Bachelor of Commerce

(B.Com.)

Cost Accounting

(OBCMCO203T24)

Self-Learning Material

(SEM - II)

Jaipur National University

Centre for Distance and Online Education

Established by Government of Rajasthan

Approved by UGC under Sec 2(f) of UGC ACT 1956

&

NAAC A+ Accredited

Table of Contents

Expert Committee

Prof. R.L. Raina
Former Vice Chancellor, JKLU
Professor of Communication, IIM Lucknow

Prof. J.K. Tandon
Former Dean, Faculty of Commerce
Former Head of EAFM Department
University of Rajasthan

Course Coordinator

Dr. Vicky Likhar
Assistant Professor
Department of Business & Management, JNU, Jaipur

Unit Preparation

Unit Writers

Dr. Harish Kumar
Department of Business & Management, JNU, Jaipur
Unit 1 - 5

Mr Girdhar Agarwal
Department of Business & Management, JNU, Jaipur
Unit 6 - 11

Ms. Saraswati Kumari
Department of Business & Management, JNU, Jaipur
Unit 12 - 15

Assisting & Proof Reading

Dr. Manoj Kumar
Department of Business & Management, JNU, Jaipur

Editor

Prof. Prashant Madan
Jaipur National University, Jaipur

Secretarial Assistance

Mr. Nitin Parashar

Course Introduction

Cost Accounting is assigned 5 credits and contains 15 units. Cost accounting is the process of the more efficient workers analyzed various recordings and expenditures. However, the objectives of cost accounting are much more profound. Cost accounting helps a company to check a large part of finances and expenditure.

All large business organisations have experts for cost accounting who execute the job and ensure the cost-related data remains transparent. Here you can study the main objective of cost accounting. Go through the following write-up to understand why the process is important and needs to be done at regular intervals. Proper cost accounting is also important because it helps to maintain a balance between the management team and the wagers of the company.

Each unit is divided into sections and sub-sections. Each unit begins with statement of objectives to indicate what we expect you to achieve through the unit.

Course Outcomes

After studying this course, a student will be able to –

1. Enumerate the conceptual knowledge of cost accounting.
2. Demonstrate methods of scheduling costs per unit of production.
3. Compute the costs according to their impact on business.
4. Analyse the specifics of different costing methods.
5. Appraise mastery of costing systems, cost management systems, budgeting systems and performance measurement systems.
6. Formulate all costs involved in performing any process, project, product

We hope you will enjoy the course.

Acknowledgement

The content we have utilized is solely educational in nature. The copyright proprietors of the materials reproduced in this book have been tracked down as much as possible. The editors apologize for any violation that may have happened, and they will be happy to rectify any such material in later versions of this book.

UNIT -1

Cost Accounting Principles

Learning Outcomes:

- Students will be able to understand the concept of cost and how it is classified.
- Pupils will be able to understand cost-related systems, procedures, and methods.
- Students will gain knowledge about the purpose of a cost sheet as well as an understanding of its helpful methods.

Structure:

1.1 Meaning of cost and cost accounting

- **Meaning of cost**

It is the amount to be paid for goods or services or the resource given in exchange for such goods or services. The expenditure incurred for manufacturing and selling of products for the provision of services and the acquisition of the asset is termed as cost. A cost is termed an expense when it is either sold or consumed. However, in the case of assets, the expense can differ significantly. When a cost is termed as an expense, it can be aligned to a variety of expenses such as the cost of goods sold, selling and distribution expenses, general and administrative expenses, and financing costs. Hence, the classification of the cost depends upon the nature of the expenses incurred. For in-depth analysis, a cost can also be divided into variable cost and fixed cost.

Variable cost

Variable cost is an expense that varies in proportion to production. With an increase in production or sale, the variable cost also increases, and when production or sales decreases, the variable cost also decreases. Variable costs are generally dependent upon output and sales. Variable cost per unit is generally a constant amount per unit produced. Variable costs are generally short-term costs as they can be adjusted quickly. For instance, when a company faces a cash flow crunch, they can immediately after their production to reduce the variable cost. Variable costs are an important element in calculating the contribution margin of a product. It also helps in determining the break-even or the target profit level. Variable costs are calculated as follows:

Total Variable Cost = Total quantity of units produce x variable cost per unit

Some examples of variable costs are raw material costs, direct labour costs, Commission, shipping and freight charges, etc.

Fixed cost

Fixed cost is the business expense that does not depend upon the quantity produced or services provided. It neither decreases nor increases with the output or sales. Fixed costs are generally linked to expenses of regular nature that do not have a direct bearing on production, such as interest, insurance, rent, and depreciation. Fixed costs are indirect as they are not related to the level of production in an organisation. Fixed costs play an important role in determining the shutdown point. It, along with the variable cost, helps in determining the total cost to manufacture a product or provide a service. In this manner, fixed costs are independent of any particular business activity. These costs are set up over some time and affect profitability at different levels of the Income statement. Fixed costs do not change over

time. Depreciation is one of the common examples of fixed costs. This cost is either be of short-term or long-term in nature.

Meaning of Cost Accounting

Cost accounting is the process of identifying, recording, analysing, and summarising company cost expenditure. It helps to identify the company's cost structure. In simple words, it helps in identifying where the company is spending its capital or what its savings are, or how much it earns. Thus, it is an essential tool to make a company more cost-efficient. Expenses can be controlled, and thus profit can be increased if the cost structure of a company is efficiently recorded. Thus, the most important aspects of cost accounting are recording, reporting, and analysis of a company's income and expenses. It also involves assigning a specific cost to each of the individual activities of a business. This leads to cost-cutting in order of the importance of the activity, thus prioritising the investment to be done in a process.

For example, a pharmaceutical company its backbone is the research and development department. Thus, it is obvious that it needs maximum focus and eventually maximum investment. This can be achieved through cost accounting, wherein a greater investment would be assigned to the research and development department, followed by production, logistics, distribution, and so on.

Types of cost accounting

1. **Standard cost accounting**

   It is the costing method where the firm compares the actual expenditure with the desired expenditure incurred for the production of the goods. Labour costs, product prices, and all overhead expenses are included in the standard cost.

2. **Marginal cost accounting**

   This is a technique where all costs are divided into fixed and variable costs. Fixed costs are not affected by the change in profit incurred. These are unrelated to the production level. It remains unchanged irrespective of the production quantities. Fixed costs like rent and electricity bills are not allocated to any one product but are added as expenses in the financial statement. Variable costs are related to production level. It changes with the change in the level of production.

3. **Activity-based accounting**

It is a technique in which company several operations, such as overhead costs are identified, and prices are assigned to them.

4. Lean accounting

Firms that employ lean manufacturing techniques gain from the lean accounting method, which gives important numerical feedback. The main goal is to improve financial management practices within an organisation.

Advantages of cost accounting

a. **Cost reduction-** Under the cost accounting system, new and improved methods of production are followed, which leads to cost reduction.
b. **Identify the reasons for profit or loss-** A good cost accounting system identifies the reason for profit or loss so that there is no possibility of shutting down any product or department.
c. **Cost control-** Budgets are prepared under a cost accounting system that does not allow expenses beyond the budget amount. Comparison of actual and standard performance helps the management to find out the variation and ways to control such variations.
d. **Price fixation-** It is one of the advantages of cost accounting. The total cost of a product is available, and it is useful for fixing of price.
e. **Helps to prepare financial accounts-** Costing records help in the preparation of financial accounts by providing information related to closing stock, work in progress, and finished goods.
f. **Prevention of fraud-** A cost audit can prevent fraud by providing correct and reliable data from the costing records.

Disadvantages of cost accounting

a. In the costing records only, past performances are available, and the management is taking future decisions.
b. Cost data are not highly useful as the cost of the previous year in the current year is not the same.
c. The cost is ascertained based on the full utilisation of capacity.
d. Cost calculation is not always correct because financial character expenses are not included in the cost calculation.
e. Installation of a cost accounting system requires maintenance of posting records which results in heavy expenditure.

f. Costs are absorbed on a free data mind rate, which leads to over-absorption or under-absorption of overheads.

1.2 Objectives

Objectives of cost accounting

1. It is a detailed report of the cost structure of the business.
2. It mainly focuses on the expenditure of a company
3. It helps in assigning and prioritising the cost of multiple activities of a business.
4. It helps to take budget-related decisions.
5. It helps in determining a cost efficiency of an organisation.
6. It helps in system development input analysis and creating quantitative cost information.
7. It applies to both the product and service sector
8. It is also a strategic tool that helps in taking expansion-related decisions.
9. It helps in the preparation of financial statements.
10. It helps in identifying the cost inefficiencies of a department or a process.

- **Knowledge Check 1**

  Fill in the Blanks.

1. **_____co**sting method where the firm compares the actual expenditure with the desired expenditure incurred for the production of the goods.
2. Firms that employ lean manufacturing techniques gain from the _____ method, which gives important numerical feedback.
3. _____ can prevent fraud by providing correct and reliable data from the costing records.
4. Fixed costs are _____ in nature as they are not related to the level of production in an organisation.
5. Costing records helps in the preparation of _____ by providing information related to closing stock, work in progress, and finished goods.

- **Outcome-Based Activity 1**

Suppose, a company is engaged in the business of ice cream. They produce ice creams and have three flavours-strawberry, vanilla, and chocolate. The variable cost per unit for

strawberry is Rs.30, the variable cost per unit for vanilla is Rs.40 and for chocolate, it is Rs.50. The company produces 100 units of strawberries, 80 units of vanilla, and 60 units of chocolate ice creams. Calculate the total variable cost.

1.3 Installation of Costing System

Conditions of Installing Costing System

The installation of a costing system should benefit the organisation. The following matters and conditions are required when introducing a costing system.

1. **Objectives of the costing system**

   The objectives of an installation of a costing system should be clear so that focus should be given to that particular area. Suppose the main objective of an organisation is to expand its production, then that area should be given more attention.

2. **Study the product**

   The suitability of the product is very important. The type of costing system to be used depends upon the nature of the product. Suppose the product requires high material cost; then the main emphasis is to be given on pricing, issuing, storing, and controlling of material and if the product requires high labour cost, then the main importance is to be given to the wage payment.

3. **Study the organisation**

   The costing system should suit the organisation. An effort should be there to introduce the costing system in an existing organisation. So, we should keep in mind that the organisation should be least disturbed. For this purpose, the nature of business and operation must be known.

4. **Deciding the structure of cost accounting**

   Deciding the structure of cost accounts is the next step in the process of installing a costing system**.** The type of manufacturing process will determine the structure of cost accounting. The costing system should be designed in such a manner that there is a gradual increase in cost at each stage of production.

5. **Selecting the cost rates**

   Allocation of various expenses among different products is required for selecting the cost rates. Division of direct and indirect expenses is required, which further helps in determining the cost rates.

6. **Introduction of the system**

Proper implementation of the system decides the success of the costing system. Proper implementation will be possible with the proper cooperation of employees. The success of the costing system will be possible by giving the proper explanation of the system to the employees. The system can also be introduced gradually if required.

7. **A follow-up**

   A follow-up of the system is essential for its proper functioning. So that when the system is put into actual practice, then its problem can be realised. Once a problem is released then the effort should be made to rectify it.

Primary objectives of installing a costing system

The objective of installing a costing system are:

a. Profitability
b. Degree of accuracy
c. Preparation of cost data
d. Nature of business
e. Quality
f. Ease of use
g. Use of data available
h. High expected benefit

Problems and possible solutions

1. **Lack of support**

   Lack of support from the management due to its higher cost. Management may consider it as expensive. By satisfying the management through facts and figures related to installation and by convincing them that this must be beneficial for the organisation, such problems can be eliminated.

2. **Resistance of the accounting staff**

   The financial accounting staff may require adjustment and should be informed about the benefits of the installation so that they may not resist fears that this will reduce their importance. The benefits provided by the system are new opportunities, improved efficiency, more varied jobs, and so on.

3. **Non-cooperation**

   This is another problem with the installation of the costing system. By adopting a non-cooperation attitude, others can cause the problem. This may harm the process of

implementation. Employees of an organisation may not supply adequate data, and this may create a problem. By educating the staff and informing them about the advantages of the system, this problem can be eliminated.

4. **Shortage of trained staff**

   A lack of trained staff will cause a problem. However, providing training to use the system will ensure its efficient use and desired result.

5. **Continuously checking progress**

   By continuously checking the progress of the costing department, such problems will be eliminated and will help to meet its objectives.

- **Knowledge Check 2**

  State True or False.

  1. The type of costing system to be used does not depend upon the nature of the product.
  2. Lack of support from the management due to its higher cost.
  3. The type of manufacturing process will determine the cost audit report.
  4. A follow-up of the system is essential for its proper functioning.

- **Outcome-Based Activity 2**

  Prepare a PowerPoint Presentation showing conditions, objectives and problems relating to the installation of the costing system in tabular form.

1.4 Summary

- Cost is the amount to be paid for goods or services or the resource given in exchange for such goods or services. The expenditure incurred for manufacturing and selling of products for the provision of services and the acquisition of the asset is termed as cost. The classification of the cost depends upon the nature of expenses incurred. For in-depth analysis, a cost can also be divided into variable cost and fixed cost.
- Cost accounting is the process of recording, analysing, and summarising of company's cost expenditure. It helps to identify the company’s cost structure. It is an essential tool to make a company more cost-efficient. Expenses can be controlled, and thus profit can be increased if the cost structure of a company is efficiently recorded. Thus, the most important aspects of cost accounting are recording, reporting, and analysing of company’s income and expenses.

- Objectives of the costing system, studying the product, studying the organisation, deciding the structure of cost accounting, selecting the cost rates, introducing the system, and a follow-up are the conditions for the installation of the costing system.
- Lack of support, the resistance of the accounting staff, non-cooperation, shortage of trained staff, and continuously checking progress are some of the problems of installing a costing system.

1.5 Self-Assessment Questions

1. Describe what cost and cost accounting are.
2. What goals does cost accounting seek to achieve?
3. What prerequisites must be met in order to deploy a costing system?
4. What are the objectives of installing a costing system?
5. Explain the problems and possible solutions for installing a costing system.

1.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.

UNIT- 2

Elements of Cost

Learning Outcomes:

- Students will be able to understand the concept of cost and the classification of cost.
- Students will be able to understand the methods, systems, and techniques of cost.
- Students will be able to learn about the meaning of a cost sheet and will be able to see its practical approach.

Structure:

2.1 Cost Concept

- **Meaning of cost concept**

The recording and retention of the cost of acquisition of assets or other items come under the cost concept of accounting. To add to it, the value of an asset displayed in the balance sheet can be correctly assumed to be its cost unless otherwise stated. According to the cost concept of accounting, the cost of an asset is recorded and not the current market value.

For example: If office land costs Rs.5,00,00,000 to build, its value should appear the same in books even if its market value has increased or decreased. Thus, the cost concept of accounting results in the overstatement of net profit in the context of inflation. Sometimes figuring out the true value of an item becomes objective and may not be estimated correctly. Thus, the cost concept is generally accepted as a fair way to maintain records. All accounting entries should be made at cost, irrespective of the current value under the cost concept.

Example of cost concept

Suppose a company purchase land for the development of its factory, which costs Rs.5,00,00,000. Under the cost concept of accounting, its value will be recorded as 5,00,00,000. Now in the current inflationary scenario, its cost has risen to Rs.10,00,00,000. This is an estimated market value for the land which can only be confirmed accurately after the sale of the land. Now the market value is Rs.10,00,00,000, but due to its subjective nature, the value of this land in companies book would still be displayed as Rs. 5,00,00,000 as any value other than this would be questionable and arbitrary. This is an advantage of the cost concept of accounting as it eliminates any possibilities of estimation of profit or loss; it only gives the most possible accurate figure for the above parameters.

Let's make it clear with one more example

The packaging manufacturing company purchase a printing and fabrication machine for Rs.1,00,00,000 5 years back. The machine was extensively used and helped the company to grow its business and earn profit as everyone knows that any piece of equipment is subject to wear and tear and other damages on being used. Due to all these factors, the machinery has taken depreciation, and its value has decreased. So now, in the company's record book, the value of this machine would be less than 1,00,00,000 depending on the depreciation shown by the company. This is another feature of the cost concept, which is taken into account the diminution of value due to depreciation.

Characteristics of cost concept

- All transactions are recorded at the cost of acquisition.

- If the cost of acquisition of assets is zero, then it would not be recorded in books.
- Non-tangible assets such as brand value, goodwill, and technological skills are not recorded as assets.
- Notably, it takes into account the depreciation of assets.
- Its basic object is the measurement of accurate and reliable profits and losses.
- Historical cost continues to be used as the basis for preparing primary financial statements.

2.2 Cost Classification

Grouping of cost as per similar characteristics generally means the classification of cost. In cost, there are various ways to classify cost as per their different characteristics such as nature, function, etc. Let's discuss such classification below:

1. **Classification by nature**
    - Under classification by nature, there are generally three broad categories: labor cost, material cost, and costs. These heads allow it to be simpler to categorize costs on the cost sheet, and they also aid in figuring out the overall cost and the cost of ongoing work.
    - **Material cost** : The expenses incurred in the production of goods. is called material cost. This includes the cost incurred in procuring any material used in the manufacture of the product. Any goods produced require raw materials, processing, packaging, etc. The combined expenses of this material are called material costs.

      For example, a piece of garment is to be produced from scratch. The basic raw material is the fabric from which the piece will be produced. Also, the garments need to be packed for the market after all the quality checks and other processes. The packaging material also has its own cost. In this case, the material cost is the cost of the fabric in addition to the cost of the packaging material.
    - **Labour cost**- The cost of all labour, including permanent and temporary wages and salaries paid to the employees who are involved in the manufacturing of the product, is called labour cost.

      For example, the fabric acquire to produce the piece of the garment needs to be processed through several processes for the final result. First, the fabric would be cut in the required shape and size; then, it would be stitched and finally ironed, and then packed. In each of the above steps, labour is involved who would run this process is

also there would be supervisors, managers, and quality checkers. The total sum of money paid to the above labour comes under labour cost.

- **Expenses**- The amount of money spent in manufacturing and selling goods and services which do not come under the above classification; that is, material cost and labour cost comes under expenses.

  For example, Storage and transportation charges for the finished goods or raw materials, etc., come under the expenses.

2. **Classification by functions**

   This is a broader classification of cost by departments having different functions, such as production, marketing, purchase administration, transportation, etc. So basically, this is a functional classification that may include the cost of different stages of a business if it comes under the same functionality.

   - **Production cost**- Production cost covers any expense incurred in the actual production of goods. This includes raw material costs, labour costs, transportation charges, etc. as these are the different costs to be born to manufacture a product end to end.
   - **Commercial cost**- The total cost of running an enterprise, excluding production cost, comes under commercial cost. It includes administration costs, distribution costs, marketing costs, etc.

3. **Classification by traceability**

   This classification is based on to what extent the cost incurred by a company can be traced. This is one of the most important aspects of the classification of cost as it divides the entire cost into direct cost or indirect cost.

   - **Direct cost**- These are easily identifiable costs as they can be specified by a cost unit on the cost center.

     For example, Manufacturing cost, product cost old labour cost comes under direct cost as these are attached to the specific expenditures or cost centres.

   - **Indirect cost**- This type, of course, does not have a specific cost unit or is incurred through many cost centres. This type of cost cannot be attached to one particular process or activity.

     For example, the office rent or the salary of the general manager is attached to one particular process; hence it comes under indirect cost.

4. **Classification by normality**

This classification is based on the usual or unusual expenditures. Thus, it can be classified into normal and abnormal costs.

- **Normal cost**- This is the usual cost or the pre-planned cost of production or any other process. This is the cost under a standard environment under which any particular functions and processes run as per plan without any unforeseen circumstances.

  For example, A car manufacturing company completes the assembly of one vehicle in 10 hours. The cost incurred if the unit is completely assembled and forwarded to the next department within the given time and without any additional cost.

- **Abnormal cost** - The cost which is not pre-planned and may arise at any time without any additional benefits is called abnormal cost. This is the extra cost that the company has to bear for the same process and is not pre-planned. This cause is not even included in the production cost, and it is the part of profit and loss account.

  For example, the paint unit in the car manufacturing facility has malfunctioned and needs to be repaired. This repair cost which was not pre-planned or standard for the assembly unit comes under abnormal cost.

- **Knowledge Check 1**

  Fill in the Blanks:

  1. The recording and retention of the cost of acquisition of assets or other items come under _____ of accounting.
  2. All transactions are recorded at _____in cost sheet.
  3. Grouping of cost as per similar characteristics generally means _____.
  4. The cost which is not pre-planned and may arise anytime without any additional benefits is called _____.
  5. The total cost of running an enterprise, excluding production cost, comes under _____.

- **Outcome-Based Activity 1**

Output units	5000	6000	7000
Total cost (Rs)	17000	17500	18000
Unit cost	3.40	2.92	2.57

Above are the cost of the company's output at different levels. Identify cost.

2.3 Methods and system of costing

1) Job costing

This method is used in businesses that work on a job basis. Here the cost is assigned to an assignment, specific job, etc. Here orders are made as per the specifications no pre-production is needed. One can find the profitability of each job if the system is established correctly.

Example of job costing

A garment manufacturing company is involved in producing garments from scratch. It has all the setup required to produce the garment piece but does not have a logo printing machine. To print this logo, the company outsources this task to an external vendor. This is one individual job in the manufacturing of garments. Thus, the cost incurred in the completion of this particular job is known as job costing, as this task was given to someone on a job basis.

2) Batch costing

When goods are produced continuously in batches irrespective of demand or order, then it is termed batch costing. Generally, the batches are of the same kind, and value is produced on a predetermined basis. This may also vary according to the order of demand. The total cost in the production of one batch is known as batch cost. Thus, the cost of the individual unit may be determined from this batch caused by dividing the batch cost by the total number of units produced in that batch. This method is known as batch costing. In simple words, it is the average cost of one unit in a particular batch. This is very useful for large enterprises where the production of goods is continuous.

Example of batch costing

A consumer electric manufacturing company keeps its factory running continuously. It produces its various products and stock and distributes them. Suppose a batch produces 100 television sets; then, the cost of each individual set is derived from this batch cost.

3) Process costing

In industries that operate on continuous processing, where the output from one operation is the input for the next, this costing method is employed. Multiple such steps culminate in the final result. As a result, this approach is only applicable in situations where goods are produced continuously. By dividing all the expenses of all operations by the total amount of units produced, the unit price of the product is calculated.

Example of process costing

A food processing company involved in the manufacturing of sugar is an excellent example where process costing is used. To manufacture sugar in its consumable form, it has to go through some chemical processes of refinement. Each process of manufacturing and refinement has its own cost and produces some by-products during the process. Now to find out the cost of 1kg of sugar, the total cost of processing has to be taken into account.

4) **Operating costing**

Operating costing is best suited to the service sector among all other methods of cost. For the calculation of the cost of services given to the customers, operating costs are used. Uniform services are provided to the customer. There is usually a compound unit in such undertaking such as passenger kilometre in transport companies, kilowatt hour in power supply, etc.

- **Contract costing**

The contract costing method is mainly used in large-scale businesses. When the job begins for a long period, then this method is used. This method is generally used by contractors, builders, etc. This method is mainly used for the construction of buildings, dams, bridges, etc.; for every single contract separate account is maintained.

- **Operation costing**

This method of costing is mainly suitable for industries that have the same production, or large production or goods are in the semi-finished stage to processing orders to issues or later operations. In this method cost, you need is an operation and it's mainly used in automobile units, cycle manufacturing, etc.

- **Unit costing**

This method of costing is majorly applicable for industries where there is a continuous manufacture of goods and all the units produced are identical. Industries such as mining, cement factory, and brick manufacturing company generally use this type of costing method. In this method, the unit cost is determined by dividing the total expenditure during or given period by the total quantity produced in that particular time.

Example of unit costing

A coal mining company is engaged in the mining and extraction of coal for one year. This is a continuous process where the product is only coal. To determine the unit costing of per kg of coal, the company will follow the unit costing method. This time frame may

depend on the company whether wants to take into account the weekly or monthly expenditure.

- **Multiple costing**

When more than one method of costing is applied to determine the cost of the same product then this method is called multiple costing. This type of method is generally used where the product is a result of the assembly of multiple different components.

Example of multiple costing

The automobile industry is an assembly industry, where a vehicle is produced by assembling multiple different components under one roof. These components differ from one another and are generally manufactured by multiple vendors. Each component carries its own cost. Also, the assembly of vehicles requires labour and other resources, which have their costs and should be added to the total cost of the vehicle produced. Thus, the total cost of the vehicle is the result of unit costing, which takes into account the cost of each component, and also process costing, which takes into account the cost of the assembly process.

Techniques of Costing

There are six different techniques of costing. They are marginal, standard, historical, direct, absorption and uniform.

1. **Marginal costing**

   Marginal costing is the method in which the total cost is divided into fixed and variable costs.

   - **Fixed cost-** Fixed cost is the business expense that does not depend upon the quantity produced or services provided. It neither decreases nor increases with the output or sales. Fixed costs are generally linked to expenses of regular nature that do not have a direct bearing on production, such as interest, insurance, rent, and depreciation. Fixed costs are indirect as they are not related to the level of production in an organisation. Fixed costs play an important role in determining the shutdown point. It, along with the variable cost, helps in determining the total cost to manufacture a product or provide a service. In this manner, fixed costs are independent of any particular business activity. These costs are set up over some time and affect profitability at different levels of the Income statement. Fixed cost does not change over some time. Depreciation is one of the common examples of fixed costs. This cost is either be of short-term or long-term in nature.

- **Variable cost-** An expense that varies according on output is known as a variable cost. The variable cost rises in unison with an increase in sales or production and falls in tandem with a decrease in sales or output. Sales and output are typically the determining factors for variable costs. Generally speaking, variable cost per unit is a fixed sum per unit produced. Variable costs are generally short-term costs as they can be adjusted quickly. For instance, when a company faces a cash flow crunch, they can immediately after their production to reduce the variable cost. Variable costs are an important element in calculating the contribution margin of a product. It also helps in determining the break-even or the target profit level.

2. **Standard costing**

   It is a method of the company to the ideal or standard cost to the actual expense incurred.

   For example, in an ideal situation, a piece of garment cost Rs.500 to the manufacturer but in this particular lot, there were extra visitors due to rejected fabrics. Thus the company has to bear additional costs due to this wastage. This is the actual cost of the lot produced, and it is higher than the conventional and standard costs. In this particular scenario, the company will apply the standard costing method to find out the variance between the standard and actual cost.

3. **Historical costing**

   The process of recording and reporting the cost after they've already been incurred is known as historical costing. It is the record of actual cost which provides the management with the cost of the event which has already happened. This method is convenient and hence is also known as conventional costing.

4. **Direct costing**

   This is a record and report of all the direct expenses. Be it operational cost, production cost or process cost, or any other direct costs. These do not include the indirect cost as indirect costs are reported in the profit and loss account under the section indirect expenses.

5. **Absorption costing**

   Absorption costing is a combination of fixed and variable costs. In the absorption costing technique, there is no distinction between fixed and variable costs, and both costs are taken into account while calculating the total cost of production. This method is also called full costing, as it cares for all the total costs incurred during production.

6. **Uniform costing**

When multiple departments follow the same technique. Of costing principles, they are said to be following the uniform costing technique. When the same set of costing principles is applied to determine cost across several different entities, it comes with the advantage of the uniform set of principles and does a better understanding and uniformity among them.

2.4 Cost Sheet

Meaning of Cost Sheet

The statement which has a record of various components of the total cost of a product and also the historical cost is known as a cost sheet. The historical cost enables the company to make a comparison between the previous cost incurred and the current cost for the same product**.** This comparison helps in reducing the idle selling price offer product based on this cost sheet. There are several methods to prepare a cost sheet, but it is generally created utilizing past expenses or three

by making use of the projected expense. The actual costs expended by the corporation to manufacture the product serve as the foundation for the historical cost sheet. However, according to the anticipated cost of the product, an estimated cost worksheet is created.

Importance and objectives of cost sheet

The following business processes benefited from preparing the cost sheet.

1) **Determining the cost**

It's the most important aspect of preparing a cost sheet where the accurate cost is determined both the total cost and per unit cost can be accurately evaluated using a cost sheet.

2) **Fixing selling price**

As stated earlier, a cost sheet helps in deciding the selling price of the product as it contains the total details of the production cost. Thus, by adding the desired margin to the production cost mentioned in the cost sheet, the selling price of the product can be ascertained.

3) **Cost comparison**

The cost sheet contains both the historical cost and the current cost of the product. Thus, the variance between the two costs can be calculated using a cost sheet which helps the management in taking any corrective measures to improve efficiency and to reduce the production cost, if possible, in the future.

4) Cost control

The cost sheet contains the estimated and historical cost of manufacturing the product. Thus, by studying the cost sheet, the current production cost can be controlled if it looks like it is going beyond the estimated cost. Thus, control methods can be implemented, and the final cost of the product can be controlled.

5) Decision making

In general cost, the sheet is the record of the cost of manufacturing a product and its different components. Just by looking at the cost sheet, the accurate cost of any of the components or the product can be determined. Thus, for any future purchases, this cost sheet can be referred to. Also, for future sales like coating prices in a tender, this cost sheet can be referred to. It helps managers at various levels to take decisions such as how to maximize profit and reduce cost, retention or replacement of old machine auto buy a new component, etc.

Elements of cost

1) Prime cost

Prime costs are the cost that is involved directly in the manufacturing process related to materials and labour used in the production. For example, raw material cost, freight, and cartage, consumable cost, wages to workers etcetera

Formula: Prime cost = Direct material cost + Direct labour +Direct expenses

2) Factory cost or work cost

The total of the core price minus any manufacturing or overhead costs is the factory cost of work cost. Manufacturing costs consist of the cost of the price of labor, indirect costs, and materials that are indirect. It also comprises the quantity of

For example, repair and maintenance to machinery and factory building, rent, salary to production manager, machine tools, etc.

3) Cost of production

The cost of production consists of factory costs plus office and administration costs. But it does not include opening and closing finished goods. For example, salary to office staff, stationery and telephone expenses, audit expenses, etc.

4) Cost of goods sold

5) The cost of goods sold emerges if the cost of finished goods is included within the cost of production.

6) Total cost

Total cost is the cost of production plus selling and distribution overheads.

Cost Sheet

The cost sheet has the following format:

Name of the Company _____

S. No.	Particulars	Total Cost	Cost Per Unit
1	Direct Materials Consumed (RM & consumables):		
	Opening Inventory of raw Material	xx	
	Add: Additions/Purchases	xx	
	Less: Closing Stock of Raw Material	(xx)	
	Net Material Consumed:		
2	Direct Labour Cost:		
	Wages to workers	xx	
	Incentive to Workers	xx	
3	Direct Expenses:		
	Power & Fuel	xx	
	Freight & Cartage for incoming material	xx	
	Salary to production supervisors, supervisors, junior engineers, etc.	xx	
	Unloading charges of incoming material	xx	
	Depreciation of Machinery	xx	
	Depreciation of factory building (if owned)	xx	
4	Prime Cost (1 2 3)	xxx	
5	Add: Factory/Works Overheads		
	Repair & Maintenance of Machinery	xx	
	Repair & Maintenance of Factory Building	xx	
	Cost of Machine Tools	xx	
	Salary to Production Manager, RM Store In-charge and other Production & Store Staff, etc.	xx	
	Labour Welfare Expenses	xx	
	Factory Rent	xx	
	Factory Lighting	xx	
	Other factory overheads like housekeeping, salary to security guards, factory stationery, etc.	xx	
6	Gross Factory / Works Cost (4 5)	xxx	
7	Add: Opening Work in Progress	xx	
8	Less: Closing Work in Progress	(xx)	

9	Factory/Works Cost (6 7-8)	xxx	
10	Add Administration Overheads:		
	Salary to Office Staff	xx	
	Incentive to Office Staff	xx	
	Stationery & Printing Expenses	xx	
	Office Lighting Expenses	xx	
	Telephone Expenses	xx	
	Remuneration to Directors	xx	
	Staff Welfare Expenses	xx	
	Audit Expenses	xx	
	Legal & Professional Charges	xx	
11	Cost of Production (9 10)	xxx	
12	Add: Opening Stock of Finished Goods	xx	
13	Less: Closing Stock of Finished Goods	(xx)	
14	Cost of Goods Sold (11 12-13)	xxx	
15	Add: Selling & Distribution Overheads		
	Salary to Sales Team	xx	
	Commission on sales	xx	
	Advertisement expenses	xx	
	Travelling & Hotel Stay Expenses of Sales Staff	xx	
	Warehouse Rent or Depreciation	xx	
16	Cost of Sales (18,19,20)	xxx	
17	Profit	xxx	
18	Sales / Selling Price (16 17)	xxx	

Practical problems

- Create a cost sheet for ABC Ltd based on the information given below for the fiscal year that ends on March 31, 2021:
- Purchases of raw material Rs. 25,000/-
- Opening stock of raw material Rs. 4,000/-
- Closing stock of raw material Rs. 2,000/-
- Direct Wages Rs. 6,000/-
- Other Direct expenses Rs. 2,000/-
- Factory Expenses/Overhead Rs. 2,500/-
- Office and administration overhead is assumed to be 30% of Factory costs
- Opening stock for finished goods Rs. 3,000/-
- Closing stock for finished goods Rs. 4,000/-
- Selling and distribution Overhead Rs. 5,000/-

- Profit Margin on Total cost= 30%

Solution:

Particulars	Amount (Rs.)
Raw material Consumed	
Opening Stock of raw material	4,000
Add: Purchases of raw material	25,000
Less: Closing Stock of Raw Material	2,000
Net raw materials consumed	27,000
Direct Wages	6,000
Other Direct Expenses	2,000
Prime Cost	35,000
Add: Factory Overheads	2,500
Factory Cost	37,500
Add: Office & Administrative Overheads (30% of Factory cost) (30% of Rs. 37,500)	11,250
Cost of Production	48,750
Add: Opening Stock of Finished Goods	3,000
Less: Closing Stock of Finished Goods	4,000
Cost of Goods Sold	47,750
Add: Selling & Distribution Overheads	5,000
Cost of Sales	52,750
Add: Profit i.e. 30% of Total Cost (30% of 52,750)	15,825
Sales (or Per Unit Selling Price)	68,575

- **Knowledge Check 2**

  State true or false:

  1. When goods are produced continuously in batches irrespective of demand or order, then it is termed job costing.
  2. In the absorption costing technique, there is no distinction between fixed and variable costs, and both costs are taken into account while calculating the total cost of production.
  3. Fixed cost is an expense that varies in proportion to production.

4. The process of recording and reporting the cost after they've already been incurred is known as standard costing.

- **Outcome-Based Activity 2**

  From the following expenses of the car manufacturing company calculate the prime cost.

  Raw material consumption- Rs 10,000

  Direct labour- Rs.5000

  Direct expenditure- Rs.4500

  Other manufacturing expenses- Rs 7000

2.5 Summary

- The recording and retention of the cost of acquisition of assets or other items come under the cost concept of accounting.
- Grouping of cost as per similar characteristics generally means the classification of cost. In cost, there are various ways to classify cost as per their different characteristics such as nature, function, etc.
- Job costing, batch costing, unit costing, multiple costing, operation costing, process costing, and agreement pricing are a few of the costing techniques.
- Different techniques for costing are marginal costing, standard costing, historical costing, uniform costing, absorption costing, and direct costing.
- The statement which has a record of various components of the total cost of a product and also the historical cost is known as a cost sheet. The historical cost enables the company to make a comparison between the previous cost incurred and the current cost for the same product**.**
- A cost sheet can be made in a number of ways, but it usually begins by referring to the expected cost or by referring to before expenses. The actual costs expended by the corporation to manufacture the product serve as the foundation for the historical cost sheet.
- Conversely, an estimated cost sheet is created using the product's anticipated cost as a basis.
- The components of the cost sheet are among them: total cost, cost of products sold, cost of production, cost of prime cost, and factory cost.

2.6 Self-Assessment Questions

1. Explain the concept of cost and its characteristics.
2. What is the classification of cost? Explain all of them.
3. What are the methods of costing?
4. What are the techniques of costing?
5. What are cost sheets, and what is their importance?
6. What are the elements of the cost sheet?

2.7 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.

UNIT -3

Cost Accounting for Material Cost Control

Learning Outcomes:

- Students will be able to understand the concept of material cost and its needs.
- Students will be able to understand the meaning of purchase control and store control.
- Students will be able to learn about stock levels and the concept of EOQ analysis.

Structure:

3.1 Material cost control

- **Meaning of material cost control**

The material constitutes a significant part of the product cost. Thus, material costs should be controlled to bring down product costs as much as it is possible. This is done through proper planning, benefits and purchases, and handling and accounting of materials.

Material cost is controlled through the functional organization, assigning responsibility and documentary evidence of approvals from the purchase and production department. Material cost can be controlled through systematic preparation of purchase requirements and summary. Accurate quantities of materials must be acquired at the best available price to keep a check on material costs. The cost of material also depends on the quality; thus, the exact quality required for production must be purchased. The material should not be under-quality or over-quality, as, in both scenarios, there will be a loss for the company. To effectively control material cost the material must be efficiently utilized, and wastage should be minimised. Under-quality materials have a low cost, but their yield is also low. On the other hand, is superior to the required quality of materials resulting in a very high cost of materials.

Needs for material cost control

1. **Material cost control helps in material acquisition at the best price-** In this competitive environment, the market is saturated with sellers offering the same material at different costs according to their desired margin. According to the buyers' point of view, he should look for vendors offering the best quality materials at the best price. This is the most important aspect of material cost control. The overall cost of the product would be minimum only if the cost of materials in manufacturing the product is minimum.
2. **It leads to the purchase of the required quality of material for production-** Every material is available in several qualities, but every quality is not suitable for the manufacture of the desired product. A second-grade product can be manufactured by using second-grade material. If first-grade materials are used for the manufacture of this product, it will lead to a higher cost of materials and hence a higher cost of the product. This will impact company sales and profit in the competitive environment.

3. **It helps to determine the exact quantity of materials required-** For the product of a certain amount of goods; more or less a fixed quantity of material is required. Thus through material cost control; these required quantities of material can be acquired so that all the materials purchased are used up in the production process. Thus it prevents any excess inventory and also ensures that fresh materials are available for every batch of production.
4. **It helps in improving the efficiency of the overall cost of operation- M**aterial costing is responsible for cost control of materials used in the manufacture of the product. Material efficiency means the highest yield and minimum wastage. Thus if the material is high yielding material, the material cost will be low in manufacturing a certain amount of goods as compared to low-yielding material. Also, to control material costs, wastage should be minimized. It also helps to keep a check off spoilage and wastage.
5. **It helps in minimizing the overall product cost- C**ost of any product depends on the cost of material used in manufacturing a product. This material cost can be efficiently controlled through the process of material cost control described above. For example, in the process of refining sugar, the yield of different grades of sugar depends on the quality of the refining chemicals used in the refining process. This quality of the refining chemical should be selected based on the maximum yield of the most profitable grade of sugar. This will result in the maximum profit for the company at the appropriate material cost.
6. Adequate records of material movement are also a feature of material cost control.

3.2 Purchase Control

- **Meaning of Control Accounts**

A control account is a summarised account in General Ledger. This account contains the aggregate total for the transaction that are separately posted in the ledger of the subsidiary. For areas that contain a large volume of transactions, such as accounts receivable and payable, this account helps such accounts to summarise separately into a subsidiary ledger and not in the general ledger. The closing balance of both the accounts, i.e., the control account and subsidiary ledger account, should match. The main objectives of the control account are to simplify the general ledger account and maintain the correct balance for the financial statement. The detailed transactional information regarding accounts payable and receivable can be seen in the subsidiary ledger and not in the general ledger. This account is

prepared in the cost ledger so that double entries may be completed and balanced in the cost ledger.

Types of control accounts

There are two types of control account, one of which are discussed below:

1. Sales Ledger control account
2. Purchase Ledger control account

- **Purchase ledger control account**

A purchase control account is a detailed ledger of all the trade creditors, so it is also known as a trade creditor control account. The purchase ledger control account shows the total purchase along with detailed information on purchase returns and discounts received on such purchases. This account similarly looks like an individual trade payable account, so it is also known as T-account. This accounting record summarised details of invoices, returns, and payments related to the creditors in the entity. This account helps us to know that in a particular period how much a business owes to its suppliers. This forms part of the balance sheet and comes in the liability side as short-term liabilities.

If the balance of this account increases, then it becomes credited, and if it decreased it becomes debited. The balance of both the accounts that are purchased ledger control account and individual supplier account must be equal and if not, then it must be investigated.

Format of purchase ledger control accounts

Dr. Purchases Ledger Control Account Cr.

Details	$	Details	$
Balance b/d (Debit balance)	xxxx	Balance b/d (Credit balance)	xxx
Cash/Bank	xxxx	Credit Purchases	xxxx
Discount received	xx	Bank/Cash (Refunds from trade payables)	xx
Purchase returns	xx	Interest charged on overdue account	xx
Set-off (transfer to sales ledger)	xx		
Balance c/d (Credit balance)	xxx	Balance c/d (Debit balance)	xxxx
	xxxx		**xxxx**
Balance b/d (Debit balance)	xxxx	Balance b/d (Credit balance)	xxx

It is prepared at the end of the financial year to check the arithmetical accuracy of individual trade payable accounts.

3.3 Stores Ledger

- **Meaning of Store Ledger Account**

A store Ledger account is a document maintained to record the details of raw materials produced, received, and balanced at the end. It is maintained by the warehouse manager. This record is kept in the costing department. Stock ledger account contains information like code number, name of the material, etc. Both quantity and value are recorded in the store ledger. Here transactions are recorded periodically. Physical verification of the closing stock facility is also available here. Below is the information that is listed on a store ledger

1. **Unit quantities-** this ledger shows the unit quantity of inventory at the beginning with additional adjustments.
2. **Cost quantity-** cost quantity is also listed in the ledger.

The concept of store ledger is applicable when there is a manual record of the entire system and not recorded in computerised form. Store ledger records the current quantity of items; thus, it helps maintain a perpetual inventory system.

- **Meaning and Objectives of Store Control**
- **Meaning**

Store control which is also known as inventory control means to detect the stock of raw materials, working progress, and finished goods used for production, distribution, and consumption.

Store control helps to maintain the inventory at various levels. In simple words, store control is used to know the amount of stock kept and the record of such stock. From purchase and delivery to recording the stock, all the stages are covered under this store's control. If stock control is done efficiently, then it allows us to know the right amount of stock used at the right time at the right place.

Objectives of store control

1. To have a continuous flow of production and make sure that the right amount of raw material is available at the right time.
2. Store control ensures that there is efficient utilisation of material.
3. To supply the necessary information to the management regarding the cost and the availability of stock.
4. To obtain the proper quality of raw materials at the correct price.
5. To prevent losses during the storage of raw materials.

Essentials of store control

1. Code-wise classification of all items in the store.

2. Proper corporation and coordination among various departments dealing with materials.
3. A great facility for the storage of materials will have to be provided.
4. An efficient system of internal audit should be there.
5. Perpetual inventory system, ABC analysis, etc., are some of the store control measures. These measures must be introduced to have a good system of material control.
6. Levels of stock should be fixed so that there is no overstocking or understocking of materials.

Advantages of store control

1. **Protect from fluctuations in demand**

   If there is any fluctuation in demand for raw materials then this can be protected if there is a proper inventory control that is sufficient items in the inventory stock.

2. **Better services to customers**

   Providing better services to the customer is one of the advantages of store control. If there is a proper inventory control system in the company, then they can complete the production process in time and can deliver the finished goods to the customer in the proper time, which also increases the demand of the customer. To fulfill such demand, proper inventory control should be there.

3. **Continuity of production operation**

   If there is a proper supply of raw materials and there is no shortage of materials, then there will be continuity of the production process, which is also one of the advantages of store control.

4. **Reduces the risk of loss**

   If all the items are checked regularly, then there will be no downturn of items. Thus proper inventory control helps to lower the risk of losses.

5. **Efficient use of working capital**

   It's the right amount of stocks is maintained, then there will be no overstocking of material, and hence working capital will not be blocked. Thus, proper inventory control helps to make efficient use of working capital.

- **Knowledge Check 1**

  Fill in the Blanks.

1. _____ is controlled through the functional organisation, assigning responsibility and documentary evidence of approvals from the purchase and production department.
2. A control account is a summarised account in the _____.
3. Store control which is also known as _____ means to detect the stock of raw materials, working progress, and finished goods used for production, distribution, and consumption.
4. The balance of both the accounts that are purchased ledger control account and individual supplier account must be _____.
5. _____ ensure that there is efficient utilization of material.

- **Outcome-Based Activity 1**

  Following are the information for the month of March. Prepare purchase ledger control accounts.

  Sales- Rs.70000

  Inventory as on 1st March- Rs. 5000

  Trade payables- Rs.3000

  Inventory as on 31st March- Rs.3500

  Wages and expenses- Rs.3000

  Discount received- Rs.1000

  Payment to suppliers- Rs.50000

  Goods purchased- Rs.55000

3.4 Stock levels

- **Meaning of stock levels**

Stock levels are the different levels of stock that are required for the effective control of materials. The proper amount of raw materials should be maintained to avoid over and under-stocking of materials. The amount of raw material should be maintained in such a manner that it must be available as and when required so that continuity of operation should be there. Raw material, finished goods, work in progress and consumable items, etc., are the important type of inventory data maintained by firms. For deciding the right amount of stock to be maintained, managers should look into the various factors like story space of the firm,

frequency of inventory used or sold, insurance cost, etc. To avoid over and under-stocking of material, the storekeeper must fix the inventory level, which is mentioned below.

- **Type of stock levels**

i. **Maximum Level-** It is that level of stock beyond it is not allowed to exceed the stocks. When the quantity exceeds its maximum limit, then it will be termed as overstocking of materials. It must be avoided because it will block the working capital, and it will also result in high costs. Overstocking means more space for stocking the material on; also, there will be a risk of losses from outdated items.

Following are the factors which must be kept in mind while setting the maximum level

a. Reorder level
b. Minimum consumption
c. Adequacy of working capital
d. Stories spaces
e. Storage space
f. Regular supply
g. Additional storage cost

The formula of the maximum level

Maximum level = Reorder level + reorder quantity-(minimum consumption x minimum delivery time)

ii. Minimum level

It is that level below which the material should not fall. It is the level that must be maintained in hand at all times. If stock maintenance goes below the minimum level, then there is a stoppage of production level to the non-availability of raw material.

The following are the factors that should be kept in mind while fixing the minimum level:

a. Reorder level
b. The average rate of consumption
c. Average reorder.
d. Maximum consumption and maximum delivery time

The formula of the minimum level

Reorder level – (normal consumption x normal reorder period) = minimum stock level

iii. Reorder level

It is that level where material reaches a certain level and required fresh orders. The order must be sent before it reaches the minimum level; that is it must be fixed between the maximum and minimum levels.

The following are the factors that should be kept in mind while fixing the reorder level:

a. Maximum consumption
b. Maximum reorder period
c. Minimum level

The formula of reorder level

Reorder level = minimum level + (average lead time x average consumption)

Or,

Maximum consumption x maximum reordering period

iv. Average stock level

It is the level of an average of minimum level and maximum level.

The formula of average stock level

Minimum level plus maximum level divided by two

v. Danger level

The danger level is that level where the stock goes below the minimum level. When a stock comes at a danger level, then urgent action needs to be taken, i.e., fresh purchase of material so that production may not be interrupted.

The formula of danger stock level

Danger level = average rate of consumption x urgent supply time

3.5 EOQ analysis

- **Meaning of EOQ analysis**

When a company purchased some units to meet the demand while minimising inventory cost is termed as EOQ. Inventory cost includes holding cost, ordering cost, and shortage cost. In the condition where demand, ordering, and holding costs remain constant, this formula applied well. It is used to determine the most efficient amount of goods that should be purchased based on carrying and ordering costs. This help the business to determine the requirement of placing the order, and the quantity that needs to be ordered to minimise the inventory cost and for the continuation of normal production. This is also an effective tool for managers.

The formula of EOQ analysis

$$Q = \sqrt{2DS/H}$$

Where,

Q = EOQ

D = demand in units

S = order cost

H = holding cost

Identifying the optimal number of product units to order is the main goal of the EOQ formula. If a company achieved this, then it can minimise the cost of buying, delivering, and storing units. It is also an important cash flow tool. As we know that the EOQ helps in minimising the level of inventory, by doing this there will be a huge cash saving which can be used for some other purpose of investment of business and helps to meet the customer's demand. To maintain a specific level of inventory if a company continuously place an order in small quantities, then there is a higher ordering cost, and also, there is a need for additional space for storage purpose.

Limitations of EOQ analysis

It assumed the demand of the consumer is constant, and it also assumed that both the holding and ordering costs are constant. This assumption makes it difficult for the EOQ to make certain changes relating to changing consumer needs, seasonal changes in inventory cost, buying inventory in large quantities, etc.

Illustration

A clothing shop which deals in retailing men's jeans and that shop sells 1000 pairs of jeans every year. It costs the company ₹300 per year to hold it in inventory, and the fixed cost is Rs 120.

Solution

$Q = \sqrt{2DS/H}$

$= \sqrt{2\ x\ 1000\ x \frac{120}{300}}$

$=\sqrt{800}$

$= 28.28$

To minimise the cost and to meet customer demand, the ideal order size is more than 28 pairs of jeans.

- **Knowledge Check 2**

  State True or False.

  1. It is not necessary to maintain the proper amount of raw materials to avoid over and under-stocking of materials.

2. Reorder level is that level where material reaches a certain level and required fresh orders.
3. In EOQ analysis, it is assumed that the demand of the consumer is constant.
4. The danger level is that level where the stock goes below the average level.

- **Outcome-Based Activity 2**

  Calculate the maximum level of stock with the following details:

  Reorder quantity = 1100 units

  Reorder level = 1600 units

  Reorder period = 5 to 7 days

  Daily consumption = 200 to 300 units

3.6 Summary

- Material cost is controlled through the functional organisation, assigning responsibility and documentary evidence of approvals from the purchase and production department
- A control account is a summarised account in the general ledger. This account contains the aggregate total for the transaction that are separately posted in the ledger of the subsidiary.
- A purchase control account is a detailed ledger of all the trade creditors so it is also known as a trade creditor control account. The purchase ledger control account shows the total purchase along with detailed information on purchase returns and discounts received on such purchases.
- A store Ledger account is a document maintained to record the details of raw materials produced, received, and balanced at the end. It is maintained by the warehouse manager.
- Store control which is also known as inventory control means to detect the stock of raw materials, working progress, and finished goods used for production, distribution, and consumption.
- Stock levels are the different levels of stock that are required for the effective control of materials. The proper amount of raw materials should be maintained to avoid over and under-stocking of materials.

- When a company purchased some units to meet the demand while minimising inventory cost is termed as EOQ. Inventory cost includes holding cost, ordering cost, and shortage cost.

3.7 Self-Assessment Questions

1. Explain the concept of material cost control. What are the needs for material cost control?
2. Describe briefly the purchase control account.
3. Explain the concept of a store control account.
4. Explain the different levels of stocks.
5. What is EOQ analysis?
6. Calculate the maximum stock level, minimum stock level, and reorder level with the following information
   a. Maximum consumption = 400 units/day
   b. Minimum consumption = 200 units/day
   c. Normal consumption = 210 units/day
   d. Reorder period = 10 to 15 days
   e. Reorder quantity = 2500 units
   f. Normal reorder period = 12 days

3.8 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.
- Cost accounting theory and problems by Maheshwari, Mittal published by Mahavir publications.
- Vikas Publishing House's Cost Accounting Principles and Practice by M.N Arora.

UNIT - 4

Pricing of Stores Issues

Learning Outcomes:

- Pupils will be able to comprehend the ideas behind perpetual inventory control.
- As well as the distinctions between VED or ABC evaluation.
- Students will be able to learn about the treatment of waste, scrap, defectives, and spoilage.

Structure:

4.1 Perpetual Inventory Control

- **Meaning of Perpetual Inventory Control**

A perpetual inventory system is a method of recording inventory in a computerised form. All the changes in an inventory are also made in detail within the software. It does not depend on physical inventory counts so there is no error in the books. If any error occurs then discrepancies may arise between the books. It is a continuous system of recording the inventory in an electronic mode. It records inventory and cost of goods sold continuously so that the current inventory can be calculated in real-time. Previously before computers, a periodic inventory system was used followed by the shopkeeper. A periodic inventory system is a manual form of recording the inventory which shopkeepers used to record all the transactions manually at the end of each month which was very difficult to maintain. Now the perpetual inventory system fixes this problem. As soon as any inventory transaction takes place it is entered automatically in detail in the software which is very useful and time-consuming. By using this method, any theft or misplacement of inventory can be avoided. If anyone tries to steal, the system will detect it.

For example, the shipping and receiving department is an example of a Barcodes are applied to items before they are dispatched to clients, and the commodities are scanned once they leave the dock & uploaded into the system for accounting to automatically balances the inventory. This process removes the product from the accounting system automatically and decreases the inventory.

• Perpetual inventory system benefits

The perpetual inventory system has the following benefits:

1. A perpetual inventory system helps to lower the management cost of inventory and allows you to predict better demand.
2. It helps in providing accurate data sets for inventory metrics making analysis better.
3. Once the product got expired then storing can be avoided.
4. A perpetual inventory system can manage storage costs as per demand. storage costs and reduction in business inventory can be adjusted by optimizing the store's inventory management.

- **Disadvantages of perpetual inventory system**

1. The perpetual inventory system is expensive. Here the setting cost is high.

2. Employees require extra training to use this system which also requires more time.

3. Once the wrong entries appeared in the books like the wrong quantity then it may also lead to incorrect inventory levels.
4. Fixing the error can be time-consuming if an employee makes any mistakes while entering the stock.

4.2 ABC Analysis

ABC method is a systematic process of inventory control 1 and applies to all commodities utilized in the distribution management process. Another name for this technique is selective inventory control, or sic. The ABC analysis is separated into three categories, with each alphabet (A, B, and C) representing a certain category of content according to its worth. The highest valuable items belongs in the group A, followed by those in categories B and C, with the lowest values. This method is critical for a business as it helps to control costs. The division of items in the above category is helpful for a business to control the inventory by focusing on materials based on their values. The principle of Pareto is the underlying idea of the ABC analysis. According to the Pareto principle, the top 20% of items represent 80% of total sales volume. It suggests that 80% of the company's revenue comes from the highest twenty percent of products. Another name for it is the 80/20 rule. Thus by identifying the A category of inventory items, the revenue can be substantially increased by increasing the consumption of A-category materials.

- **Needs for prioritizing inventory**

Item A

Item A of the ABC model denotes the highest value of goods in terms of annual consumption. 70% to 80% of the annual consumption value of the company comes from 10% to 20% of the total inventory item. Thus it is difficult to prioritize these items.

Item B

Item B of the ABC model represents a medium consumption value. 15% to 20% of the annual consumption value of the company comes from 30% of the total inventory.

Items C

Less than 5% of the annual consumption value is derived from roughly 50% of the total inventory, with item C having the smallest consuming value.

Value of annual Consumption = annual demand x item cost per unit

Uses of ABC analysis

The ABC analysis is widely used in stock checking and inventory system. Thus it is an important part of supply chain management and is implemented as a cycle counting system. This analysis helps the company in controlling its working capital and carrying costs. Giving weightage to each item based on their value prevents dead stock of a high-value item in an inventory. The item falling in the C category i.e., items having the lowest value are generally slow-moving, and purchase orders for these items are not so frequent as compared to items in categories A and B. By categorised the items, wholesalers, and distributors can easily identify the items needs to be stock or replace. For example, 80% of the retail inventory is manufactured by H&M in advance and 20% is introduced as per current market trends.

Advantages of ABC analysis

1. This method helps businesses to control working capital.
2. It provides a method to keep track of inventory items simply.
3. It helps to maintain the stock turnover ratio.
4. It helps to bring down the storage cost.
5. Low-cost inventory items falling in category C can be stored in abundance as they don't block a huge amount of working capital.

Disadvantages of ABC analysis

1. For successfully implementing the ABC analysis method there must be standardization of materials.
2. It is to be noted that this method takes into account only the monetary value of materials ignoring all other aspects which may be vital for a particular business.

VED analysis

Inventory management, which classifies inventory according on its functional relevance, benefits from the application of VED analysis. It separated the stock into three categories based on the requirements of a company. The VED stands for vital, essential, and desirable.

Let's describe each category one by one:

V- Vital category

The Inventory belongs to the heading of vital, and it's essential to all organizational processes, including manufacturing. Continuous checking of stock is required because if any shortage of stock occurs under this category then it can hamper the proper functioning of operations. The unavailability of inventory may also lead to the stoppage of production. Management should make proper checking on the availability of items.

E- Essential category

This category includes inventory which comes next to the vital category. This category may also lead to a stoppage of production but the loss may be temporary which may occur due to their unavailability or it might be possible to repair the stock under this category. Management should also make proper checking of the availability and maintenance of inventory under this category. In the essential category, the unavailability of inventory does not cause any delays or stoppage.

D- Desirable category

This is an easy and least important category among the three categories. This category leads to minor stoppage of production which is possible to replenish in a short duration of time.

Importance of VED analysis

VED analysis is used both by small and big organisations. The biggest advantage of this analysis is that it maintains medical inventory in hospitals and their medical stores. Any shortage of medicine can lead to crises and even loss of lives. Thus it helps to divide the medicine into three parts as per their usage and importance. Hence, every organization needs to maintain an ideal level of inventory which has its cost. Hence the inventory has been divided into divided into three sections to aid in the upkeep of inventory.

There are four types of costs available to maintain inventory which is as follows:

Item cost- Item cost means the Cost is the inventory item's price, which is determined by the stock's real purchase value. A greater supply means that keeping stock will actually have a higher buying value, and vice versa.

Ordering/setup cost- When we purchase inventory then it also includes setup cost or ordering cost which may include packaging charges, transportation charges, etc.

Holding cost- After the purchase of inventory, it must be put in the warehouse which also involves some cost. This cost may be related to storage, labor cost, handling of stock, insurance charges, etc. This cost occurs when there is any damage, leakage, or pilferage of the stock in hand.

Stock out the cost- When there is any stock that goes out of stock then it comes under the stock out cost. It includes loss of production that occurs due to the non-availability of spare parts which may delay the sale of a product or any product that gets out of stock.

- **Knowledge Check 1**

  Fill in the Blanks.

  1. _____records inventory and cost of goods sold continuously so that the current inventory can be calculated in real-time

2. _____ analysis is important to inventory management that differentiates inventory as per their functional importance.
3. The _____analysis is widely used in stock checking and inventory system.
4. _____ category leads to minor stoppage of production which is possible to replenish in a short duration of time.
5. _____category may also lead to a stoppage of production but the loss may be temporary which may occur due to their unavailability or it might be possible to repair the stock under this category.

- **Outcome-Based Activity 1**

A firm has X, Y and Z items. 1100 'X' items, which is counted on every 5 days, 5000 'Y' items, which is counted every 50 days and 7000 'Z' items. Which is counted every 90 days. Calculate the number of times items should be counted per day.

4.3 Treatment of waste, scrap, defectives, and spoilage

Material requisitions serve as the basis for what is needed for production. Every production process yields waste, scrap, spoilage, and defective products in addition to the final result. Only after accounting for losses can the final and complete price for the output be determined. Based on this variance, management may control these losses. The various types of material losses are discussed below:

1. Waste

Waste is a part of raw material lost in the production process. It is inherent. It is essential in any manufacturing activity. It may be visible or invisible but it doesn't have any recoverable value. It occurs invisibly in the form of evaporation. Examples of visible wastes are gases, dust; etc Waste is A particular kind of loss that drives up production costs.

Control of waste

There are two kinds of waste: typical garbage and unusual waste. At the end of the process, the actual waste is compared to the standard waste, and any anomalous waste is subsequently controlled by taking the appropriate action. Periodically, a waste report is prepared.

Accounting treatment

Accounting treatment differs from waste to waste i.e., normal to abnormal waste because waste has no value.

a. **Normal waste-** This waste manifests itself during the manufacturing process as evaporation, etc. Ordinary waste includes an overall cost that is split across the production.

b. **Abnormal waste**- In order to prevent manufacturing expenses from being impacted, this waste is moved to the costing profit and loss account.

Format of the waste report:

ABC Company Ltd.
Waste Report

Department _____ No. _____
Cost Centre _____ Date _____

Process or Job No.	*Weight of Waste*	*Percentage of Waste to production %*	*Normal Percentage of Waste %*	*Remarks*

Action taken by _____

Entered by _____ *Signature of Inspector*

2. Scrap

Scrap is leftover from manufacturing activities having disposable value. Examples of scrap are sawdust, filings, melding process, etc. It may be sold or reused.

Control of scrap

Establishing set criteria for trash can help control it. To control scrap, department-specific tasks ought to be established. It can also be managed by maintaining accurate documentation. Ultimately, waste is also compared to traditional scrap, and any necessary action is then done to regulate the scrap.

Accounting treatment

a. Sale value of scrap credited to the profit and loss account

This accounting treatment is used when the value is negligible and it is credited to the profit and loss account as other income which also includes scrap cost.

b. The sale value is credited to overhead or material cost

When it is impossible to segregate the scrap job wise then this method is adopted. Here sale value is deducted from the selling cost of scrap and the net sale value is deducted from factory overheads.

c. **An assignment or procedure where scrap originates credit for its market worth**

When there is any easy identification of scrap with the specified job this method is adopted and here sale value is credited to the job or process from which scrap has arisen.

Format of scrap report:

ABC Company Ltd.
Scrap Report

Department _____ No. _____
Cost Centre _____ Date _____

Process or Job No.	*Actual Scrap Kg/Pcs.*	*Actual % of Scrap*	*Normal Scrap %*	*Abnormal Scrap*		*Remarks*
				Quantity	*Value*	

Action taken by _____

Entered by _____

3. Defective

This occurs in the production process and can be rectified and made into good units with some extra cost. This work occurs when there is a low quality of raw materials, poor planning, etc. After rectification, it can be sold as 'first' or second quality.

- **Control of defective**

Defects are managed by establishing standards and doing routine recording. The appropriate steps are made to control it if the real defect surpasses the usual defect.

Accounting treatment

It also depends upon the nature of defectives just like spoilage. If it is a normal defect then it will be identified with specific jobs and is charged to specific jobs but if the cost is not traced with the jobs then it is treated as factory overhead. If defective work occurs due to an abnormal situation then the cost of rectification is transferred to the profit and loss account.

Format of defective work report:

ABC Company Ltd.
Defective Work Report

Department _____ No. _____
Cost Centre _____ Date _____

Process or Job No.	*Defective Units*	*Normal Defective Units*	*Abnormal Defective Units*	*Cost of Rectification*	*Disposal Value*	*Remarks*

Action taken by _____

Entered by _____ *Signature of Inspector*

4. Spoilage

When products sustain damage during production and cannot be fixed, this is known as spoilage. It is discarded without being processed any further. The cost up to the point of rejection less the sale value is known as the spoilage cost. The kind of spoiling determines whether it may be sold. It can be sold if the damage is minimal, but if it is severe, it can be sold as garbage or scrap.

Control of spoilage

By establishing clear standards and ensuring correct reporting, spoilage can be managed. If the actual spoilage surpasses the average spoilage, the corrective measure is performed.

Accounting treatment

It depends upon the normal or abnormal spoilage. Normal spoiling is caused by high output units. The expense of atypical spoiling is billed to the profit and loss account, and it is preventable.

Format of Spoilage report:

ABC Company Ltd.
Spoilage Report

Department _____ No. _____
Cost Centre _____ Date _____

Process or Job No.	*Spoiled Units*	*Actual Spoilage %*	*Standard Spoilage %*	*Cost of Spoilage*	*Cost of Abnormal Spoilage*	*Remarks for Abnormal Spoilage*

Action taken by _____

Entered by _____

- **Knowledge Check 2**

  State True or False.

  1. Normal waste is transferred to the costing profit and loss account so that there is no effect occurring in production cost.
  2. Spoilage occurs when goods are damaged in the manufacturing process and it becomes impossible to rectify it.
  3. If the defective work occurs due to a normal situation then the cost of rectification is transferred to the profit and loss account.
  4. Abnormal spoilage is avoidable and the cost of abnormal spoilage is charged to the profit and loss account.

- **Outcome-Based Activity 2**

  Suppose you have purchased wood worth Rs.30000, out of which 10 % is defective then how much is defective loss? Discuss.

4.4 Summary

- A perpetual inventory system is a method of recording inventory in a computerised form. All the changes in an inventory are also made in detail within the software. It

does not depend on physical inventory counts so there is no error in the books. If any error occurs then discrepancies may arise between the books. It is a continuous system of recording the inventory in an electronic mode.

- The commodities utilized through the supply management procedure are all subject to the systematic control of inventory process known as the ABC method. Another name for this technique is selective inventory control, or sic.
- The ABC analysis is separated into three categories, with each alphabet (A, B, and C) representing a certain category of content according to its worth. The highest value things belong to group A, then follow category B, and category C, which has the lowest value items.
- Inventory management, which separates inventory based on its functional relevance, benefits from the application of VED analysis. It separated the stock into three categories based on an organization's needs. The VED stands for vital, essential, and desirable.
- For production, material requirements are issued based on material requisition. In any production activity, wastage, waste, scrap, spoilage, and defective output are also collected. Only after accounting for losses can the ultimate and full cost of the output be determined. Based on the variation, management can regulate these losses. These losses can be controlled by management based on the variance.

4.5 Self-Assessment Questions

1. Explain the concept of a perpetual inventory system.
2. Explain ABC analysis.
3. What do you mean by VED analysis?
4. Explain the accounting treatment of spoilage.
5. What do you mean by waste and scrap and what are its treatments?

4.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.

UNIT - 5

Labour Cost Control

Learning Outcomes:

- Students will be able to understand the idea of planning and keeping time.
- They will also be able to understand the wage payment system.
- Students will be able to learn about labour turnover and its methods.

Structure:

5.1 Time Keeping and Time Booking

- **Meaning of Time Keeping**

Time keeping is the step of recording the arrival time and the departure time of the labour. Separate person called time keeper is appointed to head the department of time keeping. It is concerned with the wage calculation of the employees by giving timely information to the payroll department. Absence of time keeping will create problems among the employees who are punctual in the organization.

Benefits of Time keeping

1. It helps in assessing overtime and also ensures that the production is done, which is decided by the organization.
2. It helps in the management of the payroll department.
3. It helps in effectively reporting to top management.
4. It helps to maintain discipline among the workers and also makes them motivated at the same time.
5. It also has control over labour cost.
6. Additionally, it is beneficial to the employees because some benefits—such as pensions, gratuities, paid time off, salaries, and promotions—are contingent upon the proper attendance and service of the workforce.
7. It helps in maintaining the statutory requirements.
8. It helps in differentiation between the normal time and the overtime and thus helps in allocation.

Different methods of time keeping

Manual method

1. Dice or token method

2. Attendance register method

Mechanical method

1. Time recording clock method

2. Key recorder

- **Meaning of Time Booking**

The technique that assists in tracking the period of time individuals spends on various assignments is called time booking. For recording the start and end time attributable to each job, time tickets, and time cards are used. It fulfils the following purposes:

1. The amount of labour cost and time booking is required for determining the cost of the product.
2. A time book is required to determine the quality and value of work done.
3. It is also required in determining the earning like wages, bonuses, etc.
4. It helps in determining the labour hours spend and ideal labour hours.
5. Overhead rates and absorption of overhead can also be easily ascertained.

Methods of Time booking

1. Weekly time sheets
2. Daily time sheets
3. Labour cost card
4. Time and job card

5.2 Treatment of Ideal time and Overtime cost concept

- **Meaning of Idle time**

Idle time refers to the labour time for which labours are paid but no work is done. It refers to lost time. Here, salaries and wages are paid to the labours for the lost time i.e., no output is given by the workers for that particular payment. During this time workers remain idle. For idle time, the attendance card shows the time but it is not recorded in any job card. Idle time can also make a major impact on the cost of an item if not properly controlled. Some idle time is controllable in nature and some are uncontrollable in nature.

Causes of the ideal time

Ideal time can be caused because of the reasons which are discussed in the categories wise below:

1. Productive causes
2. Administrative causes
3. Economic causes

Productive causes- It includes-

i. Time loss between the starting and ending of one job to another.
ii. Time is taken by the workers to travel from the main gate of the factory to the main work location.
iii. Machine breakdown, power failure, etc.
iv. Non-availability of raw materials.

Administrative causes- These include-

i. Strike and lockouts

ii. Inefficiency in the management of materials and labour
iii. Underutilization of resources
iv. Lack of control by management

Economic causes- These include-

i. Shortage of material and labour
ii. A shortage of working capital can cause the closure of work.

Treatment of ideal time

Treatment of ideal time depends upon its nature i.e., normal and abnormal.

Normal ideal time- Normal ideal time is uncontrollable. It is inherent in any job situation. It cannot be reduced. The main reasons are:

1. Time taken for personal affairs.
2. Time taken for personal needs like tea break, lunch, etc.
3. Time gap from changing jobs.
4. Waiting time for getting raw materials, instructions, etc.

Treatment of normal idle time

The cost of production is increased by the expense of a typical optimal time. Either raising the labor rate or implementing an organization's overhead absorption rate can be used to transfer to manufacturing expenses for absorption.

Abnormal ideal time- Abnormal idle time is controllable. It occurs due to abnormal reasons. The main reasons are:

1. Power failure, lockouts, strikes
2. Non-cooperation and coordination
3. Inefficiency of workers
4. Non-availability of raw materials

Treatment of Abnormal idle time

The cost the price of unusual Charge the costing profit and loss account at the best time. The price for manufacturing does not account for it.

Meaning of Overtime Cost Concept

Overtime premium is the reimbursed to employees for overtime that they put in above and beyond the hours allowed by the factories act or as determined by the union. Extra hours are paid at higher rates. For example, suppose the worker is working for more than 8 hours then he is paid double the wages for such extra time.

Overtime premium = wages paid for overtime at normal rate + premium payment for overtime work

The overtime wages consist of:

1. The normal wage for extra time
2. Additional wages for the overtime work

Treatment of overtime cost concept

1. When overtime is paid, it is not considered a direct labor cost and is not charged to production; instead, it is treated as production overhead through the overhead recovery rate. Overtime hours at the regular rate are handled similarly to normal hours at the regular rate, meaning they may be treated as direct labor costs and charged to the cost of production.
2. If overtime is worked on a specific job then the full labour cost can be charged to that job as direct labour.
3. If overtime is paid because of the negligence of a different department, the individual responsible may be held accountable.

Overtime payments made for unusual reasons could be applied to the costing profit and loss account.

Wage Rate for costing

The wage rate is also known as labour cost. It is the total of wages, benefits and payroll tax paid to employees. There are two types of wage rates- Direct wage rate and Indirect wage rate.

Direct labour costs are paid to employees as wages that produce products, and indirect labour cost are the cost which makes production easier.

The wage rate depends upon various factors. It varies from industry to industry. Wages, payroll taxes, overtime, bonus sick days, healthcare, vacation days, benefits, insurance, etc. are the factors which we kept have to keep in mind while calculating the wage rate.

Average labour cost- It manages about 68% of an employee's annual wages. Employee benefits account for 30% of the overall wage rate.

For calculating labour cost as a percentage of sales are:

Labour cost percentage = Total labour cost / Total sales x100

For calculating labour cost as a percentage of operating cost:

Labour cost percentage= Total labour cost / Total operating cost x100

- **Knowledge Check 1**

  Fill in the Blanks.

  1. _____ refers to the labour time for which labours are paid but no work is done.
  2. _____ is the amount paid to workers for the extra hours worked by him beyond the normal hours as specified in the factories act or decided by the union.
  3. The cost of the abnormal ideal time should be charged to _____.
  4. If overtime is paid due to the fault of another department, then it may be charged to that _____.
  5. Time loss between the starting and ending of one job to another is _____cause.

- **Outcome-Based Activity 1**

  Mr Rahul is an employee of XYZ Co. He gets the following benefits:

  Basic pay- Rs.15000 p.m

  Dearness Allowance- 3000 p.m

  Bonus- 15% of salary and DA

  Other Allowances- Rs. 4000 p.m

  Rahul works for 2100 hours p.a., out of which 500 are treated as normal idle time. Calculate the cost of the actual hours he worked.

5.3 System of wage payment

Paying system for wages A company's wage payment system is a technique it uses to provide remuneration to the workers for their efforts and time invest in making the finished goods from the raw materials. The basis of making payment and the selection of method depend upon the nature and type of the products.

The different methods of which payment follows:

Time Rate System

This system is also known as time work, day work, day rate, and daily wages. It is the oldest method of payment of remuneration. Time is an important factor as on the basis of time, the determination of wages of the workers is possible. The wages are paid to the workers according to the time spent by workers. Here, the output of work done is not important. The wage rate is fixed for an hour, a day, a week or a month. Time spent by workers at each job is recorded and then the payment is made.

For example, Suppose Rs. 20 per day wage rate is fixed. Worker X and worker Y attend work for 27 and 24 days respectively. As per the time wage system, the wage will be Rs. 540 and

Rs. 480 for both workers respectively. This method does not give importance to the production output or the quantity of goods but to the hours or a day, workers worked. It is also kept in mind that workers do not waste their time and also good qualities are maintained.
In the time rate system, wages are calculated as under:

Earnings = Time x Rate of pay spent

This method is best suitable for:

1. Where the quality of the product is more important.
2. Where the output of the workers cannot be measured.
3. Where close supervision of work is possible.
4. Where work delays are frequent and cannot be controlled by workers.

Piece rate system

In this wage payment system, wages are not given out on a timely basis, but rather based on the quantity and calibre of items produced. Here, the output of production is important. Here, a fixed rate is paid for the completion of the job. This system is mainly used in industries like garments manufacture, footwear, etc.
In the piece rate system, wages are calculated as under:

Output x Piece rate

For example, suppose the workers complete 100 units of production in a month. The rate per unit is Rs.2.75 then the earning will be 100 x Rs.2.75 = Rs.275 per month.
For calculating the wages, quantity of goods produced will be multiplied by the rate per unit Different piece rates will be calculated for different jobs.

Piece rate system suitable under certain situations:

1. Where quality is important
2. Repetitive nature of work
3. Where work is of standard nature and output flow is continuous.
4. Where close supervision is not required
5. Where production is closely related to the efforts of humans.

Incentive Wage System

The time rate system and the piece rate system are the two fundamental wage payment systems. Both wage payment methods have certain benefits and drawbacks. To overcomes this disadvantage and to maintain the advantages experts have introduced an incentive wage system. This system is also known as the progressive wage system and bonus schemes. For making wage payments under this system both time and quality are important.

In this system workers are also paid a bonus for the additional work done by them and also some incentives are provided by an organization to the workers for maintaining quality. The main purpose of the system is to induce workers to produce more so that they can earn more wages.

Features of the incentive wage system

1. A minimum wage is guaranteed to every worker.
2. Production and productivity increase with the decrease in labour costs.
3. Modern techniques and equipment are provided to employees for an increase in productivity.
4. The standard of work must be determined on a scientific basis.
5. Easy calculation and easy understanding.
6. Establishment of a relationship between the efforts and remuneration.
7. It is flexible in nature.

Advantages of the incentive wage system

1. There is an increase in the prospect of workers earning more.
2. Increase in the man-machine relationship.
3. Effective reduction in the supervision cost.
4. Employees are encouraged to become inventive.
5. There is improvement in discipline and industrial relations.

- **Develops a feeling of mutual co-operation among the workers.**

There are two incentive plans which are discussed below:

Halsey premium plan

It is a simple combination of time and piece rate systems. Here job is based on fixed standard time and bonus is equal to 50% of the time saved. A guarantee is given for minimum time wage. Thus, it is 50-50 plan. Both the workers and employees each get 50% benefits of their time saved.

The method used to determine total earnings and bonuses

Bonus: 50% of time saved multiplied by time rate

Time rate times time spent plus bonus equals total earnings.

Rowan premium plan

In this method, tasks have a set amount of time allowed for conclusion, and anytime savings are rewarded with a bonus.

The calculation is as follows:

Time permitted x Time taken x Rate per hour + Time saved / Time taken x Rate per hour

5.4 Labour Turnover

Labour turnover means the rate of change in the number of employees in an organization during a specified period. It is very common in an organization that some employees leave and some join the organization. The composition of employees keeps changing from time to time. The employees may leave the organization due to the following factors retirement, resignation, etc. If the large number of employees leaves the organization then it indicates the instability of workers and vice-versa. It will also affect the profit of the organization.

Causes of labour turnover

Causes of labour turnover are broadly divided into three main categories:

1. Personal cause
2. Avoidable cause
3. Unavoidable cause

Personal cause- When an employee leaves his job for personal reason then this category is fall under personal cause. It includes-

1. Changing careers to improve
2. Early retirement as a result of advanced age
3. Domestic issues and family obligations
4. Unfavorable work environment

Unavoidable cause- It is a situation where management asks one or more employees to leave the organization. These are beyond the control of the management. It includes-

1. Shortage of raw materials, powers, etc.
2. Seasonal nature of the business.
3. Change in the plant location
4. Disability
5. Disciplinary measures

Avoidable cause- This situation requires continuous attention of the management so that no employee left the organization. These are under the control of the management. This cause includes-

1. Lack of training facilities
2. Dissatisfaction with the job, hours of work, remuneration, etc.
3. Low wages and allowance
4. Lack of medical facilities

Impact of employee attrition

High staff churn raises production costs in the following ways:

1. Disturbance in the flow of production.
2. The cost of training is increased.
3. There is an increase in the breakage of tours and the wastage of raw materials by the new workers.
4. Increase in cost of training and recruitment.
5. Low productivity by the new workers in the beginning.

Measures to reduce or control labour turnover.

1. Avoidable causes of labour turnover should be controlled by the managers.
2. The management must introduce a suitable wage policy for the organization so that the workers may get suitable wages and salaries based on their job and cost of living.
3. Relationships among workers, co-workers and supervisors must be improved.
4. Trade union rivalry should be reduced.
5. An incentive scheme in both monetary and non-monetary terms must be introduced.
6. A labour -management relationship should be improved.
7. Providing job security and retirement benefits
8. Collecting feedback from employees to handle their issues.

Methods of calculation of labour turnover

There are three methods of calculating labour turnover. They are:

Replacement method

This technique accounts for employee replacement. Here, the employees who are truly being replaced are the only ones taken into account—not the departing employee. Using this method, labour turnover is computed as:

Number of replacement employees over their tenure/Average number of employees over their tenure x 100

Separation method

This method takes into account the workers who left the organization during a particular period. Under this method labour turnover is calculated as under:

Number of workers left during the period / average number of workers during the period x 100

Flux method

This method takes into account both the number of workers replaced and a number of workers left during their period. Under this method labour turnover is calculated as under:

Number of workers replaced + Separated / average number of workers x100

Note:

If new employees are recruited for the expansion of an organization then it is not considered for the labour turnover calculation, but they are responsible for the change in the composition of the workforce. Due to this management feels to take them into account for such calculations. When accessions are considered for such calculation then labour turnover rate by flux method may be computed as follows:

Number of separations + Replacement + New joining / average number of workers during a period x100

or,

Number of separations + Accessions / average number of workers x100

where,

The average number of employees = number of employees at the beginning + Number of employees at the end / 2

Illustration

Calculate the labour turnover rate from the following particulars by using three different methods i.e., separation, replacement and flux.

Number of workers at the beginning- 600

Number of workers at the end- 800

Number of workers left during the period- 50

Number of workers employed during their period- 150

25 workers were employed in place of living workers and the remaining were employed under the expansion scheme.

Solution

Average number of workers = 600 + 800 / 2 = 700

Separation method- 50 / 702 x 100 =7.14%

Replacement method- 25 / 702 x 100 =3.57%

Flux method- 50 + 25 / 700 x 100 = 10.71%

- **Knowledge Check 2**

  State True or False.

1. Under piece rate payment, wages are paid on the basis of quantity and quality of goods produced and not on time.
2. Labour turnover means the rate of change in the number of employees in an organization during a specified period.
3. Lack of training facilities is a personal cause.
4. In a time rate system, close supervision of work is not possible

- **Outcome-Based Activity 2**

Under the Rowan system calculate the earning of a worker.

Time rate per hour - Rs. 60

Time allowed- 8 hours

Time taken- 6 hours

Time saved- 2 hours

5.5 Summary

- Time keeping is the step of recording the arrival time and the departure time of the labour. Separate person called time keeper is appointed to head the department of time keeping.
- Time booking is the system which helps in recording the time spent by workers on alternate jobs. For recording the start and end time attributable to each job, time ticket, time cards are used.
- Idle time refers to the labour time for which labours are paid but no work is done. It refers to lost time. Here, salaries and wages are paid to the labours for the lost time i.e., no output is given by the workers for that particular payment.
- Overtime premium is the amount paid to workers for the extra hours worked by them beyond the normal hours as specified in the factories act or decided by the union. Extra hours are paid at higher rates.
- The wage rate is also known as labour cost. It is the total of wages, benefits and payroll tax paid to employees. There are two types of wage rates- Direct wage rate and Indirect wage rate.
- Time rate system is also known as time work, day work, day rate, and daily wages. It is the oldest method of payment of remuneration. Time is an important factor as on

the basis of time, the determination of wages of the workers is possible. The wages are paid to the workers according to the time spent by workers.

- In this wage payment system, wages are not paid on a timely basis, but rather based on the quantity and quality of items produced. In this case, production output matters. In this case, payment for the completion of the task is fixed.
- The primary industries that employ this method are manufacturing of clothing, shoes, etc.
- The time rate system and the piece rate system are the two main wage payment methods. Both wage payment systems have certain benefits and drawbacks. To combat this drawback and preserve the benefits, experts have implemented a wage incentive scheme.
- The pace at which the number of employees in an organization changes over a given time period is known as labor turnover. In an organization, it is typical that

5.6 Self-Assessment Questions

1. Explain the concept of Time Keeping and Time Booking.
2. Describe the piece rate system and the time rate system.
3. By an incentive wage system, what do you mean?
4. What is labour turnover and what are the different methods of labour turnover?

5.7 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr S. N Maheshwari.

UNIT - 6

Overhead Cost Control

Learning Outcomes:

- Students will be able to comprehend the idea of overhead and how it is classified.
- Students will be able to comprehend how overhead is allocated, apportioned, and absorbed.
- Students will be able to learn about the treatment of under-absorption and over-absorption of overhead.

Structure:

6.1 Classification of Overhead

Meaning of overhead cost

The total of indirect labor, material, and expense costs that cannot be defined or assigned individually to a specific cost center is known as overhead. It is not directly attributable. Overhead costs are defined by Blocker and Walter as business operating expenses that aren't directly related to a particular output unit.

As an illustration, let's say a car manufacturer pays a premium rent for office space that includes enough capacity to construct a showroom. The overhead expense of the company is this premium rent. A business must cover its overhead costs whether or not things are sold.

Classification of Overhead

Overhead may be classified into two different categories as per their elements, control, behaviour and functions.

- **Classification as per Elements**

In this method of classification, overhead are divided into different elements which are as follows:

- **Indirect materials-** Materials which do not form part of the end product and is absorbed by the cost centre is called Indirect Material. Threads used to stitch clothes, lubricants used in machine, etc are example of an indirect material.
- **Indirect labor-** Some labourers which are not directly engaged in the production process but employed to help workers to produce goods and services are called indirect labour. Example- Wages to the indirect workers, salaries to storekeeper etc.
- **Indirect expenses-** Expenses which are incurred not for the process of production but to run the business and which cannot be allocated to job, process, cost unit or cost center are called indirect expenses. Example- rent, rates, insurance, etc.

- **Classification as per Control wise**

In this method of classification, overheads are divided into two categories which are as follows:

- **Controllable overhead-** Overhead which can be controlled by the management is called Controllable Overhead. Example- wastage, ideal time, etc.
- **Uncontrollable overhead**- Overhead which cannot be controlled by the management is uncontrollable overhead. For example- duty on taxes, etc.

- **Classification as per Behaviour**

In this method of classification, Overheads are divided into different categories, which are as follows:

- **Fixed overhead-** Fixed overhead are the cost which remains constant irrespective of the change in the volume of the production. Total overhead remain constant but per unit cost of overhead may change with the change in the volume of output. Example, rent of building, legal fees, audit fees, etc. This overhead depends upon the management policy and not on the managerial action.

Types of Fixed Overhead

1. Long run capacity fixed overhead
2. Operating fixed overhead
3. Programmed fixed overhead

- **Variable overhead-** This overhead are the cost which vary with change in volume of output. Here total overhead may vary but cost per unit of overhead remains constant. Example, nuts, bolts, consumable stores, etc.

- **Semi- variable overhead:** Overhead that is neither fixed nor variable is referred to as semi-variable overhead. It contains characteristics of both variable and fixed overhead. It fluctuates after a particular amount of production after remaining constant at that point. For instance, electricity, power, etc.
- **Function wise classification**

  In this type of classification, overheads are divided into the following categories on the basis of functions which are as follows:

  - **Production overhead-** This overhead is also known as manufacturing overhead. All the indirect expenses which are incurred for the production of goods and services within the factory is called factory overhead or production overhead. Example, factory rent, rates, plant and machinery, canteen expenses, etc.
  - **Administration overhead-** Services which are necessary for the smooth and effective operation of business is treated as administration overhead. It includes general functional overhead. Example, printing and stationery, rent, rates, bank charges, etc.
  - **Selling and Distribution overhead-** Selling overhead includes overhead incurred for getting order from customers and overheads incurred for the execution of such orders are called distribution overhead. Example of selling and distribution overhead is sales promotion expenses, advertising expenses, warehouse charges, packing, etc.

- **Research and Development overhead-** Expenses that are incurred on research and development i.e., cost of searching for new products, finding of new techniques are known as research and development overhead. Example- salaries and wages of research and development department, subscription to research association, etc.

6.2 Allocation of overhead

The common expenses for the department such as cost center or cost unit fall under overheads. Certain overhead costs are closely related to a specific division or cost center. Allocation of overhead is the process of assigning expenses for overhead to a specific departmental or cost area. Only until the quantity of overhead generated by a specific department or cost center is understood can this overhead be allocated. Thus, in simple terms, allocation of overhead implies to charging all amount to a particular department or cost center.

Importance of allocation of overhead

1. Overheads help to determine the product cost by attaching overhead cost to the cost center.
2. Consequently it helps to determine the selling price of a product.
3. The effectiveness of a particular department or cost center can be measured with allocation of overhead.
4. The cost information is supplied to the management with the help of overhead allocation.
5. In a multi-product business it helps to calculate the profitability of the product line.
6. A proper judgement of departmental efficiency can be made.
7. It controls managerial decision-making by providing cost information or planning.
8. It aids in setting fair prices in a cutthroat market.
9. It also helps with fault control and waste reduction.

Reasons for allocation of overhead

The reasons behind the location of overhead are as follows:

- Ground to be given for cost incurred.
- To communicate to the interested parties both internal and external.
- For encouraging and appreciating the managers and employees.
- For taking economic decisions, input should be provided in time

Methods of allocation

1. Dual rate method
2. Actual rate versus budgeted rates
3. Actual rate versus budgeted rates single rate method

Apportionment of overhead

Multiple departments or cost centers share some overheads. It's challenging to identify or link something to a certain department. The act of distributing such expenses to other departments in accordance with a reasonable approach is known as "overhead allocation." For example, the general manager gets paid for his labor even though he controls multiple divisions. As a result, the compensation should be distributed across all of the departments run by the concerned management. Other usual expenses can include electricity, rent, etc.

Bases of Apportionment

Overhead cost	Bases of apportionment
1. Rent and other building expenses	Floor area or Volume of department
2. Lighting and heating	
3. Air conditioning	
4. Fire precaution service	
1. Supervision	Number of workers
2. Time keeping	
3. Personal office	
4. Labour welfare expenses	
5. Fringe benefits	
1. Holiday pay	Direct wages
2. Compensation to workers	
3. ESI and PF contribution	
4. Fringe benefits	
General overhead	Direct labour hours or Direct wages or machine hours
1. Depreciation of plant and machinery	Capital values

2. Repairs and maintenance of plant and machinery	
3. Insurance of stock	
1. Internal transport	Technical estimates
2. Managerial salaries	
3. Power consumption	
Lighting expenses	No. of light points or area
Electric power	Number of machine hours or Value of machines
1. Stores overhead	Weight of materials or volume of materials or value of materials
2. Material handling	

- **Knowledge Check 1**

  Fill in the Blanks

  1. _____is the total of indirect material, labor and expenses incurred which cannot be separately allocated to the particular cost center or it cannot be identified separately.
  2. Materials which do not form part of the end product and is absorbed by the cost center is called _____.
  3. In Fixed overhead, total overhead remain constant but per unit cost of overhead may change with the change in the _____.
  4. Services which are necessary for the smooth and effective operation of business is treated as _____.
  5. _____helps to determine accurate pricing for the competitive market.

- **Outcome-Based Activity 1**

  Find out and 5 difference between allocation and apportionment of overhead.

6.3 Absorption of Overhead

It is a process of allocation and apportionment of overhead to each production department. It is also known as recovery of overhead. In the process of distribution of overhead, absorption

of overhead is the last step and it also includes the redistribution of service department cost to the production department.

Steps in absorption overhead

Step 1: Determine the rate of overhead absorption

Step 2: Rates are applied to cost units

Methods of absorption of overhead

- To calculate the amount of overhead, there are various ways to absorb it. The approach chosen to charge for overhead to supply or jobs should be investigated as it will guarantee:
- There is no difference between the total amount charged and the actual costs spent within a certain period.
- The price for each job or product is fairly calculated. This implies that there must be a difference in the amount of time needed to complete each task performed by experienced and unskilled workers in industrial overhead. They made a distinction between manual labour and machine labour.
- The method must also be used conveniently. The most common methods are discussed below:

I. Rate per unit of Production

For calculating the factory overhead rate, amount of production overhead is divided by number of units of production. The formula is-

Factory Overhead Rate = Amount of production overhead/ No of units of production

II. Machine hour rate

It is a method of calculating the cost of running a machine for an hour. The formula is-

Blanket Rate = Amount of production overhead / Machine hour

III. Percentage of Direct Material Cost

In this method, for calculating the overhead rate factory overhead is divided by direct material cost. The formula is-

Overhead Rate = Factory Overhead / Direct Material Cost x 100

IV. Percentage of Direct Labor Cost

This method is used to calculate the percentage of direct wages incurred on job. The formula is-

Overhead Rate = Factory Overhead / Direct Labor Cost x 100

V. Direct Labor Hour Rate

Under this method factory overhead is calculated by taking direct labor hours as a base. The formula is-

Factory Overhead Rate -= Amount of production Overhead / Direct Labor hours

VI. Percentage of Prime Cost

For calculating the factory overhead rate under this method prime cost is taken as a base. The formula is-

Factory Overhead Rate = Amount of Production Overhead / Prime Cost x 100

Treatment of over and under absorption of overhead

Meaning of over and under absorption of overhead

Generally, a predetermined rate is used to absorb overhead. planned production and planned overhead serve as its foundation. There is a discrepancy between the overhead incurred and the overhead absorbed when utilizing a preset rate. Over-absorption of overhead occurs when the absorbed quantity exceeds the real overhead; under-absorption of overhead occurs when the absorbed amount falls short of the actual overhead.

Causes of under and over absorption of overhead

- Seasonal fluctuation in production.
- Huge changes in production methods
- Working capacity changes majorly
- Underutilization of production capacity

Treatment

The following three crucial techniques can be used to dispose of excess and under absorption and adjust overhead:

1. Use of supplementary rate

Utilizing an additional rate The cost of work in progress, the cost of finished goods, and the cost of sales are allocated the difference between the actual and expected overhead. The additional rate of overheads is used for this. The supplemental overhead cost is calculated as follows: supplement overhead rate = overhead incurred - overhead absorbed / base quantum It has the effect of raising the production cost by the actual overhead.

The formula of supplementary rate is-

It has the effect of charging the actual overhead to the cost of production. This method is used in the following cases:

- There is major change in production methods
- Changes in the working capacity
- When contract are undertaken as a cost plus basis
- There is a serious error in predicting overhead cost of quantum.

2. Carry forward to the next year's account

When the typical business cycle extends over a year, this approach is used. Using this strategy, the amount that is over- or under-absorbed at the end of the year is carried over to an overhead reserve of suspense account for the next year.

3. Transfer to costing profit and loss account

According to this procedure, the amount that is over-absorbed and unabsorbed is transferred to the costing profit and loss account if the difference is negligible. The difference is moved to the profit and loss account if it is significant because of some unusual circumstances.

Illustration: 1

In a manufacturing company overhead was absorbed at a predetermined rate of ₹25 per man day. The total factory overhead expenses was ₹41.50 lakhs and man days actually worked was Rs 1.50 lakhs.

30,000 units were sold out of 40,000 units produced during a period. 60% of the unabsorbed overhead were due to defective planning and the others were due to increasing the overhead cost.

In cost accounts, how unabsorbed overhead will be treated?

Solution:

Recovered Overheads

Actual mandays x rate = 1.50 lakhs x Rs.25 = Rs. 37.50 lakhs

Actual Overheads = Rs. 41.50 lakhs

Under Recovery = Rs. 4.00 lakhs

Reasons for under-absorption

i. Due to defective planning =60/100 x 400000 = Rs.2,40,000

ii. Increase in overhead cost = 40/10 x 400000 = Rs.1,60,000

Treatment of over and under absorption:

i. Rs. 2,40,000 should be transferred to costing profit and loss account because it is offered due to abnormal factors.

ii. Rs.1,60,000 should be charged to units produced.

So the distribution should be as follows:

Cost of Sales A/c = 1,60,000 x 30,000 / 40,000 = Rs.1,20,000

Finished Goods Stock A/c = 1,60,000 x 10,000 / 40,000= Rs. 40,000

10,000 = finished goods stock (ration= 3:1)

Illustration:2

There are four production department of a company. The factory overhead cost of these are given below for accounting period:

Rs.

A. 19300

B. 4200

C. 4000

D. 2000

Overhead are:

Department A- Rs. 1.50 per machine hour for 14000 hour

Department B- Rs. 1.30 per direct labour hour for 3000 hours

Department C- 80% of direct labour cost of Rs. 6000

Department D- Rs.2 per piece for 950 Pieces

Find out the under and over absorption of overhead of each department and also mention the methods that could be used for the disposal of overhead.

Solution:

Department	**Factory Overhead absorbed**	**Factory Overhead incurred**	**Over absorbed (+)/ Under absorbed (-)**
A 14000 x 1.50	21000	19300	(+) 1700
B 3000 x 1.30	3950	4200	(-) 300
C 80% of 6000	4800	4000	(+) 800
D 950 x 2	1900	2000	(-) 100
Total	**31600**	**29500**	**(+) 2100**

Methods for disposal of overhead:

1. Distribution using additional rates.
2. Move to the Profit and Loss Account for Costing.
3. Transfer to the Accounts for the following year.

- **Knowledge Check 2**

  State True or False

- 1. Over absorption occurs when the absorbed quantity exceeds the real overhead.
- 2. The transfer of service department costs to the manufacturing department is not included in the absorption of overhead.
- 3. It is transferred to the profit and loss account if the difference between the amount that is over- and under-absorbed is minimal.

  4. The under- and over-absorbed amounts at the end of the year are carried over to the following year's account to an overhead reserve of suspense account under the carry forward to next year's account technique.

- **Outcome-Based Activity 2**

Activity Based on Outcomes 2. The machine costs Rs. 50 per hour, and one cost unit uses 10 hours of the machine. Determine the absorbed overhead.

6.4 Summary

- Overhead is the total of indirect material, labor and expenses incurred which cannot be separately allocated to the particular cost center or it cannot be identified separately. It is not directly attributable.
- Overhead may be classified in two different categories as per their elements, control, behaviour and functions.
- Some overheads are common to different department or cost center. This cannot be easily identified or attached to a particular department. The distribution of such overheads to different department based on a proportionate formula is known as apportionment of overheads.
- It is a process of allocation and apportionment of overhead to each production department. It is also known as recovery of overhead. In the process of distribution of overhead, absorption of overhead is the last step and it is also includes the redistribution of service department cost to production department.

There is a discrepancy between the overhead incurred and the overhead absorbed when utilizing a preset rate. If the absorbed amount is greater than actual overhead then it is said.

6.5 Self-Assessment Questions

1. Explain the classification of overhead.
2. What are the allocation and absorption of overhead?
3. What are the different methods of absorption of overhead?
4. What is the treatment of under and over-absorption of overhead?

6.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr S. N Maheshwari.

UNIT - 7

Methods of Costing

Learning Outcomes:

- Students will be able to understand the concept of job costing and contract to cost.
- Students will be able to understand the cost-plus contract and profit from an incomplete contract.
- Students will be able to learn about the concept of the escalation clause.

Structure:

7.1 Job Costing and Contract costing

Every organization has different aspects of business which are based on their nature, production, characteristics, etc. Methods of costing decide the cost of the product. For the production of different products, we need different types of costing methods.

There are various types of methods of cost. Some of these are discussed below:

- **Meaning of Job costing**

This method is used in businesses that work on a job basis. Here the cost is assigned to an assignment, specific job, etc. Here orders are made as per the specifications no pre-production is needed. One can find the profitability of each job if the system is established correctly.

Features of job costing

- It is the cost of a particular job
- This is generally fixed before assigning the job
- It is like a contract and the billing is done only after the completion of the job

Example of job costing

A garment manufacturing company is involved in producing garments from scratch. It has all the setup required to produce the garment piece but does not have a logo printing machine. To print this logo the company outsources this task to an external vendor. This is one individual job in the manufacturing of garments. Thus, the cost incurred in the completion of this particular job is known as job costing as this task was given to someone on a job basis.

- **Meaning of Contract Costing**

Contract costing is the type of costing when each order is completed over a longer period of time and according to the customer's preferences. Contractors that build roads, dams, buildings, railroad lines, hotels, hospitals, schools, etc. are responsible for contract costing. The majority of costs in contract costing are direct. Because the work is terminated and the contract account is closed after it is finished, it is also known as terminal costing. The contractor and the contractee are the two parties engaged in contract costing. In this case, the contract itself serves as the cost unit, and the contractor often completes it on the job site.

7.2 Profit from Incomplete Contracts and Cost plus contracts

- **Profit from an Incomplete Contract**

Ascertainment of profit will be easy if contracts are started and completed in the same financial year as no accounting problem occur. But in case of contract takes more than a year or more than a financial year to complete a project then the problem arises that whether profit

should be calculated on completion of work or work performed during a year. If profit is ascertained only after the completion of work then the profit will be high in that year and for another year it will be NIL. High profit also leads to higher tax liabilities so it is necessary to take into account the profit earned on the work performed during each year if the contract exceeds one year to complete. Fluctuation in profit is also undesirable for the shareholders regarding the payment of dividends and this fluctuation is also not desirable for the payment of income tax. Hence profit must be calculated and credited from year to year on a conservative basis.

The rules which have been accepted in this regard are as follows:

1. Profit is only calculated on the certified work by the contractor's architect. Uncertified work must be valued at cost.
2. If the worth of the job is certified at less than one-half the contract price, then no profit should be entered into the profit and loss account.
3. In case the value of certified work is less than 1/2 but 1/4th or more of the contract price then only 1/3rd of the profit is transferred to the profit and loss account and the rest of the profit is carried forward to the contract account as reserves. The profit is reduced by the proportion of cash received by the contractee is less than the value of certified work.
    a. Transfer to P/L A/c = Notional profit x 1/3 × cash received/work certified
4. If the work certified is 1/2 or more but less than 90% of the contract price then 2/ 3rd of the profit is transferred to the profit and loss account and if cash received is less than the value of certified work the profit is reduced proportionately.
    a. Transfer to P/L A/c = Notional profit x 2/3 x cash received/work certified

5. The profit on the entire contract should be computed when the deal is close to or at completion. The profit and loss account must receive the estimated profit.

The formula based on this is as follows:

I. Estimated profit x work certified/ contract price
II. Estimated profit x work certified/contract price x cash received /work certified
III. Estimated profit x cost of work to date/estimated total cost of work
IV. Estimated profit x cost of work to date/ estimated total cost of work x cash received / work certified

The above calculation only gives the approximate figure. The final figure can only be determined after the completion of work.

Illustration 2

Calculate the estimated profit from the following particulars:

Total expenditure Rs. 22,50,000

Estimated expenditure to complete further contract Rs. 2,50,000

Contract price Rs.32,50,000

Work certified Rs.27,50,000

Work uncertified Rs. 1,75,000

Cash received Rs. 21,25,000

Solution:

Particulars	Amount Rs
Total expenditure	22,50,000
Estimated expenditure to complete the further contract	2,50,000
	25,00,000
Estimated profit on contract (balancing figure)	7,50,000
Contract price	32,50,000

Cost Plus Contract

This type of contract term is applied where it is impossible to calculate the cost in advance due to unstable conditions of market price, labor rates, lack of records, etc. A predetermined percentage of profit is added to the overall cost of the contract to determine the contract price. It is necessary to take into account a variety of expenses in order to determine the contract's upfront cost.

Advantages of cost-plus contract

Contractor

1. In such a contract there is no risk of loss.
2. It simplifies the work like preparing tenders, quotations, etc.

3. Helps with the risk of fluctuation in the price of materials, labor, etc.
4. The contractor is assured of a fixed profit margin.

Contractee

The contractee has the right to audit the accounts of the contractor. This right helps the contractee to ensure the fair price of the contract.

Disadvantages of cost-plus contract

Contractor

1. A dispute may arise between the contractor and the contractee.
2. Since the profit is based on the cost which also lowers the cost which leads to lower profit hence this reason does not motivate the contractor to reduce cost.

Contractee

The contractee is unaware of the amount to be paid by him because it cannot be determined before the work is completed.

- **Knowledge Check 1**

  Fill in the Blanks.

  1. _____ is the type of costing where each order is filled for a longer duration and work is completed in accordance with customer preferences.
  2. _____type of contracts are applied where it is impossible to calculate the cost in advance due to unstable conditions of market price, labor rates, lack of records, etc.
  3. If profit is ascertained only after the completion of work, then the profit will be high in that year and for another year it will be _____.
  4. The contract price is also credited to the _____ with the value of work in progress as of that date if the contract is not completed in the financial year.

- **Outcome-Based Activity 1**

  Distinguish any 5 differences between job costing and contract costing.

7.3 Target costing and Escalation clause

- Meaning of target costing

Target costing is one of the important methods of costing. It is the technique of management. In target costing, the price of a new product is determined. Target cost is the difference

between the selling price and profit margin. It is the method by which management decides the cost of its new product, the price selling points, and the profit margin on each sale. It helps the management to monitor the new product right from the production level. The product's total price is decided by using research and development and various skills put differently, it can also be described as a technique for cost management that lowers the overall price of a good over the course of its whole life cycle. These techniques help to meet the demand of the customer and also to meet the organisation's profit goal. The cost of the product is generally decided at the design stage of the product life cycle so it is important to give more emphasis on cost reduction at this stage.

Features of target costing

1. The price of the new product is determined at the design and production stage.
2. The profit margin which is required for a new product is already included in a target selling price.
3. It is the management's technique to give more emphasis on cost reduction.
4. Cost reduction is the difference between the current cost and the target cost.
5. While deciding the total selling price the main focus is on the product design, specifications and customer expectations.
6. For designing, purchasing, manufacturing and marketing a team is formed which helps to find and achieve the target cost.

- **Escalation clause**

At the time of entering into the contract if the price of the raw materials and the labor increases beyond a certain limit fixed at the time of execution then the contract price will be readjusted. This adjustment of the price will be explained in the escalation clause. In simple words, the escalation clause gives power to the contractor to revise the price of the contract if there is any rising in the price of raw material and labor due to some agreed reasons. This escalation clause protects the contractor from adverse financial conditions and also gives the power to recover the increased prices. The escalation clause gives the right to the contractor to increase the contract price if the cost of material, and labor increases beyond a specified limit.

Illustration 1

A contractor has entered into a long-term contract at an agreed price of Rs 17,50,000. Escalation clause for materials and wages, both the actual and standard are given below:

	Standard		Actual	
Materials	**Quantity (tons)**	**Rate (Rs)**	**Quantity (tons)**	**Rate (Rs)**
A	5000	50	5050	48
B	3500	80	3450	79
C	2500	60	2600	66
Wages	**Hours**	**Hourly Rate (Rs)**	**Hours**	**Hourly Rate (Rs)**
X	2000	70	2100	72
Y	2500	75	2450	75
Z	3000	65	3100	66

After calculating the full actual consumption of material and wages, the company claimed a final price of Rs. 17,73,600. Give your analysis of the escalation claim and indicate the final price payable.

Solution:

Statement showing final claim

	Standard Qty/hrs	**Standard rate Rs**	**Actual rate Rs**	**Variation in rate (Rs)**	**Escalation claim Rs**
Materials	**(a)**	**(b)**	**(c)**	**(d) = (c) - (b)**	**(e)= (a) x (d)**
A	5000	50	48	(-) 2	(-) 10000
B	3500	80	79	(1) 1	(-)3500
C	2500	60	66	(+) 6	15000
Wages	**Materials escalation claim (A)**				1500
X	2000	70	72	(+) 2	4000
Y	2500	75	75	-	-
Z	3000	65	66	(+)1	3000
	Wages escalation claim (B)				7000
	Final Claim (A) +(B)				8500

Statement showing final price payable

Agreed Price		1750000
Agreed escalation		
Material cost	1500	
Labor cost	7000	
Final price payable		**1758500**

The claim is for Rs.1773600 which is based on the total increase in cost which can be verified below:

	Standard Cost			**Actual Cost**			
	Qty/hrs	**Rate Rs**	**Amount Rs**	**Qty/hrs**	**Rate Rs**	**Amount Rs**	**Increase/Decrease**
Materials	**(a)**	**(b)**	**(c)= (a) x (b)**	**(d)**	**(e)**	**(f) = (d) x (e)**	**(g) = (f) - (c)**
A	5000	50	250000	5050	48	242400	-7600
B	3500	80	280000	3450	79	272550	-7450
C	2500	60	150000	2600	66	171600	21600
Wages			**680000**			**686550**	**6550**
X	2000	70	140000	2100	72	151200	11200
Y	2500	75	187500	2450	75	183750	-3750
Z	3000	65	195000	3100	66	204600	9600
			522500			**539550**	**17050**
							23600

Contract price = Rs 1750000

Add: increase in cost =Rs 23600

Final price claimed by the Company = Rs.1773600

This claim is not admissible because this increase in cost is caused by inflation.

- **Knowledge Check 2**

  State True or False.

1. The escalation clause gives power to the contractor to revise the price of the contract if there is any decrease in the price of raw material and labor due to some agreed reasons.
2. Target cost is the addition of the selling price plus a profit margin.
3. The cost of the product is generally decided at the design stage of the product life cycle so it is important to give more emphasis on cost reduction at this stage.
4. This escalation clause protects the contractor from adverse financial conditions and also gives the power to recover the increased prices.

- **Outcome-Based Activity 2**

  Discuss 5 advantages of an escalation clause.

7.4 Summary

- Every organization has different aspects of business which are based on their nature, production, characteristics, etc. Methods of costing decide the cost of the product.
- The job costing method is used in businesses that work on a job basis. Here the cost is assigned to an assignment, specific job, etc. Here orders are made as per the specifications no pre-production is needed. One can find the profitability of each job if the system is established correctly.
- Contract costing is that form of costing where work is carried out as per the customer's preference and each order is for a longer period. Contract costing is carried out by the contractors who undertake construction works like roads, dams, buildings, railway lines, hotels, hospitals, schools, etc. In contract costing most of the expenses are direct.
- Ascertainment of profit will be easy if contracts are started and completed in the same financial year as no accounting problem occur. But in case of contract takes more than a year or more than a financial year to complete a project then the problem arises that whether profit should be calculated on completion of work or work performed during a year. If profit is ascertained only after the completion of work, then the profit will be high in that year and for another year it will be NIL.
- Cost plus contract is a type of contract term that is applied where it is impossible to calculate the cost in advance due to unstable conditions of market price, labor rates, lack of records, etc. This contact is usually entered for executing the special type of

work where estimation of cost is difficult like the contraction of the dam, powerhouse, etc.

- Target costing is one of the important methods of costing. It is the technique of management. In target costing, the price of a new product is determined. Target cost is the difference between the selling price minus the profit margin.
- At the time of entering into the contract if the price of the raw materials and the labor increases beyond a certain limit fixed at the time of execution then the contract price will be readjusted. This adjustment of the price will be explained in the escalation clause.

7.5 Self-Assessment Questions

1. Explain the concept of job costing and its features.
2. Explain contract costing with its features.
3. What do you mean by profit from incomplete contracts?
4. Explain the concept of target costing and its features.
5. What do you mean by escalation clause?

7.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.

UNIT - 8

Unit Costing

Learning Outcomes:

- Students will be able to understand the concept of Unit Costing.
- Students will be able to understand the procedure of cost accumulation in unit costing.
- Students will be able to learn about the preparation of cost sheets.

Structure:

8.1 Unit Costing

- **Meaning of Unit Costing**

Unit costing is also known as single output costing. An organization or concern that produces a single product in large quantities uses this method of costing. The cost units are identical cost. No continuous process of production is necessary. All the products are homogeneous. By using this method, cost collection and cost ascertainment becomes very easy because of the production of one product of different grades. Under this method of costing are collected and analysed element-wise and then cost per unit is ascertained.

To determine the cost per unit, the total cost is divided by the total production. The cost statement is prepared where the previous year's figure is also included for comparison. Products like bricks, pencils, pens, books, laptops and the like are an example of unit costing. In simple words, this method of costing is majorly applicable to industries where there is a continuous manufacturer of goods and all the units produced are identical. Industries such as mining, cement factory, and brick manufacturing company generally use this type of costing method. In this method, the unit cost is determined by dividing the total expenditure during a given period by the total quantity produced in that particular time.

For example, a Coal mining company is engaged in the mining and extraction of coal for one year. This is a continuous process where the product is only coal. To determine the unit cost per kg of coal the company will follow the unit costing method. This time frame may depend on the company whether wants to take into account the weekly or monthly expenditure.

- **Importance of Unit Costing**
  - The main importance of unit costing is that it discloses the total cost and cost per unit.
  - Unit costing also helps to calculate the selling price of the product.
  - A comparison of the current cost with the last cost is also determined through unit costing.
  - It helps in identifying a profitable volume of production.
  - It helps to provide other useful information related to wastage, losses, etc.
- **Advantages of unit costing**
  - It helps in pricing decisions for the management.
  - To avoid losses there is a break-even point below which the company shall not sell its product. Unit costing helps to identify such break-even points.
  - It helps to track and monitor the cost.
  - This method of costing is helpful for filing tenders.

- **Limitations of unit costing**
  - This method of costing is not useful for an industry that produces different ranges and varieties of products.
  - The unit costing method is not suitable for a service organization.
  - This method of costing is not used for the heterogeneous product.

8.2 Cost Accumulation

- **The procedure of cost accumulation**

The cost for the production of output is collected element-wise and recorded in a cost accounting system for the ascertainment of cost. Hence there is no need to maintain a separate book regarding such information. The following information is required for unit costing.

1. **The value of raw materials consumed**

   For every material required there is a need to fill out the requisition slip of materials which is also the basis for collecting the value of raw material consumption. Materials are issued only based on authorised requisition slips. Such requisition slips disclose the details like quantity of materials, values, grades, and types. If any materials are damaged during storage, then it must be considered a normal loss. The abnormal loss should be charged to the profit and loss account.

2. **Cost of labor**

   There are two categories of labor i.e., direct and indirect labor. If the workers are involved directly in the activities related to manufacturing, then it is termed as direct labor and can calculate the direct labor with the help of production details. Workers who are involved in factory activities in general then they can be put in a separate category in the wage sheet.

3. **Overhead**

   The overhead is distinguished on a functional basis for unit costing. The classification of overhead is factory overhead, office, and administrative overhead, and selling and distribution overhead. For cost accounting, these overheads are recovered at a pre-determined rate, and from this pre-determined rate, the cost statement is prepared at short intervals. From the financial records, actual overheads are collected.

- **Unit of measurement in unit costing**

Under the unit costing method, the unit of measurement plays an important role in the attainment of cost. There are different units of measurement such as liter, units, dozen, meters, square feet, tonnes, kilograms, etc. According to the type and nature of industry or company can choose any of the above units of measurement.

- **Knowledge Check 1**

  Fill in the Blanks

  1. An organization or concern that produces _____ product in large quantities uses this method of costing.
  2. The cost statement is prepared where _____ figure is also included for the comparison.
  3. This method of costing is majorly applicable for the industries where there is a _____ manufacturer of goods and all the units produced are identical _____.
  4. Unit costing also helps to calculate the _____ of the product.
  5. Materials are issued only based on authorised _____.
  6. The overhead are distinguished on _____basis for the purpose of unit costing.

- **Outcome-Based Activity 1**

  Find out five features of unit costing.

8.3 Cost Sheet

- **Preparation of cost sheet**

Under unit costing, it is mandatory to prepare a cost sheet at periodic intervals. Details of the total cost and cost per unit at each stage are shown here. For cost analysis and cost control, it should contain more cost information. The figures for the previous year are shown in the cost sheet for comparison purposes. A cost sheet is a statement that shows the detail regarding factory cost, selling cost, and office cost and also shows elements of cost such as prime cost, factory cost, cost of production, and total cost. It is an operating statement that classifies the expense for a particular in a tabular form. It is not an account and does not form part of the double-entry system. It is prepared at any time whether it's weekly, monthly, quarterly, half-yearly, or yearly based on actual or estimated cost.

A cost sheet is a document that lists the different parts of a product's total cost as well as its historical cost. The historical cost enables the organization to draw a comparison between the

former cost incurred and the present cost for the same product. Based on this cost sheet, the comparison aids in lowering the idle selling price offer product. A cost sheet can be created in a number of ways, but it is typically created by referring to the expected cost or by referencing past costs. The actual costs expended by the corporation to manufacture the product serve as the foundation for the historical cost sheet. However, based on the anticipated cost, an estimated cost sheet is created.

Importance and objectives of cost sheet are already discussed in Chapter 2.

- **Purpose of cost sheet**
  - It helps to fix the selling price more accurately.
  - In case detail and useful information about the wastage, loss, etc
  - It provides information for tenders.
  - It helps in comparing of cost of identical jobs or periods.
- **Components of cost sheet**

1) Prime cost

Prime costs are the cost that is involved directly in the manufacturing process related to materials and labor used in the production. For example, raw material cost, freight, and cartage, consumable cost, wages to workers etcetera

Formula: Prime cost = Direct material cost + Direct labor

2) Factory cost or work cost

Factory cost of work cost is the sum of the prime cost in addition to factory expenses or overhead expenses. Factory expenses include the cost of indirect material, indirect wages, and indirect expenses. It also includes the amount of work in progress. For example, repair and maintenance to machinery and factory building, rent, salary to production manager, machine tools, etc.

3) Cost of production

The cost of production consists of factory costs plus office and administration costs. But it does not include opening and closing finished goods. For example, salary to office staff, stationery and telephone expenses, audit expenses, etc.

4) Cost of goods sold

If in the cost of production, the cost of finished goods is included then the cost of goods sold arrives.

5) Total cost

Total cost is the cost of production plus selling and distribution overheads.

Treatment of stock in the cost sheet

There are 3 different types of opening and closing stock which are treated in the cost sheet are:

- Opening stock and closing stock of raw materials
- Opening stock and closing stock of work in progress
- Opening stock and closing stock of finished goods

Opening stock and closing stock of raw material

To ascertain the cost of materials, opening stock and closing stock of raw materials are required and adjusted which form part of the prime cost. In the cost sheet treatment of opening and closing stock of raw material is shown in this way

Opening Stock of raw materials	xxx
Add: Purchase of raw material	xxx
Other items (if any)	xxx
Less: Closing Stock of raw materials	xxx
Cost of materials consumed	xxx

Opening stock of raw material are shown first from which purchase of raw material and other items if any are added and then deducted closing stock of raw material to get the cost of materials consumed.

Opening stock and closing stock of work in progress

In this case, factory overheads are added to the prime cost to get gross factory cost and from this opening stock of work in progress is added and closing stock of working progress is deducted to get factory costs

Prime Cost	xxx
Add: factory overheads	xxx
Gross Factory cost	xxx
Add: opening stock of WIP	xxx
Less: closing stock of WIP	xxx
Factory cost	xxx

Opening stock and closing stock of finished goods

In this case office and administrative overhead are added to the factory cost to get the cost of production and from the cost of production opening stock of finished goods is added and the closing stock of finished goods is deducted to get the cost of goods sold.

Factory cost	xxx

Add: office & administrative overheads	xxx
Cost of production	xxx
Add: opening stock of finished goods	xxx
Less: closing stock of finished goods	xxx
Cost of goods sold	xxx

If units are given for opening stock and closing stock of finished goods then this must be valued as per cost per unit.

Cost per unit = Cos of production/ unit produced.

Ascertainment of cost per unit in unit costing

The primary objective of unit costing is to determine cost per unit. The price of each component and its proportion to the overall cost are next examined. For these reasons, costs are tallied and examined under several cost components. Financial records are used to gather direct costs and expenses, and costing records are used to collect indirect costs and elements. A variety of cost records are utilized to determine the cost of a unit. These expense reports are salary abstract, material abstract, cost ledger, etc. The formula used for the ascertainment of cost per unit is:

Cost per unit = Total cost/ number of units produced.

Note: Certain items must be excluded from cost because of their financial nature which is interest paid, cash discount allowed, loss on sale of an investment, loss on sale of fixed asset, etc.

Format of cost sheet

Name of the Company _____

S. No.	Particulars	Total Cost	Cost Per Unit
1	Direct Materials Consumed (RM & consumables):		
	Opening Stock of raw Material	Xx	
	Add: Additions/Purchases	Xx	
	Less: Closing Stock of Raw Material	(xx)	

	Net Material Consumed:		
2	Direct Labour Cost :		
	Wages to workers	Xx	
	Incentive to Workers	Xx	
3	Direct Expenses:		
	Power & Fuel	Xx	
	Freight & Cartage for incoming material	Xx	
	Salary to production supervisors, supervisors, junior engineers, etc.	Xx	
	Unloading charges of incoming material	Xx	
	Depreciation of Machinery	Xx	
	Depreciation of factory building (if owned)	Xx	
4	Prime Cost (1 2 3)	xxx	
5	Add: Factory/Works Overheads		
	Repair & Maintenance of Machinery	xx	
	Repair & Maintenance of Factory Building	xx	
	Cost of Machine Tools	xx	
	Salary to Production Manager, RM Store In-charge and other Production & Store Staff, etc.	xx	
	Labour Welfare Expenses	xx	
	Factory Rent	xx	

	Factory Lighting	xx	
	Other factory overheads like housekeeping, salary to security guards, factory stationery, etc.	xx	
6	Gross Factory / Works Cost (4 5)	xxx	
7	Add: Opening Work in Progress	xx	
8	Less: Closing Work in Progress	(xx)	
9	Factory/Works Cost (6 7-8)	xxx	
10	Add Administration Overheads:		
	Salary to Office Staff	xx	
	Incentive to Office Staff	xx	
	Stationery & Printing Expenses	xx	
	Office Lighting Expenses	xx	
	Telephone Expenses	xx	
	Remuneration to Directors	xx	
	Staff Welfare Expenses	xx	
	Audit Expenses	xx	
	Legal & Professional Charges	xx	
11	Cost of Production (9 10)	xxx	
12	Add: Opening Stock of Finished Goods	xx	

13	Less: Closing Stock of Finished Goods	(xx)	
14	Cost of Goods Sold (11 12-13)	xxx	
15	Add: Selling & Distribution Overheads		
	Salary to Sales Team	xx	
	Commission on sales	xx	
	Advertisement expenses	xx	
	Travelling & Hotel Stay Expenses of Sales Staff	xx	
	Warehouse Rent or Depreciation	xx	
16	Cost of Sales (18,19,20)	xxx	
17	Profit	xxx	
18	Sales / Selling Price (16 17)	xxx	

Illustration 1

In the factory of ABC, there were manufactured 20,000 units of A- products in October 2019. Prepare a cost sheet showing the total cost and cost per unit from the below-given information.

Direct material consumed Rs. 2,00,000

Direct Wages Rs. 1,60,000

Direct expenses Rs. 40,000

Factory overheads Rs. 80,000

Office and administrative overheads Rs. 60,000

Selling and distribution overheads Rs. 60,000

Solution:

Cost Sheet of A-Product for Oct 2019

Output=20000 units

Particulars	Total cost	Cost per unit
Cost of Direct Material	200000	10.00
Cost of Direct Labor	160000	8.00
Cost of Direct Expenses	40000	2.00
PRIME COST	**400000**	**20.00**
Add: Factory Overheads	80000	4.00
FACTORY COST	**480000**	**24.00**
Add: Office & Administrative overheads	60000	3.00
COST OF PRODUCTION	**540000**	**27.00**
Add: Selling & Distribution expenses	60000	3.00
COST OF SALES	**600000**	**30.00**

Illustration 2

Prepare cost sheet 1) showing the cost of production of goods produced and 2) a statement showing the cost of sales and profit for October 2018 from the following information obtained from a manufacturing company for October 2018.

The cost of raw materials as of 1st October 2018 is Rs. 75,000

The cost of raw materials as on 31st October 2018 is Rs. 90,000

Raw material purchase Rs. 9,60,000

Carriage on purchase Rs. 15,000

Chargeable expenses Rs. 80,000

Direct wages Rs. 4,20,000

Factory overheads Rs. 2,30,000

Work in progress on 1st October 2018 Rs. 60,000

Work in progress as on 31st October 2018 is Rs. 75,000

Finished goods as on 1st October 2018 is Rs. 1,50,000

Finish good as on 31st October 2018 is Rs. 1,80,000

Office and administrative overheads Rs. 1,25,000

Selling and distribution overheads Rs. 1,30,000

Sales Rs. 22,50,000

Solution

1) Cost sheet for October 2018

PARTICULARS	DETAILS RS	AMOUNT RS
Cost of raw material used		
Opening stock of raw materials	75000	
Add: Purchase of raw materials	960000	
Carriage on purchase	15000	
	1050000	
Less: Closing stock of raw materials	90000	960000
Cost of direct labor		420000
Cost of chargeable expenses		80000
PRIME COST		**1460000**
Add: Factory overheads		230000
GROSS FACTORY COST		**1690000**
Add: opening stock of work-in-progress	60000	
Less: Closing stock of work-in-progress	-75000	
		-15000
FACTORY COST		**1675000**
Add: Office & Administrative overhead		125000
COST OF PRODUCTION		**1800000**

2) Statement showing the cost of sales and profit for October 2018

PARTICULARS	DETAILS RS	AMOUNT RS
COST OF PRODUCTION		**1800000**

Add: Opening stock of finished goods	150000	
Less: closing stock of finished goods	-180000	
		-30000
COST OF GOODS SOLD		**1770000**
Add: Selling & Distribution overheads		130000
COST OF SALES		**1900000**
PROFIT (Balancing Figure)		**350000**
SALES		**2250000**

- **Knowledge Check 2**

  State True or False.

  5. It is not necessary to show the previous year's figure in the cost sheet.
  6. Factory cost of work cost is the sum of the cost of production in addition to factory expenses or overhead expenses.
  7. The cost sheet contains the estimated and historical cost of manufacturing the product.
  8. If units are given for opening stock and closing stock of finished goods then this must be valued as per cost per unit.

- **Outcome-Based Activity 2**

  Calculate the cost of direct material consumed from the given particulars below:

  Opening stock of raw materials Rs.40,000

  Purchase of raw materials Rs.2,40,000

  Carriage inwards Rs.20,000

  Closing stock of raw materials Rs.50,000

  Direct wages Rs. 1,80,000

8.4 Summary

- Unit costing is also known as single output costing. An organization or concern that produces a single product in large quantities uses this method of costing. The cost units are identical cost. No continuous process of production is necessary.
- To determine the cost per unit, the total cost is divided by the total production. The cost statement is prepared where the previous year's figure is also included for

comparison. Products like bricks, pencils, pens, books, laptops and the like are an example of unit costing.

- The cost for the production of output is collected element-wise and recorded in a cost accounting system for the ascertainment of cost. Hence there is no need to maintain a separate book regarding such information.
- The statement which has a record of various components of the total cost of a product and also the historical cost is known as a cost sheet. The historical cost enables the company to make a comparison between the previous cost incurred and the current cost for the same product**.**
- Ascertainment of cost per unit is the main goal of unit costing. It then analyses the cost of each element and its shares in the total cost. Costs are accumulated and analysed under different elements of cost for such purposes.

8.5 Self-Assessment Questions

1. Explain the concept of unit costing and what are its importance.
2. What is the procedure of cost accumulation in unit costing?
3. What are the purpose and importance of the cost sheet?
4. What are the advantages and limitations of unit costing?

8.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.
- Cost accounting-Standard costing by Chandra Sekhar.
- Cost accounting and financial management a practical guide by CA B.Saravana Prasath

UNIT - 9

Process Costing

Learning Outcomes:

- Student will be able to understand the concept of process costing.
- Student will be able to learn the difference between job costing and process costing.
- Students will be able to learn about the accounting of process costing.
- Students will be able to know about the inter process profit and its advantages and disadvantages.
- Students will be able to learn about the accounting for joint products and by products.

Structure:

9.1 Process Costing

- **Meaning of process costing**
- Process costing is a technique in which the product goes through several manufacturing phases prior to being the finished product. It is employed in manufacturing businesses that transform raw resources into completed products. The costs associated with each process are recorded in the corresponding process account, which is opened separately for each procedure. T. Charles T. Hangmen defines process costing as the study of mass manufacture of identical items that normally follow a series of production steps known as the process operation. In other words, industries that depend on continuous processing—where the output from one operation becomes the input for another—use this costing technique. These processes culminate in the final product. Consequently.
- **Features of process costing**
    1. The continuous flow of production and the output of one process becomes the input of another process and so the finished product is obtained.
    2. The cost incurred in one process is transferred to the next process.
    3. At the end of the period,the cost of each process is ascertained.
    4. Homogeneous and uniform units of production.
    5. The total cost of each process is adjusted with scrap, abnormal loss, normal loss, etc of the process.
    6. Joint products and byproducts may obtain from the production of a product.
    7. Each factory is divided into a number of processes or cost centres and each division is a stage of production.
- **Difference between job costing and process costing**
- **Production-**

  In job costing, production is against the specific demand of the customer.

  In process costing- production is in the continuous flow because production is of homogeneous nature.
- **Transfer-**

  No job is transferred from one to another under job costing.

  In process costing cost along with output transfer from one process to another process.
- **Cost determination-**

  For each job, costs are determined separately irrespective of the time period.

In-process costing costs are compiled for every process on a given period of time.

- **Work in progress-**

  No work in progress at the beginning or end of the period.

  In process costing, work in progress is present at the beginning or end of the period.

- **Control-**

  Proper control is difficult because production is not continuous.

  Proper control is easier because of stability in production.

- **Nature-**

  Job costing is a terminal cost.

  Process costing is a period cost.

9.2 Accounting for process costing

For each step, a distinct account is kept under process costing. The value of the materials, labour costs, and overrates are deducted from the account; any scrap and by product values are credited; the remaining balance of this account is then transferred to the subsequent step. As a result, the final product of one process is used as the starting point for another. There are certain situations which arise while preparing process accounts:

1. **No process loss**

   All the costs related to the particular product are debited to the process account. Hence there is no process loss. The output of the process is equal to the unit of input in the process. The total cost is transferred to the next process.

   No process loss accounting format is given below:

   Process I A/c

Particulars	units	Amount Rs	Particulars	units	Amount Rs
To input (main raw materials)	xxx	Xxx	By process II A/c	xxx	xxx
To indirect material		Xxx			
To direct wages		Xxx			
To direct expenses		Xxx			
To manufacturing overhead		Xxx			
	xxx	Xxx		xxx	xxx

3. **Process loss-** Process loss is the term used to describe the difference between the input and output of a process when the output is less than the input. Process loss might take the shape of weight loss, scraps, or waste. Process loss can be divided into two categories: abnormal loss and normal loss.
4. **Normal loss-** It is an uncontrollable loss which is inherent in nature. This loss includes loss of leakage and normal scrap. It is an integral part of the process and it is unavoidable.

   Treatment- Good units produced by the method cover the cost of typical process loss. The process account should be credited with the amount received from the sale of typical process loss units.

   Abnormal loss- This loss is caused by unexpected situations such as an accident. It is an excess of over-normal loss. For example, suppose 2000 units of raw material are introduced in the process and it was decided that there can be 10% of wastage which is a normal loss. Thus, the output must be 1800 units, but the actual output is 1750. It means that an extra loss of 50 units isan abnormal loss. In simple words excess loss of 50 units over normal loss i.e., 200 units is an abnormal loss.

   Treatment- The cost of abnormal loss is equal to the loss of good unit. This is not treated as part of cost of goods sold and thus total cost of abnormal loss is credited to process account from where it arises.

- **Abnormal gain** Abnormal gain is also known as an unexpected gain in production. When the actual production exceeds the expected figure, it is known as an abnormal gain. This is a rise due to the following reasons:

  i. Above assessment of process loss

  ii. Development in work capability of workers

  iii. Used of improved technology.

  Treatment- Abnormal gain is debited to the process account from where it arises and credited to the abnormal gain account which will be closed transferring to the closing profit and loss account. This is computed on the basis of normal production.

Illustration 1

XYZ manufacturing co's product passes through two different processes, I and II and then finished goods. Prepare the cost sheet from the below-given information:

In process I, 5% of the units enter the process, In process II, 10% of the units enter the process. The scrap value of the wastages that occurred in the process I is Rs. 8 per 100 units and in process, II is Rs 10 per 100 units.

Material consumed Process I=6000, Process II= 3000

Wages Process I=7000, Process II=4000

Manufacturing expenses Process I & II=2000

10000 units purchased into process I is Rs.5000.

Output of Process I=9500 units, Process II=8500 units

Solution:

Process I Account

Particulars	**Qty**	**Rate**	**Amount**	**Particulars**	**Qty**	**Rate**	**Amount**
To units introduced	10000	0.5	5000	By Normal loss scrap			
To materials			6000	(5% of 10000)	500	0.08	40
To wages			7000	By Process II A/c (output transferred)	9500	2.1	19960
To manufacturing expenses			2000				
	10000		20000		10000		20000

Process II Account

Particulars	**Qty**	**Rate**	**Amount**	**Particulars**	**Qty**	**Rate**	**Amount**
To Process I A/c	9500	2.1	19960	By Normal loss scrap			
To materials			3000	(10% of 9500)	950	0.1	95
To wages			4000	By Abnormal loss	50	3.376	169
To manufacturing expenses			2000	By output transferred to finished stock A/c	8500	3.376	28696
	9500		28960		9500		28960

Working notes:

Process I Cost per unit= Total cost-Value of scrap/Normal production

=20000-40/9500 = Rs.2.101 approx

Process II Cost per unit= 28960-95/9500-950

= 28865/8550 = Rs.3.376

- **Knowledge Check 1**

  Fill in the Blanks

  1. _____ is a method where the product passes through different stages of production before it reaches the final product.
  2. In process costing- production is in _____ flow because production is of homogeneous nature.
  3. If the output of the process is less than the input then the difference between the input and output is called _____.
  4. When the actual production exceeds the expected figure, it is known as _____.

- **Outcome-Based Activity 1**

  Discuss any 5 benefits of process costing.

9.3 Inter-Process Profit

Profit connected to the movement of items from one place to another is referred to as inter-process profit. Finished goods are often moved to the next process at manufacturing cost from the previous one. However, transfer typically occurs at a profit to the cost in various processing businesses. This method is used to demonstrate the effectiveness of the concerned process department. It facilitates the recording of the earnings from every industrial activity. This is where the idea of a transfer price originated, when output is transferred from one department to another at profit and production costs. The internal transfer profit is typically subtracted when creating the balance sheet in order to determine the true cost price of this

Objectives

- Evaluating the process operation's performance.
- Evaluating if the output can meet the market's demands.
- To determine if the generated output can be sold on the open market without requiring additional processing.

Advantages

- It displays whether manufacturing costs are comparable to market rates.
- The industry can determine the strong and weak processes throughout the whole manufacturing process by comparing the transfer price with the market price. Therefore this helps in taking necessary action in improving the situation of the manufacturing activities.
- It calculates the efficiency and effectiveness of the individual process.

Disadvantages

- This system generates unrealised profit on this stock lying in the warehouse on the closing date of the financial year
- .It is a long process that causes needless complexity in the accounting system. Traditionally, stock has been recorded on the balance sheet at the lower of cost or market price.
- To ensure that the accounts are accepted by the tax authorities and auditors, a convention process is followed.
- Thus, in order to ensure that the balance sheet and financial statements are accurate and impartial, the profit that was included in the stock must be removed.

9.4 Accounting for joint product and by-product

- **Meaning of Joint product-**

When twoor more products are produced from a single and same raw material which is having equal importance then theseare treated as joint products. In other words, when two products are separated at the time of the manufacturing process i.e., requiring more processing but havingthe same importance then it is called joint products.

For example, suppose in an oil industry when different oil is manufactured like fuel oil, lubricants, coal tar, etc, the raw materials that are used for all the products are the same i.e.,crude petroleum, but all are having equal importance in a particular field then it is treated as joint products.

- **Meaning of by-product-**

In the manufacturing process, when the main product is manufactured and the other product of relatively less value is produced along with the main product accidentally then it is termed a by-product. The sale value of such a product is less than that of the main product. The point

from where it gets separated from the main product is known as the split-off point. For example, molasses in the manufacture of sugar, and glycerin in the manufacture of soap.

- **Accounting for joint products**

Apportionment of joint cost among joint products is of great importance for various purposes such as:

- Pricing of product
- Valuation of closing stock
- Profit and loss of sale of a product

The method that is commonly used for the apportionment of joint product over joint stock are:

i. Physical units method
ii. Net realisable value
iii. Using technical estimates
iv. Market value at the point of separation
v. Market value after further processing
vi. Average unit cost method
vii. Contribution margin method

i) Physical units method

When two joint products can be measured in the same physical units, the physical unit approach is used. It is a section based on the same fundamental units, like weight, quantity, etc. Stated differently, this strategy is attractive when joint costs are allocated to join products in the ratio of physical units of production at the point of separation. The same methodology is used to allocate any loss that results from the same procedure. This procedure will not work if the joint products' physical units disagree. With this strategy, each joint product is given equal weight.

ii) Net realizable value

By using this method, the post-split of cost, marketing and distribution expenses, and the anticipated profit margin are subtracted from the combined product's sales value after processing. The amount left over after such a deduction is known as the net realisable value. Joint costs are allocated using the net realisable value ratio.

iii) Using technical estimates

This approach is utilized when the joint product's realisable value is unavailable or the amount determined by the net realisable value technique does not correspond to the resources required by the joint product.

iv) Market value at the point of separation

This method is applied at the point where the other product gets separated from the main product which is the split-off point. This method is useful where the processing of costs is incurred unequally. If there is an unavailability of the market price of the product at the separation point then it could be difficult to apply this method. A multiplying factor is determined for such apportionment which then multiplies with the sales value of each joint product to give rise to the proportion of the joint cost.

v) Market value after further processing

Valuation of sales at the separation point is difficult so the ratio of the market value of a single product after further processing to their total sales value may be used to allocate the joint cost. Valuation of sales at the final stage is easy.

vi) Average unit cost method

This is a really easy technique. The entire process cost divided by the total number of units of joint product generated is the average unit cost using this method. All of the products are priced similarly when using this strategy. Customers of high-quality products benefit from this strategy as well because they spend less money on their purchases.

vii) Contribution margin method

Under this method, joint costs are divided into variable and fixed costs. Joint products are apportioned on the basis of units produced or physical quantities under variable cost. If further processing takes place after the separation point, then the cost of the variable incurred is added to the earlier determined variable cost and then the variable cost which is obtained is deducted from the sales to determine the contribution. On the basis of the contribution ratio fixed costs are apportioned.

Accounting for the by-product

For an accounting of by-products, the following methods are adopted:

i) Net realisable value

To determine the cost of the primary product, the amount received from the by-product's disposal can be subtracted from the entire cost of manufacturing. If further manufacturing is needed to make the by-product marketable, the costs associated with that process should be subtracted from the overall amount of money made from the by-product's sale. The net realizable value must be subtracted from the overall cost of production in order to determine the cost of production for the primary product. It is advisable to open and keep separate accounts for this kind of processing and the associated costs.

ii) Standard cost in technical estimates

By-products may be valued at standard cost and this method is suitable when the by-product that emerges is not in saleable condition and also the non-availability of the price of a similar product.

iii) Comparative price

The value of the by-product is ascertained under this method by referring to the price of a similar product.

iv) Reuse basis

By-products can occasionally be reprocessed as part of the process's input and used in another procedure. Since the by-product was first added to the process as material, its value should be the same.

Treatment of the by-product

There are 3 ways of treatment of by-products:

i. Small total value

When the total value of the by-products is small then the amount so realised from their sale may be treated in either of the following ways:

- such sales value may be credited to the costing profit and loss account and have no effect on the cost account and this will be treated as miscellaneous income.
- such sale proceeds may be treated as a deduction from the total cost.

ii. Considerable total value

When the total value of the by-product is considerable then it may be treated as a joint product and not by product. To ascertain the cost of the by-product, the cost incurred upto the separation point should be allocated over the by-product and joint product. Joint costs may be segregated into by-products and joint products by using different methods.

iii) When they require further processing

To find out the net realisable value of the by-product at the separation point by subtracting the further processing cost from the realisable value of the by-product. In case the total sales value is small or considerable, then options (i) or (ii) may be followed accordingly.

- **Knowledge Check 2**

  State True or False.

  1. The physical unit method is applied when two joint products are capable of being measured in different physical units.
  2. In the manufacturing process, when the main product is manufactured and the other product of relatively less value is produced along with the main product accidentally then it is termed a by-product.
  3. In some of the processing industries transfer generally happens at a profit to the cost.
  4. To find out the net realisable value of the by-product at the separation point by adding the further processing cost from the realisable value of the by-product.

- **Outcome-Based Activity 2**

  Discuss any 5 differences between joint products and by-products.

9.5 Summary

- Process costing is a method where the product passes through different stages of production before it reaches the final product. It is used in a manufacturing company where the raw materials are converted into finished goods.
- A separate account is maintained under process costing for each process. Value of material labour expenses and over rates are debited in the account and the value of scrap and byproducts if any are credited to the account and the balance of this account is passed on to the next process. Thus, the finished product of one process becomes the raw material of the next process.
- Inter-process profit is a profit that is related to the transfer of goods from one to another. Generally, the finished goods produced at one process are transferred to the next process at cost of production. However, in some of the processing industries transfer generally happens at a profit to the cost. This procedure is followed to showcase the efficiency of the department of the concern process.
- When twoor more products are produced from a single and same raw material which is having equal importance then theseare treated as joint products.

- In the manufacturing process, when the main product is manufactured and the other product of relatively less value is produced along with the main product accidentally then it is termed by-product.

9.6 Self-Assessment Questions

1. What is the meaning of process costing? What are its features?
2. Distinguish the difference between job costing and process costing.
3. Explain the accounting for process costing.
4. What do you mean by inter-process profit and what are its advantages?
5. Write any 5 differences between joint products and by-products.

9.7 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr S. N Maheshwari.

UNIT - 10

Contract Costing

Learning Outcomes:

- Students will be able to understand the concept of contract costing and its procedure.
- Students will be able to learn about the profit from the incomplete contract.
- They will also be able to comprehend what a cost-plus contract is.

Structure:

10.1 Meaning of Contract Costing

- **Meaning of contract costing**

Contract costing is a form of costing where work is carried out as per the customer's preference, and each order is for a longer period. Contract costing is carried out by the contractors who undertake construction works like roads, dams, buildings, railway lines, hotels, hospitals, schools, etc. In contract costing, most of the expenses are direct. It is also known as terminal costing because once the work is completed, it is terminated and the contract account is closed. In contract costing, there are two parties involved, the contractor and the contractee. Here the cost unit is the contract itself and is generally completed by the contractor at the work site. For each contract,a separate account is opened in the books of the contractor and a separate identity number is given, like contract numbers 101, 102, 103 and so on, to know the profit and loss made on each contract.

In simple words, the contract costing method is mainly used in large-scale businesses where the job is big and for a longer period. This method is generally used by contractors, builders, etc. This method is mainly used for the construction of buildings, dams, bridges, etc. For every single contract separate account is maintained.

Features of contract costing

1. The work is carried out at the contractee's work site.
2. In contract costing, the contract is usually for a longer duration i.e.; it even takes more than one accounting period.
3. Contract work involves risk and uncertainty.
4. The contract is itself treated as a cost unit.
5. Each separate contract account is opened and maintained to ascertain the profit or loss of each contract.
6. Materials are purchased specially for each contract.
7. All the expenses incurred in the contract are direct, for example, electricity, insurance, etc.
8. It is easy to allocate and apportion the overhead cost.
9. Plant and equipment may be purchased or hired for the time till the contract is completed.
10. Here the payment is received depending on the level of completion of work.

The procedure of contract costing

The procedure of contract costing is as follows:

- **Contract account-** Each contract is provided with a distinct number, and a separate account is opened for each contract.
- **Direct cost-** Most of the contract cost can be allocated directly to the contract; hence all direct costs, such as material, labour, direct expenses, depreciation of plant and machinery sub-contract costs, are debited to the contract account.
- **Indirect cost-** Overheads are also debited to the contract account, but it tends to be small direct costs. Such cost is often absorbed on a prediction basis as a percentage of prime cost, material, wages, etc.
- **Transfer of materials or plant-** When the material, plant, or other items are transferred from the contract, then the contract account is credited by that amount.
- **Contract price-** Contract price is also credited to the contract account with the value of work in progress as of that date if the contract is not completed in the financial year.
- **Profit or loss on contract-** The profit or loss balance of the contract account is transferred to the profit and loss account, and only the part of the profit which is arrived from the half completion of work is taken into account, and the rest is kept as reserves if the contract is not completed within the financial year.

- **Knowledge Check 1**

  Fill in the Blanks.

  1. _____ is that form of costing where work is carried out as per the customer's preference, and each order is for a longer period.
  2. Contract costing is also known as _____ because once the work is completed, it is terminated and the contract account is closed.
  3. All the expenses incurred in the contract are _____ in nature.
  4. The contract price is credited to the _____ with the value of work in progress as of that date if the contract is not completed in the financial year.
  5. The profit or loss balance of the contact account is transferred to _____, and only the part of the profit which is arrived from the half completion of work is taken into account, and the rest is kept as _____.

- **Outcome-Based Activity 1**

  Discuss any 5 objectives of contract costing.

Format of contract costing

Contract Account No. 4			
Particulars	**Amount**	**Particulars**	**Amount**
To Materials:		**By Materials:**	
(i) Direct Purchases		(i) Returned to Suppliers	
(ii) Issued From Stores		(ii) Returned to Stores	
(iii) Transferred From Other Contracts		(iii) Transferred to Other Contracts	
To Wages:		(iv) Sold	
To Plant:		(v) In Hand	
(i) Cost of Special Plant		**By Plant:**	
(ii) Depreciation of General Plant		(i) Returned to Stores	
To Direct Expenses		(ii) Transferred to Other Contracts	
To Cost of Sub-contracts		(iii) Sold	
To Cost of Extra Work		(iv) In Hand	
To Indirect Expenses		**By Profit and Loss Account:**	
To Expenses Accrued		(i) Materials Lost, Stolen, or Destroyed	
		(ii) Plant Lost, Stolen, or Destroyed	
		By Contractees's A/c	
		Contract Price in Case of a Completed Contract	
		OR	
		By Work-in-Progress A/c	
		(i) Value of Certified Work	
		(ii) Cost of Uncertified Work	
		In Case of an Incomplete Contract	

Illustration 1

Prepare the Contract account and the Contractee's account from the below-given particulars: Materials 85,349 at the location On-site labor cost: Rs. 74,375 The plant installation cost was Rs. fifteen thousand. 41 Direct costs: Rs. 4126 Establishment fees of INR 31,67 Materials were returned for Rs. 549. Certified Work at Rs. 1,95,000 Rs. 450 for uncertified work Materials at December 31, 1883 Rs. Earnings as of December 31, Rs. 2,400 On December 31, direct expenses totaled Rs. 240. Plant value of Rs. 11,000 on December 31 Rs. 2,50,000 is the contract price. Money received Rs. 1,80,000 from the contractee.

Solution:

Contract A/c

Particulars	**Details Rs**	**Amount Rs**	**Particulars**	**Details Rs**	**Amount Rs**
To Materials at the site		85349	By Materials returned		549
To wages	74375		By Materials on hand		1883

Add: accrued	2400	76775	By Plant		11000
To Plant		15000			13432
To Direct expenses	4126		By work in progress:		
Add: accrued	240	4366	Work certified	195000	
To establishment charges		3167	work not certified	4500	199500
To Profit c/d		28275			
		212932			**212932**
To Profit & Loss A/c		17400	By Profit b/d		28275
To work in progress		10875			
		28275			**28275**

Contractee's Account

Particulars	**Details Rs**	**Amount Rs**	**Particulars**	**Details Rs**	**Amount Rs**
To Contract A/c		195000	By Bank		180000
			By balance c/d		15000
		195000			**195000**

Working note:

Calculation of profit transferred to profit & loss account

= 2/3 x 28,275 x (180,000 + 195,000)

= Rs.17400

10.2 Types of contract costing

There are two types of contract costing-fixed price contract and cost-plus contract.

1. Fixed price contract

In this type of contract, both the parties i.e., contractor and contractee, agree to fix the contract price on a predetermined basis. The value of the contract doesn't change throughout, irrespective of the time spent on the job or the material purchased. If any additional work comes, then it may be charged separately as per the agreement. Here the contractor prepares quotes and presents them before the owner. Once they both agreed upon all the project details, like how much to spend, they signed a fixed-price contract. Any changes, like man

hours or material cost, after signing the agreement are considered irrelevant. This type of contract is very beneficial for those who have a clear idea in mind about what they want in the project, and other details of the project plan are set.

Advantages

- Fixed price contract helps in reducing the risk and protectsthe contractor and contractee from unknown quantities.
- It helps both parties to plan as per their need; sellers can predict revenue while the buyer can predict the final cost.
- If any unexpected situation occurs during the project, then this contract helps both parties from losing money or cancelling the contract.
- This contract is easy to draw up.

Disadvantages

- Fixed-price contracts are beneficial only if the contractor knows how much time and money a project will cost.
- It is more expensive for contractors as it requires a higher hourly rate.
- Fixed price contracts can also lead to Losing money to the contractor if this contract fails to account for hidden costs.
- The owner does not have control over the project regarding the completion of a fixed-price contract with the contractor.

2. Cost Plus Contract

This kind of contract phrase is used in situations where it is hard to estimate the cost beforehand because of variable labour costs, market prices, a lack of records, etc. This engagement is typically entered for the execution of specialized work, such as the contraction of a dam or powerhouse, when cost forecasting is challenging. A predetermined percentage of profit is added to the overall cost of the contract to determine the contract price. It is necessary to take into account a variety of expenses in order to determine the contract's upfront cost.

For example, a contractor named XYZ has received a contract to construct a hotel with an estimated total cost of 30,000,000. The client will reimburse all the costs which are incurred by XYZ. On the actual cost, XYZ will make a profit of 20%. They are entitled to receive an incentive if the project is completed within three years from the day when the contract was made. The amount of inceptive is decided by both parties and agreed upon.

Advantages of cost plus contract

Contractor

- In such a contract, there is no risk of loss.
- It simplifies the work like preparing tenders, quotations, etc.
- Helps withthe risk of fluctuation in the price of materials, labour, etc.
- The contractor is assured of a fixed profit margin.

Contractee

- The contractee has the right to audit the accounts of the contractor. This right helps the contractee to ensure the fair price of the contract.

Disadvantages of cost plus contract

Contractor

- A dispute may arise between the contractor and the contractee.
- Since the profit is based on the cost which also lowers the cost, which leads to lower profit hence this reason does not motivate the contractor to reduce cost.

Contractee

- The contractee is unaware of the amount to be paid by him because it cannot be determined before the work is completed.

Types of cost plus contract

- **Cost plus fixed percentage fee-** In this contract, by using a pre-determined fee on the cost, the contractor will receive the income.
- **Cost plus fixed fee contract-** Under this contract, the fixed amount is to be paid to the contractor.
- **Cost plus fixed percent/fee and incentive-** In some contracts, there is an additional incentive benefit, which means that in case of completion of land, before it is mentioned in the agreement, the contractor is eligible to receive the incentive as per the agreement.

10.3 Profit from an Incomplete Contract

If contracts are initiated and finished during the same fiscal year and there are no accounting issues, determining profit will be simple. However, if a project takes longer than a year to complete—either a financial year or longer—the question of whether profit should be computed at the end of the project or throughout the course of the year becomes apparent. If profit is determined solely after the project is finished, it will be large in that year and zero in

subsequent years. If the contract takes longer than a year to finish, the profit earned on the work completed during each year must be taken into consideration because high profit also results in increased tax responsibilities. The rules which have been accepted in this regard are as follows:

- Profit is only calculated on the certified work by the contractor's architect. Uncertified work must be valued at cost.
- No profit should be transferred to the profit and loss account if less than ¼ th of the contract price of the value of work is certified.

  • Only one-third of the profit is moved to the profit and loss account and the remaining portion is carried forward to the contract account as reserves if the value of the certified work is less than half but at least one-fourth of the contract price. The percentage of the contracture's cash that is less than the certified work's worth is deducted from the profit.

  Transfer to P/L A/c = Notional profit x 1/3 × cash received/work certified
- If the work certified is 1/2 or more but less than 90% of the contract price then 2/ 3rd of the profit is transferred to the profit and loss account and if cash received is less than the value of certified work the profit is reduced proportionately.

  Transfer to P/L A/c = Notional profit x 2/3 x cash received/work certified
- When the contract is about to complete or is near completion then the profit should be calculated on the full contract. The estimated profit is to be transferred to the profit and loss account.

The formula based on this is as follows:

I. Estimated profit x work certified/ contract price
II. Estimated profit x work certified/contract price x cash received /work certified
III. Estimated profit x cost of work to date/estimated total cost of work
IV. Estimated profit x cost of work to date/ estimated total cost of work x cash received / work certified

The above calculation only gives the approximate figure. The final figure can only be determined after the completion of work.

Illustration 2

Calculate the estimated profit from the following particulars:

Total expenditure Rs. 22,50,000

Estimated expenditure to complete further contract Rs. 2,50,000

Contract price Rs.32,50,000

Work certified Rs.27,50,000

Work uncertified Rs. 1,75,000

Cash received Rs. 21,25,000

Solution:

Particulars	**Amount Rs**
Total expenditure	22,50,000
Estimated expenditure to complete the further contract	2,50,000
	25,00,000
Estimated profit on contract (balancing figure)	7,50,000
Contract price	32,50,000

- **Knowledge Check 2**

State True or False.

4. In a fixed-price contract, both parties do not agree to fix the contract price on a predetermined basis.
5. In cost plus contract, the contract price is calculated by adding a fixed percentage of profit to the total cost of the contract.
6. Profit is only calculated on the certified work by the contractor's architect.
7. When the contract is about to complete or is near completion then the profit should be calculated on the full contract.

- **Outcome-Based Activity 2**

Write any 5 differences between a fixed-price contract and a cost-plus contract.

10.4 Summary

- Contract costing is a type of costing where each order is for a longer duration and work is completed in accordance with the customer's preferences.

- Contractors that build roads, dams, buildings, railroad lines, hotels, hospitals, schools, etc. are responsible for contract costing.
- The majority of costs in contract costing are direct.
- The steps involved in contract costing include contract account, direct cost, indirect cost, transfer of goods or plant, contract price, and profit or loss on contract.
- Both the contractor and the contracted agree to fix the contract price on a predetermined basis in a fixed price contract. Regardless of the amount of time spent on the project or the materials purchased, the contract's value remains constant. If anyThis type of contract term is applied where it is impossible to calculate the cost in advance due to unstable conditions of market price, labour rates, lack of records, etc. This contact is usually entered for executing the special type of work where estimation of cost is difficult like the contraction of the dam, powerhouse, etc. The contract price is calculated by adding a fixed percentage of profit to the total cost of the contract.
- Ascertainment of profit will be easy if contracts are started and completed in the same financial year as no accounting problem occur. But in case of contract takes more than a year or more than a financial year to complete a project then the problem arises that whether profit should be calculated on completion of work or work performed during a year.
- High profit also leads to higher tax liabilities so it is necessary to take into account the profit earned on the work performed during each year if the contract exceeds one year to complete.

10.5 Self-Assessment Questions

1. Explain the concept of contract costing. What are its features?
2. What is the procedure for contract costing?
3. What are the different types of contract costing?
4. What do you mean by profit from incomplete contracts?

10.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.

UNIT - 11

Operating Costing

Learning Outcomes:

- Students will be able to understand the concept of operating costing and its features.
- Students will be able to understand the meaning of cost unit and also able to understand the practical approach to operating costing.
- Students will be able to learn about transport costing.

Structure:

11.1 Meaning of operating costing

Operating costing is also known as service costing. This method is applied to an organization that provides service. It is used for ascertaining the cost per unit or service provided. The service may be in any form like transport, hospitals, hotels, etc. It does not apply to an undertaking that produced a product. It is the cost of rendering, producing, and maintaining a service. Both internal and external services are included under operating costing. Service which is provided in the same organization is known as internal service, for example, repairs and maintenance, and service which are provided to customers is known as external service, hospitals, transport, etc. The operating cost per unit is calculated by dividing the total cost by the number of service units produced.

In simple words operating costing is best suited to the service sector among all the other methods of cost. For the calculation of the cost of services given to the customers operating costs are used. Uniform services are provided to the customers. There is usually a compound unit in such undertaking such as passenger kilometres in transport companies, kilowatt hours in power supply, etc.

- **Features of operating costing**
  1. Consistent services are provided to all the customers.
  2. The costs are divided into fixed costs and variable costs.
  3. To calculate the cost of service and unit cost of service classification of fixed cost and variable cost is necessary.
  4. If an organization is engaged in rendering service then there is no physical stock of goods.
  5. The cost unit is composite in the case of transport service and simple in other cases.
  6. Total costs are averaged over the total amount of service rendered.
  7. The cost is collected from the operating cost sheet, canteen cost sheet, etc.
- **Objectives of operating costing**
  1. Operating costing helps in fixing accurate quotations and fares.
  2. Ensuring that the service is given in accurate time.
  3. Controlling fuel consumption and its expenses.
  4. Operating costing helps in ensuring that all the equipment used in providing services is well maintained.
  5. It helps in cost comparison between own service and hiring service and also the cost of one service centre with another.

6. It helps in controlling the cost of repairs and maintenance.
7. It helps in determining the cost apportionment within an organization.
8. To ignore the underutilization of capacity and the ideal time of the workforce.

11.2 Cost Unit

- **Meaning of cost unit**

The selection of units is the main problem in operating costing. The cost unit is divided into simple units and composite units. In some undertakings, a simple cost unit is followed. For instance:

Undertakings	**Unit of Cost**
Hospitals	Per bed
Canteen	Per cup of tea
Gas co's	Per cylinder
Waterworks	Per 1000 litres

but in another undertaking, the cost unit is a composite unit like transport. For instance:
Calculations of the composite unit in case of transport undertaking are as follows:

1. The total number of buses is 4
2. The number of days operated in a month is 25
3. Trips made daily by each bus are 2
4. The route distance is 100 kilometres on one side
5. One bus capacity is 50 passenger
6. Normal passenger travelling is 80% of capacity

Compute total kilometre and total passenger kilometre

Solution

Total kilometre = number of buses x number of days operated x number of trips x route distance

= 4 X 25 X 2 X 200 =40000 km

Total Passenger kilometre = Total Km x seating capacity x % of capacity

= 40000 X 50 X 80/100 = 1600000

To calculate the cost per unit of service provided, a proper unit of cost must be selected. It depends upon the nature and purpose for which the cost has to be computed. Examples of simple units are per child in the case of schools, per kilometre of road maintained, per cup of

tea, etc. Examples of the composite unit are per passenger kilometre in the case of a bus service provider, cost per quintal kilometre, etc. Following is the list of simple and composite units in a certain organization.

Undertakings	**Cost unit**
Goods transport	per tonne-kilometre
Railway Cos	Per passenger kilometer
Hospitals	Per patient per bed occupied
Canteen	Per meal
Electricity board	Per kilowatt hour

- **Operating Cost Sheet**

Costs are classified under three heads for collecting and controlling purposes which are analysed and presented periodically in the form of an operating cost sheet.

A format of the operating cost sheet is given as follows:

Roadways Transport Co Ltd

Operating Cost Sheet

Vehicle no:	No of trips:	Period:
Registration no:	Kms.run:	Capacity:
Route No:	Total weight carried:	No of cost units:
Cost:	Total hours operated:	
Estimated life:		

Particulars	**Total**	**Per unit**
A) Fixed costs:		
Garage rent		
Licenses and taxes		
Insurance		
Interest on Capital		
Supervision charges		
Establishment and general charges		
Subtotal (A)		

B) Maintenance Costs:		
Tyres and tubes		
Repairs & Maintenance		
Spare parts & accessories		
Overhauling		
Painting		
Subtotal (B)		
C) Operating and Running costs:		
Depreciation		
Petrol & diesel		
Oil & grease		
Transit insurance		
Wages of drivers, cleaners & conductors		
Subtotal (C)		
Total (A+B+C)		
D) Ton Km/Passenger km run		
E) Cost per ton km/passenger km		

Illustration 1

ABC, a transport company is running 6 buses between 2 towns, 75 kilometres apart. The seating capacity is 40 passengers for each bus. The following particulars are available for the calculation of cost per passenger km.

Wages of the driver, and cleaners ₹3600

Salaries of office and other staff ₹1500

Diesel and other oils ₹10320

Repairs and maintenance ₹1200

Taxation and insurance ₹2400

Depreciation ₹3900

Interest on capital ₹3000

Actual passengers were 80% of the seating capacity

All the buses ran all 7 days of the month and each bus made one round trip per day.

Solution:

Total passenger kilometers = 6 buses x 75kms distance each side x 2(coming and going round trip) x 30 days in a month x (40 x 80%)actual passenger travelling

=864000 passenger kilometres

Now for the calculation of the total cost of the transport company, we need to make an operating cost sheet.

Particulars	**Total**	**Per unit**
A) Fixed costs:		
Wages of drivers, cleaners & conductors	3600	
Salaries to the office and other staff	1500	
Insurance and taxation	2400	
Interest on Capital	3000	
Subtotal (A)	**10500**	
B) Variable Costs:		
Diesel and other oil	10320	
Repairs & Maintenance	1200	
Depreciation	3900	
Subtotal (B)	**15420**	
Grand total (A+B)	**25920**	

Cost per passenger kms = Total cost / Total passenger-kms

= Rs.25920/864000

= 3 paise per passenger-kms

- **Knowledge Check 1**

  Fill in the Blanks.

  5. In operating costing, _____services are provided to all customers.
  6. The cost unit is _____ in the case of transport service and _____ in other cases.
  7. Operating costing helps in determining the _____ within an organization.
  8. Costs are classified under the _____heads for collecting and controlling purposes which are analysed and presented periodically in the form of _____.

- **Outcome-Based Activity 1**

  Discuss any 5 advantages of operating costing.

11.3 Transport costing

- Meaning of transport costing

Transport costing is one type of service costing. Transport costing includes air, water, and land transport. It provides services to society at large. The cost unit of a service sector is composite. In the case of transport costing number of passengers, distance covered, etc. are the important factors to be kept in mind.

- **Classification of cost**

Operating costing of a transport undertaking are classified into three groups:

1. **Standing or fixed charge-** This charge is fixed in nature where kilometre runs are not considered. For example, license fees, and rent. Insurance, etc.
2. **Maintenance charge-** Maintenance charge includes semi-variable expenses like repairs and paintings, tyres and tubes, etc.
3. **Operating and running charge-** These charges are changed as per the kilometre. All the variable charges are included in the running vehicle group. This group includes oil, petrol, driver's salary, etc. Here expenses are divided into two parts fixed and variable expenses. Running charges and maintenance charges fall under variable expenses.

- **Objectives of transport costing**

Objectives of transport costing are segregated as per different transport services which are as follows:

1. **Private transport-** When the vehicle is hired for private use for some hours then service costing is used to determine the hiring charges of such vehicle.
2. **Passenger transport-** In the case of public or passenger transport,the service costing method is used to determine the cost of conveyance, per passenger up to a certain distance, etc.
3. **Goods transport-** In the case of goods transport, the cost of carrying goods from one place to another is also certain by service costing.

- **Selection of unit**

In transport costing the unit that is used is a composite unit such as a passenger kilometre or tonne-kilometre selected. This composite unit considered both the number of passengers or weight of goods carried and the distance run.

Absolute method

This is calculated by multiplying the total distance by the weight carried. After obtaining the product of each journey add all the products. The total is absolute ton per quintal kilometre. In the case of goods transport, the formula is distance multipliedby weight carried. In the case of passenger transport, the formula is distance multipliedbythe number of passengers.

Commercial method

To find out the commercial tonne kilometre first we need to find out the average trip load after that find out the total distance of the journey and then multiply the average trip load by the total distance to find out the commercial ton kilometre.

For Instance

A truck carries 10 tons of goods from station X. 4 tons of goods are unloaded at station Y and goods which are left are unloaded at station Z and back directly to station X after carrying again 8 tons of goods at station Y. The distance from X to Y, Y to Z, and then Z to X are 40, 60, and 80 kilometres respectively. Compute absolute and commercial tons per kilometre.

Solution:

Absolute tonne/km = total distance x weight carried

= (40 x 10) + (60 x 6) + (80 x 8)

= 400+360+640 = 1400

Commercial tonne/km = distance x average load

= (40+60+80) x (10+6+8/3)

= 180 x 8 = 1440

Illustration 2

XYZ transport company is running a 5-ton capacity truck. From the following information given below prepare the operating cost per tonne mile and also the rate per ton per trip that the company should charge if a profit of 50% on freightage is to be earned.

Cost of the truck ₹90,000

Estimated life 10 years

Diesel, oil, grease ₹ 15 per trip each way

Repairs and maintenance ₹ 500 per month

Drivers wage ₹500 per month

Cleaner salary ₹250 per month

Insurance ₹4800 per year

Tax ₹2400 per year

General supervision charges ₹ 4800 per year

Trucks covering a distance of 50 miles each way for carries goods to and from the city

Assuming the truck runs 25 days a month.

Solution:

i) Operating Cost Sheet

Particulars	**Total**	**Per tonne mile**
A) Fixed costs:		
Wages of drivers	500	
Cleaner's wage	250	
Insurance	400	
Taxes	200	
General supervision	400	
Subtotal (A)	1750	0.233
B) Running Costs:		
Diesel and other oil	750	
Repairs & Maintenance	500	
Depreciation	750	
Subtotal (B)	2000	0.267
Grand total (A+B)	3750	

ii) **Calculation of fright rate**

Cost per ton mile Re. 0.50

Profit per ton mile Re.0.50

Freight rate per ton mile Re. 1.00

Freight rate per trip both ways = 300 x Re. 1

= Rs. 300

Tonnes miles = (50 x 5) + (50 x 1) x 25 = 7500 tonne mile

- **Knowledge Check 2**

State True or False.

1. The cost unit of a service sector is simple.
2. The absolute method is calculated by multiplying the total distance by the no of passengers.
3. The commercial method is calculated by multiplying the average trip load by the total distance.
4. When the vehicle is hired for private use for some hours then service costing is used to determine the hiring charges of such vehicle.

- **Outcome-Based Activity 2**

Discuss any 5 differences between the absolute method and commercial method in transport costing.

11.4 Summary

- Operating costing is also known as service costing. This method is applied to an organization that provides service. It is used for ascertaining the cost per unit or service provided. The service may be in any form like transport, hospitals, hotels, etc. It does not apply to an undertaking that produced a product.
- The selection of units is the main problem in operating costing. The cost unit is divided into simple units and composite units. In some undertakings,a simple cost unit is followed.
- To calculate the cost per unit of service provided, a proper unit of cost must be selected. It depends upon the nature and purpose for which the cost has to be computed. Examples of simple units are per child in the case of schools, per kilometre of road maintained, per cup of tea, etc. Examples of the composite unit are per passenger kilometre in the case of bus service providers, cost per quintal kilometre, etc
- Transport costing is one type of service costing. Transport costing includes air, water, and land transport. It provides services to society at large. The cost unit of a service sector is composite. In the case of transport costing number of passengers, distance covered, etc. are the important factors to be kept in mind.

- In transport costing the unit that is used is a composite unit such as a passenger kilometre or tonne-kilometre selected. This composite unit considered both the number of passengers or weight of goods carried and the distance run.

11.5 Self-Assessment Questions

1. Explain the concept of operating costing and what are its features.
2. Write in brief about transport costing.
3. What are the objectives of transport costing?
4. Explain the cost unit in operating costing.

11.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.

UNIT - 12

Batch Costing

Learning Outcomes:

- Students will be able to understand the concept of batch coting.
- Students will be able to understand the meaning of economic batch quantity.
- Students will be able to learn about the applicability of batch costing.

Structure:

12.1 Batch Costing

- **Meaning of batch costing**

When goods are produced continuously in batches respective to demand or order then the method of batch costing is used. Generally, the batches are of the same kind and value if produced on a predetermined basis. This may also vary according to the order or demand. The total cost in the production of one batch is known as batch cost. Thus, the cost of the individual unit may be derived from this batch cost by dividing the batch cost by the total number of units produced in that batch. In simple words, it is the average cost of one unit in a particular batch. This method is very useful for large enterprises where the production of goods is continuous. For example, a consumer electric manufacturing company keep its factory running continuously introduces its various products and stocks and distributes them. Suppose a batch produces 100 television sets the cost of each individual set is derived from this batch cost.

- **Features of batch costing**

1. Cost sheet data is separately maintained for each batch of product; the cost of such product is also calculated separately.
2. In a batch, there may be hundreds or thousands of identical products but each batch is regarded as an independent unit and to calculate the cost per unit the total cost of a batch is divided by the number of units produced.
3. External reporting like customer quotes and invoices can be used by batch costing.
4. Direct and overhead costs are assigned to each batch of products for which a separate batch account is opened.

- **Process of batch costing**

Batch costing involves various processes which are discussed below:

1. **Number of units**

   Firstly, we need to determine the number of units in a batch for which we need to determine the amount of material used for such a batch.

2. **The cost of materials**

   Secondly, we need to determine the cost of material used in a batch and this can be done by calculating the cost of material used for each unit and multiplying by buying the number of units computed above.

3. **The cost of labour**

Thirdly, we need to calculate the cost of labour used in a bash for which we need to calculate the cost of labour per unit and multiply it by the number of units.

4. **The cost of overhead**

   Fourthly, the cost of overhead needs to be determined by calculating the overhead unit and multiplying it by the number of units.

5. **Allocating the total batch cost**

   Lastly, we need to allocate the total batch cost among the units in the batch and this can be done by dividing the total batch cost by the number of units.

- **Advantages of batch costing**
  - Batch costing helps to track the cost of each batch so this is helpful for such companies that produce a product in batches and also separately assign a cost to each batch. It also helps the companies to decide which batch is more expensive and which is less expensive and thus helps to produce a such batch.
  - Batch costing helps in pricing and decision-making about the manufacture of products because it helps to track the cost of each type of product.
  - Batch costing does not require lots of information does it help companies to maintain the records it is a simple method of costing.
  - Batch costing reduces the accounting work because costing is done in respect of a homogeneous product.
  - Batch costing help in the minimization of labour and tools.
  - It helps to reduce the cost of production rising out of economic batch quantity.
- **Disadvantages of batch costing**
  - Under batch costing, the cost is assigned to each batch thus it makes this method of costing a time-consuming and expensive.
  - Under this method of costing, accurate tracking of direct and indirect costs requires it to make this method more complex.
  - Under batch costing, it becomes difficult to determine the batch as goods to be manufactured differ from customer to customer.
  - As managers are more focused on short-term cost reduction this batch costing can distort decision-making.
  - Batch costing may create asymmetries of information because data is not available to other decision-makers apart from managers.

12.2 Applicability of batch costing

For calculating the total cost of each product, the batch costing method is used. It is a small set of units that are produced. All the raw materials and expenses are supplied and paid on pre batch basis. Suppose, in a book manufacturing company, the producer will make the sets of books and not produce a single book. Book sets will be easy to sell in the market thanks to this. We will compute the cost of labour for each batch, the cost of materials for each batch, and additional costs to find the total cost of each batch. Divide the batch's total cost by the total number of units in the batch to get the cost per unit.

Industries that create large, homogeneous items—that is, products made using the same raw ingredients and processes—apply batch costing. It is used in sectors where production is done in batches, such as pharmaceuticals, stationery, shoes, computers, cookies, and two-wheeler replacement parts.

In simple words, this method is generally applied to those industries which have the following features:

- The product is carried on in batches having similar products.
- The production is done for its own stock to be sold to customers.
- Cost per unit is the total cost of the batch divided by the total number of users.
- Each batch must be numbered and coded properly which is also mentioned on the products.

Illustration 1

Calculate the selling price from the below-given information:

Direct Material is Rs 10000

Labor A= 800 labor hours @ Rs. 5 per hour

B= 1400 labor hours @ Rs. 6 per hour

Factory overhead are calculated on labor hour basis:

For A = Rs 7 per hour

For B = Rs 4 per hour

Cost plus system is used by firm for selling price.

Gross Profit is 25%

Administrative overheads are 10 % of selling price

Calculate the selling price assuming 1000 units produce in Batch A-100.

Solution

Cost Sheet of Batch A-100

Particulars	Details Rs	Amount Rs
Materials		10000
Labor Dept A=800 x 5 Dept B =1400 x 6	 4000 8400	 **12400**
Factory Overheads Dept A = 800 x 7 Dept B = 1400 x 4	 5600 5600	 **11200**
Factory Cost		**33600**
Administration overhead (10% of SP)		4480
Cost of Production		**38080**
Profit (15% of SP)		**6720**
Selling Price		**44800**

Working Note:

Calculation of Selling Price

Selling price= 33600 x 100/75 = 44800

Less: factory cost = 33600

11200

Less: Administrative overhead = 4480

Profit = 6720

- **Knowledge Check 1**

  Fill in the Blanks.

  1. When goods are produced continuously in batches respective to demand or order then the method of _____ is used.

2. To calculate the cost per unit the total cost of a batch is divided by the _____.
3. Batch costing reduces the accounting work because costing is done in respect of _____product.
4. The batch costing is applied to industries of _____size homogeneous product.

- **Outcome-Based Activity 1**

  An engineering company having batch no 8501, passes through two departments, department A and department B, which contains 1500 units. Following are the cost incurred for the batches:

  Direct Material – A: 5000 kgs @ Rs.15 per kg
  B: 1000 kgs @ Rs.10 per kg

  Direct Wages – A: 1500 hours @ Rs.3 per hour
  B: 500 hours @Rs.2 per hour

  Factory Overhead – A: 120% on direct wages @ RS.15 per labour hour

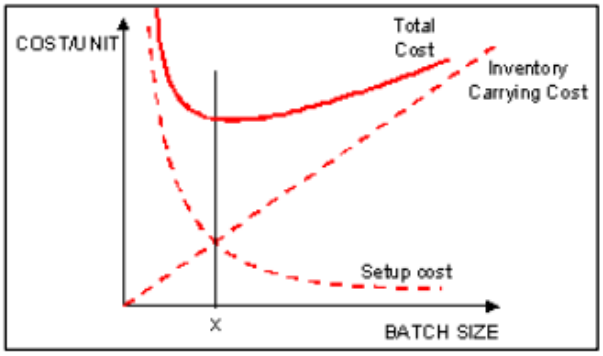
  After the completion of the batch, 300 kgs of raw material issued to department B are found to be surplus and returned to the storehouse.

  Prepare Cost Sheet.

12.3 Economic Batch Quantity (EBQ)

We can explain economic batch quantity with the help of an example. Suppose in a factory spare parts and other components are produced one after another with the same facility but large machines and tools can be reset and adjusted after every change of component at the time of production. In this process, there is a need to incur more expenses and time for such resetting. So by producing a minimum number of units, the machine will be reset. If we produce large quantities of goods in a batch then they need to be stored for a long because of which more capital will be blocked which will be very unethical and the production of small quantities will also be unethical. so a quantity needs to be fixed for smooth production and that quantity is to be produced in a batch which is economic batch quantity.

In similar words, if the lot size is higher, then the setup cost is lower but the holding cost will go up and if the lot size is lower, then the holding cost is also low but it leads to higher setup costs. So EBQ is that point where setup costs and holding costs are at a minimum. This can be explained with the help of a diagram:



In the above diagram, it is shown that the x-axis is batch size and the cost of a unit is on the y-axis. It is shown that with the increase in batch size holding costs also tend to increase whereas setup costs tend to decrease. The point where both the cost line intersects each other signifies the lowest cost combination. The objective is to determine the batch size that developed on both sets of formulas.

Formula of EBQ

$$EBQ = \sqrt{\frac{2\square\ \square}{\square}}$$

Where, D = annual demand for the product

S = setting a cost

C = carrying cost

Illustration 2

Total no of units produced annually = 10000

Setting cost per batch = Rs 200

Carrying cost per batch = Rs .10 per unit

Calculate EBQ

Solution

$$EBQ = \sqrt{\frac{2\square\ \square}{\square}}$$

$$= \sqrt{\frac{2\square 10000\square 200}{.10}}$$

= 6324 units

Illustration 4

Annual demand for a product is 30000 units.

Set-up cost per batch is Rs. 600

Carrying cost of inventory per unit is Re. 1 pa

Calculate the total cost assuming batch size from 4000 units to 10000 units and also find the EBQ.

Solution

Batch size	Setup cost (Rs)	Carrying cost (Rs)	Total cost (Rs) (setup cost + carrying cost)
4000	4500 (30000/4000x600)	4000/2 x 1 = 2000	6500
5000	3600 (30000/5000x600)	5000/2 x 1 = 2500	6100
6000	3000 (30000/6000x600)	6000/2 x 1 = 3000	6000
7000	2580 (30000/7000x600)	7000/2 x 1 = 3500	6080
8000	2250 (30000/8000x600)	8000/2 x 1 = 4000	6250
9000	2000 (30000/9000x600)	9000/2 x 1 = 4500	6500
10000	1800 (30000/10000x600)	10000/2 x 1 = 5000	6800

When batch size is 6000 units, total cost is lower i.e., 6000, so EBQ is 6000 units

$$EBQ = \sqrt{\frac{2\square\ \square}{\square}}$$

$$= \sqrt{\frac{2\square 30000\square 600}{1}}$$

= 6000 units

- **Knowledge Check 2**

  State True or False.

  1. In EBQ, if the lot size is higher, then the setup cost is also high but the holding cost will go down.
  2. EBQ is that point where setup costs and holding costs are at a minimum.

3. Batch costing help in the maximization of labour and tools.
4. Batch costing helps to reduce the cost of production rising out of economic batch quantity.

- **Outcome-Based Activity 2**

  The monthly demand for a product is 500 units. The setting cost is Rs. 60. Cost of manufacturing is Rs. 20. Interest rate is equal to 10%. Calculate EBQ.

12.4 Summary

- When goods are produced continuously in batches respective to demand or order then the method of batch costing is used. Generally, the batches are of the same kind and value if produced on a predetermined basis.
- The cost of the individual unit may be derived from this batch cost by dividing the batch cost by the total number of units produced in that batch. In simple words, it is the average cost of one unit in a particular batch. This method is very useful for large enterprises where the production of goods is continuous.
- The number of units, the cost of materials, the cost of labour, the cost of overhead, and allocating the total batch cost are the process of batch costing.
- For calculating the total cost of each product, the batch costing method is used. It is a small set of units that are produced. All the raw materials and expenses are supplied and paid on pre batch basis.
- The batch costing is applied to industries of large-size homogeneous products i.e., products that are produced from the same raw materials in the same process. It is applied to industries like medicine, stationery, shoes, computers, biscuits, spare parts of two-wheelers, etc where production is made in batches.
- If the lot size is higher, then the setup cost is lower but the holding cost will go up and if the lot size is lower, then the holding cost is also low but it leads to higher setup costs. So EBQ is that point where setup costs and holding costs are at a minimum.

12.5 Self-Assessment Questions

1. Explain the meaning of batch costing and also write its features.
2. What are the Advantages and disadvantages of batch costing?
3. What is the applicability of batch costing?
4. Explain the concept of economic batch quantity.

12.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr S. N Maheshwari.

UNIT - 13

Standard Costing

Learning Outcomes:

- Students will be able to understand the concept of standard costing.
- Students will be able to understand the advantages and limitations of standard costing.
- Students will be able to learn about variance analysis and its types.

Structure:

13.1 Meaning of Standard Costing

Definition of Standard Costing

Standard costing is a method of comparing standard costs with the actual cost. It is a method of estimating production expenses. The actual cost cannot be predicted by the manufacturer in advance. Differences between expected and actual costs are recorded in variances. In similar words, standard costing is an estimation of expected costs, and it is a simplified alternative to a large cost layering system such as the FIFO and LIFO methods, where a huge amount of historical cost information is maintained for the inventory. Standard costing helps in improving accounting efficiency because it already sets a standard of expenses for the particular process. In some applications, collecting actual costs is tedious and time-consuming; thus, standard costing is much more helpful in such cases. Standard costing is not the actual cost and thus the accounting department periodically gives calculates the variances between the actual cost and standard cost. The standard costing is dynamic where it can be changed to reduce the variance from the actual cost. In deciding the profits, productivity, and efficiency of a business, budget plays an important role. Standard costing plays a crucial and beneficial role in deciding the budget for the manufacturers.

For example, in an ideal situation, a piece of garment cost Rs. 500 to the manufacturer but in this particular lot, there were extra visitors due to rejected fabrics. Thus the company has to bear additional costs due to this wastage. This is the actual cost of the lot produced and it is higher than the conventional and standard cost. In this particular scenario, the company will apply the standard costing method to find out the variance between the standard and actual cost.

Process of standard costing

1. **Settings of standards**

   The first step of standard costing is to set standards and achieve them. Based on management estimation, a standard cost is set. Technical specifications provided by the engineering department help in cost estimation. The current production plan, historical data, and expected conditions for the future are reflected while setting the standard. Standard cost is set for raw material, labour, and fixed overhead. It is also set for the number of sales and their value which is also known as budgeted sales.

2. **Ascertainment of actual costs**

   The second process of standard costing is to ascertain the actual cost of each component. Actual costs are ascertained from wage sheets, charge slips, books of accounts, etc.

3. **Comparison of actual cost with standard cost**

   The third step is to compare the actual cost with the standard cost and to determine variances between them.

4. **Investigate the reasons for variances**

   The fourth step of standard costing is to investigate the reason for variances and to take further action based on which performance is evaluated and appropriate actions need to be taken.

5. **Disposition of variances**

   Variances that arrive from the difference between actual and standard costs are disposed of by transferring them to the relevant account.

13.2 Advantages and Limitations of Standard Costing

Advantages of Standard Costing

Standard Costing plays a significant role and thus provides various advantages to an organization which are as follows:

1. **Budgeting-** A budget is usually an approximate allocation of cost for a particular task. Standard costing helps in budgeting as a cost are already estimated under standard costing. Comparison of budget and actual cost also happens after the task is complete, which is also a key aspect of standard costing which helps in calculating variances between estimated and actual cost. Standard costing helps the manufacturer to fix the budget because without a complete production process, it is not possible to determine the actual cost.
2. **Inventory costing-** Inventory costing is the process of calculating the cost of inventory of stock. Standard costing helps in calculating this inventory cost easily as a standard costing of each unit is available, and the inventory cost would simply be the multiplication of standard costing within the total units in inventory. It may be noted that this inventory cost is not the actual cost of inventory but if the standard costing is properly done in alignment with the actual cost, that is if the variance between the standard cost and actual cost is low, it gives white clues result of the actual inventory cost.
3. **Overhead application-** Overhead application is a time-saving concept in which standard costing can be used if collecting the actual costs is time-consuming and difficult. In such cases, a standard overhead application rate is used.
4. **Price formulation-** Price formulation of the companies involved in custom product standard costing is very helpful**.** The standard cost of a particular product is already

available and the cost of customization can be added to this standard cost to calculate the cost of the customized product.

5. **Provides efficient financial records management-** It becomes very difficult for the company to maintain financial records if it depends totally on the actual cost. Thus, standard costing helps companies maintain financial records more easily. A company can also conduct other financial activities such as borrowing and overdrafts.
6. **Facilitates production benchmarking-** Standard costing is also used to set benchmarks so that manufacturers can compare the actual cost with benchmarks. Budgeting is said to be successful if the actual cost meets the standard cost and if it does not meet that actual cost exceeds the standard cost then the company may change its production efficiency to lower the cost in the future.

Limitations of Standard Costing

Despite the above advantages listed for standard costing, it may have some limitations in some specific scenarios:

1. **Cost-plus contracts-** This type of contract demands the information of actual cost rather than an estimated cost. In this type of contract, the actual cost incurred must be communicated to the customer. Thus, in this case, standard costing cannot be used as it is still an estimation no matter how low the variance.
2. **Inappropriate cost allocation-** To reduce the variance, sometimes more than the required amount of funds are used for a particular task. For example, more than the required quantity of raw material purchased just to improve the price variance results in fund blocking and, subsequently, high inventory costs.
3. **Long-term assumptions-** Standard costing system generally assumes that the cost remains the same over a particular period. But in cases where the product life is short, and the actual cost is changed a lot more than expected, standard costing fails to give an accurate result.
4. **Unit level information-** The variance calculation between the actual cost and standard cost is typically an aggregate of the company's entire production department. Thus the unit-level discrepancies or variants are not known accurately under this method.
5. **Can offer slow feedback-** Variance calculations are done by the accounting department at the end of each production cycle or reporting period. If that department requires urgent feedback, then the standard costing becomes irrelevant with slow feedback.

- **Knowledge Check 1**

  Fill in the Blanks.

  1. Differences between expected and actual costs are recorded in _____.
  2. Standard costing is an estimation of expected costs, and it is a simplified alternative to a large cost layering system such as _____ and _____ method, where a huge amount of historical cost information is maintained for the inventory.
  3. The first step of standard costing is to _____ and to achieve it.
  4. Standard costing helps in _____ as a cost is already estimated under standard costing.
  5. _____ is a time-saving concept in which standard costing can be used if collecting the actual costs is time-consuming and difficult.
  6. _____type of contracts demand the information of actual cost rather than an estimated cost.

- **Outcome Based activity 1**

  Calculate variances from the following given details:

  Standard time for the job – 1500 hours

  Standard rate/ hour – Rs.100

  Actual time taken – 1200 hours

  Actual wages paid – Rs.40000

13.3 Variance Analysis

- **Meaning of Variance analysis**

Variance analysis is a step of calculating the difference between the standard cost and the actual cost. Variance is determined at the end of the financial year and thus helps to improve future budgets. To review the performance of expenses and revenue, variance analysis is used. Whether the budget variance is favourable or unfavourable is determined with the help of standard costing.

- **Unfavourable variance-** Unfavorable variance indicates lower profit by the company as in this case actual cost is higher than the standard cost.
- **Favourable variance**- It indicates higher profit earned by the company as in this case standard cost is higher than the actual cost.

Variance analysis has 4 basic steps

a. The amount of variance is computed
b. The cause of any significant variance is determined.
c. A performance measure is identified for tracking activities, the result of the tracking is analyzed and the problem is determined as ways to correct it.
d. Corrective action is taken.

Variance also helps to find out the areas of the cause of this difference which is the difference between the actual cost and standard cost. For example, in an organization variance data is used to find the cause of the changes, that is if the change were due to labour costs all material costs or delay due to operation.

Classification of variance

Variances are classified into three parts which are as follows:

1. **Material variance:** It is the variance between the actual materials used and the material acquired. If the company has to reorder additional material because of low quality or any other reason, then the additional cost shows the variance in the analysis. This gives a piece of useful information about the quality of materials provided by the suppliers depending on the variance. Material variance also has the following aspects:

   a. **Material Cost Variance**:

      The difference between the standard cost of direct materials provided for the desired output and the actual cost of direct materials used is known as the material cost variance. This discrepancy arises from variations in the amounts of materials utilized and those permitted for manufacturing, as well as from variations in the prices paid and those fixed beforehand.

      This can be computed by using the following formula:

      Standard Quantity * Standard Price - Actual Quantity * Actual Price is the material cost variance.

   b. **Material quality variance**

      It is the difference between the actual quantity used in the production and a standard quantity recorded for the same production. This difference, then multiplied by the standard cost, gives the quantity variance.

      As a formula, this variance is shown as:

      Materials quantity variance = (Actual Quantity – Standard Quantity) x Standard Price

      Material price variance

It is the difference between the standard price and the actual price multiplied by the actual quantity used in the production.

Materials price variance = (Actual price – Standard price) x Actual quantity

c. Overall variance-

It is the sum of quantity variance and price variance.

Total variance= Material quantity variance + Material price variance

2. Labor Variance- Labor variance helps in determining the efficiency of the labour used. This labour variance should be low as only in this case the price effectiveness can be determined. Labour variance also helps the company streamline its operation for future savings.

a. Rate variance

It is calculated by multiplying the actual quantity purchased by the difference between the raw aterial's actual and projected prices. One type of rate variance is the labor rate variance. The gap between the actual and standard costs of labor is known as the labor rate variance.

The formula for its calculation is:

Labour rate variance = (Actual rate – Standard rate) x Actual hours

b. Efficiency variance

It is a difference between the actual and the standard hours multiplied by the standard rate. Labour efficiency variance occurs when labour operations are more efficient or less efficient than standard performance. If actual direct labor hours required to complete a job differ from the number of standard hours specified, a labor efficiency variance result.

a. **Labour efficiency variance is computed by applying the following formula:**
b. Labour efficiency variance = (Actual hours – Standard hours for the actual output) x Std. rate per hour.

c. Overall labour variance

a. It is the sum of Rate variance and efficiency variance.
b. Overall labour variance = rate variance + efficiency variance

3. Fixed overhead variance- Fixed overhead variance helps identify the difference between the budgeted overhead cost and the use overhead cost. This information helps the company in allocating the budget to other areas of business. For example, if the company wants to review its budget plan, then it might use fixed overhead variance, which helps to reduce its current allotted budget.

a. **Budget Variance**

This variance indicates the difference between actual fixed overhead and budgeted fixed overhead.

The formula for computing this variance is as follows:

(Actual fixed overhead – Budgeted fixed overhead)

In this case, if the actual fixed overhead is greater than the budgeted fixed overhead then it is said to be an unfavourable variance and vice-versa.

b. **Volume variance**

Only fixed overhead is related to volume variance. This discrepancy results from the gap between the planned fixed overhead, which is based on standard hours permitted for actual output achieved during the period, and the standard fixed overhead cost allowed (absorbed) for the actual output.

The formula for computing this variance is as follows:

(Budgeted fixed overhead applied to actual output – Budgeted fixed overhead based on standard hours allowed for actual output)

c. **Budgeted fixed overhead cost**

It's called a planned fixed overhead cost when the standard rate is multiplied by the denominator level of activity.

The formula for computing this variance is as follows:

Denominator level of activity x Standard rate

d. **Fixed overhead cost applied to inventory**

When standard hours are multiplied by the standard rate then it comes to fixed overhead cost applied to inventory.

The formula for computing this variance is as follows:

Standard hours x standard rate

e. **Overall overhead variance**

It is the sum of budget variance and volume variance

The formula for computing this variance is as follows:

Budget variance + volume variance

Practical Problems

Illustration 1

ABC is a manufacturing company that manufactures running shoes. In a meeting, the company decided to manufacture 300 units of shoes in the future. Calculate the standard costing of this manufacturing company, for which cost estimations are given below.

a. Direct labour is equal to Rs.500 per hour
b. The raw material is Rs. 1000 per unit
c. Manufacturing overhead Rs. 800 per unit
d. Manufacturing overhead of Rs. 800 per unit time to produce one unit is equal to 5 hours
e. Fixed over Rs. 1,00,000

Solution

Direct labour = employee hourly rate x no of hours to produce one-unit x total no of units

= 500 X 5 X 300= Rs.750000

Raw Material = cost/unit x total no of units

= 1000 X 300 = Rs.300000

Manufacturing overhead = Fixed overhead + variable manufacturing overhead x total no of units

= 100000 + 800 x 300 = Rs.340000

Standard costing = Raw material cost + Direct labour + Manufacturing overhead

= 300000 + 750000 + 340000

= Rs.13,90,000

For calculating the cost of manufacturing one unit of shoes:

Standard Costing/ Total no of units

= 13,90,000/300 = Rs. 4634

Illustration 2

Calculations of different types of variances

Material variance

Calculate the material variance of XYZ company which is a clothing company that has an actual quantity of 30,000 pieces of fabric at a standard price of ₹0.65 per fabric. The standard quantity is ₹ 25,000 pieces of fabric at an actual price of ₹0.50 per fabric.

Solution

Quantity Variance= (AQ x SP) – (SQ x SP)

= (30000 x .65) – (25000 x .50)

= Rs. 3250

Price Variance = (AQ x SP) – (AQ x AP)

= (30000 x .65) – (30000 x .50)

= Rs.4500

Overall variance = quantity variance + price variance

= Rs.3250 + Rs.4500 = Rs.7750

Labor Variance

A construction company wants to calculate overall labour variance, for which the required data are given below.

a. Actual hours are equal to 5000
b. Actual rate Rs.15 per hour
c. Standard hours 4800
d. Standard rate Rs.12 per hour

Solution

Rate Variance = (Actual hours x Actual rate) – (Actual hours x Standard rate)

= (5000 x 15) – (5000 x 12)

= Rs.15000

Efficiency Variance = (Actual hours x Standard rate) – (Standard hours x Standard rate)

= (5000 x 12) – (4800 x 12)

= Rs.2400

Overall Variance = Rate Variance + Efficiency Variance

= 15000 + 2400

= Rs. 17400

This is an overall labour variance, but it may be an unfavourable situation for a company if the company does not want to spend such an additional amount on labour costs.

Fixed Overhead Variance

Marketing and public relations company want to calculate fixed overhead variance for which the data are given below:

a. Actual hours 8000 hours
b. Standard rate Rs.10 per hour
c. Standard hour 6300
d. Actual fixed overhead cost Rs.82200

Solution

Budgeted Fixed Overhead Cost = Denominator level of activity x Standard rate

= 8000 x 10 = Rs.80000

Budgeted Variance = Actual Fixed Overhead cost - Budgeted Fixed Overhead Cost

= 82200-80000 = Rs.2200

Fixed Overhead Cost = Standard hours x Standard rate

= 6300 x10 = Rs.63000

Volume Variance = Budgeted Fixed Overhead Cost – Fixed Overhead Cost

= Rs.80000 - Rs.63000 = Rs.17000

Overall Variance = Budgeted variance + Volume variance

= Rs. 2200 + Rs. 17000

= Rs. 19200

- **Knowledge Check 2**

  State True or False.

  1. Variance analysis is a step of calculating the difference between the standard cost and the total cost.
  2. Favourable variance indicates lower profit earned by the company as in this case standard cost is lower than the actual cost.
  3. Fixed overhead variance helps identify the difference between the budgeted overhead cost and the use overhead cost.
  4. Material cost variance is the difference between the actual cost of direct material used and the standard cost of direct materials specified for the output achieved.

- **Outcome-Based Activity 2**

  Calculate material quantity variance and material price variance

  a. The standard material for 70 kg of fixed product is equal to 100 kg
  b. The price of materials is Rs. 1 per kg
  c. Actual output Rs. 2,10,000 kg
  d. The material used Rs. 2,80,000 kg
  e. Cost of materials Rs. 2,52,000

13.4 Summary

- Standard costing is a method of comparing standard costs with the actual cost. It is a method of estimating production expenses. The actual course cannot be predicted by the manufacturer in advance. Differences between expected and actual costs are recorded in variances.
- Budgeting, inventory costing, overhead application, and Price formulation of the companies involved in custom product standard costing are very helpful, Providing

efficient financial records management and facilitating production benchmarkingare the various advantages of standard costing.

- Cost-plus contracts, inappropriate cost allocation, long-term assumptions, and unit-level information can offer slow feedback are the limitations of standard costing.
- Variance analysis is a step of calculating the difference between the standard cost and the actual cost. Variance is determined at the end of the financial year and thus helps to improve the future budget.
- Material variance, labour variance, and overhead variance are the three main types of variance analysis.

13.5 Self-Assessment Questions

1. Explain the concept of standard costing along with the process.
2. What are the advantages and limitations of standard costing?
3. Define variance analysis.
4. How are variance analyses classified? Explain.

13.6 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr. S. N Maheshwari.
- Cost accounting-Standard costing by Chandra Sekhar.
- Cost accounting and financial management a practical guide by CA B. Saravana Prasath.

UNIT- 14

Cost Control

Learning Outcomes:

- Students will be able to understand the concept of cost control.
- Students will be able to understand the tools and techniques of cost control.
- Students will be able to learn about the essentials for the success of cost control.
- Students will also be able to explain the areas of cost control.

Structure:

14.1 Cost Control

- **Meaning of cost control**

- The technique of reducing overall costs by competitive analysis is known as cost control. The real cost must be in line with the accepted standards. It assists in cost control by reducing production costs that exceed predefined thresholds. Creating a production-related budget is another aspect of cost control. We must compute the differences between the actual cost and the projected cost and determine the cause of the differences in order to identify the real issues. The two main methods for controlling costs are standard costing and budgetary control. It assists in determining the reason behind variations, such as minimizing material waste.
- **Advantages of cost control**
    1. The expected return on capital employed may be achieved by maximizing the profit.
    2. The productivity of the available resources may be increased by management.
    3. A reasonable remuneration for employees with bonus.
    4. Continue job opportunities for the workers
    5. Increase credit worthiness of the company.
    6. Possibility of prosperity and economic stability of the industry.
    7. Limited resources of production are used effectively.
- **Tools and techniques of cost control**

Tools and techniques of cost control are divided into internal and external tools.

External tools are used for comparing performance with other firms. It is applied to company cost performance with other organizations.

On the other hand, internal standards are used for the evaluation of cost elements like materials, labour, etc. It is applied for the evaluation of intra-firms cost elements.

The internal standards which are used for cost control are standard costing and budgetary control.

- **Standard Costing**

  Meaning of Standard Costing

  Standard costing is a method of comparing standard costs with the actual cost. It is a method of estimating production expenses. The actual cost cannot be predicted by the manufacturer in advance. Differences between expected and actual costs are recorded in

variances. In similar words, standard costing is an estimation of expected costs, and it is a simplified alternative to large cost layering systems such as FIFO and LIFO methods, where a huge amount of historical cost information is maintained for the inventory. Standard costing helps in improving accounting efficiency because it already sets a standard of expenses for the particular process.

- **Advantages of Standard Costing**

Standard Costing plays a significant role and thus provides various advantages to an organization which are as follows:

1. **Budgeting-** A budget is usually an approximate allocation of cost for a particular task. Standard costing helps in budgeting as a cost are already estimated under standard costing. Comparison of budget and actual cost also happens after the task is complete, which is also a key aspect of standard costing which helps in calculating variances between estimated and actual cost. Standard costing helps the manufacturer to fix the budget because, without a complete production process, it is not possible to determine the actual cost.
2. **Inventory costing-** Inventory costing is the process of calculating the cost of inventory of stock. Standard costing helps in calculating this inventory cost easily as a standard costing of each unit is available, and the inventory cost would simply be the multiplication of standard costing within the total units in inventory. It may be noted that this inventory cost is not the actual cost of inventory, but if the standard costing is properly done in alignment with the actual cost, that is if the variance between the standard cost and actual cost is low, it gives white clues result of the actual inventory cost.
3. **Overhead application-** Overhead application is a time-saving concept in which standard costing can be used if collecting the actual costs is time-consuming and difficult. In such cases, a standard overhead application rate is used.
4. **Price formulation-** If the companies involved in custom product standard costing is very helpful. The standard cost of a particular product is already available, and the cost of customization can be added to this standard cost to calculate the cost of the customized product.
5. **Provides efficient financial records management-** It becomes very difficult for the company to maintain financial records if it depends totally on the actual cost. Thus

standard costing helps companies to maintain financial records in an easier way. The company can also conduct other financial activities such as borrowing and overdrafts.

6. **Facilitates production benchmarking-** Standard costing is also be used to set benchmarks so that manufacturers can compare the actual cost with benchmarks. Budgeting is said to be successful if the actual cost meets the standard cost, and if it does not meet that is actual cost exceeds the standard cost, then the company may change their production efficiency to lower the cost in future.

- **Meaning of Variance analysis**

Variance analysis is a step of calculating the difference between the standard cost and the actual cost. Variance is determined at the end of the financial year and thus helps to improve the future budget. To review the performance of expenses and revenue, variance analysis is used. Whether the budget variance is favourable or unfavourable is determined with the help of standard costing.

1. **Unfavourable variance-** Unfavorable variance indicates lower profit by the company as in this case actual cost is higher than the standard cost.
2. **Favourable variance**- It indicates higher profit earned by the company as in this case standard cost is higher than the actual cost.

- **Variance analysis has four basic steps**

i. The amount of variance is computed
ii. The cause of any significant variance is determined.
iii. A performance measure is identified for tracking activities, the result of the tracking is analyzed, and the problem is determined as ways to correct it.
iv. Corrective action is taken.

1. Budgetary Control

Budgetary control is derived from the concept of budgets. A budget is an anticipated financial statement of revenue and expenses for a particular period. Budgeting is usually an approximate allocation of cost for a particular task.

2. Features of budgetary control

i. It established a target performance.
ii. The outcome of activities is measured in quantified terms.

iii. It tries to focus the attention of the management between what is planned and what is being achieved and the necessary actions to be taken place

Characteristics of budgetary control

i. **Planning-** Budgetary control helps the manager in the planning of the activities related to each department, and also it contributes to managerial planning at higher levels.
ii. **Coordination-** Corporation among different departments in the organization is also one of the characteristics of budgetary control.
iii. **Recording-** It helps to keep records up to date of all the activities of the business
iv. **Control-** Budgetary control as control is also one of the important characteristics. It points out any deviation between the budget standard and actual achievement.
v. **Corrective measures-** Budgetary control helps to take corrective measures for better results and also improves the overall performance of the business through directing, counselling, etc.

Advantages of budgetary control

i. It integrates all activities from planning to controlling
ii. Actual results can be compared with the standard as provided by budgetary control
iii. It also provides the objectives and policies of the concern
iv. It helps in profit planning
v. It has to decrease unproductive activities and minimize waste.

- **Limitations of budgetary control**
  i. The main limitation of budgetary control is that budgeting is made only on the assumption of the future, so it comes because of the uncertainty of the future.
  ii. More time is taken to build a good system of budgetary control by the budgetary programme.
  iii. Budgetary control is flexible in nature because its role in planning is sometimes overemphasized.
  iv. It requires a lot of paperwork.
  v. It only depends upon the coordination of the top management.

- **Value analysis**

Value analysis deals with product design. It is a procedure which describes the functions of the product. It also establishes appropriate costs and finds alternatives, and evaluates them. It is the process of reducing costs without offering predetermined standards. It is also suitable for industries running on a large scale, so it is also related to value engineering.

Example of value analysis

1. In place of old materials, use of newly introduced materials
2. To find the alternatives relatively at a lower price
3. Waving of the facility is not required by the customers.

- **Method study**

Method study is the study of work data. Method study helps the management to get the work done in an efficient manner. The main objective of the method study to analyze the factors affecting the performance of work. It is the creative aspect of work-study. It also helps to develop work methods which make optimum use of humans.

- **Essentials for effective cost control**

Essentials for effective cost control are:

1. For effective cost control, the price and quantity for each physical unit should be estimated. The factors which lead to variances, such as inadequate facilities, poor materials, etc., should not be ignored.
2. For running the cost control effectively, all concerns should be associated in determining the standard cost.
3. Proper collection and processing of cost-collection data are important for effective cost control.
4. The variances, price, usage, and mix should be related to material, labour or overhead.
5. The mistake which has already been done related to detailed analysis of variances cannot be undone; however, control measures should be taken to ensure that such mistakes are not repeated.
6. The essential of effective cost control must include a flexible attitude regarding the standard sets.

Close control helps to reduce the cost, but it is not the only aim it also focuses on the maximum utilization of the cost incurred.

- **Areas of cost control**

Areas where cost control is essential are:

1. **Labour**- the cost of labour increases in the following three ways.
   a. Higher basic pay
   b. Shorter working hours
   c. Reduced output

Reducing the cost of labour is very difficult because reducing the wage rate is not possible. If management allows to reduction in wages, then it will become counterproductive for the management. To motivate the workers, it is necessary to revise the wage rate in an upward direction.. The only way where it is possible to reduce the wage rate is overtime means raising labour productivity. In other words, if the rate of output per worker increases faster than the wage rate, then it is possible to reduce the wage.

2. **Material-** The use of the material in an inefficient manner is one of the prime causes of increased costs. The price that are paid for material is affected by commodity markets. There are various ways to reduce material costs if the material is purchased properly with a discount.
   a. Identify the sources where materials are available
   b. Purchase of raw material at a cheaper rate or available of the cheaper substitute
   c. Examination of cost of freight
   d. How to reduce material usage, a suitable product design is necessary
   e. Examination of an alternative process of production

Reduction of material cost is very important because material costs form the major part of the total cost of production.

3. **Sales-** Sales are the areas where monitoring costs is necessary. Sale control is required to ensure the company is not over spending to achieve goals.

   Ratios related to sales are:

   a. Advertising to sales
   b. sales promotion to sales
   c. marketing research to sales
   d. sales administration to sales

Sales costs can be controlled by rearranging market segments as a basis of demand.

4. **Overheads-** overhead cost is also known as a fixed asset. Fixed asset are the asset which remains the same and do not vary with output. The cost of plants, buildings, etc., are an example of fixed costs. To reduce overhead, a proper selection of capacity, choice of equipment and its maintenance are needed. In simple words, the overhead cost can be reduced by planning and implementation.
5. **Energy-** excessive use of power and materials are not acceptable. Lighting costs can be reduced by high-quality electronic energy-saving tube bulbs. The increase in oil prices

leads to the high level of waste. The cost of reducing energy consumption can now be set off by savings.

- **Knowledge Check 1**

  Fill in the Blanks.

  1. The expected return on capital employed may be achieved by _____ the profit.
  2. _____ application is a time-saving concept in which standard costing can be used if collecting the actual costs is time-consuming and difficult.
  3. For running the cost control effectively, all concerns should be associated in determining the _____.
  4. Reduction of material cost is very important because material cost from the major part of the _____.
  5. The main objective of the method study to analyze the factors affecting the _____.

- **Outcome-Based Activity 1**

A factory operates for 8000 hours i.e 80% level of activity. Expenses of the factory are given below:

Variable – Rs.1300

Semi-variable – Rs.1250

Fixed – Rs.1900

The semi-variable rise by 15% between 70% to 80% activity and by 25% above 85% activity. You need to prepare a flexible budget for 70%,80% and 90% of activities.

14.2 Summary

- Cost control is the process of controlling the total cost through competitive analysis. It has to align the actual cost in agreement with the established norms. It helps in cost controlling of the cost incurred in the production that goes beyond the predetermined limit. Cost control also involves the preparation of a budget in relation to production.

- Standard costing is a method of comparing standard costs with the actual cost. It is a method of estimating production expenses. The actual cost cannot be predicted by the manufacturer in advance. Differences between expected and actual costs are recorded in variances.

14.3 Self-Assessment Questions

1. Explain the concept of cost control.
2. What are the advantages of cost control?
3. What are the tools and techniques of cost control?
4. What are the essentials elements required for successful cost control?

14.4 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr S. N Maheshwari.
- Cost accounting-Standard costing by Chandra Sekhar.
- Cost accounting and financial management a practical guide by CA B.Saravana Prasath.

UNIT - 15

Cost Reduction

Learning Outcomes:

- Students will be able to understand the concept of cost reduction.
- Students will be able to understand the tools and techniques of cost reduction.
- Students will be able to learn about the essentials for the success of cost reduction.
- Students will also be able to explain the areas of cost reduction.

Structure:

15.1 Cost Reduction

- **Meaning of cost reduction**

➢ The technique of reducing costs helps to save money per unit and maximize profit. By switching to new methods and procedures, it seeks to reduce the unit cost of a product created or services provided without sacrificing the product's quality. It aids in cutting back on pointless production-related costs. This emphasis on cutting costs through the use of various instruments and methods that also prioritize quality control, better product design, etc.

➢ **Features of cost reduction**

1. Cost reduction is the final result in the cost control process and is not concerned with the setting of standards and targets.
2. It aims at improving the standards.
3. It helps to reduce cost; hence it is dynamic, innovative and continuous in nature.
4. It helps in analysis at all levels of management.
5. Cost reduction is a corrective function.

- **Advantages of cost reduction**

1. **Increase in profit-** The main advantage of cost reduction is that it increases profit. An increase in profit means more dividends to the shareholders and more bonus to the staff, and it also helps in the expansion of the business.
2. **Improve the relationship between management and workers-** As we know, cost reduction leads to an increase in profit; due to the increase in profit, management may provide more benefits to the workers which will improve the relationship between management and workers and helps reduce labour turnover.
3. **Goodwill-** The increase in profit of the undertaking also adds to its goodwill.
4. **Taxation-** Higher profit due to cost reduction is also helpful for the government to earn revenue by way of taxation.
5. **Demand-** Cost reduction also helps in making goods available at relatively low rates to the consumer, which also helps to increase the demand for the products.
6. **Exports- C**ost reduction helps to lower the export price but it will increase the total export.
7. **Efficiency-** Cost reduction indicates better productivity and more efficiency.

- **Tools and techniques of cost reduction**

1. **Budgetary control-** Budgetary control helps in planning, carrying out and controlling the operations of the business. It is an important tool for management. Here actual results are compared with budgeted objectives, and the difference between the two, which is known as the variance, is noted, and action is taken to minimize the variation.
2. **Inventory control-** Inventory control which is also known as stock control, is also an important tool for management. It helps in checking the stock and ensure that the supply of stock is sufficient and it always available within the business.
3. **Standard costing-** It is also an important technique. It is a method of comparing standard cost with the actual cost, and the difference between the expected and actual cost are recorded in variances.
4. **Job evaluation and merit rating-** Job evaluation is a practice which helps in measuring the comparative value of a job within or among a similar organization. Merit rating will ensure control and adjustment of pay differentials with categories of wages and salaries.
5. **Value analysis-** It is an important tool in the field of cost reduction. It helps to improve organizational performance by using various techniques.
6. **Uniform costing-** When multiple departments follow the same technique of costing principles, they are said to be following the uniform costing technique. It is a document in written form which is prepared to provide guidance to the management. It also helps in cost determination. A copy of the uniform cost manual is given to each member unit.
7. **Intra inter-firm comparison-** Intra-firm efficiency represents a firm that has a specific production frontier. Due to bad production process it is not always necessary to have maximum output.

   Inter-firm efficiency involves choosing the best practice frontier at each time period among the set of comparable firms.

8. **Operational research-** Operational research is a method to the analysis of operations. It adopts- scientific methods, interdisciplinary nature, and the explicit formulation of a complex relationship.
9. **Productivity-** It is also an important tool for cost reduction. It is the ratio between the production of a given commodity measured by volume and one or more of the other

input factors which is also measured by volume. It is also defined as the relationship between the input and output resources. It is defined as a physical concept.

10. **Reduction in variety of products-** It is also one of the important tools in cost reduction.

- **Essential for the success of cost reduction programme**

1. A cost reduction program must be suitable to the undertaking.
2. A cost reduction program is a continuous activity. It helps to reduce costs continuously and aimed to innovate new ideas. It should not be taken as a one-time activity.
3. A cost reduction programme should be a real and permanent reduction in cost
4. A cost reduction programme should introduce to the top executives at first and then to the employees of the organization. The number of persons involved in the programme only depends upon the success of this programme.
5. Every person must join this programme, and it also helps to make it successful. The person giving new and innovative ideas should be rewarded by way of a rise in wages and salaries, special awards, etc.
6. Social and legal factors should also be considered by this programme.
7. Cost reduction programmes ensure that there is always scope for cost reduction in every firm.
8. There should not be any overlap between the cost reduction measures.

- **Areas of cost reduction**

Cost reduction may be implemented in the following areas:

1. **Design-** Every product, when get into the process of manufacturing it, first starts at the design of a product. Designing of a new product or improvement in the design of old product requires and investment to find a useful design. This may reduce the cost of the product in the following terms:
2. **Material cost**- Raw materials of relatively low cost should encourage.
3. **Labour cost-** it may reduce the time of operation, cost of after-sale service, etc.
4. **Organization- c**ost reduction schemes should be encouraged by employees in an organization. This can be done through various ways. There should be no communication gap between the department and management, and there should be no doubt among them.

5. **Factory layout and equipment-** cost can be reduced of any product by doing a proper study about the manpower, utilization of unused material, machines, etc.
6. **Administration-** The cost of administrative expenses should be low**.** The organization may reduce the cause but not the cost of efficiency of the following expenses:
    a) Telephone expenses
    b) Travelling expenses
    c) Postage and telegram
    d) Salary by reducing staff

- **Marketing-** The areas that are covered under marketing includes advertisement, warehouse, and distribution expenses. Sales promotion, etc., while concentrate on cost reduction following points should be remembered.
    a) The system is working economically
    b) The efficiency of the sales promotion system
    c) The research and development system of the market is sufficient
    d) ABC analysis of the customers
    e) The efficiency of the system
- **Financial management-** In the areas of financial management, cost reduction plays an important role. Areas that needed attention are:
    b) Is there is any over-investment?
    c) How much economical is the cost of capital received?
    d) Whether the organization is getting maximum returns for the capital employed.
    e) Slow-moving or non-moving inventory should be removed.
    f) Transfer of surplus to the working capital to reinvest and to earn more profit in the business.
    g) If there is any over-investment that should be sold.
    h) The unutilized fixed asset should be eliminated.
- **Personal management-** Field that are covered under personal management for cost reduction programme includes staff welfare measures and improving labour relation. For an efficient cost reduction programme, it is necessary to give labour a better working environment by introducing some incentive schemes for labour.
- **Material control-** For running an efficient cost-reduction programming, it is necessary to purchase more economical and useful materials. The technique of EOQ must be used.

Proper checking of material, property insurance of material, and effective material yield should be done.

- **Production-** An efficient cost reduction programme can be run by using effective control over material labour and machine.
- **Distinguish between cost control and cost reduction**

Cost Control	Cost Reduction
1. It focuses on lower the total cost of production.	1. It focuses on lower the per-unit cost of the product.
2. It is temporary in nature.	2. It is permanent in nature.
3. It's a process said to be completed when the required target is achieved.	3. This is a continuous process.
4. No assurance in the quality of the product.	4. Assured 100% quality maintenance.
5. Cost control is a preventive function.	5. Cost reduction is a corrective function.

- **Knowledge Check 2**

  State True or False.

  1. Cost Control is the process which helps in saving in per unit cost and a maximum of profit.
  2. For run efficient cost-reduction programming it is necessary to purchase more economical and useful materials.
  3. A cost reduction program is a continuous activity. It helps to reduce costs continuously and aimed in innovating new ideas. It should not be taken as a one-time activity.
  4. Inventory control helps in checking the stock and ensuring that the supply of stock is sufficient and it always available within the business.

- **Outcome-Based Activity 2**

  Prepare a PowerPoint Presentation showing the cost-cutting ideas that we need to implement for the expansion of the business.

15.2 Summary

- Cost control is the process of controlling the total cost through competitive analysis. It has to align the actual cost in agreement with the established norms. It helps in cost controlling of the cost incurred in the production that goes beyond the predetermined limit. Cost control also involves the preparation of a budget in relation to production.
- Standard costing is a method of comparing standard costs with the actual cost. It is a method of estimating production expenses. The actual cost cannot be predicted by the manufacturer in advance. Differences between expected and actual costs are recorded in variances.
- Cost reduction is the process which helps in saving in per unit cost and a maximum of profit. It aims to lower the unit cost of a product manufactured or services rendered by transfer to new methods and techniques without reducing the time quality of a product. It helps to reduce unnecessary expenses in the production process.
- Budgetary control, inventory control, standard costing, job evaluation and merit rating, value analysis, uniform costing, operational research, and productivity are the tools & techniques of cost reduction.

15.3 Self-Assessment Questions

1. Explain the concept of cost control and cost reduction.
2. What are the advantages of cost control and cost reduction?
3. What are the tools and techniques of cost control and cost reduction?
4. What are the essentials elements required for successful cost control and cost reduction?

15.4 References

- Viva student edition Fundamentals of cost accounting by T. R Sikka.
- Fundamentals of cost accounting theory, problem, solution by I. Narsis.
- Fundamentals of cost accounting by Dr S. N Maheshwari.
- Cost accounting-Standard costing by Chandra Sekhar.
- Cost accounting and financial management a practical guide by CA B.Saravana Prasath.