sells 10 cans of floor chemical to Department Y at Rs 7.00 per can. An IN is used to record the sale; and a journal entry is used to remove the cans sold from inventory.

The IN to record the sale (10 cans at Rs 7.00 = Rs 70.00):

Debit	Dept Y Exp, Program FOPPS - account 515109	Rs 70.00	
Credit	Dept X Rev, Program FOPPS - account 380100		Rs 70.00

The journal entry to record the cost of goods sold and to remove the cans sold from inventory (10 cans at Rs 6.10 = Rs 61.00):

Debit	Cost of Goods, Program FOPPS - account 450200	Rs 61.00	
Credit	Inventory, Program FOPPS - account 0400xx		Rs 61.00

Thus, Department Z has Rs 9.00 in net revenue (Rs 70.00 Revenue minus Rs 61.00 Cost of Goods) and has an inventory balance of Rs 158.60, 26 cans of floor chemical.

Prior to the fiscal year end closing on July 31, Department Z completes its annual physical supply count and discovers that two cans of the floor chemicals were defective. A journal entry is used to adjust the physical inventory for the defective cans.

The journal entry to adjust the inventory (two cans at Rs 6.10 = Rs 12.20) is:

Debit Physical Inventory Adjustment,

Program FOPPS - account 450300 Rs 12.20

Credit Inventory, Program FOPPS - account 0400xx Rs 12.20

Thus, the adjusted inventory balance for Department Z is Rs 146.40.

3.6.2 Issues

The issues arise in supply control system concerns more with infrequent large orders vs. frequent small orders. Large orders will increase the amount of supply on hand, which is costly, but may benefit from volume discounts. Frequent orders are costly to process, and the resulting small supply levels may increase the probability of stock-outs, leading to loss of customers. In principle all these factors can be calculated mathematically and the optimum found.

Secondly, the issue arises while changing in demand for the product. In case, if the needed merchandise on hand in order to make sales during the appropriate buying season(s). A classic example is a gift shop pre-Christmas. If one does not have the items on the shelves, one will not make the sales. And the wholesale market is not perfect. There can be considerable delays, particularly with the most popular gifts. So, the entrepreneur or business manager will buy on spec. Another example is a departmental store. If there is a six week, or more, delay for customers to get merchandise, some sales will be lost. And yet another example is a pub, where a considerable percentage of the sales are the value-added aspects of drinks preparation and presentation, and so it is rational to buy and store somewhat more to reduce the chances of running out of key ingredients.

And a third issue comes from the view that supply also serves the function of decoupling two separate operations. For example work in process inventory often accumulates between two departments because the consuming and the producing department do not coordinate their work. With improved coordination this buffer inventory could be eliminated. This leads to the whole philosophy of Just in Time, which argues that the costs of carrying supply have typically been underestimated, both the direct, obvious costs of storage space and insurance, but also the harder-to-measure costs of increased variables and complexity, and thus decreased flexibility, for the business enterprise.

Review Questions

1. Give the basic idea about inventory?
2. What are the basic types of inventory classification?
3. What are the different methods used to manage an inventory?
4. What is an inventory management?

Discussion Questions

Discuss Just in Time Method of Inventory Control with an Example.

Application Exercises

1. A hardware company has a nail storage drum. The drum was filled three times. The first filling consisted of 100 pounds costing Rs1.01 per pound. The second filling consisted of 80 pounds costing Rs1.10 per pound. The net restocking was 90 pounds at Rs1.30 per pound. The drum was never allowed to empty completely and customers have picked all around in the drum as they bought nails. It is hard to say exactly which nails are physically still in the drum. As one might expect, some of the nails are probably from the first filling, some from the second, and some from the final.

2. In the data shown, by using the information, calculate the value of inventory on hand on March 31 and cost of goods sold during March in FIFO periodic inventory system and under FIFO perpetual inventory system.

Dec 1	Beginning Inventory	60 units @ Rs35.00 per unit
5	Purchase	140 units @ Rs 65.50 per unit
14	Sale	190 units @ Rs 49.00 per unit
27	Purchase	70 units @ Rs 36.00 per unit
29	Sale	30 units @ Rs 29.50 per unit

Lesson 4 – Pricing the Issue of Materials

Learning Objectives

- To explain the idea about pricing of goods.
- To analyse about pricing and its type.
- To recognise the types of costing.
- Understand the scope of cost accounting.
- To identify how the benefits of using IS may be measured and assessed, and contrast with existing practice.

4.1 Introduction

The price of a good or service is the value that a society or places to obtain. Pricing decisions on the marketing mix are compounded when marketing across international boundaries. Prices are permanent, usually on the basis of cost, competitive or market considerations and may be inclined high or low, depending on supply/demand and elusive factors. The procedure of price fixing is:

a) switch over rate considerations
b) currency fluctuations
c) inflation
d) devaluation or revaluation
e) transfer and price escalation considerations.

Pre-financing in export is normally required as sellers have often to bear the costs that were involved before obtaining the revenue from the sale. Sources vary, including internal and external sources. In order to make sure that the export system is supported and expectant, many countries have an export credit assurance system which helps reduce the financial risks involved. Other methods of obtaining revenue in a risk situation are by operating in the futures and options market.

Pricing products or services in international marketing is not as easy and requires more to take instinct decision. Price is, in part, a function of cost, and the foreign exchange rate is an important determinant of a company's cost of production. While borrowing capital to do business the cost of that capital can be powerful in the price decision. The cost of capital has to be covered or included in the price along with the possible effect of changes in exchange rates if the capital is raised globally.

4.2 Types of Pricing

The price of a product plays an important role as how the products will be sold. Producers and retailers practice right pricing strategies to earn profits without defrauding competitors or consumers. Regardless of competitor's prices, convenience, availability and other factors affect consumer impressions of fair pricing. Business laws protect competitors and consumers from many unethical pricing strategies that corrupt marketers may wish to attempt.

4.2.1 Fair Pricing

In such cases, producers sell products at wholesale costs that pay for the labour, materials and overhead to make the products with a reasonable margin of profit. Retailers commonly mark up the price to two or three times the wholesale cost to pay for employees and overhead with a considerable profit margin for the company and its shareholders. At times retailers cut prices to arouse sales of particular products or to sell large quantities of popular products.

4.2.2 Advertising Schemes

Trade laws attach companies' advertising price comparisons. A tractor dealer who claims to sell for thousands less than competitors has to be able to produce documentation of that competitor's prices and their own to prove it. Advertisers publishing an inexpensive product when there is not much supply of the product are often using the illegal bait-and-switch scheme with a large supply of a similar product at a much higher price.

4.2.3 Price Cutting

Many times firms are in process to cut the prices in order to sell off outdated stock or to make way for a new line of products. Some vendors set prices very low for new products to introduce them to the market and motivate customers to try them. These are both legal and principled pricing strategies. Under such circumstances, the company uses unethical pricing cuts to squash the sales of competitors by selling the same products for lower prices. Centralized laws protect competitors from undercutting.

4.2.4 Monopolizing

This is important as monopoly exists when there is only one source of a particular product. Federal antitrust laws protect competition in the marketplace by outlawing

monopolies. It is also illegal to fix prices or divide markets among competitors to undermine opposition. An assumed monopoly exists when one firm sets pricing for the whole market. Monopoly symbolizes domination over a product to the level that the enterprise or individual dictates the terms of admission and the markets for availability. The term is accurate to a seller's market. A similar circumstance in the buyer's market shows as monopsony. It appeared initially as an economics-related term in 'Politics'.

Monopoly in economics refers to the fixed cost of the capital goods, where goods are so high that it is not profitable for a second firm to enter and compete. There is a "natural" reason for this industry being a monopoly. It is an extreme imperfect form of market. In ancient times, common salt was responsible for natural monopolies, till the time people learned about winning sea-salt. Regions facing scarcity of transport facilities and storage were most prone to notorious acceleration of commodity prices and uneven distribution of daily-use products and services. The features of monopoly are private to the condition generated by intent.

4.3 Factors

Mainly, three basic factors determine the boundaries of the pricing decision as:

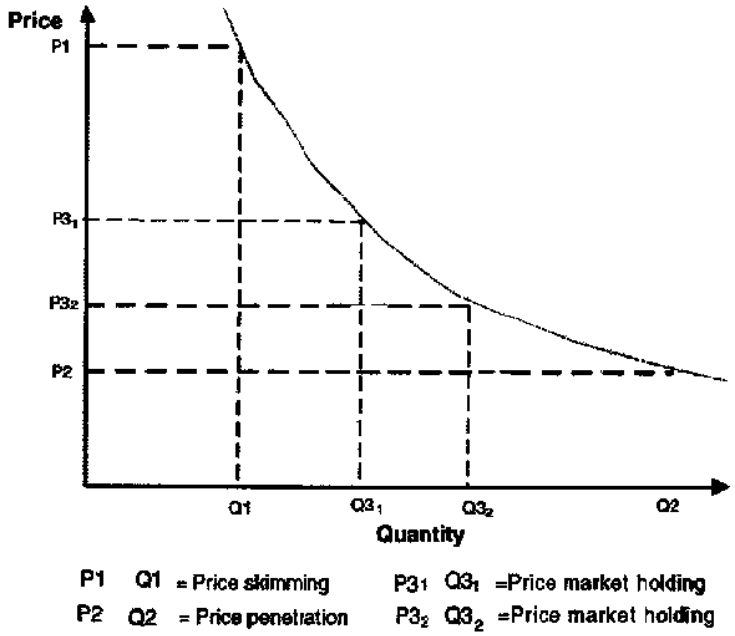
I. price floor
II. minimum price
III. bounded by product cost

It was seen that the price ceiling or maximum price bounded by competition and the market and the most constructive price, a function of demand and the cost of supplying the product. In addition, in price situation cognisance must be, taken in respect of government tax policies, resale prices, dumping problems, transportation costs, middlemen and so on. At the same time as many farmland products are at the mercy of the market others are not which includes high value added products where demand outstrips supply at present.

In setting prices, it should be clear that the objectives and policy of few organisations can be pure profit as there is hardly a sector of industry where competition, or potential competition is not prevalent. Three frequently encountered price polices are:

5. market penetration
6. skimming
7. holding

It is observed that a low price is a volume strategy and a high price is used if the product is fairly different along with high development costs and demands with relatively inelastic. Market investment is a strategy that is planned to hold share. Here products are not based on straight exchange rates at current rates but on what the market can bear. The figure below shows three price policies.



The assumption behind all three pricing policies is that the underlying conditions governing supply and demand apply. In reality, these do not always do so, if indeed ever.

4.4 Types

4.4.1 Export pricing

It is found that, actual pricing methods usually involve cost, market, or competition oriented. On the other hand, in the international arena, other factors come into play. To establish an overseas price, you need to consider many of the same factors involved in pricing for the domestic market. These factors include competition; costs such as production, packaging, transportation and handling, promotion and selling expenses; the demand for your product or service and the maximum price that the market is willing to pay.

There are three common methods of pricing exports:

- **Domestic Pricing**

It is a common method of pricing the exports materials. This type of pricing uses the domestic price of the product or service as a base and adds export costs, including packaging, shipping and insurance. Since the domestic price already includes an

allocation of domestic marketing costs, prices determined using the method might be too high to be competitive.

- **Incremental cost pricing**

This will resolve the basic unit cost that takes into account the costs of producing and selling goods for export, and then adds a gain to arrive at the desired profit margin. In order to establish a price using this method, first establish the "export base cost" by stripping profit markup and the cost of domestic selling. In addition to the base cost, include genuine export expenses such as export overheads, special packing, shipping, port charges, insurance, overseas commissions, and allowance for sales promotion and advertising along the unit price which is necessary to yield the desired profit margin.

- **Cost modification**

It involves reducing the quality of an item by using lower and cheaper materials, that simplifies the product or modifying the need of marketing program, that will lowers the price.

Internationally, an export quotation includes the price and all principal conditions of a possible tem or sale. Basically, the quotation should describe a product in terms of:

a) its price
b) its payment terms
c) its delivery period
d) its place of delivery

Many times it is advantageous to include gross and net shipping weight in this description. With this information, the buyer can make inland forwarding plans, and many times this measurement is helpful in the determination of import duties at the foreign port.

The most common method of providing a sales quotation is the "pro forma" invoice. A pro forma invoice is not used as a form of prepayment, but rather to further describe products, price, payment terms, and delivery information so the buyer can arrange funds. Many banks provide their customers with a checklist for preparing this information.

In case of a proforma invoice, it should contain a declaration certifying that the pro forma invoice is true and correct and the declaration should contain the name of the country of origin of goods. Also, the invoice should be noticeably marked "pro forma invoice." It is good business practice to include a pro forma invoice with any international reference, whether it has been requested or not.

Generally, price quotations should state explicitly that they are subject to change without notice. If a specific price has been agreed upon or guaranteed by the exporter, the precise period during which the offer remains valid should be specified in the pro forma invoice.

4.4.1.1. Cost plus pricing:

These types of pricing comprises of two types mainly:

a) historical accounting cost method
b) estimated future cost method

The former includes direct and indirect costs and has the disadvantage of ignoring demand and competitive position in the target market. Estimated cost approaches are based on assumptions of production volume which will be a principal factor determining costs. Likewise difficulties may lie in trying to estimate production levels. In reality, costs may be a useful starting point but should never be used as a final arbiter.

Advantages of using cost plus pricing are:

- Easy to calculate
- Price increases can be justified when costs rise
- Price stability may arise if competitors take the same approach
- Pricing decisions can be made at a relatively junior level in a business based on formulas

Disadvantages of cost plus pricing are:

- This method ignores the concept of price elasticity of demand - it may be possible for the business to charge a higher or lower price to maximise profits depending on the responsiveness of customers to a change in price.
- The business has less incentive to cut or control costs - if costs increase, then selling prices increase. However, this might be making an "inefficient" business uncompetitive relative to competitor pricing;
- It requires an estimate and apportionment of business overheads. For example, total factory overheads need to be calculated and then allocated in some way against individual products. This share is always arbitrary.
- If applied strictly, a full cost plus pricing method may leave a business in a vicious circle. For example, if budgeted costs are over-estimated, selling prices may be set too high. This in turn may lead to lower demand (if the price is set above the level that customers will accept), higher costs (e.g. surplus stock) and

lower profits. When the pricing decision is made for the next year, the problem may be exacerbated and repeated.

Amongst the factors that influence the choice of the mark-up percentage are as follows:

- Nature of the market where a mark-up should reflect the degree of competition in the market
- Bulk discounts shows the volume orders where attraction among lower mark-up is reflected from a single order?
- Pricing strategy which includes skimming and penetration.
- Stage of the product in its life cycle; products at the earlier stages of the life cycle may need a lower mark-up percentage to help establish demand.

4.4.1.2 Competitive pricing

At the same time the costs are important as they should be looked at the side of the prices of competitive products in the target markets. Once these price levels have been well-known then the base price, or price that the buyer will pay for the product, can be determined. It involves four steps:

i) judgment of demand schedules

ii) inference of incremental and full manufacturing and marketing costs to attain projected sales volumes

iii) assortment of price which offers the highest donation

iv) addition of other elements of the marketing mix. Such steps are by no means easy. Costs are difficult to assess properly as are demand conditions.

In products of a raw commodity nature or those traded on the worldwide market subject to world prices, often the manufacturer has no option but to take the going away price - a price governed by competition, especially on the supply side. In some countries, for example, even though cigarette prices internationally may be encouraging, if too many shopkeepers sells it, the price will be concealed for all.

4.4.1.3 Market pricing:

In case of certain goods, one can incriminate what the market can tolerate. If the supplier is one of a few, notwithstanding all the problems associated with price fixing, the market may be able to bear a high price. If an export fails, then other suppliers will take gain of this to charge higher prices for a similar export.

In many other cases if the product is so different and unique that the company should capitalise on its scarcity by charging a high price. At one time foreign produce star fruit and rambutans could rule a high price due to their scarcity. The problem is, encouraged by the profit margins, more entrants are drawn into the market.

In case if the market is to be studied, the first thing what is important is to understand the components of the position to be priced, as well as the competitive labour market that includes

- Geography
- Industry
- Size

within which it competes. Once the survey is completed, the results of the market pricing can be utilized to develop a salary structure consisting of compensation grades and ranges. Market pricing should be done periodically to ensure competitiveness over time. Market pricing can be skillful by collecting data from available survey sources. These surveys can be either based on geography or industry. It is important to use as many related sources as possible in order to make sure that an accurate comparison is done. Each survey has an effective date; so all data must be aged to a common date, utilizing a prorated percentage of the average merit increase award in the competitive market. Once all data is aged, multiple measures of central tendency should be calculated, such as the average, median, and weighted average, to determine the best estimate of the market value.

4.4.2 Global pricing

The path to improved worldwide pricing practices characteristically begins with segmentation. If you are selling to international customers against a common set of competitors, then a global pricing strategy makes sense. If you are selling into markets with local customers, having unique requirements with varying competitors, then strategic management of local pricing decisions is a better path forward. In reality the best solution is likely a combination of serving the needs of these two broad segments of your business. Away from segmentation, some or all of the following elements may form part of a solution.

4.4.2.1 Price Performance Measurement.

In case, a solid portion of your business shows numerous unique markets around the globe, then a second part of the solution that improves the business is price performance

measurement. If you could quickly review pricing performance of any local market, then you would make better daily decisions. So a international price performance measurement system may be part of the solution.

In fact, performance measurement systems can have the whole thing to do with counter productive actions that involve building up inventory or controlling purchase price variance with vendors in order to satisfy unproductive management accounting methods. Here are some of the snitch symptoms of a management that focuses on the wrong metrics.

- Engineering continues to design products that are not designed with a bend over supply chain in mind.
- Accounting is focused on historical, myopic measures that emphasize sub-process performance optimization without considering the performance of the entire process.
- Sales is confident to focus heavily on booking orders without regard for what product mix was planned to be sold and produced or for what margins will be realized.
- Plant management is fully focused on efficiency, utilization and overhead absorption metrics that run counter to reducing cycle time and increasing customer satisfaction.

4.4.2.2 Global Pricing Policies.

If a considerable segment of customers is large commercial clients who make international buying decisions, then a key part of the solution may increase worldwide policies, authority and controls around large account pricing, and enforcing implementation. In this case, an important part of the price performance measurement would be monitoring pricing policy compliance.

It seems that, international pricing is relatively more cumbersome as compared to domestic pricing since international trade is complex and cannot be explained as a simple preference for free trade or protectionism. Generally the thought of exchange rate exposure shows the degree to which the value of a firm or an industry is affected by switch rate changes. Exchange rate changes can affect an individual investor who owns a portfolio consisting of securities in different currencies; a multinational company with subsidiaries and braches in foreign locations; an exporter and importer who concentrates

on international trade and even a firm that has no direct international activities. In addition, exchange rate changes, through their impact on the costs of inputs, outputs, and stand-in goods play a significant role in determining the competitive position of domestic companies with no direct international operations relative to foreign firms.

4.4.2.3 Pricing Processes.

It is seen that the professional services pricing authorises and takes decision which is the necessity to be widely dispersed. In case of global environment, that dispersion is compounded. In this case, when value and pricing are largely determined at the point of sale, a key to improved control and performance is implementing common pricing processes. For example, a global training initiative that includes sharing a common toolbox for profiling buyers' willingness to pay, for estimating and communicating value, measuring price sensitivity, and tailoring proposals may be a good solution.

4.4.2.4 Pricing Information Systems.

Achieving the desired level of price optimization may require you to provide field sales people with a pricing information management system to anchor the processes. These systems not only provide real time value selling and pricing tools to field sales, they also make pricing processes more efficient, streamlining decision making and shortening sales cycle time.

4.4.2.5 Sales reimbursement.

A sales reimbursement is a way to put all marketing strategy into operation. It is seen that the impact on the sales reimbursement can led to growth, which every company will work along with a sales force that takes a more strategic approach to design incentives plan. Fully understanding both the key drivers of successful sales incentive programs and the ways to optimize them can be complex, and plan specifics can vary widely. On the other hand, there are a few key factors that you should consider when designing and administering an effective sales incentive program.

In case if the reimbursement system is structured to primarily maximize utilization, then price presentation will be difficult to sustain. It is simply not in sales best interests to hang tough on prices. Highly successful pricing organizations reward sales by tying reimbursement either to margin or to presentation relative to a price target. There are three possible global pricing policies such as:

i) extension (ethnocentric)

ii) adaptation (polycentric)

iii) invention (geocentric).

- **Extension**

It means the same global price. It is a very simple method but does not respond to market sensitivity.

- **Adaptation**

It shows different prices in different markets. The only control is setting transfer prices within the corporate system. It prevents problems of arbitrage when the disparities in local market prices exceed the transportation and duty costs separating markets.

- **Innovation**

This takes cognisance of any unique market factors like:

a) Costs
b) Competition
c) income levels
d) local marketing strategy

In addition, it recognises the fact that headquarters price coordination is necessary in dealing with international accounts and arbitrage and it systematically seeks to embrace national experience.

Review Questions

1. Give the basic idea about pricing?
2. What are the basic factors that affect the pricing?
3. Explain the three different methods of Pricing Export?
4. What is an proforma invoice?

Discussion Questions

Discuss the concept of Global Pricing? Write its advantages and Disadvantages?

Application Exercises

1. Suppose you are an exporter and want to quote a price for a foreign buyer? What Global price factor will you consider?

2. You are the marketing head of your company, suggest the basic sales strategy hat should be followed in order to get the orders from the market?

Lesson 5 – Labour

Learning Objectives

- To understand the meaning of Labour.
- To analyse the necessity for Methods involved in ascertainment of costs.
- To recognise the types of elements of Labour Cost.
- Understand the scope of **Piecewise work System**.
- To identify how to minimize Labour Turnover.

5.1 Introduction

It was seen that like materials, labor is also one of the prime inputs of production system. In case of all industrialized concerns, labour is required for carrying out their production activities. The labour consists of workers who are essential to convert materials into finished products. The workers operate machine and perform other tasks to help convert materials into final outputs.

It was seen that the labour can be either direct or indirect. In case of labor who is directly engaged in the conversion process is called direct labour and who is not is called indirect labor. The labour must be properly utilized and satisfactorily paid in order to minimize labor revenue and labour cost. Unlike materials, labour is complex to deal with. Dissatisfied and unhappy labor always results in high labor costs and low quality outputs. Therefore there should be proper planning, accounting and controlling of labour.

In respect to core principle or direct labour, there is an involvement of direct expenses. It was seen that, labour cost is classified as:

5. Direct cost
6. Indirect cost

They form the labour cost which form a significant percentage of the total cost of production in a manufacturing organization and there is need to exercise maximum care to minimize these costs. Minimizing cost down not mean reducing cost but means getting the optimal efficient and productivity of the employee.

5.2 Labour Cost

It should be noted that the payment made to the labour in exchange for its service is called labour cost, which comprises of a major part of the total cost of construction. Labour cost is normally called as wages. Labour cost or wages is one of the major elements of cost. Labour cost represents the expense received on both direct and indirect labour. It is seen that, the labour cost is more than just wage as it includes the total amount of financial payback given by the concern to all its workers and employees for their time and effort used in producing goods and services. In fact, the financial reward provided to the workers for their physical and mental contribution for converting raw materials into finished outputs. Labour cost includes monetary and non-monetary benefits. Monetary benefits include basic wages, dearness allowance, employer's payment to provident find, production bonus, pension and gratuity. Fringe benefits include subsidized food, subsidized housing, subsidized education, medical facilities and holiday pay.

5.2.1 Direct Cost

It is found that many companies undervalue direct labor cost. The art for calculating the direct labor cost make confident that you include everything that includes cost for your company in hiring and keeping an employee. This is not just how much you pay the person, but also how much having an employee impacts your insurance premiums, benefits costs, payroll tax donations, etc. To accurately measure direct labor cost, you must include all expenditures, not just wages. It covers:

- employer-paid Social Security
- Medicare
- unemployment taxes
- workmen’s compensation insurance

Expenditures for health insurance and donations to pension plans are other examples of items you must include in the total labor cost. You may also need to embrace an allowance for training and worker recruitment.

5.2.1.1 Calculation

1. First calculate the total wages paid to your employees. This will includes everyone from temporary help up to and including any salary the owner or president/CEO of the company is paid. All these wages are part of your direct labor cost.

2. Secondly, analyze the costs associated with your employees and their pension plan that you pay. Some companies do not match any money put into a pension plan, which keeps their costs at essentially zero. Till the time, others match a certain percentage that each employee contributes. If your company matches this percentage, it must be included in the pension costs as direct labor cost. Many companies contribute to a pension plan for an employee without an employee contribution; once again, this is part of direct labor cost.

3. Calculate the company's health cover costs per employee if any. This will include any amount your company contributes to disability cover for your employees. Further, it includes both short and long term disability costs for your company that are paid by the employer. This should be totaled to get your entire health care costs as part of direct labor cost.

4. Now add the total cost your company that must pay in respect to workers recompense premiums. This amount will vary based on the total of payroll and the company's rating, so actually it must be considered at the time of determining the direct labor costs.

5. Also include the employer contribution for taxes that must be paid for each employee. This will include the employer's portion of federal and state taxes as well as FICA.

6. At last. add any additional costs that is associated in respect to hiring employees, such as advertising open positions or hiring a headhunter. If you attend job fairs, include the cost for that in your direct labor cost.

7. Finally combine these entire categories and total the sum with your total direct labor cost.

5.2.2. Indirect Cost

Indirect labor cost explains about the wages paid to workers which helps in performing the tasks that do not directly contribute to the production of goods or performance of services, such as support workers who help enable others to produce goods. For example, a corporate might employ janitors to keep facilities clean, foremen to oversee production workers and security guards to keep facilities safe. All of these workers are involved in indirect labor, because they do not actually produce any goods. Examples of other workers engaged in indirect labor which includes:

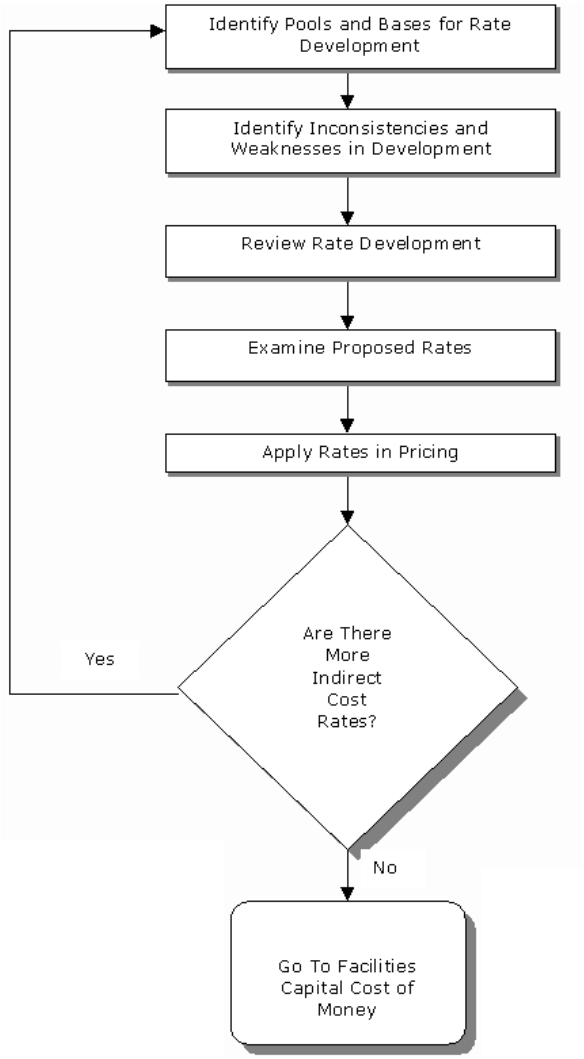
- Managers
- Accountants
- maintenance staff

Indirect labor costs includes more than differences between employees who support and produce. Part of flourishing scheduling is to make certain employees to have little idle time. Even if an employee is mainly involved in production of goods, poor scheduling or things like poor machine protection can lead to employee idle time. This is when employees are paid but aren't producing any kind of work, and it is usually classed as indirect labor. Evaluating scheduling and making changes may reduce this cause and lead to producing employees being able to work more at production during each workday.

In any case where a company considers how its money is being exhausted, a sense of balance is appropriate. Splinter too many indirect labor costs may cause producing employees to be less supported in the workplace. Excessively high indirect labor expenses may propose that supportive employees are more valued than producers, which is equally problematic. Companies need to think hard on how to balance costs, allocating sufficient resources to all workers and departments. Because indirect costs affect a number of contracts, support from the auditor and administrative contracting officer can be particularly important to your analysis. On the other hand, remember that the

contracting officer still has the final responsibility for determining contract price rationality.

The flowchart showing below explains the key events that must be completed as part of a typical indirect cost analysis:



Indirect cost rates can be calculated in terms of rupees per hour or percentage of cost. Indirect cost rates are calculated for each accounting period by dividing a pool of indirect cost for the period by the allocation base for the same period.

$$\text{Indirect Cost Rate} = \frac{\text{Indirect Cost Pool}}{\text{Indirect Cost Allocation Base}}$$

Once a rate is identified, the above formula can be used to conclude the amount of indirect cost that should be allocated to the contract. In this case, simply multiply the rate by the estimated or actual amount of the allocation base in the contract for that period.

Contracts with a greater share of the allocation base will be charged a greater share of the related indirect cost pool. Contracts with a smaller share of the base will be charged a smaller share of the related indirect cost pool.

5.2.3 Purposes of labour Cost

a) To calculate the correct gross and net pair for each employee.
b) For financial accounting purposes.
c) For management accounting purposes in case of stock valuation.

5.2.4 Elements of Labour Cost

Labour Cost can either be direct or indirect cost that include.

a) Basic Wages
b) Overtime premium
c) Bonus payment
d) Idle time
e) Labour turnover.

5.3 Remuneration methods

There are certain methods by which we can calculate the basic wages that includes:

i) Fixed salary per month.
ii) Time based systems.
iii) Piece works systems.
iv) Bonus / incentive schemes.

5.3.1 Fixed Salary per month

It is basically applied to permanent workers who received a fixed salary every month.

5.3.2 Time based systems.

Wages determined by number of worked. If an employee works more than their basis hours then an overtime payment might be made.

5.3.1.1 Formula

Total Wages = Hours x Basic rate of worked pay per hour + Overtime hour worked + Overtime premium per hour

5.3.1.2 Example

Rohan is a direct labour employee who works for 40 hours per week. He paid basic rate 15 per hour. Overtime paid at a time and half in a certain week Rohan works for 50 hours and due to his improved efficiency he is entitled for a bonus of 100, Classify amount paid to Rohan as Direct / Indirect labour cost?

Now,

a) Basic pay for standard hours.

= 40 x 15

= 600

b) Basic pay for overtime hours.

= 10 x 15

= 15

c) Overtime Premium

=10 x 15/2

= 75

d)

Direct Indirect

Basic Standard Bonus

Basic Overtime Overtime Premium.

5.4 Piecewise work System

In this case wages depend on level output achieved and is expressed as follows.

Basic earnings = Unit Produced x Rate of Pay per unit.

5.4.1 Piece rate Remuneration.

i) Straight Piece Work.

a. The basic rate per unit remains constant irrespective number of units produced

ii) Straight Piecework with guaranteed minimum wage.

a. Employees paid on number of units produced bill one is guaranteed of a minimum wage since there are occasions when production doesn't take place due to unavoidable circumstances e.g. power failure shortage of material machine breakdown etc.

5.4.1.1 Example

Rohan is paid 10 for each unit produced she is guaranteed a minimum wage of 1500 for 40 hour week in a series of 4 weeks she produces 130, 150, 170 and 180 units. Production overheads are added at rate of 5 per direct labour hour.

We need to calculate:

a) Rohan pay per week.
b) Production overhead per week
c) Conversation Cost.
d) Unit Conversion Cost.

a) Week 1 150 units

Pay 130 x 10

=1300 p 1500

= 1500

Week 2 150 units

Pay 150 x 10

1500 = 1500

= 1500

Week 3 170 units

Pay 170 x 10

=1700 f 1500

= 1700

Week 4 180 units.

Pay 180 x 10

=1800 f 1500

= 1800

b) Production Overhead.

5 for every hour

40 hours.

40 x 5 = 200 per week

c) Conversion Cost.

Direct labour week Week 1 1500

Week 2 1500

Week 3 1700

Week 4 1800

Total 6500

6500

6500 + 800

Conversion Cost 7300

d) Unit Conversion Cost

Total Units. Week 1 130

Week 2 150

Week 3 170

Week 4 180

Total 630

Total 630 Units = 7300

= 11.59

5.4.1.2 Advantages of time rate over piece rate

i) Quality of production is better since there is no hurry to produce more units.

ii) Employees feel protected and they are assured of some pay at the end of the period if time is determining factor.

iii) Does not lead to hard negotiations when rates are being revised.

iv) More appropriate when quality of output is more important than quality.

5.4.1.2 Disadvantages time rate over piecework

i) No incentive for employees paid on a daily rate to improve performance as more efficient are equally compensated as less efficient.

ii) Quality of output is much lower and supervisory cost is high since employees need close attention.

5.4.1.3 Bonus / Incentive Schemes

Bonus paid to employees to increase competence and productive productivity is a measure of efficiency with which output have been produced. An increase in production without an increase in productivity will not reduce unit cost.

Productivity is improved will enable a company to achieve its production targets in few hours of work and therefore at a lower cost.

5.5 Labour Turnover

It is a measure of the proportion of people leaving relative to the average number of people employed over a period of time. This rate should be kept as low as possible. Under such circumstances, management might wish to monitor labour turnover so that control measures might be considered if turnover rate is too high since business is losing experience and valuable staff at a fast rate.

Labour turnover is calculated for any given period by using this formula.

$$labour\ turnover\ rate = \frac{\text{Re}\ placement}{Average\ number\ of\ employees\ in\ the\ period} \times 100$$

The labour turnover proportion calculated can be compared with past figures, targets and industry averages. It provides an sign of whether an unacceptably high number of people are leaving the organization.

5.5.1 Causes of High Labour Turnover

Labour turnover usually indicates how content workers are within a business. An increasing labour turnover rate could be an indication that employees are dissatisfied with

their job or the business. The reason for the causes of a high labour turnover could be both due to internal or external factors. Internal factors include:

- Leadership that is ineffective or management styles that are inappropriate. The will pay as is being offered by the business which is less than comparable jobs within other organisations.
- Communication between management and employees may be poor.
- Employees may feel that working conditions are inadequate or they may not like certain working practices.
- The wrong people may be being selected for the wrong types of jobs due to flawed recruitment and selection policies.

External factors that may affect labour turnover within a business include:

- The state of the labour market. In this, if there is an increase in the availability of jobs than the business's employees find more attractive as they may leave for another job.
- How attractive a job is to an employee is determine by a number of factors.

These factors may include better pay, better working conditions, improved training, the location of the job and whether the job would be more interesting or satisfying.

5.5.2 Problems Associated with High Labour Turnover

High labour turnover can create problems for a business. The problems that may be caused for the business may include:

i. An increase in employment and selection costs. It is seen that these costs include administration and management costs which are received from advertising and conducting interviews. Senior administration and skilled professional positions are likely to incur even higher costs.

ii. Induction and training costs will increase. As perhaps, this will ensure that new employees become familiar with the operation of the business

and learn any necessary skills quickly, so this is a time consuming and necessary process to ensure that new employees can carry out their job roles properly.

iii. Trouble caused due to employees leaving and new untrained employees that are arriving results in negative productivity. This loss of efficiency lead and possibly lost sales would be bad if the employee that was leaving has vital knowledge or skills that the business may struggle to replace.

iv. High labour turnover can lead to deskilling within businesses. This is because of the need to simplify jobs and break them down into smaller tasks. This is to make it easier to find replacement employees if someone decide to leave the business.

5.5.3 Reducing Labour Turnover

In order to lower the labour turnover it is essential to implement better human resource management practices. Practices that can be implemented include performing exit interviews, improving recruitment and selection, improving training, monitoring labour turnover and benchmarking against comparable businesses and attempting to improve retention of long serving employees.

It is seen that exit interviews is a good way of identifying areas of concern within a business. It helps to uncover any similarities in why employees leave the business. This could play a key role in formative why labour turnover may be high. An effective exit interview should include discussion about the job itself, working conditions, pay rates, supervision and management, training and career prospects and equal opportunities. The information gathered from an exit interview would allow a business to improve on any weaknesses it has.

Also by implementing an improving recruitment and selection processes ensures that the right person is recruited for a job position. It results in increase the likelihood that the employee will remain with the business for a greater period of time. The extra money

spent on improving this process and increasing its effectiveness would be more than recovered due to lower labour turnover as time progresses.

A good planned and high quality introduction for employees is required that helps to make them feel like they are part of the business earlier. This sense of belonging and acknowledgment should serve to increase inspiration and also produce a greater level of commitment to the business. It is basically as important as on the job training and supervision is to maintain a motivation and job satisfaction it is important to try to make sure the employees job is challenging but not too challenging.

By monitoring labour turnover allows a business to recognise the increase in costs that can be received due to it being too high. Most businesses do not proactively deal with labour turnover or they are uninformed of its implications to costs. Businesses should put into practice a monitoring system that compares its labour turnover with the average of the industry, tracks trends in labour turnover over time and identify sections of the business where turnover is particularly high. The information established by this system could be useful and could be used to benchmark against other businesses. This helps them solve problems by having a comparison.

It is believed that the most precious employees that a business has is usually one that have been there since long. As they have accumulated vast amounts of human capital that is specific to that business. This would include knowledge and skills which are directly relevant to the business. This makes it very important that the business can retain these employees and reduce labour turnover from this group. To retain theses employees the business may offer endorsement opportunities and the evaluation of their rate of pay to make sure it is competitive.

A high labour earnings usually has negative penalty for a business. The cost of employment and selection of new employees can lead to a momentous loss of competitiveness and a decrease in efficiency. However, within any business there is always a natural level of labour turnover which cannot be avoided. This natural level of turnover can be beneficial for the business as it allows new ideas, skills, innovation,

talents and enthusiasm to enter their workforce. This can lead to an increase in motivation and improvement s in working practices.

5.5.4 Example.

1) At 1st January a company employed 42200 employees at 31st Dec employee Number was increased to 45600 during the year 2400 chose to leave the company.

Required.

Labour turnover rate for the year.

$$LT = \frac{2400}{(45000 + 42200)/2} \times 100 = 5.47\%$$

2) A company has 42000 staff at begin during year there was a major restructuring and 15000 staff company to work for another company 3000 new employees joined Co. in the year.

Required.

Calculate labour turnover rate for 2010

42000 – 15000 = 27000

$$\frac{42000 + 27000}{2}$$

$$\frac{3000}{34500} \times 100 = 8.7\%$$

5.5.5 Causes of Labour Turnover.

Can be divided into two

- Avoidable
- Unavoidable.

It can be avoidable due to:

1. Poor payment.
2. Lack of teaching opportunities
3. Lack of promotion prospects.
4. Poor working conditions.
5. Harassment in work place

It is unavoidable as:

1. Illness, death.
2. Retirement
3. Transfer, redeployment
4. Family matters.
5. Natural Calamities.

Review Questions

1. What is labour cost?
2. What is an Indirect Cost?
3. How will you calculate the basic wages of an employee?
4. What is a piece wise working system? Explain this with example?

Discussion Questions

Discuss the concept of Global Pricing? Write its advantages and Disadvantages?

Application Exercises

1. Suppose if you want to calculate the status of labour turnover in your factor, what measures will you adopt?

2. Mr. X is a direct labour employee who works for 60 hours per week. He paid basic rate 25 per hour. Overtime paid at a time and half in a certain week If Mr. X works for 55 hours and due to his improved efficiency he is entitled for a bonus of 120. Calculate the amount of his labour?

Lesson 6 – Procurement, Storage and Issue

Learning Objectives

- To explain the idea of Procurement.
- To analyse the necessity for improving the procurement.
- To established the need of storage.
- Understand the issues related to procurement and storage.
- To identify the effect on procurement through cost analysis.

6.1 Procurement

It was found that procurement development is the process that is used by companies or institutions to plan purchasing activity for a specific period of time. This is normally done at the time of budgeting process. Every year, departments are essential to request budget for staff, expenses, and purchases. This is the first step in the procurement planning process.

In such case, the budgets for all the departments are reviewed, and in an organization that is committed to procurement planning, the accountants spend much time to find common purchasing requirements. Based on the budgets laid or submitted, they may direct the individual departments to work with central purchasing in order to combine their planned spending for specific commodities. Further this process works best in an organization that is committed to reducing costs. Under such cases, issues surrounding delivery dates, contract compliance and customer service must be resolved internally before going out to contract.

The main intend of procurement is in case of proceed planning, scheduling and group buying that further results in cost savings. More competent business operations are therefore increases with much productivity. There are four steps that form the basis of procurement planning: group buying, just in time delivery, negotiated bulk pricing, and reduced administrative overhead.

Group buying is the process of combining the total source requirements for different departments and creating one purchase order. The departments can be actually located in

a range of buildings, with the delivery dates, quantities, and conditions listed in the purchase order. This practice is more and more common in government and public sector firms, where the same item can be purchased for a range of different institutions.

Under such cases, in time delivery is a central constituent of procurement planning. In this model, the cost of storage is approved by the supplier. They are accountable for ensuring the purchased quantities of materials on ready and available basis for delivery at specified dates and times. Such type of delivery condition is normally combined with group buying, keeping storage costs down.

Moreover, mass pricing and negotiating is important when carrying out procurement planning. Organizations that combine the total number required for a specific period of time are able to get lower pricing, based on a specific level of ordering. Discussions are typically completed by the procurement director or senior buying agent.

In case of administrative overhead, the cost is put to the group for the entire procurement to pay in cycle which includes:

- Salaries
- bear costs for procurement staff
- invoice processing
- check production
- resolving of vendor inquiries

An organized, managed process eliminates a significant amount of these costs, as they are received only once for every commodity.

Further we can say that, procurement is an important part of any business so it needs regular and modernized procurement analysis is required in any business to ensure that you are making the best use of your hard earned money. It examins about what goes on in purchasing department and what purchasing strategy are followed. With respect to suppliers, are the best suppliers been chosen and are they offering the best prices and terms?

Whatever is the size of the company, it must analyze costs and inventories. As you become larger and your purchasing needs become more complex, you should be

analyzing delivery times, maverick spending and whether you are making the best use of your suppliers. The various procurement analysis are:

6.1.1 Cost Analysis

Clearly, the first thing that you will come across is the actual cost to purchase the goods is. Costs do not stop there unluckily, there are also the costs received for delivery, handling and storage. In that case you may also have a dealer that requires advanced payments, so if you are ordering large items that take several people to move and you have to pay for them to be delivered, your actual costs are far higher than just the costs of the goods. In case of an overstock of supplies, holding costs also have to be added to the total cost. A full procurement analysis will identify the total cost of purchasing from a particular supplier.

6.1.2 Inventory Analysis

Another important region to examine is the costs of storing the items as well as the costs of not having the items to be had for sale or create. A right procurement analysis on your current inventory will be able to predict the optimal future inventory. It clearly explains about the most favorable inventory levels that will not negatively influence sales or productivity. People and machines being idle are expensive. Such kind of supply was designed by the Japanese and called as Just In Time.

6.1.3 Best Use of Suppliers Analysis

Suppose you have number of suppliers, so you might like to examine who is supplying what to you. You in that case will depend and belief on one supplier too much which is not a good idea. On the other hand, it might be that by consolidating suppliers you may get the better prices and terms that communicate to larger orders.

6.1.4 Maverick Spending

Sometimes, above all if you use purchase requisitions, items may be ordered that are not suitable or of a higher price or lower quality than you frequently purchase. It could also be that an item is purchased from one supplier, when another could have been cheaper. A procurement analysis of all your purchase requisitions and ad hoc purchases will soon

identify these nonconformist purchases that could be costing your company far more than need be.

6.1.5 Delivery Time Analysis

It is supposed that delivery times can be of importance to some of the large companies, predominantly when fresh and large goods are concerned. A large release that needs to be paid for very quickly can play havoc with a tight cash flow. Large goods need staff handling and a correspondingly large storage area.

Some goods need extraordinary storage facilities such as freezer areas that may not be available. Careful control of a company's supply needs to be maintained. All of these areas will be painted with a thorough procurement analysis of the delivery times.

6.2 Importance of Procurement

Procurement can be as easy as once off procurement or replicate orders where there is no need for a agreement or a long term relationship with a supplier. It can also be as multifaceted as finding a long term partner and managing that relationship with vendor reviews, a contract and vendor metrics. Purchasing is more often than not split into two distinct categories - that of direct purchases or indirect purchases.

It is found that, direct purchases refer to such goods and services that are needed for operational purposes. Such goods are often ordered frequently in large quantities and are industry specific. On the other hand, indirect purchases comprises of maintenance and repair needs and capital assets and services. MRO items could be prepared relatively regularly but their quantity is generally low. It is a strategic decision whether to buy and how much of each item. It is seen that, wealth assets and services are strategic issues and would normally not be accepted by a single-handed buyer. Their value is high and therefore whole committees would be concerned in buying decisions here with the buyer being responsible for the research and background information that would simplify their decision.

It should be obvious that with the division of type of purchase, organizational structure and authority should come into play. In that case, administration needs to make sure that procurement duties, sanction levels and training needs are clearly explained as per the

type of procurement that can take place. Management must also make a decision if all procurement will be done centrally or whether certain items such as stationary can be bought by others in the organization. Many companies need to rethink their procurement strategy and this is step one.

It is believed that, the total charge of ownership is an economic assessment model that was developed for software and hardware purchases at first, and is now used for far more than just these two types of equipment. In case of a TCO evaluation offers, a final statement reflecting the cost of purchase and all other aspects of maintenance, repair, training, installation, warranties, testing, quality assurance etc gets involved with that specific product. It is occasionally called as total cost of operation and is used in evaluation tools like the ROI and the IRR when capital projects are assessed.

Procurement decisions rely upon the total cost assessments that be inclined to be more effective than those based only on cost of purchase and cost of maintenance and repair. The hidden costs ought to always come back. Making sure that all possible costs are included also makes for better comparison between suppliers and those looking cheaper at the outset that make their money after purchase, will then not have the advantage as before.

It is convinced that some training should also be given to the procurement officers in respect to this methodology and they need to be monitored on this. Companies also need to make sure that a successful TCO system or tool is purchased to help out a department that normally would not have the time to spend more time than necessary on single deal. Make life easier for your procurement officials as they are the frontline making sure that you continue to function. Many companies have ongoing to realize what the benefit of highly trained procurement officials are. Not only do they need training in TCO, but also the concept of life cycle costing.

6.3 Storage

Storage is the procedure or an act of positioning and placing items in an area that is set aside for holding these items or staging these items for consignment. The most common reason for storing a product is that storage allows the other elements of production to

operate more professionally on a per-unit basis because the fixed costs associated with utilizing the element can be spread over more products; e.g., storing up to a truckload of product in a facility reduces the per-unit costs of shipping, and buffering or storage of WIP enables batch production, which reduces the per-unit setup costs. Other potential reasons for storage include:

- Time bridging: Storage allows product to be available when it is needed (e.g., storing spare machine parts at the facility).

- Processing: For some products (e.g., wine), storage can be considered as a processing operation because the product undergoes a required change during storage.

- Securing: Safe-keeping of product, e.g., nuclear waste storage.

Apparently, the lack of storage limitation in the common commodity price models is traced to the very philosophy of commodity risk hedging. Physical commodities are cumbersome: Their storage could be difficult and expensive, the quality may be deteriorated by storage, the supply may require a costly transportation. Furthermore, short positions in commodities are almost impossible. Opposing to this, futures are clean financial instruments, predestined to hedge against undesirable price changes.

For that reason, futures are frequently measured as prime underlying. Thus, the general approaches in commodity modeling attempt to exclude merely the financial arbitrage, losing the sight of the physical arbitrage, which may result from trading of financial contracts in addition to an appropriate inventory management. At the present stage, the assessment of commodity options sticks to the calculation of prices which exclude arbitrage within a given futures market, neglecting so the existing real storage opportunities. According to this, there is a need for a unified model which encompasses all commodities, distinguishing particular cases by their storability degree.

The situation here arises as the variety of storage cost structures ranges from a simple quality deterioration (agricultural products) and dependence on related commodities, to

the availability of the inventory capacities. In view of economists, the negative storage costs are useful to describe the benefit or premium associated with holding of underlying merchandise or physical good rather than a financial contract. This benefit will mostly depend on the supply levels as the marginal yield of the physical stock will decrease as the quantity approaches a level larger than the business requires. In order to complete the perplexity, the inventory levels should be highlighted, in turn, are inter-related with commodity spot prices and also could exhibit seasonality's. Basically there is no simple move toward the entire range of storage particularities. Under such case the simplified cost structure is able to capture those storability aspects which are quantitatively required for derivatives pricing. An empirical study presented in this contribution supports this assumption.

6.4 Issues

It is found that outsourcing procurement is mainly undertaken by very large companies to save money. Procurement requires a great deal of focus on cost saving, profit maximization and compliance. Often good procurement strategies can be the difference between a gainful company and a failed business.

Some companies have made their purchasing strategies a competitive advantage. Procurement can be very composite and cost consuming in many large companies so some of them are outsourcing procurement rather than build their own world-class procurement capabilities. A procurement outsourcer can control their economies of scale and have the experience and trained staff that cut costs and enhance efficiencies.

Small companies that have experienced expansion spurts and have few internal purchasing resources also outsource procurement to take advantage of external structures and expertise. Others that do not have the market leverage to obtain good discounts or the expertise to find good suppliers or purchasing staff are also turning to outsourcing procurement.

6.4.1 Benefits

- Some of the benefits that can be achieved are:
- Cost reduction from head count, training, office space and computerization.
- Market leverage by allowing for better discounts.
- Transaction cost per purchase to be lowered by economies of scale.
- Marketing knowledge of suppliers which are best for each product to be

purchased.

- Highly skilled staff that focus in purchasing.
- Improved communication between purchasing experts and the company staff.
- Better management information and purchasing analysis is available for people who understand the purchasing environment.
- Globalization means that the same products are often required in different countries.
- Negotiation by an expert in the field is often more effective and profitable.

6.4.2 Problems

Several key problems **that may arise are:**

1. Continuity of service

   It is believed that there is a hand over time that needs to be organised so that products continue to be delivered during this time. You should have a detailed transition plan in operation the commencement of any handover.

2. A reduction in control

   In case of outsourcing there are probability for loss and control over in particular day to day purchasing activities as it ensures that you retain a reliable company and have a measurable and enforceable service level agreement (SLA).

3. Outsourcing management

   It is advised that you need to manage the outsourcing procurement on a continual basis and ensure compliance to your contracts and SLA's.

4. Integration

   In such case there is a need of integration of technology that can be done mostly by the accounts and warehousing systems and the staff needs to understand what is happening on a day to day basis. Encouragement should be there to understand what is happening and treat the outsourced area as part of the business.

By outsourcing procurement companies are able to focus on their core capabilities, confident that their purchasing is being effectively and profitably managed.

Many large companies have ensured that they have "first mover's advantage" by concentrating on their core business as opposed to purchasing.

Review Questions

1. What is Procurement? State the remedial measures to improve it?

2. What is Cost Analysis? What is its importance?
3. Write short note on delivery time analysis?
4. State the importance of Procurement?

Discussion Questions

Discuss in the details what issues will be there in case of storage and procurement related to their benefits and drawbacks?

Application Exercises

1. The company has import the consignment of wheat that will be delivered on Mumbai Port. What precaution will a company be taking after delivering it? Also prepare an analysis of cost related to the consignment?
2. To execute a bulk order to be delivered within 2 2 months, what necessary process you will follow being a development manager. State the graph of program to be executed?
3. State the difference and plot a chart regarding the benefits of procuring the item from outside or establishing a manufacturing unit?

Chapter 3

Overheads

Lesson 7 – Treatment of Overheads

Learning Objectives

- To explain the importance of overheads.
- To analyse the different types of expenditure.
- To recognise the types of cost.
- Understand the scope of cost accounting.
- To identify how the benefits of using IS may be measured and assessed, and contrast with existing practice.

7.1 Overheads

In case of trade, expenditure is also called as overhead expense is the outgoing expense of the working business. It shows that such can be used for grouping of operating cost which are necessary for the continuing of the business of the project but cannot be directly associated with the products and services which are being produced or offered by the enterprise.

7.2 The overheads are of four types:

1. Factory or Manufacturing expenditure
2. Office and Administrative expenditure
3. Selling and Distribution expenditure
4. Research and Development expenditure

Whether an expense belongs to one class or another depends entirely on the benefit derived from it.

Under certain conditions, salaries of clerks will be

- factory or manufacturing operating cost, if the clerks concerned work in the factory office.
- office and administrative expenditure, if the clerks work in the general office.

- selling and distribution outlay, if the clerks work in the sales office.

In case of medium or small establishment, it is difficult to differentiate between an office and selling operating expense and above that smaller concerns treat all overhead, of whatever class, together. In case of big enterprises even more detailed classification can led to exercise better control.

7.2.1 Factory or Manufacturing expenditure:

Manufacturing operating cost explains about indirect factory-related costs that are received when a product is manufactured. Along with costs such as direct material and direct labor, the cost of manufacturing operating cost must be assigned to each unit produced so that Inventory and Cost of Goods Sold are valued and reported according to generally accepted accounting principles.

It covers things as electricity usage that operates the factory tools, depreciation on the factory tools and building, factory supplies and factory employees. How these costs are assigned to products has an impact on the measurement of an individual product's profitability. It is found that all companies benefit from determining the cost of providing products or services to their customers. Managers use these expenses in order to make pricing decisions, decide if a manufactured goods should be discontinued or initiated, and other manufactured goods related decisions. It is seen that the financial accounting related primarily to merchandising companies. Product expenses were relatively easy to identify because the expenditure was equal to the statement price plus shipping costs less any cash discounts. By determining the product costs in manufacturing companies, it is more challenging as the number of expenses that received in manufacturing arises as product begins. In case of the manufacturers differ from merchandisers certain expenditure are:

(a) Stores expenditure
(b) Labour expenditure
(c) Factory administration overheads

7.2.2 Office and Administration Expenses:

Administrative operating cost is those that received on managerial personnel - their salaries, costs of facilities provided to them and salaries of their personal workers. It is necessary costs that are associated with the management, clerical, and general functions within an organization that cannot be directly applied to some expense category related to the operation. It is from time to time considered as a part of general business expense, which takes part of basic needs such as rental space for the business, the cost of utilities, or even the salaries of personnel that are not involved in the sales efforts of the company.

It is sometimes referred to as general operating cost, as it focuses mainly on the expenses that offer a wide benefit to the organization. As such, their benefits rise above the departmental lines and make it possible for the many necessary functions to successfully take place. For the most part, any expense that is limited to a particular division or department of the company, while offering little or no direct benefit to other areas of the organization, cannot be considered a general administrative expense. Some expenses that seem tied to one department, like accounting or legal, are considered administrative because they benefit the entire organization.

It is seen that one of the common types of administrative operating expense that is found in an organization is the rate of utilities. It involves the charges related to heating, cooling, power and water that are usually identified as administrative and general operating cost. In past years, costs for Internet access, landline and mobile telephone services are also included as general operating cost. However, there is some difference of opinion as to whether mobile services should be considered a general expense or if the cost should be classified as an expense related specifically to the departments of employees who actually use the services.

Another example of administrative operating cost is the price of leasing or renting space for the operation of the organization. It includes leasing retail store space, a suite of offices in an office building, or the rental of industrialized facilities. Since the entire organization benefits from having space to operate, it is not possible in most cases to directly associate this charge with a specific department within the business.

It is found that salaries are also covered under general managerial operating expense. This is particularly true with managers and general administrator whose responsibilities involve them in many different areas of the operation. Since more than one area has the direct benefit of the manager's efforts, the expense is considered to be general in nature.

In case of regulations used to define administrative operating expense, it varies around the world, as there are certain types of operating cost that are hardly defined in nature, which include any expenses that can be directly connected with sales and marketing efforts, or research into the development of a new product or service. It is found that manufacturing expenses, both in terms of equipment and raw materials, are also not likely to be considered an administrative expense under any circumstances.

7.2.3 Selling and Distribution Expenses:

While discussing selling and distribution expenses, often discuss about the increased rate of labour, excessive discounts, or high commissions. It usually center upon tasting room sales or winery direct sales to local food outlets or whisky shops. However, even if a winery does not maintain its own sales force or uses outside brokers and salespeople, there can be hidden sales and distribution expenses involved on the wholesale level.

(a) Selling expenses

(b) Distribution expenses are those which are there to execute orders.

It should be noted that many people use terms such as "selling" and "sharing" as synonymous. Selling expense budget is a plan of planned operating expenses other than industrialized costs. It is a component of master budget and it is prepared by all types of businesses before the preparation of budgeted income statement. Usually it is divided in two sections: the selling expenses and the administrative operating expense.

In case of selling operating expense, it may be fixed or variable. For example sales commission and shipment cost on sales are variable selling operating expense where as sales salaries are fixed selling expenses. Similarly depreciation and rent on office

building are fixed administrative operating expense whereas office supplies and utilities expense are variable administrative expenses.

It is found that different variable selling and administrative operating expense varies with different types of activities. In case of sales commission vary with number of units sold, entertainment expenses with number of workers in the organization etc., is an accurate selling operating expense budget that can be made by using activity based costing.

7.2.4 Example

The following example shows a typical selling expenditure:

Company A

Selling expenditure Budget

For the Year Ending December 30, 2011

	Quarter				
	1	2	3	4	Year
Budgeted Selling Expenses:					
Sales Commission	Rs2,620	Rs 2,380	Rs 2,410	Rs 3,590	Rs 11,000
Freight-out	3,890	3,510	3,050	5,030	15,480
Budgeted Admin. Expenses:					
Office Rent	8,000	8,000	8,000	8,000	32,000
Office Salaries	10,000	10,000	10,000	10,000	40,000
Office Supplies	1,120	1,030	1,560	2,370	6,080
Miscellaneous Expenses	700	700	700	700	2,800
Total Selling & Admin. Expense	Rs 26,330	Rs 25,620	Rs 25,720	Rs 29,690	Rs 107,360

7.3 Cost Types

7.3.1 Production Cost

It is the expenditure of the sequence of operations which begins with supplying materials, labour and service and ends with the primary packing of the product.

7.3.1.1 Calculating costs of production

- Costing is an important aspect of production as:
- by knowing how much it costs to produce an item or to carry out an activity it is possible to price the item or activity
- it becomes possible to see how much of the total cost of an organisation, production line, or process can be attributed to particular items or activities
- it makes it possible to identify costs that are too high and can be cut out
- it is possible to make comparisons between the costs of different activities.

7.3.1.2 The two main costs that are involved in production are:

Direct costs.

These are the types of expenses that are linked with each unit of output created. For example, in producing a four wheeler where a company will incur into Audi which would be covered under direct material costs that go directly into labour costs.

Indirect costs

Such expenditure are overheads that received while making everything in the factory e.g. factory lighting, rent and management salaries. These indirect expenses need to be apportioned in a appropriate way to the products made e.g. an accountant will work out how much of the indirect expenses should be apportioned to each individual car produced.

7.3.2 Selling Cost

This cost relates to the cost of seeking to create and stimulate demand sometimes termed and of securing orders.

7.3.2.1 Effects of Selling cost:

- Selling cost influences the commercial desire to purchase a commodity.
- They not only aware the existence of commodity but also told that the commodity in question is better than its substitutes.
- If the demand cost increases for a product the producer is able to sell more at the same price.
- It succeeds in making the demand more elastic.

- In case if the producer is able to reduce the selling price by controlling the selling cost then he will be able to sell more quantity and vice versa.
- Selling cost increases the profits.
- It increases the firms total cost the increase in the total revenue surpasses the increase in cost thus bringing in more profit.

7.3.3 Distribution Cost

In such cases the expenditure of the sequence of operations begins with making the packed product available for despatch and ends with making the reconditioned returned empty package, if any, available for recycle. It includes expenditure received in moving articles to central or local storage; distribution cost includes expenditure received in moving articles to and from prospective customers as in the case of goods on sale or return basis. In the gas, electricity and water industries 'Distribution' means pipes, mains and services which may be regarded as equivalent to packing and transportation. A distribution cost is a part of the cost of doing business. Items are rarely made and sold in the same location. Instead, an item is made in a factory or other mass-production location.

The item is then shipped or transported from the area where it is made either to an end user or to a middleman who sells the product to end users. The methods of shipment vary depending upon the item and the structure of the business. For example, individual items may be shipped directly to consumers in the case of a wholesaler or distributor who engages in direct selling, or hundreds of items may be shipped from a wholesaler or a factory to retail locations where the items are sold.

It is normally built in to the price of an item. As in case, if a retailer orders items from a warehouse, either the retailer or the wholesaler must pay the cost of moving those items to the retailer's location. If the wholesaler pays the distribution cost, the wholesaler may charge the retailer more for the purchase of the item to pay for the cost of shipping. It is found that, if a retailer pays the shipping cost, that cost is factored in when the item is priced for resale to the end user or consumer.

True distribution cost generally refers only to actual shipping fees. In other words, a distribution cost may be the cost of employing a truck driver to drive items to the end

user. The cost may also refer to the cost of shipping the item via the mail or some other method.

In various cases, advertising and marketing costs are included as a part of distribution cost, since advertising is necessary to secure individuals who want to purchase the item. In some cases, advertising costs are listed separately as marketing costs, and are calculated separately. The distribution costs are then a separate line item on a budget or profit/loss statement that tracks the purchase amount or sales cost of an item.

7.3.4 Administration cost

In this the expenditure of formulating the policy, directing the organisation and controlling the operations of an undertaking which is not related directly to production, selling, distribution, research or development activity or function. It must be calculated on the base of actual costs and capable of verification. For both direct and indirect costs, it must be possible for an auditor to verify the respective expenditure on a basis of invoices and expenditure born directly by the project institution. It is found that in this, all calculations must be properly documented and self-explanatory.

The allocation of the organisation's eligible administration expenses to the project could be done e.g. on the basis of the following keys depending on which key best reflects the type of cost:

- The ratio "number of people working for the project / number of people working in the organisation or department"

- The ratio "number of hours worked on the project / number of hours worked in total in the organisation or department"

- The ratio surface used by the personnel working for the project/surface of the organisation or department.

7.3.5 Research and Development Expenses

It shows the research operating expense as “the expenses of searching for new or improved products, new application of materials, or new or improved methods.” Equally, development operating expense is defined as “the expenses of the process which begins with the implementation of the decision to produce a new or improved product.

In case of the investigation is conducted in the methods of production, the research operating expense should be charged to the production unexpected costs; while the expenditure becomes a part of the administration unexpected costs if research relates to administration.

In the same way, market research operating expense is charged to the selling and distribution unexpected costs. Development costs received in connection with a particular product should be charged directly to that product. These operating expenses are usually treated as “deferred revenue expenses,” and recovered as a cost per unit of the product when production is fully established.

It is seen that research expenses of a routine nature got on new or improved methods of manufacture or the improvement of the existing products should be charged to the general over head. Even in this case, if the amount involved is substantial it may be treated as overdue revenue expenditure, and spread over the period during which the benefit would increase.

Expenses spent on fundamental research which is not related to any specific product are treated as apart of the administrative unexpected costs. Under such cases, research proves a failure; the cost associated with it should be excluded from costs and charged to the costing Profit and Loss Account.

7.4 Controlling Overheads

It is observed that overheads are by nature those costs which cannot be directly related to a product or to any other cost unit. To calculate the total cost of a product or a unit of service, the overheads must be included. Thus we have to find out away by which the overheads can be distributed over the various units of production.
In this connect a method of working out the distribution of expenses over various products could be to decide the amount of actual operating expense and distribute them over the products. It still creates a problem since, the definite amount of overheads can be known only after the financial accounts are closed. Under such cases, by waiting so long, the expenditure sheets will be able to lose their main advantages that could be of utility to the management. All the decisions for which expenditure sheets are prepared are immediate decisions and cannot be postponed till the actual overheads are known.

It was observed that, some method has to be found by which fixed cost can be included in the cost of the products, as soon as prime cost, the cost of raw materials, labour and other direct fixed cost, is ascertained. One method is to work out fixed rates for absorbing expenditure. These rates are worked out before an accounting period begins by estimating the amount of overheads and the level of activity in the ensuing period.

It was thus believed that as soon as the prime cost of a product or a job is available, the various expenditure are charged by these rates. It further shows that the overheads are charged on an estimated basis. After sometime when the actual expenditure are known, the difference between the expenditure charged to the products and actual overheads is worked out and adjusted.

7.4.1 Manufacturing Overheads:

It is observed that the manufacturing expenditure forms a large piece of total expenses. It is an important factor or a concern for a business firm to properly absorb

these overheads over the cost of the fabrication. The absorption of manufacturing overheads is performed by estimating and collection of cost allocation. Once the cost apportionment and reapportionment are calculated, the absorption of manufacturing overheads is done. The over and under absorbed overheads are then treated for adjustment.

Usually manufacturing overheads form a considerable portion of the total overheads. It is significant, that such overheads should be properly absorbed over the cost of production. The following procedure may be adopted in this regard.

7.5 Treatment

It is believed that the overhead expenses act as an important role in many manufacturing companies. It is an indirect manufacturing expenses. Accountants use a cost allotment process to allocate overhead expenses to products. It includes exploring the underlying reasons for cost allocation, use of predetermined overhead rates, separation of mixed costs into their fixed and variable components and capacity measures used to compute fixed overhead rates. In spite of of the method, the company uses to assign overhead to production, the company must dispose of the underapplied or overapplied overhead at the end of the year.

Overhead includes any indirect manufacturing expenditure that occurs while manufacturing a product or providing a service. It is found that, indirect material and labour are part of overhead. Direct labour cost has been declining while overhead costs have been increasing. In case of manufacturing concerns, direct labor accounts for only 10 to 15 percent of the cost of production. This trend is due to the increased used of automation.

It was observed that overhead costs can be fixed or variable. In case of variable overhead it includes:

- indirect material
- lubricants
- variable portion of electricity

Indirect labour paid on an hourly basis is a variable overhead cost. In this the depreciation using the units-of-production method or service-life method indicates an example of a variable overhead cost.

Fixed overhead costs include:

- straight-line depreciation on factory equipment
- factory license fees
- factory insurance
- property taxes.

Indirect labor paid on a salary basis is a fixed overhead cost. The fixed portion of mixed overhead costs such as maintenance is also included in fixed overhead costs.

It is believed that, quality costs acts as an important category of overhead costs.

Managers are concerned about quality at two levels which are:

1. concerned about the customer's perception of quality
2. concerned about the quality of the production process

This costs amount to 20 to 25 percent of sales. It is variable, step fixed or fixed. The two major categories of quality costs are:

(1) cost of control

(2) cost of failure to control.

The cost to control includes prevention costs and assessment costs. The cost of failure to control includes internal failure costs and external failure costs.

- **Prevention costs** include employee training, improved production equipment, and researching customers' needs.
- **Appraisal costs** are the costs of inspection and monitoring.
- **Internal failure** costs include the costs of scrap and rework.
- **External failure** costs include handling customers' returns due to poor quality, warranty costs, and handling customers' complaints.

In a company, the fixed cost is accumulated over a period and allocates the overhead costs to the products manufactured or services rendered during the period. It is found that c**ost portion** is assigned to the indirect costs to one or more cost objects that uses reasonable basis. It involves a number of accounting procedures. In cost accounting, the accountant must assign overhead expenses to products using **predictors or cost drivers.** This process reflects the cost principle, which requires that all production costs attach to the products manufactured.

Three primary reasons for allocating overhead costs to products are:

(1) to calculate a full cost of the product

(2) to motivate the manager to manage costs efficiently

(3) to analyze alternative courses of action for planning, controlling, and decision making.

The primary reason relates to financial accounting principles that require that full cost that must include the indirect costs of manufacturing. Non factory overhead costs are not usually due to products under generally accepted accounting principles. The other two reasons for overhead allocation relate to internal purposes. A company may use different methods to allocate overhead for different purposes.

Companies uses either **actual cost system** or **normal cost system** in order to allocate overhead costs to production. In an actual cost system all production costs are actual costs.

- A**ctual cost system** does not provide real overhead costs until the end of the period. In this the managers need timely cost information to make good operating decisions. So many companies uses a **normal cost system**.
- N**ormal cost system** uses actual costs for direct material and direct labor and a **predetermined overhead rate** for overhead costs. In this, the accountant computes the predetermined overhead rate by dividing the budgeted overhead costs for the period by the budgeted activity level for the same period.

This period is normally used to determine the overhead rate is one year. The overhead charged to work in process is the fixed rate that is multiplied by the actual activity level. Such overhead is known as **applied overhead**. So functional overhead is the amount of overhead that is given to the Work in Process Inventory. It is equal to the fixed rate which is multiplied by the actual activity. The company could use separate accounts to record actual overhead and applied overhead or use a single account. Additionally, the company could use separate accounts for fixed and variable overhead or multiple overhead accounts by activity or department. If the company uses separate accounts for fixed and variable overhead, the accountant must separate mixed costs.

Three reasons exist for using a predetermined overhead rate which includes:

- a predetermined overhead rate that allows the company to charge overhead costs to products during the period rather than at the end of the period.

- a predetermined overhead rates compensate for changes in actual overhead costs unrelated to the activity level.
- a predetermined overhead rates that can overcome the problem of changes in the activity level that do not affect actual fixed overhead costs.

Changes in the **activity level** do not affect fixed overhead costs, but changes in the activity level cause actual fixed overhead costs to vary on a per-unit basis. Using a predetermined overhead rate reduces such per-unit cost fluctuations.

Using production volume as the activity base makes sense if the company makes only one product. In order to allocate overhead cost to multiple products, the company must use an activity measure that should be common to all the products. Preferably, the base should be a cost driver. It was thought that many companies have used direct labor hours or direct labor cost in order to allocate overhead cost to production. By using such direct labour hours or direct labor cost in a highly automated plants, the results obtained is extremely high with high overhead rates and with distorted product costs. I was seen that the high overhead rate occurs as the overhead costs are higher in automated plants while direct labor hours and direct labor cost are lower. Machine hours may be a more reliable base in automated plants. Also, some companies use activities such as machine setups, number of defects, and material handling time to assign certain overhead costs to products.

A company debits Manufacturing Overhead for actual overhead costs and credits various accounts as appropriate. A company applies overhead by debiting Work in Process Inventory and crediting Manufacturing Overhead. Manufacturing Overhead account will have a balance at the end of the period. If actual overhead is greater than the applied overhead, then overhead is **under applied** and the Manufacturing Overhead account will have a debit balance. If actual overhead is less than the applied overhead, then overhead is **over applied** and the Manufacturing Overhead account will have a credit balance. A company must close the balance in the Manufacturing Overhead account. If the balance is not material, the accountant closes it to Cost of Goods Sold. If the balance is material, the accountant must allocate it pro rata among Work in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold.

Two causes of under applied and over applied overhead arises as:

(1) a difference between actual and budgeted costs

(2) a difference between actual activity and activity or capacity used to compute the fixed overhead application rate.

In order to find the per-unit fixed overhead costs, management must specify the **capacity level** used for the denominator. Capacity is a measure of production volume or some other activity base. Possible capacity measures are t**heoretical capacity, practical capacity, normal capacity, and expected capacity.**

- **Theoretical capacity** is the maximum potential activity for a particular period assuming that everything works perfectly.
- **Practical capacity** is the production the company could achieve taking regular operating interruptions into consideration.
- **Normal capacity** is the long-run average capacity considering cyclical fluctuations.
- **Expected capacity** is the anticipated activity level for the upcoming period based on the current budget. Management often uses expected capacity in computing the predetermined overhead rate.

Review Questions

1. What are overheads? State its type?
2. What is Factory expenditure? Compare it with manufacturing expenditure?
3. Write the similarities and distinction points among office and administration expenses?
4. What is selling cost and what its affect?

Discussion Questions

Discuss in details the overhead cost? Write the suggestive measure to control it?

Application Exercises

1. Suppose you are the production manager in an export house. A workorder for sample is to be delivered in short period. The production involves extra time and cost. Prepare a static's describing the activity involved?
2. Give the justification of cost that is involved while completing the assignment from manufacturing to dispatch. Give steps to be followed?
3. State the points that best explains about the administration expenses?

Lesson 8 – Absorption of Factory Overheads

Learning Objectives

- To know more about factory overheads.
- To analyse the overhead absorption rate.
- To recognise the direct labour cost.
- Understand the scope of prime cost.

8.1 Introduction

It was observed that the production department overheads are absorbed over production units. Under such case, the overhead expenses can be absorbed by estimating the overhead expenses and finally by working out an absorption rate. In case the overheads are estimated, their absorption is carried out by adopting a pre-determined overhead absorption rate.

It was observed that after preparing estimates of factory overhead for production departments, the next step is to select a factory overhead absorption base for each production department. The base to be selected for this purpose should be the principal cost deriver of factory overhead of the department. It should be noted that cost driver is used as a measure of activity and the magnitude of which influences if magnitude of cost of relevant cost objectives.

Factory overhead application base should be a measure of activity which has causal relation with incurrence of factory overhead. The most simple and direct measure of activity of a manufacturing concern is number of units produced.

8.1.1 Advantages

1. It is simple to understand and easy to calculate.

2. It is suitable when the prices of material do not fluctuate widely.

3. It is suitable when the products are uniform. Disadvantages

4. This method ignores the time factor.

5. This method is not suitable when the material costs fluctuate widely.

6. It ignores the distinction between jobs done manually and jobs done by machine.

8.2 Overhead Absorption Rate

Once the estimates of factory operating cost for production division are planned, the next step is to select a factory overhead absorption base for each production department. The base to be selected for this purpose should be the principal cost deriver of factory overhead of the division.

It is assumed that a cost driver is defined as a measure of activity the magnitude of which influences the magnitude of cost of relevant cost objectives. In other words Factory overhead application base should be a measure of activity which has causal relation with incurrence of factory overhead.

It was found that the most simple and direct measure of activity of a manufacturing concern is the number of units produced. It is seen that it can be safely regarded as the best cost driver for the purpose of factory overhead absorption in such situations where there is a mass production of homogeneous units or where a few products are produced in batches.

In case of costing industries such as sugar, cement etc. Kilogram or a bag may be regarded as unit of output. Under such case, a bottler may use a bottle or a liter as a unit of output. In bate costing industries the activity is measured "in equivalent number of units produced.

In case of a chip-board factory, in production of three grades of chip board as A, B, C a square foot is used as the unit to measure out put. Technical estimates reveals that

factory overhead cost of one square foot of grade B and grade C is respectively one-half and one-fourth of grade A.

In value of proportion of factory overhead cost of one square foot of chip board among its three grades as 4:2:1, the purpose of factory overhead absorption deals in one square foot of grade A, B, and C which shall be regarded as equivalent to 4 Sq, Ft. 2 Sq, Ft. and 1 Sq. Ft. respectively. On the other hand in job costing industries each unit of output is quite different from the other.

In case of a furniture manufacturer the production of chairs, tables, beds and many other items, each according to specifications of customers. In such a situation because of the dissimilarities, a unit of output can neither be used to measure the activity nor as base for factory overhead absorption. Therefore, some other common denominator should be adopted to measure the activity and as base for applying factory overhead to the products. Basis generally selected for this purpose are listed below in descending order of frequency of use:

1. Direct labor cost;
2. Direct labor hours;
3. Machine hours;
4. Direct materials cost;
5. Prime cost.

With regardless, it was observed that there was no hard and fast rule regarding selection of the absorption base can be prescribed. However, two guiding principles in this respect are:

- selected base should give accurate results
- cost of operating the base should not be greater than the benefit derived from accuracy.

In many cases, it was believed that the factory overhead expenditure variations with time that was spent on the products or Jobs, so, the direct labor hours and machine hours are more favourable cost derivers. But use of direct labor hours or

machine hours as factory overhead absorption base requires additional cost and clerical efforts to collect data of time spent on each job,

As a result, for the sake of convenience, administration may decide to adopt direct labor cost as base for applying factory overhead, provided that it also gives approximately correct results. Use of direct materials cost as factory overhead absorption base is rarely optional as the prices of materials are subject to violent variation as well as direct materials cost seldom represents a cost driver of factory overhead. Same is the case with prime cost as a base for factory overhead absorption.

8.2.1 Direct labor cost

Direct labour is a type of work that is directly related with the production of good or service. It includes only those who operate the machines or perform the tasks that result in the production of goods. Direct labor cost is the cost of personnel that can be identified in the product, such as the salary of the person who works at the production machine, but not the administrator's or janitor's salary.

It is observed that direct labor cost is the cost of wage-bill or payroll that can be specifically and consistently assigned to or associated with the manufacture of a product, a particular work order, or provision of a service. Direct labor costs differ from one factory or company to another depending upon the nature of production. The type of labour is directly related to manufacturing of products in the company. The direct labour cost includes:

- wages
- payment for subsidized food
- subsidized housing
- educational benefits to the children of the workers
- benefits related to bonuses, allowances and perks.

In order to calculate direct labor cost not only payment of wages but also the company insurance premiums, benefits costs, payroll tax contributions, etc. There are several steps involved in calculating the direct labour cost that includes:

- the total wages of the employees to be calculated
- the costs that is associated with the employees and their pension

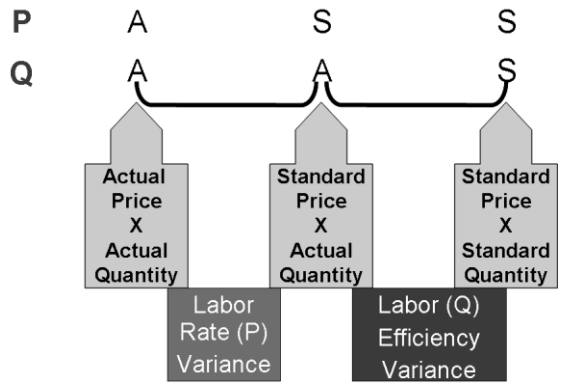
The company's health insurance cost per employee is calculated. The total cost the company that must paid in workers compensation premiums is also included. Also the employer contribution for the taxes that should be paid for each employee is included. The additional costs associated with hiring employees, such as advertising open positions or hiring a headhunter is included for the calculation. Finally all these category costs bring up the total direct labor cost.

8.2.2. Direct labor hours;

It is found that a labor price standard is the amount that should be paid per hour for direct labour. It is often identified as labor rate standard. A labor quantity standard is the amount of hours that should be sued for manufacturing, often referred to as the labor efficiency standard. Consider a matrix where

- P = Price
- Q = Quantity
- A = Actual
- S = Standard

In this it is seen that there are two rows on which the letters P and Q are placed on the left side. The first row will have only Price rates of labour. The space filled by A in the P row will have the real price of labour and in the space provided by S on the P row, we write as Standard Price of direct labour. The second row is used to write the real quantity and standard quantity of hours that are allowed for production.



It is found that the three columns that contain the amounts for AA, SA, and SS are multiplied to give a total under each of the three columns. The total of AA column is compared to the total of SA column. Here the difference is marked as Labor Rate Variance. The total of the SA column is compared to the total of the SS column and the difference is labeled as Labor Efficiency Variance.

8.2.3. Machine hours;

It is seen that in factories or in divisions, where manufacturing is mainly done by machinery, this method gives greater accuracy than any of the other methods. It defines as the rate calculated by dividing the budgeted or estimated fixed cost or labour and overhead cost attributable to a machine or group of similar machines by the appropriate number of machine hours. In this the hours may be number of hours for which the machine or group is expected to be operated and the number of hours which would be similar to normal working for the factory or full capacity. In a highly mechanised cost centre, majority of the overhead expenses are received on account of using the machine, such as, depreciation, power, repairs and maintenance, insurance, etc. It is seen that machine hour rate are provided for equitable basis for absorption of overheads in machine intensive cost centres.

The fixed cost is to be departmentalized first. Then, each machine or a group of machines within the department shall be treated as a cost centre, and all the items of expenses are allocated to the machine cost centres on some suitable basis. A machine hour rate is then computed by dividing the total overhead for the machine cost centre by the anticipated machine hours. For example, in the cigarette making department,

there are twenty machines of which eight machines manufacture filter cigarettes, five machines plain medium cigarettes, and seven machines produce magnum size cigarettes. In such a situation, three different machine hour rates are to be computed for three groups of machines. Machine hour rate can be bifurcated into variable or running expenses and standing or fixed expenses in order to differentiate between expenses being received while running the machine compared to when it remains idle.

For example, light, motor oil, lubricant and cotton waste, repairs and maintenance expenses are running or variable, while depreciation, rent and taxes, lighting and heating, insurance and supervision are included under standing or fixed charges. Lastly, a machine hour rate may include the wages of the machine operator and attendance, if they become part of the complements. For example, in cigarette making machine, the operator and two catchers become part of the machine, because as long as the machine operates, they have to attend the machine and gain the same speed, say 2000 cigarettes per minute, as the machine produces. Such rate is called comprehensive machine hour rate. Needless to mention that operators wages shall be included as variable overhead expenses.

8.2.4. Direct materials cost;

Direct equipment or material cost is the cost which can be easily identified with the unit of production. For example, the cost of wineglass is a direct materials cost in manufacturing of whisky bottles. The manufacture of products or goods required material as the prime element. In general, these materials are divided into two categories. These categories are direct materials and indirect materials. Direct materials are also called productive materials, raw materials, raw stock, stores and only materials without any descriptive title. Steps to estimate the direct material costs are:

- Find the total amount to be produced. This is usually noted as the order size.
- Calculate the total amount of raw materials required to produce the order size.
- Multiply that amount by the cost associated with the raw materials.
- If there is a waste or scrap, its cost should be added to the costs in step 3.

- If the waste or scrap can be sold at salvage value, this value should be subtracted from the costs in step 4.

8.2.5. Prime cost.

A business's expenses are the type of expense that is related to the materials and labour that are involved in the manufacturing. Prime cost is a way of measuring the total cost of the production inputs needed to create a given output. By analyzing its prime costs, a company can determine how much it must charge for its finished product in order to make a profit. By lowering its prime costs, a company can increase its profit margin and/or undercut its competitors' prices.

Review Questions

1. What are the basic advantages of factory overheads?
2. What is Overhead Absorption rate?
3. What is direct labour cost? Calculate the cost of direct labour charges involved in a specific work?
4. What is a prime cost?

Discussion Questions

Discuss in details the overhead cost? Write the suggestive measure to control it?

Application Exercises

1. Suppose you are the production manager in a factory. What necessary steps ou will follow to reduce factory overheads?
2. Being the manufacturing incharge, how will you calculate the labour cost that incurred during the production of an order?
3. Being a manager in a company, how will you incurred the prime cost that is involved in a respective factory?

Lesson 9 – Classification and Distribution of Overheads

Learning Objectives

- To explain the different overheads.
- To analyse the necessity for Methods involved in ascertainment of costs.
- To recognise the types of costing.
- Understand the scope of cost accounting.
- To identify how the benefits of using IS may be measured and assessed, and contrast with existing practice.

9.1 Introduction

In terms of general characteristics, we classify or group the expenses. Such grouping helps the managers and other officers concerned to classify the Over heads. As per the common individuality, we can classify or group the overheads.

9.2 Classification

Major common characteristics through which we can classify overheads are:

1. Behaviour
2. Elements
3. Functions.

9.2.1 Behaviour Wise Classification

On the basis of variability nature of production the overheads can be classified as:

- **Fixed Overheads**
- **Variable Overheads**
- **Semi-variable overheads**

9.2.1.1 **Fixed Overheads:**

In some cases, cost of some expenditure such as Employee Salaries, House Rent, legal expenses, bank charges etc. comes under fixed cost. There is no change in such overheads irrespective of the output or level of manufacturing. In case of less production or increase in production, there will be no affect in such overheads. Effect of such fixed expenses will decrease if the production increase as the increase in number of units will decrease the cost. On the other hand decrease in production increase the effect of fixed cost per unit.

"Fixed" overhead expenses remain the same in total even though the volume of production may increase by a diffident amount. As seen in case of assets tax on the manufacturing facility is a fixed overhead. The amount of the assets tax bill was not dependent on the number of units produced or the number of machine hours that the plant operated. Apart from this, other examples include the reduction or rent on production facilities; salaries of production managers/ supervisors; professional memberships and training for personnel in the manufacturing unit. It is found that the fixed manufacturing overhead costs present themselves as large monthly or annual expenses, they are, in reality, a small part of each product's cost.

The estimate below shows fixed manufacturing overhead:

Rent for space per month including heat/air	Rs 600
Rent for equipment per month	Rs 100
Total Fixed Overhead per Month	Rs 700

It is seen that a small amount of these permanent manufacturing expenses must be billed to each apron produced. This is referred to as absorption costing and it explains why some accountants say that each product must "absorb" a portion of the fixed manufacturing overhead costs.

In the similar way we can assign or allocate the permanent costs which are base on things such as direct labor hours, machine hours, or of direct material. However, we will allot the permanent manufacturing overhead expenses to the aprons by using the same method we used for variable manufacturing overhead—by using direct labor hours.

Companies typically set up a standard permanent manufacturing overhead rate prior to the start of the year and then use that rate for the full year. It is illustrated that during the month of December 2011 the standard permanent manufacturing overhead rate is to be utilized in year 2012 for this the necessary steps are followed:

Step 1. Project/estimate the fixed manufacturing overhead costs for the year 2012. .

Step 2. Project/estimate the total number of standard direct labor hours that are needed to manufacture your products during 2012.

We can do that from the information given earlier as:

	Large Apron	Small Apron	Total

Time required to cut and sew - the standard	0.3 hr. (18 min.)	0.2 hr. (12 min.)	
Planned production for the year 2012	5,000 aprons	3,000 aprons	
Total standard direct labour hours in the planned production for year 2012	1,500	600	2,100

Step 3. Calculate the permanent manufacturing overhead rate to be used in 2012.

= Expected fixed manufacturing overhead for 2012 ÷ Expected total standard direct labors hours for 2012

= Rs 8,400 ÷ 2,100 Standard DLH

= Rs 4 per Standard Direct Labor Hour

It is believed that the company develops a fixed annual rate that is standardized throughout the year, even though the number of units manufactured may vary month by month. It is expected that in a company, monthly rates would be high when few units are manufactured which mathematically equals to Rs 700 ÷ 100 units produced = Rs 7 per unit and it will be low when many units are produced so the monthly fixed costs results to Rs 700 ÷ 350 units = Rs 2 per unit.

9.2.1.2 Variable Overheads:

Some of the overheads like electricity, oil, commission, indirect materials, stationary, etc. will differ according to the production or unit of products. Such overheads are called changeable overheads. Increase in production will result in increase of such overheads. Decrease in production will result in decrease in variable overheads.

Variable overhead effectiveness variance is the total of standard variable overhead rate and the difference between the standard units which are allowed of the variable overhead application base and the real units used as variable overhead application base. Assuming

that variable operating cost application base is direct labor hours, which can be calculated mathematically as:

$$\text{VOH Efficiency Variance} = (\text{SH} - \text{AH}) \times \text{SR}$$

Where,

SH are standard direct labor hours allowed

AH are the actual direct labor hours

SR is the standard variable overhead rate

It is seen that the standard direct labor hours allowed in the formula can be calculated by multiplying standard direct labor hours per unit into actual units produced. As the name suggests, variable overhead effectiveness variance measure the effectiveness of production department by converting inputs to outputs. Variable overhead effectiveness variance is constructive when standard hours allowed exceed actual hours. Therefore a constructive value is favorable by implying that the production process was carried out efficiently with minimal loss of resources.

On the other hand when actual hours exceed standard hours allowed, the variance is negative and unfavorable implying that production process was inefficient.

9.2.1.3 Example

From the data given, find the variable overhead efficiency variance:

Number of Units Produced	620
Standard Direct Labor Hours Per Unit	0.2
Actual Direct Labor Hours Used	130
Standard Variable Overhead Rate	Rs 9.40

Solution

Actual Units Produced	620
Standard Direct Labor Hours Per Unit	0.2
Standard Direct Labor Hours Allowed	124

Standard Hours Allowed	124
Actual Hours Used	130
Difference	− 6

Standard Variable Overhead Rate	Rs 9.4
Direct Labor Efficiency Variance	Rs − 56.4

9.2.1.4 Semi-Variable Overheads:

Such type of overheads is related to:

- Depreciation
- cost of supervision
- telephone charges
- repair and maintenance

These expenditure are grouped under the Semi-variable expenses. They are partly fixed and partly variable and the changes in such overheads does not directly balanced the variation of production.

9.2.2 Element wise Classification

In case of elements wise, overheads can be classified as:

- Indirect Labour
- Indirect Materials.
- Indirect Expenses.

9.2.2.1 Indirect Labour:

Indirect labour is that which cannot be easily allocated to a particular job, process or production unit. Such labour is not directly involved in the manufacturing of a product or in a job or service, but indirectly helps in production activities. It is the labour that cannot be directly identified with a job, process or operation, is generally treated as indirect labour. An indirect labour can be:

- Labour employed as supervisors, repair workmen, inspectors.
- Maintenance workers such as workshop cleaner, mechanics, etc.
- Labour engaged in purchasing, stores, factory office, time-keeping, canteen, etc.

Pay and salaries paid to such labour are treated as indirect cost which is included in overheads. The importance of distinction between direct and indirect labour costs is to provide a more correct product cost and to exercise a strict control over labour cost. Labour expenses received for the payment of:

- Watchman

- Cleaner
- Clerk
- Supervisor
- Peon

These are not directly part of the labour expenses of production but they help or assist production, they are not directly engaged in the process of production. Such overheads are classified under the head of indirect labour expenses.

9.2.2.2 Indirect Materials:

Indirect material is a class of indirect cost which is basically the materials that are used in a production process, but are not directly traceable to a cost object. Indirect material costs are considered overhead costs and treated accordingly. Materials such as:

- lubricating oil
- fuel
- coal
- sand paper
- Cotton waste

Such materials do not become a part of finished goods and are called indirect materials. At the same time some materials which may form the part of finished goods but of small value like pins, bolts, nuts, screws, washers etc can be considered as indirect material for the convenience of finding the cost.

9.2.2.3 Indirect Expenses:

Indirect expenses are such type of expenses that support more than one action of the charity or that authorise the charity to carry on its work. Even if you did not carry out a specific activity, you would still incur some or all of these costs. As seen that in case of the charity publishes a regular monthly journal that provides news and information to members and giving thanks to its donors and sponserers for their support as well as promotes the upcoming events of the organization.

The charity's information system should be used to provide counseling services as well as support other services and activities. The chief executive officer travels across the country, teaching education programs, visiting funders, and doing performance reviews

with regional staff members. A laboratory is sometimes used by several researchers and sometimes rented out to other organizations.

It is observed that, indirect expenses normally relates to more than one activity and may be received whether or not the activity takes place. It is usually harder to identify what portion of indirect operating expense relates to each of a charity's activities. In such cases, you need to develop a reasonable basis for spreading the costs or allocating them among the relevant activities. Expenses related to

- insurance
- advertising
- rent
- depreciation
- power and lighting

comes under overhead of indirect expenses. All expenses which will not come under the indirect labour and indirect materials come under the head of Indirect Expenses.

9.2.3 Function-wise Classification

Certain overheads are classified as per the categorisation based under the division or function comes under the function wise classification of overheads.

Following are the major functions or departments:

- Production overheads
- Administration overheads
- Selling overheads
- Distribution overheads.
- Research and Development

9.2.3.1 Production overheads:

Production overheads are those categories of indirect costs that are connected with production of goods or service. For example, heating, energy, rent and electricity are not actually the part of the finished product but without them, the production would not be achievable. It is necessary to include them in the final pricing of the product for sale to ensure you can pay your bills etc. Under such overheads, various expenses results from the initial stage of production till the final completion of finished product. These includes:

- indirect wages

- indirect material cost
- indirect factory expenses

These expenses come under the function of manufacturing or at the production division for maintaining and running the production unit of an organization. Indirect earnings, indirect expenses and indirect materials used for the production division come under the production expenditure.

9.2.3.2 Examples:

1. Indirect Expenses like factory light, factory rent, normal loss of material, overtime, Idle time etc.
2. Indirect Materials like cotton waste, grease, coal, oil etc
3. Indirect Wages like salaries of store keeper, supervisor, peon, watchmen etc.

9.2.3.3 Administration overheads

There are three methods of accounting the administrative overheads which are discussed as shown:

i. Apportioning between production and selling and distribution function:

As per this method, whole administration overhead are apportioned between the production and sales departments on some reasonable basis, on the premise that manufacturing and selling are the two main functions of the organisation and administrative expenses are received mainly for these two functions. It is found that, all expenses pertaining to administrative function should be proportionately charged to production and selling departments, and absorbed by the products as part of production and selling and distribution overheads.

ii. Transfer to profit and loss account

This particular method recognises the items of administration operating expense that are of fixed nature, having no straight relationship with production and sales. They should be treated as period cost and can be written off to costing profit and loss account in the period in which they are received.

iii. Treating administration overhead as separate addition to cost of productions sales

This method administered the fixed cost and treats it as a separate function, and appears as a separate element of cost of goods sold. The most difficult problem arises in selecting an equitable base for recovery or absorption. The following bases are normally used for determining the rate of application:

- Factory cost
- Gross profit
- Net sales value
- Number of units sold or manufactured

It is believed that each one of the above basis has relative merits and demerits, but generally factory cost is adopted for product cost oriented products, while one of the **last** three bases is used where selling and sharing cost is main. On the other hand, it should be emphasised that although administration overhead will be added to cost of sales, the same should not be loaded with inventory of finished goods or work-in-process.

Control of Administrative Overhead

It was found that the administrative overhead operating cost is of fixed nature, arising out of management policies. So managing of such expenses requires collection under correct cost account numbers for each administrative department. In order to control such overheads collected for an accounting period, they are supplementary compared with similar figures of the previous period. Such a comparison will reveal efficiency or inefficiency of the particular department. However, this method gives a limited degree of control, if the level of activity is not constant during the two periods under comparison.

It was acknowledged that the past year's data may not give the correct valuation criteria, because it incorporates inefficiencies of the past year and fails to consider superseding changes. A better method of control is the preparation and use of budget for each item of expenses should be classified department wise. In this the budgets figures are based on expected activity level and are compared against genuine performance, and the variances are analysed and responsibility is assigned to the department concerned for control purposes.

Treatment of Administration Overhead:

In this case, three methods are used independently which are explained as:

1. First Method:

In case of profit & loss account, administrative fixed cost is transferred, under this method. On the assumptions that the administrative operating expense are of fixed nature & no relation can be determined between the administrative activities on the one hand & the production, sales & distribution functions on the other hand; this transfer may be justified. Thus, administrative fixed cost,

on the basis of these assumptions is treated as 'period cost' which has to be written off to the concerned period's costing profit & loss account.

2. Second Method:

Under this method, the sharing out of the administration expense is made to the production functions & selling & distribution functions of the organization. The assumption in this case is that, any organization has mainly two functions:

- production
- sales & distribution

So addition of appropriate share of administration expenses in both is needed for the point of ascertaining the correct production as well as selling & sharing overhead. In the administration overhead account, all administration expenses which have been received during a period are debited & at the end of the year, transfer of organizational expenses, which are attributable to production functions, is done to the factory overhead account & transfer of the administration expenses, which are attributable to sales & distribution, is done to the selling & distribution overhead account.

Under this method, the selection of right bases on the basis of which various administrative operating cost items are apportioned to other two above mentioned overhead account is the principal difficulty. In this, the bases used are similar to the bases which are used for the purpose of apportionment of production overhead.

In case of production overhead, amount of any administration expenses is apportioned; the apportionment of such amount is to be done again to the service department & to the production departments of the production function. To the production departments, the service department's share has again to be reapportioned in the usual manner & ultimately from production, the recovery shall be done.

3. Third Method:

In this method, administration is treated as a separate function & in the cost accounts, the treatment of administration expenses are done in the same manner as the expenses of other functions. Thus the question arises as how in

total cost, the absorption of administrative expenses will be done. On some suitable basis, absorption of administration expenses is done.

9.2.3.3 Selling and Distribution overheads

Selling fixed cost indicates the expenses that are received for promoting the marketing of the products, securing and executing the orders. While the sharing overhead is the cost of delivery and dispatch of finished products from the factory to warehouse and from warehouse to customers, which includes the cost of bringing returnable containers, if any, to the factory till they are ready for reuse.

Examples:

- carriage and freight
- depreciation of delivery vans
- repairs and maintenance
- insurance of delivery vans
- warehouse rent and expenses
- transit insurance of finished goods

Selling and Distribution are therefore, two separate functions, but in most of the organisations, they are clubbed together as selling and distribution expenses for the purpose of accounting and control.

- Accounting of Selling and Distribution Overhead

It is seen that accounting of selling and distribution overhead start with the collection of expenses that are under specific defined cost account numbers. These expenses are, further, allocated and apportioned to various functions which may be grouped under the following headings:

- Advertisement and sales promotion
- Direct selling
- Transportation
- Warehousing and storage
- Credit and collection

Such functions can be further divided into various territories, such as North, South, East, West, and the expenses can be allocated and apportioned to each of these territories for accounting and control. Some of the expenses such as:

- sales commission

- travelling expenses of the salesmen
- shipping cost

are direct selling expenses that are identifiable and can be allocated directly to the function and territories. Other expenses can be apportioned on some suitable basis.

- Control of Selling and Distribution Overhead

Control of selling and distribution overhead is a difficult task as per the nature of expenses. The incidence of such expenses mainly depends on external factors, such as market location and competition, customer's behaviour, prevailing terms of sales, etc. on which management has no control. In this, sales promotional effort differs widely between products, customers and territories. It is often difficult to match the cost with results.

- Methods

In spite of the aforesaid difficulties, the following methods may be used for controlling them:

- Comparison with past results.

Under this, the selling and distribution overhead are compared with the previous period figures. If there is important change in volume between the two periods, then the expenses may be expressed as a percentage of sales, and the percentages may be compared between the two periods.

- Use of budget.

A budget is prepared for Selling and sharing expenses on the basis of expected sales. Such expenses are classified into fixed and variable expenses. If needed, a flexible budget can be prepared using different levels of sales. Actual expenses are compared against budget, and deviations are analysed and discussed for corrective action.

- Use of standard.

Here the standards may be set up in relation to standard sales volume for salesmen, territories, products, etc. and actuals are compared with standards. Variances are analysed and corrective measures are taken.

9.2.3.4. Research and Development

Marketing comprises the activities of selling, publicity and distribution.

The cost accounting system should show:

- Suitable cost centre analysis to identify costs with responsibility

- analysis between fixed and variable, especially for distribution costs, e.g. pack aging and delivery
- Statistical bases to measure and compare costs such as salesmen's calls, number of orders

Review Questions

1. Write short note on classification of overheads?
2. What are variable overheads?
3. What is selling and distribution overhead?
4. Is reach and development overhead, a necessity for the Company?

Discussion Questions

Discuss in details the overhead that can exist in a company? Which type of overhead is required and can be control?

Application Exercises

1. Suppose you are the production manager in a factory and need to explore certain new development prevailing nowadays, will you spent some extra cost for this? State reason?
2. Being an administrator, what qualities you would highlight in order to reduce the overheads? Give steps with example?
3. Sketch the aspect of controlling an overhead in a company?

Chapter 4

Methods of Costing

Lesson 10 – Reconciliation of Cost and Financial Accounts

Learning Objectives

- To explain more about settlement of account.
- To analyse the types of ledger accounts.
- To understand the reason among cost and financial profit.
- To understand the scope of inventory error.
- To identify the different method of stock.10.1 Introduction

We say in accounting, settlement indicates a process that compares two sets of records that are usually the balances of two accounts in order to make sure that they are in agreement. Settlement is preferred to make sure that the money leaving an account matches with the actual money spent. This can be done by making sure that the balances matches at the end of a particular accounting phase.

It shows two sets of account. In this each account is given a work breakdown structure number that determines the cost of the well. These numbers are compared to promise that they two will balance at the end of the accounting cycle.

It is seen that there arises five types of general ledger accounts that the typical business accounting system deals with. These are:

- Asset
- Liability
- Equity
- Revenue
- Expense

Income Statement accounts lastly get closed out into an Equity account and is called as retained earnings at the end of the financial year and their balances start over again from zero. Balance Sheet accounts, on the other hand, should continue to roll their balances from period to period and year to year.

In order to make sure that the reliability of the financial records, reconciliations must, therefore, be performed for all balance sheet accounts on a regular and ongoing basis. A

robust reconciliation process improves the accuracy of the financial reporting function and allows the Finance Department to publish financial reports with confidence.

10.1.1 Importance of Reconciliation

Reconciliation of cost and financial account is required for the following reasons:

- It is definite for the arithmetical accuracy of both set of accounts for effective cost ascertainment and cost control.
- Having reasons for different results in two sets of accounts.
- Calculate the reasons involving variations for effective internal control.
- To permit the smooth co-operation and co-ordination between the activities of cost and financial accounting departments.
- Make sure that the required standard in terms of policies relating to stock valuation, depreciation and absorption of overheads.

10.2 Reconciliation in terms of Cost and Financial Accounts

It was seen that in case of accounts are maintained on the integral accounts structure, there are no separate cost accounts and financial accounts. The problem of reconciliation of cost and financial accounts does not arise. On the other hand, where separate sets of books are maintained for cost accounting and financial accounting system, it is very significant that every now and then the two accounts should be reconciled. A memorandum of reconciliation is prepared, indicating the reasons for difference between the results disclosed by each system.

10.2.1 Sets of Accounts

It was observed that the difference between the two sets of accounts arises because of the following reasons:

(a) Items included only in financial accounts

Here it is seen that if there are number of items which appear only in financial accounts, and not in cost accounts arises, they neither do nor relate to the manufacturing activities, such as,

- Purely financial charges, reducing financial profit
- Losses on capital assets

- Stamp duty and expenses on issue and transfer of stock, shares and bonds
- Loss on investments.
- Discount on debentures, bonds, etc.
- Fines and penalties,
- Interest on bank loans.
- Purely financial income, increasing financial profit
- Rent received
- Profit on sale of assets
- Share transfer fee
- Share premium
- Interest on investment, bank deposits.
- Dividends received.
- Appropriation of profit donations and charities.

(b) Items included only in the cost accounts

It was seen that in this there are very few items which appear in cost accounts, but not in financial accounts. Since, all expenses received whether for cash or credit passes though the financial accounts and out of these only relevant expenses is incorporated in cost accounts. For this reason, only item which can appear in cost accounts but not in fiscal accounts is a notional charge which includes:

(i) interest on capital that is not paid but included in cost accounts to show the notional cost of employing capital

(ii) rent where the charging of premises that is owned by the proprietor.

(c) Items accounted for differently in cost accounting and financial accounting

Overhead

In case of cost accounts, overheads are applied to cost units at programmed rates based on estimates, and the amount improved may differ from actual expenses received. Under such case of under-or over-recovery of overheads, there are no charges to costing profit and loss account and the profits in case of two sets of books will differ.

Stock valuation

In area of financial accounts, stock is valued at lower of cost or market value. In case of cost accounts, stock is valued at cost adoption by methods such as FIFO, LIFO, average etc., which is suitable to the unit. So there may be difference in stock valuation, which will reflect difference in profit between the two sets of books.

Depreciation

In case of depreciation, if different basis is adopted for charging depreciation in cost accounts as compared to financial accounts, the profits will fluctuate.

10.3 Preparation of Cost settlement Statement

10.3.1 Methods

In case of settlement, the profit or loss as disclosed by the financial accounting with that can be shown by the cost accounting. For this a settlement Statement or Memorandum of Reconciliation Account is prepared. The following steps have to be taken for preparation of Reconciliation Statement:

- To find the extent of difference between the profit or loss disclosed by two set of book of accounts.
- To calculate the base profit or loss as per any set of books of accounts as the starting point.
- To get ready a statement by making suitable adjustment of items either added or subtracted included in one set of accounts but not in the other set.
- To balances as per cost account has been taken as the starting point, then balance as per financial account is to be adjusted according to the transaction recorded in the financial accounts and vice versa.

10.3.2 Statement

A settlement statement is a type of document that start with a company's own record of an account balance, adds and subtracts integration items in a set of additional columns, and then uses these adjustments to arrive at the record of the same account held by a third party. The purpose of the settlement statement is to know an independent verification of the veracity of the balance in the company account, as well as to clarify the differences between the two versions of the account.

It was observed that the differences between the two accounts are detailed in the settlement statement, which makes it easier to determine which of the reconciling items may be invalid and in need of adjustment. Settlement statements are an extremely useful tool for both internal and external auditors. Settlement statements are commonly constructed in the following situations:

- **Bank accounts.**

It was found that the bank settlement compares the balances between a company's version of its cash balance and the bank's version, typically with many reconciling items.

- **Debt accounts.**

Further the debt settlement compares the debt amounts outstanding according to the company and its lender.

- **Accounts receivable.**

The receivables settlement is usually constructed on an informal basis for individual customers, and compares their version of outstanding receivable balances to the company's version.

- **Accounts payable.**

The payables settlement is also usually constructed on an informal basis by individual supplier, and compares their version of outstanding payable balances to the company's version.

It was observed that if there is a difference in the results shown by the cost accounts and financial accounts, then we have to see for the cost settlement statement. This is prepared to reconcile the results by removing their differences. A cost settlement statement is prepared on the basis of same footing on which a bank reconciliation statement is prepared. In such cases the preparation of cost settlement statement involves the steps mentioned as:

Step 1: First start with profit or loss as shown by any one set of accounts as the base

Step 2: Secondly find the reason of difference of profit between cost and financial account.

Step 3: Find the addition or subtraction items

Step 4: Finally prepare the cost settlement statement

Taking the profit as per cost account or loss of financial account

Particulars.....Amount

Profit as depend on cost account or loss as per financial account.....XXX

Add:

i. Overcharge of expenses XXX

ii. Items of expenses XXX

iii. Items of income recorded XXX

iv. Amount of understated income XXX

v. Over-valuation of opening stock XXX

Vi. Under valuation of closing stock XXX

Less:

i. Under charge of expenses ..... .(XXX)

ii. Items of expenses recorded ..... .(XXX)

iii. Income shown in cost account ..... .(XXX)

iv. Amount of income over state ..... (XXX)

v. Under valuation of opening stock ..... .(XXX)

vi. Over valuation of closing stock ..... .(XXX)

Profit as per financial account or loss as per cost account. XXX

10.4 Reasons for the Difference

The are certain reasons which can create difference between cost and financial profit or loss shown by the two set of books may be listed under the following heads :

(1) shown only in Financial Accounts

(2) shown only in Cost Accounts

(3) Absorption of expenses

(4) Methods of Stock Valuation

(5) Abnormal Loss and Gains

10.4.1 Shown only in Financial Accounts:

Some items of income and expenses which are included only in financial accounts but are not shown in cost accounts and vice versa. The following items are shown in financial accounts but not in cost accounts:

(A) Income:

- Profit on sale of permanent assets
- Interest received on asset
- Dividend received on savings
- Rent, brokerage and commission received
- Premium on issue of shares
- Transfer fees received.

(B). Expenditure:

- Loss on sale of fixed assets, e.g., Factory, Machinery, Building etc.
- Interest paid

- Discount paid
- Dividend paid
- Losses due to scrapping of plant and machinery
- Penalties and fines
- Expenses of shares' transfer fees
- Preliminary expenses written off
- Damages payable at law.

10.4.2 Items shown only in Cost Accounts:

It is seen that there are certain items which are recorded only in Cost Accounts but are not included in financial accounts, national interest on capital, notional rent of premises owned, salary to proprietor etc. are not recorded in financial account as the amount is not actually spent or paid. These expenses reduced the profit in cost account while in financial account it may be the reverse effect.

10.4.3 Absorption of Overheads :

In real fiscal accounts, amount of expenses paid are recorded whereas in cost accounts expenditure are charged at predetermined rates. If overhead charged are not equal to the amount of overhead received the under or over absorption of overhead leads to difference in profits of two accounts.

10.4.4 Methods of Stock

- Valuation: Stock can be calculated if it is:
- In shape of raw materials
- In shape of work in progress
- In shape of finished goods.

In financial accounts stocks are appreciated at cost price or market price whichever is lower. In case of Cost Account; stock of raw equipment can be valued on the basis of FIFO, LIFO and Simple Average Method etc., and work in progress may be valued at Prime Cost or Work Cost. Finished stocks are generally valued on the basis of cost of production. So, the adaptation of different method of valuation of stock leads to difference in profits of two sets of accounts.

10.4.5 Abnormal Losses and Gains:

There are certain diverse items of abnormal wastages, losses or gains which are included in financial accounts but they are not recorded in cost accounts. It was observed that the

figures of unusual losses and gains may affect the results in financial accounts unaccompanied.

10.5 Inventory Error

In accounting, there are great many types of errors that can result in an incorrect inventory assessment. It was observed that the result can be a major understatement or overstatement of the ending inventory valuation, which translates into a misstatement of the reported profits of a business. Such types errors are mentioned here:

10.5.1 Incorrect unit count.

Possibly this is the most understandable error, as it highlights when there is a physical count of the inventory which is incorrect, resulting in an excessively high or low inventory quantity that is then translated into a valuation error when you multiply it by the unit cost.

10.5.2 Incorrect unit of measure.

It arises when you count a certain quantity and enter it into the accounting records, but the designated unit of measure in the item master file for that item is different from what you assumed. So, you may be counting in individual unit quantities, but the unit of measure in the computer is set to dozens, so your quantity is now incorrect by a factor of twelve.

10.5.3 Incorrect standard cost.

In case of standard costing system, you store the standard cost of an item in the item master file. If no one adjusts this number to match actual costs, then the inventory will be valued at a cost that does not match actual costs.

10.5.4 Incorrect inventory layering.

If we look towards an inventory cost layering system, like FIFO or LIFO, the system has to assign a cost to an item based on the inventory layer in which it is located. System errors are possible here. If you are doing this manually, then you can assume a large proportion of operator errors.

10.5.5 Incorrect part number.

In such cases, you can assume that something you are counting has a certain part number, and will assign the inventory count to that part number in the computer system. But what if it really has a different part number? Then you just made the double error of imposing

the correct count on the wrong part, and of not assigning any count at all to the correct part number.

10.5.6 Cycle counting adjustment error.

In case of a cycle counter error, an error can be found out in an inventory count and makes an adjustment in the accounting records to fix it. This is a problem if there is already an entry that has not yet been posted to the system, which would have already corrected the "error." This transactional delay can cause major problems when there is an active cycle counting system in place.

10.5.7 Customer owned inventory.

Customers may have some of their inventory at your location, so you may mistakenly count it as though it is your own inventory.

Consignment inventory. You may have inventory on consignment at retailers, and forget to count it.

10.5.8 Improper cutoff.

Under such error, the inventory may arrive at the receiving dock during a physical count, so you include it in the count. The trouble is, the corresponding supplier invoice may not yet have reached the accounting department, so you have just recorded inventory for which there is no cost.

10.5.9 Transfer imbalance.

The inventory system may be set up to require you to reduce the inventory quantity in one department, and separately increase the inventory quantity in another department when you are transferring inventory inside the company. If you do one but not the other, then either you have the same inventory item reported in two places at once, or it is not located anywhere at all.

10.5.10 Incorrect scrap relief from backflushing.

It was observed that, back flushing is where you reduce the balances in inventory records which is based on the number of units of finished goods produced. It lies on the assumption that the standard component quantities listed in the bill of materials are correct; however, if scrap and spoilage is different, then incorrect unit quantities will be relieved from the inventory records. You need an excellent scrap reporting system to mitigate this problem.

Review Questions

1. Explain the different types of ledger accounts?

2. What is the importance of reconciliation of accounts?
3. What type of items are included in financial accounting?
4. Explain the reasons of difference between cost and financial profit?

Discussion Questions

Discuss in the different type of Inventory Error?

Application Exercises

1. Design any balance sheet and determine the profit and loss of inventory of your choice?
2. Design a settlement statement and sketch the necessary inputs?

Lesson 11 – Job and Contract Costing

Learning Objectives

- To explain more about Job costing.
- To analyse the necessity for Methods involved in ascertainment of costs.
- To recognise the types of costing.
- Understand the scope of cost accounting.
- To identify how the benefits of using IS may be measured and assessed, and contrast with existing practice.

11.1 Job Costing

Job costing relates to the process of tracking the operating cost that have received during a job against the income produced by that job. It is an important tool for those who are pairing a relatively high rupee volume per customer with a relatively low number of customers. In case of a structure contractors, subcontractors, architects and consultants, the use of job costing, is really required whereas in case of hardware shop or convenience store the job costing is not of much use.

Particular type of Job costing requires accounting software that enables to track a number of factors and analyze the results to aid decision making. The result is that the Job costing report helps to ensure that all costs involved in a job have been properly invoiced to the customer. Under such circumstances, an estimates vs. actual report is framed that compares quoted costs to actual costs, and quoted revenues to actual revenues so that you can analyze any variances between your quote and the actual result. You can then use the results of your analysis to create more accurate quotes when you bid on future jobs.

Using job costing it allows an individual to identify the most and least profitable areas of your business, so that you can focus on the profitable elements, and try to make the less profitable aspects of your business more efficient. It helps an individual to quote new jobs more accurately, and assist you in managing jobs in progress. Job Costing is a type of specific order costing which shows where industries which manufacture products or render services against specific orders such as:

- civil contracts
- construction works
- automobile repair shop

- printing press
- machine tool manufacturing
- ship building
- furniture making

11.1.1 Components and Concept

It is further refers to as "in job costing where the costs are collected and accumulated as per the jobs, contracts, products or work orders. In this each work is treated as a separate entity for the reason of costing. The material and labour costs are together complied by way of the respective abstracts and overheads and are charged on prearranged basis to arrive at the total cost."

There are numerous aspects to job costing, and you may use many, some or none of them. If you want to use job costing, you need to:

- Find the costs involved in the job
- Make sure all of the costs are invoiced to the customer
- Prepare reports that shows the details of costs and revenues by job
- The fundamental components of job costing are:
- Quotes
- Permanent fee jobs
- Time and resources jobs
- Revenues
- Items
- Direct costs
- Average costs

Let's take a look at the meaning of each of these components and how you might use them in job costing.

11.1.1.1 Quotes

Many people know that with quotes, you can non-post the transactions. Such type will not affect your financial statements or your common ledger. You prepare a citation to give your customer an estimate of projected costs, before a job is issued. Nevertheless,

quotes also provide a means to track costs as the job progresses, so that costs do not get out of line, or so that cost variances can be identified and dealt with quickly.

11.1.1.2 Fixed fee jobs

Fixed fee jobs are basically an agreement that the required job to be completed for a customer for a given set of price, no matter what costs are received. It was seen that a good deal for the customer, an experienced estimator will set a price high enough to cover any contingencies, which may result in a higher price than a time and materials job.

11.1.1.3 Time and materials job

In case of a time and materials job, costs of labour and materials are passed on to the customer. A markup for operating cost and profit may be built-in as a percentage of each item or stated as a separate line item. Time and materials jobs are often preferred by the seller, as any unexpected costs may be passed on to the customer.

11.1.1.4 Revenues

Revenues are significant to the life of any business. In case of job estimate, revenues are not only categorized by account, but also by customer, job and entry. We further can think of jobs as sub-categories of customers and items as sub-categories of revenue/expense. This creates a new way of analyzing your revenues and the costs received to produce them.

On the other hand, operating cost become revenues; as costs are received for a job, they are marked up and passed on to the customer as revenues. To be able to compare your costs to the revenues they produce, you should create matching categories in your revenue accounts and cost of goods sold accounts.

11.1.2 Features

Some of the important features are:

- Works is undertaken against order of customers.
- Manufacturing is not as continuous process as each job is accepted by work order basis not for stock or future sales.
- Particular job is treated as a separate entity for the purpose of costing.
- Absence of uniformity in flow of production as of different manufacturing process.
- Collection and accumulation of Cost after the completion of each job or products in order to find out profit or loss on each job.
- Variance in jobs as other requiring separate work in progress maintained for each

job.

11.1.2.1 Job Costing System includes:

- Tracking of all costs related to jobs done by the company.
- Identification of a given job.
- Subdivision into number of activities used to track costs of individual tasks within a job. Each of these activities refers to a general ledger account number where the costs are to be accumulated.
- Having costs upto date for the activity along with the budget estimates.
- To compare the actual expenditures against the budgeted amounts to watch the progress.
- All of the Accounting System modules can charge costs to an activity of a job.
- Payroll costs can be charged against an activity through the Payroll System.
- Direct purchases are charged against an activity.
- It is also possible to charge the cost of inventory items used against an activity.
- Transferring the costs of a job to a work in process account while the job is in progress, and to transfers those costs to the proper expense accounts when the job is completed.
- A job may be created using existing jobs as a model. To create a jab using the actual costs of an existing job as the budget estimates for the new job.
- Many types of job cost reports are available which give various levels of detail. The reports range from giving one total per existing job to detailing every single transaction that has been made against each job.

The features can be accessed from the Select, Reports and Maintenance sections of the main accounting system. The following Job Costing System features are available:

- **T**o Select
- Creating Job Costing
- Creating Jobs and Activities
- Job Masters to print
- Create Duplicate Job in process
- Posting a Job / Work which is in Process
- Creating Reports
- Job Cost Work Journal

- Job Cost Report
- Job Cost with Detail
- Maintenance of job
- Deletion of Old job
- Closing of Jobs
- Job Cost Entries

The Job Cost System is used for entering and updating the job and activity related to master records. There are certain procedures such as:

- There exist a data entry of records in the job master file.
- There should a data entry of records in the job activity master file.
- The process involves creating, duplicating jobs from an existing job.
- The process of putting a job to the work in process account.
- Involves process of deleting old closed jobs from the system.
- Involves process of deleting old job cost journal entries.
- To print the job cost reports as listed on the Reports, Job Costing.

11.1.3 Objectives

The following are the important objectives of Job Costing:

- Shows accurate Cost information about each job or product.
- Allows management to reduce the cost by doing comparison of each element in respect to actual costs and estimated ones.
- Give benefit to the management to measure the operational efficiency and inefficiency for each job or works to take effective decision making.
- Allows the management to provide proper assessment of work in progress.

11.1.3.1 Procedure:

The following is the procedure used for costing purposes in a concern using job costing:

Job order number:

Under this, every order received is selected with a certain number from a operation list maintained for this purpose. By this, every order or job will be known by its number throughout its manufacturing process in the factory.

Production / job order:

A production / job order is shown as a printed order that is issued to the manufacturing division to proceed with a job. It is issued by the production planning division on receipt of a job order to the foreman of the relevant section. In this the instructions are supplied to the costing department to collect particulars of costs on execution of the job are also issued simultaneously. The production order is ready with sufficient copies for all the departmental managers or foreman who will be required to take any part in the production.

Bills of materials:

Under this, the production and planning division prepared a list of materials and stores required for the completion of the job. In such circumstances, a copy is sent to the concerned foreman with the production order which serves as an authority to him for collecting the materials and stores mentioned from the storekeeper. Based on the same pattern a list of tools required is also prepared.

Job cost card:

Job cost card or job cost sheet is an important document as it is used in the job costing system. In this a separate card or cost sheet is maintained for each job in which all expenses regarding materials, labour and overheads are recorded straight from costing records. It is observed that the method used in finding out the cost of these elements in respect of a particular order is as:

Materials:

The information connected to the cost of materials or stores used for a particular job order can be obtained from materials or stores request slips. In case of large job orders, materials abstracts can be prepared for finding out the total value of equipment issued to different jobs.

Labour:

It was seen that the cost of labour received on each job can be ascertained with the help of time and job cards. In case of a large number of jobs, preparation of wages hypothetical may considered and could be of help in computing the amount paid as wages for completion of specific jobs. Wages paid for indirect labour will constitute an item of factory overheads.

Overheads:

Every job will be charged with amount of expenditure determined on the basis of the method preferred for allocation of expenditure. Normally on the basis of past results an overhead rate is resolute and each job is charged for overheads at the pre-determined rate. It was seen that, profit or loss on a job can also be calculated out by preparing a job account. Additional the job account is debited with all running expense that received on the job is credited with the job price. The difference of the two sides will be the profit or loss made or suffered on the job.

Work-in-process:

In such cases, the account is maintained in the price ledger and it represents that the jobs is in progress. It was seen that the account could be maintained in any of the following two ways depending upon the requirements of the business:

- A compound work-in-process account for the entire factory.
- A compound work-in-process account for every division. For example, if the factory has three sections A, B and C, a work-in-process for each of these three sections will be opened.

It was found that the work-in-process account is every so often debited with all costs that is directly or indirectly received in execution of the jobs. During the intervals of month or so a précis of completed jobs is prepared and the work-in-process account is endorsed with the cost of completed jobs. In case work-in-progress account for each department of the factory has been opened, it will be necessary to find out the cost of completed jobs regarding each department. It was found that the balance in work-in-process account at any time represents the cost of jobs not yet completed.

Job ticket: In order to provide information in respect to the progress of each job at each operation, generally a job ticket is issued by the production control department. It contains detachable portions for different operations. The ticket is useful for both production control and costing departments. Once on completion of an operation, the required portion of ticket is detached and sent to production control department. This enables production control department in keeping production schedule up-to-date. Based on the detached portion, a departmental summary of production can be prepared which is beneficial for costing purposes. Furthermore, the amount of work-in-process as shown by the cost ledger can be checked by listing the ticket number of jobs in process in any department and valuing this list.

Progress advice: The foreman of a department may be required to send periodically a statement regarding the stage of completion of each job to ensure completion of jobs by scheduled dates. Such a note is called "progress advice".

11.1.4 Advantages

There are certain advantages of job order costing which includes:

- identification of profitable and unprofitable jobs.
- requirement of information related to preparation of estimates while submitting quotations for similar jobs.
- cheap cost control evaluation by finding the operational efficiency of each job or works.
- setting up of selling price of each order or each job.
- to find out the spoilage work by each person.
- to facilitates the application of cost-plus formula of pricing for large contracts.
- to facilitates the introduction of budgetary control of overheads, since the overheads are charged on predetermined basis to arrive at the total costs.

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11.1.5 Disadvantages

There are some disadvantages of job costing cited below:

- Expensive method.
- More clerical work as a result of which there are chances for committing more errors and mistakes.
- Old fashioned costing method and does not provide for the control of cost unless it is combined with estimated or standard costing system.
- It is difficult to compare cost as each job has its own features.

11.1.6 Pre-requisites

To ensure the successful application of Job Costing method, the following pre-requisites are required:

- Effective production planning and controlling system.
- Suitable time booking and time keeping system that avoids idle time.

- Easy maintenance of records along with job tickets, work order, operation tickets, bills of materials and tools requirements etc.
- Suitable methods of overhead apportionment and absorption rate.
- Good designing and scheduling of production.

11.1.7 Procedure

The necessary procedure of Job costing that may be adopted for costing purposes is briefly given below:

1) Customer's Enquiry: Manufacturing or job order is executed on the basis of information received from the customers. The daily enquiries may be related to expected estimated costs to be received, quality to be maintained and duration for production planning etc.

2) Quotation for the Job: As per the customer's enquiry and condition of work or job, an answerable person is preparing the estimates or quotation and cost is fixed for a particular job. And the same is conveyed to the customer appropriately.

3) Customer's Order: If the quotation is satisfactory to the customer, he may place an order.

4) Production Order: As soon as an order is received, the Production Planning and Controlling division will make out a manufacturing order. It is in the form of instructions supplied to the foremen to execute the order and to control its physical progress. It contains all the information regarding the production. Accordingly the production control department assigns a production order number for each order or job.

5) Cost Accumulation: The Cost Accountant is accountable for preparing a Job Cost Card on the base of production order. It is also termed as "Job Cost Sheet," For each job the costs are collected and recorded under separate production order number. The sources of collection of costs are:

- Direct material can be identified or obtained either from Bill of Materials or Requisition Slips or Invoices in the case of direct purchases.

- Wages paid to direct labour is associated with a job and can be identified or recorded with the help of Time Sheet, Job Cards and Wage Analysis Sheet.

- Direct expenses are identified on the basis of direct expenses vouchers.

- Overheads are apportioned on some predetermined basis. It can be accumulated with the use of standing order numbers or cost account numbers.

6) Completion of Jobs: After the completion of a job, the concluding report is sent to the costing division with regard to charging of material, labour, and expenditure which are to be recorded on the job cost sheet. The actual cost saved under each element of cost is ascertained to find out the entire cost. Any deviations from the expected costs are also noted to take the corrective actions.

7) Profit or Loss on job: It is determined by comparing the actual cost with the price obtained.

11.2 Agreement Costing

11.2.1 Concept

In case of agreement costing, a special type of job estimate is required where the unit of expenditure is a case of single contract. Agreement itself refers to cost centre and is executed under the customer's specifications. Agreement Costing is explained by the ICMA Terminology as the "form of specific order estimate that is supplied where the work is undertaken to customer's special requirements and each order is of long duration.

It is also known as "Terminal Costing". In this, the principles of job costing are applicable and are used by concerns such as:

- Builders
- public works contractors
- constructional and mechanical engineering firms
- ship builders

11.2.1.1 Sub-contract:

Under the subcontract category, the contractor may hand over certain types of specialized work such as:

- Electrical
- Plumbing
- Painting
- Carpentry
- Masonry
- Flooring

to a sub-contractor. The sub-contractor is then responsible to the primary contractor in terms of performing the work and he will get the payment from the main contractor. The cost of such sub-contract is debited to contract account.

11.2.1.2 Retention Money

Usually the contractee stipulates in the contract action that he would keep back a part of the contract price to be paid at a later stage after completion of the contract. This is to make sure that the contractor has performed all work relating to contract on the most satisfactory approach and that no repair work arises within a agreed time limit. The amount so withdrawn by the contractee is known as retention money. It safeguards the interest of the contractee against the contractor, who may at time perform sub-standard work and gain there from.

11.2.1.3 Escalation Clause:

Referring to the owing to variation in the prices of materials and labour costs, the contract price is altered so that neither party suffers the loss arising out of the change in price level. In order to protect his interest against the rise in prices, the contractor inserts a clause known as the appreciation clause, under which, the contractee will be obliged to pay the enhanced price of the contract because of increase in the rates of materials,

labour and other expenses. In the same way, to protect the interest of the contractee against the fall in the rates of materials, labour and overheads, a ' appreciation clause' is inserted. It is noted that the terms and conditions beneath which the contract price is to be altered is to be specifically mentioned. The reasons which give rise to change in price level is to be stipulated. It was found that there should be no ambiguity in the wordings of this clause. The essentials of the appreciation clause are as follows:

(a) The fundamentals of costs on the basis of which quotation price is submitted must be specified.
(b) The fundamentals in relation to which appreciation clause applies should be precise.
(c) The appreciation clause should apply to only those factors which are beyond the control of contractor.
(d) The acceleration clause should talk about the date from which the rise in price of the contract comes into effect.
(e) The report of the contractor are to be made available to the contractee for check.
(f) The stipulation for alteration of contract price must relate only to change in design, or any major alteration of the work but not on account of defective work.

11.2.1.4 Cost-plus Contract

Cost plus Contract is a customized method of agreement costing. In this method, resorted is done when it is not possible to find the cost of the contract in advance with a reasonable degree of accuracy. Under such condition, the contractee agrees to pay to the contractor, the definite cost received together with an settled amount of profit which the contractor earns in the usual course of business. This type of contract is mostly followed during the period of urgency when certain types of products are to be manufactured and supplied as in the case of defence products, component parts and so on.

11.2.1.5 Work Certified and Work Uncertified

It represents that part of the contract that has been duly approved by the architect of the contractee. This is denoted in terms of money value in contract account and appears on the credit side of the contract account. Work uncertified relates to that portion of work

that is completed by the contractor but disapproved by the architect on the ground that it has not reached a stipulated stage. The value of work uncertified also appears on the credit side of the contract account.

11.2.1.6 Profit on Uncompleted Contract

As seen that profit on a certain completed contract, should be safely taken to profit and loss account. This is so because it is the actual profit earned on a contract which is taken for granted to be the profit earned on a completed contract. But in case of incomplete contract the profit made on it cannot be taken to be the actual profit. Since the completion of contract in the subsequent years may be subjected to risk of loss, a prudent contractor will not consider the profit on partial contract to be the actual profit. Instead, it is treated as notional profit and necessary provision is made in anticipation of probable losses. The question is what percentage of notional profit is to be transferred to profit and loss account on an incomplete contract in an accounting year. There are no hard and fast rules laid down to calculate a proportionate amount of profit to be taken into profit and loss account. It was seen and believed that the following rules are followed in practice as laid down by contractors of yester years.

(a) When the work is done upto 25% : Under such situation no profit is transferred to profit and loss account. The entire amount of profit is passed forward in the form of reserve.

(b) When the work is done more than 25% but less than 50% : In this case ⅓ of the estimated profit is transferred to profit and loss account and the balance is carried forward in the form of reserve. The following formula is used :

⅓ x Notional profit x Cash received/Work certified

(c) When the work is done more than 50% and not reaching the stage of completion: Under such situation ⅔ of notional profit is transferred to profit and loss account and the balance to work-in-progress account.

(d) When the contract has reached to completion stage: In this case, the cost of completing the contract is anticipated. The estimated profit is calculated by deducting the whole estimated cost from the contract price. For calculating the profit to be taken to profit and loss account, the following formula is adopted :

Estimated profit x Work certified/Contract price

11.2.1.7 Contractee's Account

The contractee's account is ready by the contractor in his books. When the various installments of contract price is received from the contractee, the following entry is passed :

Cash a/c

Dr.

To contractee's a/

When the contract account is fully completed, the following entry is passed :

Contractee's a/c

Dr.

To contract a/c

It is confirmed that the contractee's account will show a debit balance representing the amount due from him to the contractor till it is paid fully.

11.2.2 Features

The special features of Contract Costing include:

- cost unit as a specific contract.
- time taken for the contract to be completed.
- constructive work.
- bulk materials that are purchased and delivered direct to the contract site or obtained from the central stores through the requisition slips.
- specific portions of the contract are given to sub-contractors.
- costs which are normally treated as indirect can be identified specifically with a particular contract and are charged to it as direct costs.
- overheads that constitute a very small proportion of the cost of the contract. However, indirect costs consist mainly of administrative cost of the central office.
- Scale of operations and cost control become difficult due to theft of materials, labour time utilization, pilferages etc.
- The pay roll is prepared either at the site or at a central administrative office.

11.2.3 Procedure

In case of contract costing, costs are defined, allocated, collected and accumulated as per the contract workings. Each contract is treated as a separate entity in which each contract account is maintained and is handled separately in general ledge for the purpose of costing and cost control.

Following are the costing procedures which include:

A) Supply of Materials:

(i) Contract Account details while debited with following transactions:

- Purchasing of bulk material for a specific contract from suppliers.
- Materials issued from contractor's stores through the request slips.
- Materials transferred from one contract to another contract.
- Value of materials remaining unutilized on site during the accounting year.

(ii) Contract Account is credited with the following transactions relating to materials:

- Materials returned under Materials Return Note.
- Sale of materials at site on account of some extraneous reasons.
- Materials transferred to other contracts.
- Materials stolen or destroyed by fire.
- On completion, if a part of materials received from the stores are returned.

(iii)Any profit or loss on materials account is transferred to the Profit and Loss account:

- Sale price is different from the cost price.
- Resulting from the sale of materials at site.
- Resulting from the materials stolen or destroyed by fire.

B) Labour:

In this, all labour occupied at site, their salaries and pay paid to the labour and workers are treated as direct labour expenditure which is debited to Contract Account.

C) Direct Expenses:

The expenses such as light, mediclaim, telephone, documentation, sub-Contracts, Architect's fees etc. are treated as direct cost which is debited to Contract Account.

D) Fixed Cost:

In this case, overheads received only an insignificant part of the total cost of contract account. The nature office and administrative expenses of a particular contract may be apportioned on suitable basis.

E) Plant and Machinery:

Under this, the use of plant and machinery in a particular contract, the treatment of plant costs in assured by any of the two ways :

a) In this, where a plant has been specially purchased for a particular contract and will be exhausted at site, the Contract Account should be debited with the cost of the plant. On the completion of the contact the residual or written down value as shown by the Plant Ledger will be credited to the Contract Account.

b) In this, when the plant and machinery are required to the contract site only for a shorter period, the contract account should be debited with the notional amount of depreciation based on some estimates to be charged to the Contract Account.

F) Sub- Contracts:

In Sub-Contracts, some portions of the specified work that is connected with the main contract is done by the sub-contractor. As an example, the work of painting, special flooring, steel work etc. is allotted to the sub-contractors and the sub-contract undertakes on cost-plus basis and cost of such sub-contract shall be treated as a direct charge and is debited to Contract Account.

G) Work Certified:

Under this, the small contracts which are completed within the short period, the contractor pays the contract price on the completion of the contract. In the case of contracts of long duration, the contract agreement provides interim payment to the

contractor. It is done on the basis of Certificates issued by the contractee's Surveyor, Architect or Engineer.

Though the Contractee usually does not pay to the full value of the work certified, a portion of amount say 20% or 30% thereof shall be retained by Contractee. The money so retained is called as "Retention Money." This retention money is intented to ensure that the contractor to complete the work as scheduled and according to specifications. Money retained could be used for imposing penalties for faulty or delayed work as this amount will be settled on the completion of the contract.

H) Work Uncertified:

In case if the progress of a work is unsatisfactory or the work has not reached upto the mark, such work will not be treated as per qualify in order to issue certificate and under such circumstances, the Contractee's Architect or Surveyor is declared as "Work Uncertified." It is valued at cost and credited to contract Account and debited to Work in Progress Account.

I) Work in Progress:

Work in progress includes the amount of work certified and the amount of work uncertified. The work in progress account will appear on the asset side of the balance sheet. The amount of cash received from the contractee and reserved for contingencies will be deducted out of this amount.

In this the Treatment of Profits or Loss on Contracts A/c is done in the following stages:

a) Profit or Loss on incomplete contracts

b) Profits or Loss on completed contracts

A) Profit or Loss on Incomplete Contracts

To find the profits to be taken to Profit and Loss Account, in the case of incomplete contracts, the following situations arises:

i) In case if the completion of Contract is done Less than 25% , then no profit should be taken to profit and Loss Account.

ii) If the completion of Contract is done upto 25% or more but less than 50%, then one-third of the notional profit is reduced in terms of cash received to work certified and should be transferred to profit and Loss Account.

Review Questions

1. Explain the idea of Job Costing?
2. What is the idea of Quotes? Explain?
3. State the important features of Job Costing?
4. Explain the agreement costing in detail?

Discussion Questions

Discuss the procedure involved in costing?

Application Exercises

1. Design any balance sheet and determine the profit and loss of inventory of your choice?
2. Design a settlement statement and sketch the necessary inputs?

Lesson 12 – Process Costing

Learning Objectives

- To explain about processes.
- To analyse the different types of process costing.
- To generalized idea about LIFO and FIFO methods.
- Understand the scope of cost flow process.

12.1 Introduction

Process costing is a part of accounting methodology that highlights and accumulates direct costs, and allocates indirect costs of a manufacturing process. In this the costs are assigned to products, usually in a large batch, which includes an entire month's production. Eventually, costs have to be allocated to individual units of product. It assigns average costs to each unit, and is the opposite extreme of Job costing which attempts to measure individual costs of production of each unit.

Process costing is a form of operations costing which is used where consistent homogeneous goods are produced. This costing method is used in factories such as:

- Chemicals
- Textiles
- Steel
- Rubber
- Sugar
- Shoes
- Petrol etc

Process costing is also used in the assembly type of industries also. It is assumed in process costing that the average cost presents the cost per unit. Cost of production during a particular period is divided by the number of units produced during that period to arrive at the cost per unit. .

Also we can say that a process costing is a type of action costing which is used to determine the cost of a product at each process or stage of manufacture. Here the CIMA defines process costing as "costing method valid where goods or services result from a sequence of continuous or repetitive operations or processes. In this the costs are averaged over the units produced during the period". It is appropriate for industries producing uniform products and in case where production is a regular or continuous flow. A process can be referred to as the sub-unit of an organization specifically defined for cost collection purpose.

12.2 Importance

It was believed that costing is an important process that many companies engage in to keep track of where their money is being spent in the production and distribution processes. By considering these expenses is their initial step to control them. It is very important that a company chooses the appropriate type of estimation system for their product type and industry. One type of costing system that is used in certain industries is process costing that varies from other types of costing in some ways. In case of process costing, the unit costs are more like averages, the process-costing system requires less bookkeeping than does a job-order costing system. So, a lot of companies prefer to use process-costing system.

12.2.1 Features:

(a) Continuous manufacturing
(b) Same product quality
(c) Uniform process
(d) Interlinked process as the output of one become raw material of another
(e) Last output is transferred to finished stock
(f) Step wise expenditure
(g) Both direct and indirect costs are collected in each process
(h) If there is a stock of semi-finished goods, it is uttered in terms of equaling units
(i) The total cost of each process is divided by the normal output of that process to find out cost per unit of that process.

12.2.2 Advantages:

1. Costs are been calculated periodically at the end of the period
2. Simple and less clerical
3. It is easy to allocate the expenses to processes in order to have accurate costs.
4. Use of standard costing systems in very effective in process costing situations.
5. Process costing helps in preparation of tender, quotations
6. Since cost data is available for each process, operation and department, good managerial control is possible.

12.2.3 Limitations:

1. Cost obtained at each process is only historical cost and are not very useful for effective control.
2. Process costing is based on average cost method, which is not that suitable for performance analysis, evaluation and managerial control.
3. Work-in-progress is generally done on estimated basis which leads to inaccuracy in total cost calculations.
4. The computation of average cost is more difficult in those cases where more than one type of products is manufactured and a division of the cost element is necessary.
5. Where different products arise in the same process and common costs are prorated to various costs units. Such individual products costs may be taken as only approximation

(a) and hence not reliable.

12.3 Types

Process costing is of three types:

12.3.1 Weighted average costs.

In this all costs whether from a previous period or the current one, are lump together and are assigned to create units. It is the simplest version to calculate. A calculation of a

firm's cost of assets in which each category of capital is proportionately weighted. All capital sources such as common stock, preferred stock, bonds and any other long-term debt that are covered in a WAC calculation. All else equal, the WAC of a firm increases as the beta and rate of return on equity increases, as an increase in WAC notes a decrease in valuation and a higher risk.

Mathematically in WAC equation, the cost of each capital element is multiplied by its proportional weight and then summing:

$$WACC = \frac{E}{V} * Re + \frac{D}{V} * Rd * (1 - Tc)$$

Where:

Re = cost of equity

Rd = cost of debt

E = market value of the firm's equity

D = market value of the firm's debt

V = E + D

E/V = percentage of financing that is equity

D/V = percentage of financing that is debt

Tc = corporate tax rate

In business the discount cash flows in WAC are required to determine the Net Present Value (NPV) of a project, using the formula:

NPV = Present Value (PV) of the Cash Flows discounted at WACC.

12.3.2 Standard costs.

This is related to standard costs. Its has similar calculation to weighted normal costing, but standard costs are assigned to production units, rather than actual costs; after total costs are accumulated based on standard costs, these totals are compared to definite accumulated costs, and the difference is charged to a variance account. Standard costing is an important subtopic of cost accounting. Standard costs are usually associated with a manufacturing company's costs of direct material, direct labor, and manufacturing overhead.

In case of preparation of budget, the costs are typically calculated at two levels, in total dollars so an income statement can be prepared, and cost per unit. The cost per unit is referred to as a standard cost which can be developed and used for pricing decisions and cost control even if a budget is not prepared. A standard cost in a manufacturing company such as Pickup Trucks consists of per unit costs for direct materials, direct labor, and overhead. The per unit costs can be further divided into the expected amount and cost of materials per unit, the expected number of hours and cost per hour for direct labor, and the expected total overhead costs and a method for assigning those costs to each unit. Within the expected amount of materials, waste or spoilage must be considered when determining the standard amount.

It was found that, if a product, such as a chair, requires material, more material than is actually needed for the chair must be ordered because the shape of the seat and the fabric are usually not exactly the same. The dump of material are called waste, which is not avoidable, given that the chair is being produced with this specific fabric. The cost of the full piece of material is used as the standard cost because the waste has no other use.

By assigning the actual costs of direct material, direct labor and manufacturing overhead to a product, many manufacturers assign the expected or standard cost. This means that a manufacturer's inventories and cost of goods sold will begin with amounts reflecting the standard costs, not the real costs, of a product. Manufacturers, of course, still have to pay the actual costs. As a result there are almost always differences between the actual costs and the standard costs, and those differences are known as variances.

Standard estimation and the related variances is a valuable management tool. If a variance arises, management becomes aware that manufacturing costs have differed from the standard costs. If genuine costs are greater than standard costs the variance is unfavorable. An unfavorable variance tells management that if everything else stays constant the company's actual profit will be less than planned. If actual costs are less than standard costs the variance is favorable. A favorable variance tells management that if everything else stays constant the actual profit will likely exceed the planned profit. The earlier that the accounting system reports a variance, the faster that management can direct its attention to the difference from the planned amounts.

If we assume that a company uses the everlasting inventory system that carries all of its inventory accounts at standard cost, then the standard cost of a completed product is the sum of the standard costs of the inputs:

1. Direct material
2. Direct labor
3. Manufacturing overhead
    a. Variable manufacturing overhead
    b. Fixed manufacturing overhead

12.3.3 First-in first-out costing (FIFO).

FIFO is more complex and results in complexed calculation. It creates layers of costs, one for any units of production that were started in the earlier production period but not completed, and another layer for any production that is started in the current period.

There is no last in, first out (LIFO) costing method used in process costing, since the underlying postulation of process costing is that the first unit produced is, in fact, the first unit used, which is the FIFO concept.

The unlike calculations are required for different cost accounting needs. In case of weighted normal method, it is used in situations where there is no standard costing system, or where the fluctuations in costs from period to period are so small that the management team has no need for the slight improvement in costing accuracy that can be obtained with the FIFO costing method.

On the other hand, development costing which is based on standard costs is required for costing systems that uses normal costs. It is useful in situation where companies manufacture such a broad mix of products that have difficulty accurately assigning actual costs to each type of product; under the other process costing methodologies, which both use definite costs, there is a strong chance that costs for different products will become mixed together.

It was believed that FIFO costing is used when there are ongoing and important changes in product costs are necessary from period to period in such a way that the management team needs to know the new costing levels in order to re-price goods appropriately, which can be determine if there are internal costing problems requiring resolution, or perhaps to change manager performance-based compensation. Generally, the simplest costing approach is the weighted average method, with FIFO costing being the most difficult.

12.3.3.1 Example

By using the following information, calculate the value of inventory on hand on Dec 31 and cost of goods sold during Dec in FIFO periodic inventory system and under FIFO perpetual inventory system.

Dec 1	Beginning Inventory	60 units @ Rs 15.00 per unit
5	Purchase	140 units @ Rs 15.50 per unit
14	Sale	190 units @ Rs 19.00 per unit
27	Purchase	70 units @ Rs 16.00 per unit
29	Sale	30 units @ Rs 19.50 per unit

By using FIFO Periodic

Units Available for Sale	= 60 + 140 + 70	= 270
Units Sold	= 190 + 30	= 220
Units in Ending Inventory	= 270 − 220	= 50

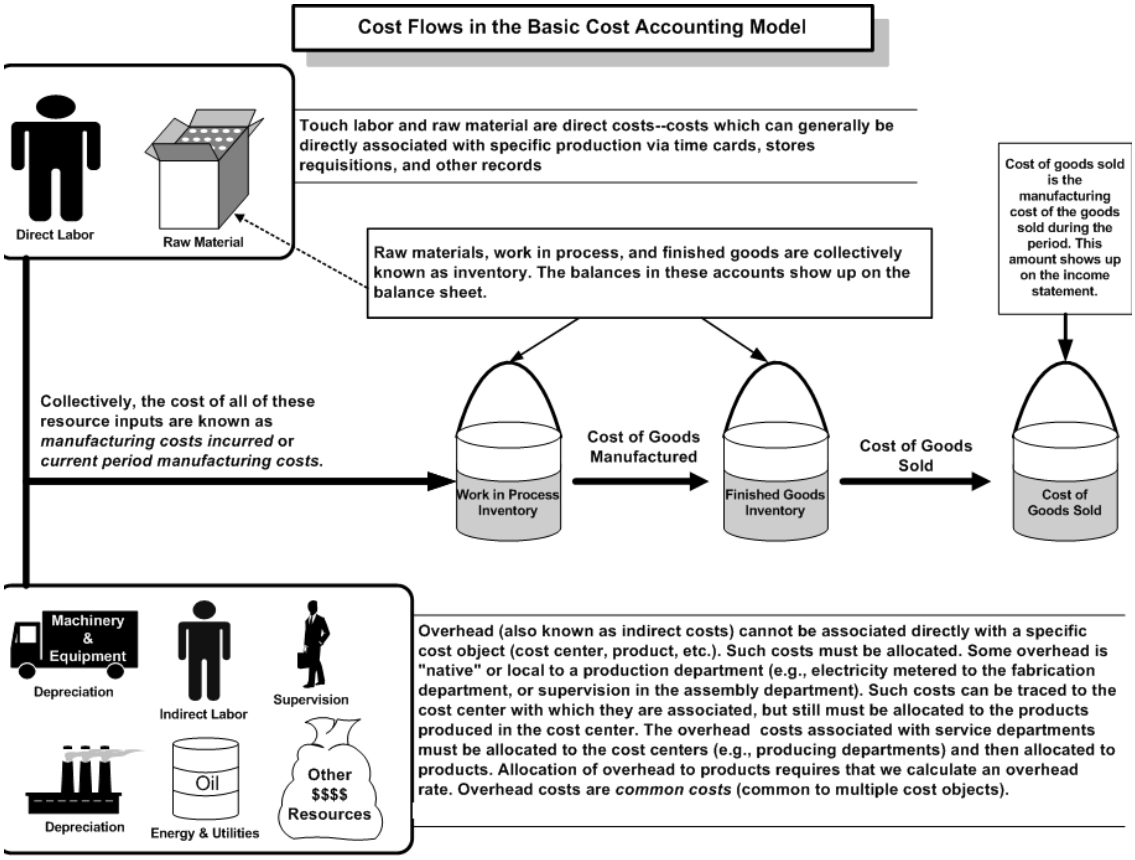
Cost of Goods Sold	**Units**	**Unit Cost**	**Total**
Sales From Mar 1 Inventory	60	Rs 15.00	Rs 900
Sales From Mar 5 Purchase	140	Rs 15.50	Rs 2,170
Sales From Mar 27 Purchase	20	Rs 16.00	Rs 320
	220		Rs **3390**

Ending Inventory	**Units**	**Unit Cost**	**Total**
Inventory From Mar 27 Purchase	50	Rs 16.00	Rs 800

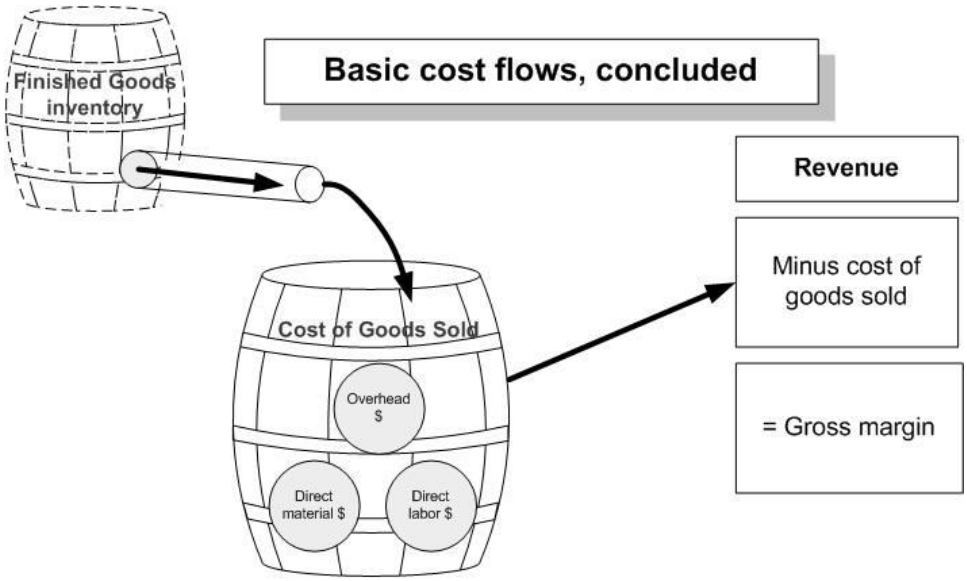
Using FIFO Perpetual

Date	Purchases			Sales			Balance		
	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Mar 1							60	Rs 15.00	Rs 900
5	140	Rs 15.50	Rs 2,170				60	Rs 15.00	Rs 900
							140	Rs 15.50	Rs 2,170
14				60	Rs 15.00	Rs 900	10	Rs 15.50	Rs 155
				130	Rs 15.50	Rs 2,015			
27	70	Rs 16.00	Rs 1,190				10	Rs 15.50	Rs 155
							70	Rs 16.00	Rs 1,120
29				10	Rs 15.50	Rs 155	50	Rs 16.00	Rs 800
				20	Rs 16.00	Rs 320			
31							50	Rs 16.00	Rs 800

12.4 Cost Flow in Process Costing



Typically the costs flow in development costing is basically to direct the material costs that are added at the beginning of the process, by keeping all other costs to add slowly over the course of the production process. In case of a food processing process, the direct material is added at the beginning of the operation, and then various rendering operations slowly convert the direct material into finished products.



12.5 Reasons for use

It was seen that nowadays companies need to allocate total product costs to units of product that is based on the following reasons:

1. A firm may produce thousands or millions of units of product in a given period of time.
2. Products are produced in big quantities, but products may be sold in less quantities, sometimes one at a time or may be a dozen or two at a time etc.
3. Product costs must be transferred from completed Goods to Cost of Goods Sold as sales are made. This requires a correct and accurate accounting of manufactured goods costs per unit, to have a proper matching of product costs against related sales revenue.
4. In this the administration need to maintain cost control over the manufacturing process.
5. A fraction-of-a-cent cost change can represent a large rupee change in overall profitability, when selling thousands of units of product in a month. Higher officials must carefully watch per unit costs on a daily basis through the production process, while at the same time dealing with materials and output in huge quantities.
6. Materials part way from side to side might need to be given a value, process costing allows for this. By finding what cost the part processed material has received such as labor or overhead an "equivalent unit" relative to the value of a finished process can be calculated.

Review Questions

1. Explain the process involved in costing?
2. State the features of Process Costing?
3. State the important features of Job Costing?
4. What is standard cost?

Discussion Questions

Discuss FIFO method in detail?

Application Exercises

1. Develop a basic costing model and state its process?
2. Implement a Job Costing method and the necessary tools involved?

Lesson 13 – Unit Costing

Learning Objectives

- To explain about unit costing.
- To analyse the various development techniques.
- To estimate the advantages of unit cost.
- Understand the scope of unit costing.

13.1 Introduction

Unit cost highlights the normal or particular cost that is used as the base for measurement against the real one. A unit cost is simply the "average total cost" of producing one unit of output. It is considered by dividing the total cost of production by the total number of units of output produced.. Unit costs for manufactured items include:

- Labor
- Material
- Overhead
- vendor acquisition
- freight
- duty fees

Unit cost principles clarify a management methodology that is used to many organizations, whether operations are funded by direct appropriations or financed through a rotating fund. The idea of unit cost is to relate total cost to the work or output produced. In order to get better use of resources, decision makers must appreciate their mission and the work required to perform that mission. They must also have visibility of total cost, including costs that historically have been viewed as "free" such as military labour or capital equipment. Unit cost focuses management concentration on relating total cost with work accomplished. Outputs produced must be specifically identifiable and quantifiable. Costs are captured and categorized as: direct, indirect, and general and administrative costs. It is basically the sum of these costs, divided by the number of units of outputs produced. Output and cost data are collected through financial and non financial processes and systems. Unit Cost Reports provide data on the execution of a program in unit cost terms.

We all recognise that absolute costs can add to year on year; but what exactly are we getting for our money? Are we provide more services? Or are the services we provide just getting more costly? Without linking what we spend to what we provide we do not know how cost effective we are. Measuring the cost per unit produced is consequently one way that we can define Value for Money. By comparing the unit cost of the service over time we can track our progress on cost effectiveness. Comparing unit costs with other similar organisations we can assess our relative efficiency.

Mathematically the calculation of unit cost is simple and is represented by taking the total cost of service and dividing it by the number of service units provided.

$$\frac{\text{Total cost}}{\text{Number of cost units}} = \text{Unit Cost}$$

It sounds simple, but to be meaningful we need to understand our costs and how they behave and also be able to identify units that most meaningfully measure the performance of the service.

13.2 Method

This method of costing is used for products which can be expressed in identical quantitative units and is beneficial for products which are manufactured by regular manufacturing activity. In this the costs are ascertained for convenient units of output. Unit cost is a move to more businesslike accounting. Businesses depends mostly on linking or tracing costs to outputs, and managerial or cost accounting provides management this information. Management accountants struggle to establish causal relationships between costs and cost objects to determine why costs were received. The process of tracing costs to cost objects forges a necessary link so that ultimately, we can relate costs to outputs, even if at an aggregated level. To enable treating costs in this manner, in DoD unit cost, we categorize costs as direct costs, indirect costs, and general and administrative costs (G&A).

In case of brick making, mining, cement manufacturing, dairy, flour mills etc, unit costing is a widespread tool for planning costs and setting prices. It can be further used in:

- Materials for preservative costs
- base preparation objects
- cost object ID
- CO making order
- sales paper
- project
- internal order
- primary cost element

13.2.1 Direct Costs:

Direct costs are those costs that can be find out exclusively to one output, such as hands on labor or material consumed directly in the production of an output. Direct costs tend to change proportionally with the number of output.

13.2.2 Indirect Costs:

Indirect costs are those costs which is good for two or more outputs but not for all outputs. Indirect costs are often relatively insensitive to changes in quantity of output. An example of an indirect cost may be a second line supervisor who oversees some specific, but not all, manufacturing processes. Typically these costs are allocated among the various outputs which they benefit. It is important to note that while cost accounting attempts to establish causality, ultimately there is a certain amount of arbitrariness in any allocation scheme used. This is to say that no allocation scheme will be completely accurate, but a reasoned allocation scheme for these costs helps better identify the "true" total cost.

13.2.3 General and Administrative Costs:

General and administrative costs are those costs that cannot be reasonably associated with any particular product or service produced. Commonly referred to as overhead, these costs are allocated over all outputs produced. Again, any allocation scheme will be somewhat arbitrary in nature, but will help better reveal the "true" total cost of an output. On the other hand, every attempt is made to choose an allocation methodology that best suits each functional area. As with indirect costs, G&A costs tend to be relatively insensitive to small changes in output. Examples of G&A costs include functions such as local comptroller, security, engineering facilities, fire fighting, custodial services, snow removal and similar types of base support functions.

13.2.4 Cost behavior:

The economic view as with the cost accounting view, cost behavior is generally explains as either fixed or variable. In this, the cost and the total cost is the sum of all fixed costs and all variable costs. Fixed costs are those costs that, over some specific time period, do not vary with quantity of output. These are costs that we must pay no matter how much we create. For example, an annual lease that requires monthly rent payments whether or not we produce anything is a fixed cost.

Variable costs are those costs that vary directly with quantity of output. If we produce nothing, variable costs are zero. Consider the cost of materials used to repair television. Each television repaired requires one unit of material at some cost. The more television is

repaired, more will be the total material cost. If we repair no television, then we use no materials and received no cost for materials. There is also a cost category called mixed costs. Mixed costs perform as fixed costs up to some low amount quantity of output, then, like variable costs, increase as the number of units of output increases. Only fixed and variable costs will be discussed in this section on unit cost.

It is important for management to recognize how costs behave in order to plan and manage properly. In the short run, changes can normally be effected only by making decisions about uneven costs. For example, reducing the amount of packing material used for export could reduce the unit cost of issues at a allocation point. Changes to fixed cost tend to be long run oriented. The buy versus rent decision is one example. Management should not use the idea that all of their costs are fixed costs and therefore management is unable to control those particular costs. In today's environment of increasingly scarce resources, creative, cost conscious managers should want to drive production cost down. To do so enables them to "do more with less." The challenges to the management mean reengineering the process in which they work and produce. In this chase, it is required to recognize which costs can be affected quickly by management action and which will take more planning and management concentration to influence.

Within DoD financial management, there is no clear agreement or generally accepted definitions as to which costs are fixed and which costs are variable. But in spite of cost behavior, fixed or variable, all costs of a business should be addressed. Management are responsible for their decisions, and using unit cost helps focus attention on and communicate information about the total cost of production. The unit cost process reinforces responsibility and accountability for decisions.

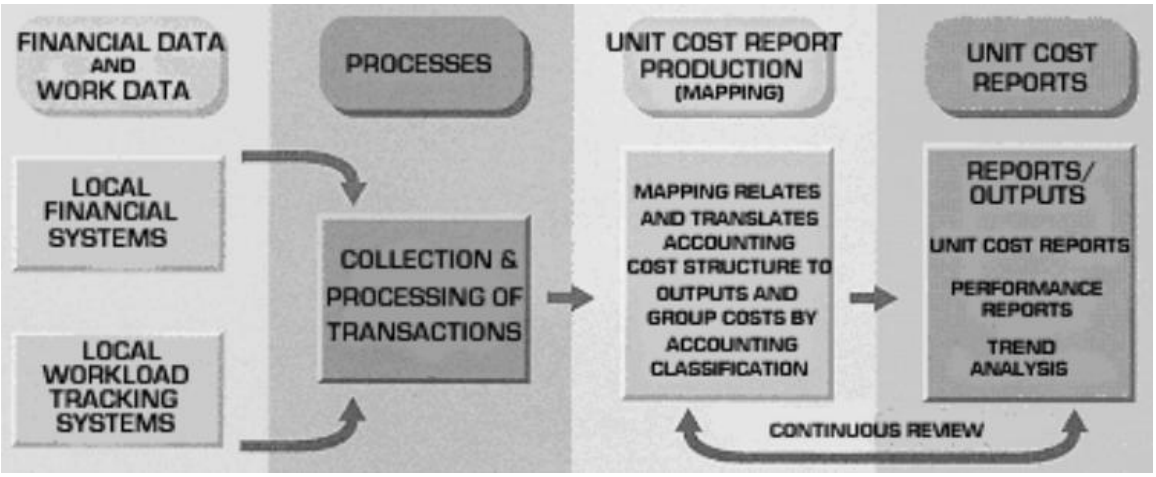
13.3 Development of Unit Cost

Aligning Costs and Outputs Unit cost should help managers at all levels to make more informed resource share decisions. To provide this capability, it is necessary to understand the output definitions and cost collection methodologies used in the process of developing unit cost.

DoD-wide task forces first began developing productivity measures for the various business areas in 2011. The task forces were comprised of financial and nonfinancial legislative body from the components till various other officers. They determined organizational outputs for selected functional areas, identified sources of data and workload information and developed the mapping, a methodology of aligning costs to individual outputs.

The mapping procedure brings workload, financial and manpower data jointly to assign direct costs that allocate indirect costs and spread G&A costs to specific outputs. In unit cost growth, costs and outputs are connected or aligned by using this "mapping" process. In this process, cost data collected from the official accounting systems are grouped together by cost account codes.

The costs are linked or mapped to exacting outputs. This process results in cost-output relations that provide management visibility of the total cost for a given output. The mapping for an action should be continuously reviewed and efficient in order to reflect accurately changes occurring. This process can be described as:



Under this, each Group consists of suitable subject matter experts from the DoD components that perform support functions in each defined business area. In accomplishing its mission, the Group identifies the outputs of the business area and identifies the appropriate costs applicable to that business area. Other considerations such as standard report development and production and customer identification are also part of the Group's purview.

Further, it was observed that the Group is liable for carefully documenting the results of their work. This includes documenting the suitable expenses and workloads residing in the various systems that will be used to create the unit expenditure reports and measure outputs. The Group is the primary body responsible for continuously reviewing cost-output mappings and ensuring currency and accuracy. However, local activity managers should recommend changes when proper. The suitable Unit Expenditure Working Group reviews all recommended changes prior to changes being implemented.

13.4 Use

Certain objects such as cost object IDs and production orders in Controlling can only be planned using unit costing. In this the cost estimate results are valid for the entire life of the object.

For WBS elements and internal orders, unit costing is used for other forms of planning, such as cost element planning and structure planning. Here the cost estimate results can be valid for the entire life of the object or for a fiscal year.

The advantage of unit costing is that one can easily plan costs not only at the cost element level, but also for each material component and internal activity.

Such case related to production orders, materials and sales orders, unit cost is used to calculate. Material costing is generally used in connection with the Production Planning (PP) Module, while unit costing is can be used to transfer data relevant to costing from non-SAP systems.

13.5 Calculations

In order to calculate the unit cost, let's take an example of a purchasing division with 3 expenditure lines and 3 procedures.

1. Procedures:

- Purchase Orders
- Review Inventory
- Evaluate Vendors

2. Actual Expenses of Rs 150,000

- Wages Rs 100,000
- Sterio Rs 30,000
- Purchase Rs 20,000

3. Assign Expenses to each Activity and 4. Total Expenses for each activity

Total	Wage	Sterio	Purchase	Total
Rs 150,000	Rs 100,000	Rs 30,000	Rs 20,000	Rs 150,000
Process PO	Rs 80,000	Rs 24,000		Rs 104,000
Review Inventory	Rs 10,000	Rs 6,000		Rs 16,000
Evaluate Vendors	Rs 10,000		Rs 20,000	Rs 30,000

4. Survey or estimate

- Process Purchase Orders: 1,000
- Review Inventory
- Evaluate Vendors

5. Calculate Unit Cost

- Process Purchase Orders: Rs 104,000 / 1,000 = Rs 104/purchase order
- Review Inventory Rs 16,000 / 50 = Rs 320/weekly review
- Evaluate Vendors Rs 30,000 / 10 = Rs 3,000 per vendor

Review Questions

1. Explain the general procedure to calculate the unit cost?
2. What is direct and an indirect cost?
3. State the important features of variable cost?
4. What is standard cost?

Discussion Questions

Discuss in detail about unit costing and its method involved to develop a report?

Application Exercises

1. Develop the method employed in designing a unit cost model?
2. Develop a unit costing report by analyzing various techniques?

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