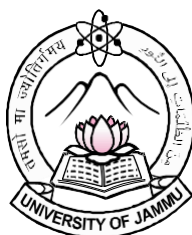


**CENTRE FOR DISTANCE & ONLINE EDUCATION**  
**UNIVERSITY OF JAMMU**  
**JAMMU**



**SELF LEARNING MATERIAL OF**  
**ADVANCED COST ACCOUNTING**  
**FOR M.COM SEM III**  
**FOR THE YEAR 2023,2024,2025**

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**COURSE NO. MCOMFE354**

**UNIT: I - IV**

**LESSON: 1 - 20**

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Printed and Published on behalf of the Centre for Distance & Online Education,  
University of Jammu, Jammu by the Director, CDOE, University of Jammu, Jammu.  
<http://www.centrefordistanceandonlineeducationju.in>



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## ADVANCED COST ACCOUNTING

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*Printed at : Jandiyal Printing Press / 2023/650*

**DIRECTORATE OF DISTANCE EDUCATION  
UNIVERSITY OF JAMMU  
SYLLABUS  
M.COM. THIRD SEMESTER (NON CBCS)  
ADVANCED COST ACCOUNTING  
(Core Course)**

**Course: MCOMFE354**

**Credit: 4**

**Time: 3.00 Hrs**

**Max Marks: 100 Marks**

**External: 80 Marks**

**Internal: 20 Marks**

**(Syllabus for the examination to be held in December 2023, 2024, 2025)**

**COURSE OBJECTIVES**

1. To provide the students with an in-depth knowledge of advanced approaches of cost accounting;
2. To enable them to apply costing methods and techniques to assist management for taking appropriate decisions.
3. To sensitize the students about the standardized principles and methods of cost accounting employed by different companies and firms to facilitate inter-firm comparison.
4. To make the students specialized in cost analysis under activity based costing and application of marginal costing techniques for decision making;
5. To make the students familiar with the factors (constraints) that restrict the organization from getting more of whatever it strives for, which is usually profit.

**COURSE OUTCOMES:**

After the completion of this course, the students will be able:

1. demonstrate costing methods and techniques appropriate to a variety of different businesses.
2. have the ability to maintain cost data for inter-firm comparison, comparison of

- operational efficiency of individual concerns within the industry and to assist in the fixation of selling price for the industry as a whole;
3. develop competencies in evaluating the costs and benefits of implementing activity based costing system;
  4. adopt CVP analysis to situations in which a product has more than one cost driver; and
  5. demonstrate knowledge about the theory of constraints, throughput accounting, target costing, life cycle costing, value engineering, and value chain analysis.

## **UNIT I INTRODUCTION**

Basics of cost accounting; Difference between cost accounting and management accounting, cost accounting and financial accounting; Elements of costs; Bases of ascertaining costs; Methods of costing: Units of output costs-operating costs, contract cost, job cost and batch costing-Process costs including equivalent production and methods of treatment of joint products and by products.

## **UNIT II UNIFORM COSTS, INTERFIRM COMPARISONS AND COST AUDIT**

Uniform costing-Basics of uniform costing, uniform costing manual; Inter-firm comparisons-Basics; Procedure for inter-firm comparisons; Purpose of inter-firm comparisons and problems in inter-firm comparisons; Cost audit- basics of cost audit, objects of cost audit, important legal provisions of cost audit, cost audit vs. financial audit.

## **UNIT III ACTIVITY BASED COSTING AND MARGINAL COSTING**

Activity Based Costing (ABC)- Basics of Activity Based Costing; Stages in Activity Based Costing; Cost analysis under Activity Based Costing (Practical problems). Marginal Costing: Basics of Marginal Costing, Distinction between Absorption Costing and Marginal costing, Contribution, Break even analysis, Margin of safety, Profit Volume graph, Practical application of Marginal Costing.

## **UNIT-IV THEORY OF CONSTRAINTS AND THROUGHPUT ACCOUNTING**

Theory of Constraints: Identifying and Exploiting Constraints, Throughput Accounting, Steps in Theory of Constraints Analysis; Target Costing, Value Engineering, Target Costing and Kaizen Costing; Life Cycle Costing; Value Chain Analysis.

### **SUGGESTIVE READINGS**

1. Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
2. Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
3. Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
4. Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
5. Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
6. Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delh.

### **NOTE FOR PAPER SETTING**

The paper consists of two sections. Each section will cover the whole of the syllabus without repeating the question in the entire paper.

**Section A:** It will consist of eight short answer questions, selecting two from each unit. A candidate has to attempt any six and answer to each question shall be within 200 words. Each question carries four marks and total weightage to this section shall be 24 marks.

**Section B:** It will consist of six essay type questions with answer to each question within 800 words. One question will be set at least from each unit and the candidate has to attempt four. Each question will carry 14 marks and total weightage shall be 56 marks.

## **MODEL QUESTION PAPER**

### **INVESTMENT MANAGMENT**

**Time : 3 Hours**

**Maximum Marks : 80**

#### **SECTION - A**

Attempt any six questions. Each question carries four marks. Answer to each question should be within 200 words.

1. Explain historical evolution of cost accounting.
2. Discuss the various features of unit costing.
3. Explain the purpose of inter firm comparison.
4. Difference between cost audit & financial audit.
5. Explain the concept of activity based costing.
6. Explain the concept of absorption costing.
7. Discuss the features of Through put accounting.
8. Discuss the basis of Kaizen costing.

#### **SECTION B**

Attempt any four questions. Each question carries 14 marks. Answer to each question should be within 800 words.

1. Explain the concept and features of batch costing.
2. Describe job costing giving example of industries where it is used.
3. Discuss the various features of uniform costing.
4. Discuss the implementation procedure of ABC.
5. Compare and contrast Kaizen and Target costing.
6. From the following particulars, calculate
  - (i) Break-even point in terms of sales value and in units.
  - (ii) Number of units that must be sold to earn a profit of Rs. 90,000.

	( )
Fixed Factory Overhead Cost	60,000
Fixed Selling overheads Cost	12,000
Variable Manufacturing Cost per unit	12
Variable Selling Cost per unit	3
Selling price per unit	24

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## **INTRODUCTION**

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**M.COM III SEM  
MCOMC354**

**UNIT- I  
LESSON - 1**

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### **BASICS OF COST ACCOUNTINGS, DIFFERENCE BETWEEN COST ACCOUNTING AND MANAGEMENT ACCOUNTING, COST ACCOUNTING AND FINANCIAL ACCOUNTING**

#### **STRUCTURE**

- 1.1 Introduction
- 1.2 Objectives
- 1.3 Basics of Cost Accounting
- 1.4 Difference between Cost Accounting and Management Accounting
- 1.5 Difference between Cost Accounting and Financial Accounting
- 1.6 Summary
- 1.7 Glossary
- 1.8 Self Assessment Questions
- 1.9 Lesson End Exercise
- 1.10 Suggested Readings

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#### **1.1 INTRODUCTION**

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Cost accounting is a branch of accounting that is concerned with measuring and analyzing the costs associated with producing goods or services. It involves the

collection, recording, and analysis of financial data related to the cost of resources used in the production process, such as labour, materials, and overhead.

The primary goal of cost accounting is to provide management with accurate information about the costs of their operations, so that they can make informed decisions about pricing, production, and resource allocation. By understanding the costs associated with each product or service, managers can identify opportunities for cost reduction, optimize their production processes, and increase profitability.

Cost accounting can be used in a variety of industries, including manufacturing, healthcare, and service industries. It is also an important tool for government agencies and non-profit organizations.

There are several different methods of cost accounting, each of which is suited to different types of organizations and production processes. These include job costing, process costing, activity-based costing, and standard costing.

Overall, cost accounting is a vital tool for managers in making informed decisions about their operations. By tracking and analyzing costs, managers can optimize their production processes, reduce waste, and increase profitability.

All types of businesses, whether manufacturing, trading or producing services, require cost accounting to track their activities. Cost accounting has long been used to help managers understand the costs of running a business. Modern cost accounting originated during the industrial revolution when the complexities of running large scale businesses led to the development of systems for recording and tracking costs to help business owners and managers make decisions. Various techniques used by cost accountants include standard costing and variance analysis, marginal costing and cost volume profit analysis, budgetary control, uniform costing, inter firm comparison, etc. Evaluation of cost accounting is mainly due to the limitations of financial accounting. Moreover, maintenance of cost records has been made compulsory in selected industries as notified by the government from time to time.

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## **1.2 OBJECTIVES**

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After reading this lesson, you will be able to understand about the:

- Basics of cost accounting.
- Difference between cost accounting and financial accounting.
- Difference between cost accounting and management accounting.

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### 1.3 BASICS OF COST ACCOUNTING

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Cost accounting is a branch of accounting that involves the collection, recording, analysis, and interpretation of financial information related to the cost of producing goods or services. The goal of cost accounting is to help managers make informed decisions about pricing, production, and resource allocation by providing them with accurate information about the costs of their operations. Cost accounting involves tracking and analyzing both direct costs (such as materials, labour, and equipment) and indirect costs (such as rent, utilities, and administrative expenses) to determine the true cost of producing a product or service. This information can then be used to improve efficiency, reduce waste, and increase profitability.

Some definitions of cost accounting by experts in the field:

According to the **American Institute of Certified Public Accountants (AICPA)**, “Cost accounting is the application of costing and cost accounting principles, methods, and techniques to the science, art, and practice of cost control and the ascertainment of profitability.”

**Charles T. Horngren**, a prominent author and professor of accounting, defines cost accounting as “the process of measuring, analyzing, and reporting financial and nonfinancial information related to the costs of acquiring or using resources in an organization.”

**The Chartered Institute of Management Accountants (CIMA)** defines cost accounting as “the process of accounting for costs from the point at which they are incurred or committed to the establishment of their ultimate relationship with cost centers and cost units.”

Overall, above definitions emphasize the importance of cost accounting in measuring

and analyzing the costs of a company's operations and using that information to make informed decisions about pricing, production, and resource allocation.

Cost accounting is the process of tracking, recording, and analyzing all of the costs associated with producing a product or providing a service. The main purpose of cost accounting is to help managers make better decisions by providing them with accurate information about the costs of their operations.

Here are some of the basics of cost accounting:

- **Cost Object:** A cost object is anything for which costs are measured, such as a product, service, or department.
- **Direct Costs:** Direct costs are costs that can be directly attributed to a specific cost object. Examples of direct costs include raw materials, labour, and equipment.
- **Indirect Costs:** Indirect costs are costs that cannot be directly attributed to a specific cost object. Examples of indirect costs include rent, utilities, and administrative expenses.
- **Cost Drivers:** A cost driver is any factor that causes a change in the cost of an activity. For example, the number of units produced is a cost driver for the cost of production.
- **Cost Allocation:** Cost allocation is the process of assigning indirect costs to specific cost objects. This is done using a cost allocation method, such as the direct method or the step-down method.
- **Cost Behaviour:** Cost behaviour refers to how costs change in relation to changes in activity levels. For example, some costs such as rent are fixed costs that do not change with changes in activity levels, while other costs, such as labour, are variable costs that increase or decrease with changes in activity levels.
- **Cost Volume Profit Analysis:** Cost volume profit analysis is a tool used to determine the relationship between costs, volume, and profits. This analysis can help managers make decisions about pricing, production levels, and sales strategies.

- **Standard Costing:** Standard costing : It is a method of accounting that uses predetermined costs to determine the cost of a product or service. This allows managers to compare actual costs to expected costs and identify areas where costs are higher than expected.
- **Variance Analysis:** Variance analysis is the process of comparing actual costs to standard costs and identifying the reasons for any differences. This analysis can help managers identify areas where costs are higher than expected and take corrective action.

Overall, cost accounting is a critical tool for managers to make informed decisions about their operations. By understanding the basics of cost accounting, managers can better analyze costs, identify areas for improvement, and make strategic decisions to improve their company's profitability.

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#### **1.4 DIFFERENCE BETWEEN COST ACCOUNTING AND MANAGEMENT ACCOUNTING**

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Cost accounting and management accounting are two different branches of accounting that are used for different purposes. While cost accounting focuses on the calculation and analysis of costs incurred in the production or service delivery process, management accounting provides information to help managers make decisions related to planning, controlling, and evaluating business operations.

Here are some of the key differences between cost accounting and management accounting:

1. **Scope:** Cost accounting is primarily concerned with the calculation and analysis of costs incurred in the production or service delivery process, including direct costs, indirect costs, and overheads. Management accounting, on the other hand, is concerned with providing information to help managers make decisions related to planning, controlling, and evaluating business operations.
2. **Purpose:** The purpose of cost accounting is to determine the actual cost of a product or service, and to identify ways to reduce costs and improve profitability. The purpose of management accounting is to provide information to help managers

make decisions related to resource allocation, budgeting, and performance evaluation.

3. **Reporting:** Cost accounting typically involves the preparation of cost reports that provide information about the cost of goods sold, the cost of inventory, and the cost of production. Management accounting, on the other hand, involves the preparation of various reports such as budget reports, variance reports, and performance reports.
4. **Users:** Cost accounting is primarily used by internal users such as managers and employees who are involved in the production or service delivery process. Management accounting, on the other hand, is used by both internal and external users such as investors, creditors, and regulators.
5. **Timeframe:** Cost accounting typically focuses on historical costs and is concerned with analyzing the costs that have already been incurred. Management accounting, on the other hand, is forward-looking and is concerned with planning and making decisions for the future.
6. **Level of detail:** Cost accounting can be very detailed, and can involve analyzing the costs of individual products or services, as well as individual cost components. Management accounting, on the other hand, can be less detailed and may focus on broader categories of costs or performance metrics.
7. **Decision-making focus:** Cost accounting is primarily focused on making decisions related to cost reduction and cost control, while management accounting is focused on making decisions related to resource allocation, budgeting, and performance evaluation.
8. **Methods and techniques:** Cost accounting typically uses techniques such as job costing, process costing, and activity-based costing to calculate and analyze costs. Management accounting, on the other hand, may use techniques such as budgeting, variance analysis, and cost-volume-profit analysis to provide information for decision-making.
9. **Regulatory requirements:** Cost accounting may be subject to regulatory

requirements, such as those related to inventory valuation or cost of goods sold reporting. Management accounting, on the other hand, is less likely to be subject to regulatory requirements, and is primarily focused on providing information to help managers make decisions.

- 10. Focus on Cost Control vs. Decision-Making:** Cost accounting is primarily focused on cost control and reducing costs in production or service delivery processes. This is achieved through analyzing and managing the costs of labour, raw materials, overheads, and other inputs involved in the production process. Management accounting, on the other hand, is focused on decision-making by providing information for planning, control, and evaluation of business operations.
- 11. Use of Historical vs. Future Data:** Cost accounting primarily deals with historical data to determine the actual cost incurred in the production process. This helps in identifying areas where costs can be reduced in the future. Management accounting, on the other hand, is concerned with providing information based on future projections, budgets, and forecasts, which is critical for strategic planning and decision-making.
- 12. Analysis vs. Planning:** Cost accounting is more focused on analyzing past and current costs to determine the actual cost of production, while management accounting is more focused on planning for future operations and providing insights to decision-makers to make better decisions.
- 13. Internal vs. External Focus:** Cost accounting is primarily focused on the internal operations of a company, analyzing and managing costs within the production process. Management accounting, on the other hand, can have both an internal and external focus, providing information to managers and stakeholders, including investors, creditors, and regulators.
- 14. Integration with Other Disciplines:** Cost accounting is often integrated with other disciplines, such as engineering, production management, and quality control, to optimize production processes and reduce costs. Management accounting, on the other hand, is often integrated with other management disciplines, such as



marketing, finance, and strategy, to help managers make informed decisions across different business functions.

In conclusion, while both cost accounting and management accounting are important branches of accounting, they have distinct differences in their scope, purpose, reporting, users, timeframe, level of detail, decision-making focus, methods, and regulatory requirements. Understanding these differences can help businesses make better use of both types of accounting information in their operations and decision-making. While cost accounting is concerned with the calculation and analysis of costs incurred in the production or service delivery process, management accounting provides information to help managers make decisions related to planning, controlling, and evaluating business operations. Both cost accounting and management accounting are critical for effective business operations, they differ in their focus, use of data, analysis vs. planning, internal vs. external focus, and integration with other disciplines. Understanding these differences is essential for businesses to use both types of accounting information to drive better decision-making and financial performance.

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## **1.5 DIFFERENCE BETWEEN COST ACCOUNTING AND FINANCIAL ACCOUNTING**

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Cost accounting and financial accounting are two distinct branches of accounting that are used for different purposes. While cost accounting focuses on the calculation and analysis of costs incurred in the production or service delivery process, financial accounting is concerned with the preparation of financial statements that provide information about the financial performance and position of a company.

Here are some key differences between cost accounting and financial accounting:

- 1 Scope:** Cost accounting is primarily concerned with the calculation and analysis of costs incurred in the production or service delivery process, including direct costs, indirect costs, and overheads. Financial accounting, on the other hand, is concerned with providing information to external users, such as investors, creditors, and regulators, about the financial performance and position of a company.
- 2 Purpose:** The purpose of cost accounting is to determine the actual cost of a

product or service, and to identify ways to reduce costs and improve profitability. The purpose of financial accounting is to provide information to external users about the financial performance and position of a company, such as through the preparation of financial statements like the income statement, balance sheet, and cash flow statement.

- 3 Reporting:** Cost accounting typically involves the preparation of cost reports that provide information about the cost of goods sold, the cost of inventory, and the cost of production. Financial accounting, on the other hand, involves the preparation of financial statements that provide information about a company's financial performance and position, such as revenue, expenses, assets, liabilities, and equity.
- 4 Users:** Cost accounting is primarily used by internal users such as managers and employees who are involved in the production or service delivery process. Financial accounting, on the other hand, is used by external users such as investors, creditors, and regulators.
- 5 Timeframe:** Cost accounting typically focuses on historical costs and is concerned with analyzing the costs that have already been incurred. Financial accounting, on the other hand, is forward-looking and provides information about a company's financial performance and position over a specific period, usually a fiscal year.
- 6 Nature of Information:** Cost accounting provides detailed information on the cost of producing goods or services, including the cost of each unit produced. Financial accounting provides information about the financial performance of a company, such as revenue, expenses, and profit, and the financial position of a company, such as assets, liabilities, and equity.
- 7 Methodology:** Cost accounting uses various methods to calculate and analyze costs, such as job costing, process costing, and activity-based costing. Financial accounting, on the other hand, follows a standardized set of accounting principles, such as Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS), to prepare financial statements.

- 8 **Time Horizon:** Cost accounting is concerned with short-term analysis and decision-making, such as the cost of producing a batch of goods or the cost of a specific service. Financial accounting, on the other hand, takes a long-term perspective, providing information about a company's financial performance and position over an entire fiscal year.
- 9 **Frequency of Reporting:** Cost accounting reports are prepared on a more frequent basis, such as weekly, monthly, or quarterly, to provide timely information for decision-making. Financial accounting reports are typically prepared on an annual basis, although companies may also prepare quarterly or semi-annual financial statements.
- 10 **Regulation:** Financial accounting is highly regulated, with companies required to follow standardized accounting principles and regulations set by government bodies or accounting standards boards. Cost accounting is less regulated and can be tailored to the specific needs of a company.
- 11 **Importance of Non-Financial Information:** Cost accounting focuses primarily on the financial aspects of a company's operations, while financial accounting also incorporates non-financial information, such as environmental, social, and governance factors, into its reporting.
- 12 **Internal vs External Reporting:** Cost accounting reports are primarily used for internal purposes, such as decision-making and cost control, while financial accounting reports are used for external reporting to stakeholders, such as investors, lenders, and regulatory bodies.
- 13 **Level of Detail:** Cost accounting provides more detailed information about the costs of producing goods and services than financial accounting, which provides a more high-level overview of a company's financial performance.

**Type of Analysis:** Cost accounting focuses on the analysis of costs and cost drivers, while financial accounting analyzes financial ratios, trends, and performance indicators.

**Usefulness:** Cost accounting is more useful for managers and internal stakeholders who are involved in day-to-day operations and decision-making, while financial

accounting is more useful for external stakeholders who are interested in a company's financial health and long-term viability.

**Limitations:** Cost accounting has some limitations, such as the difficulty of accurately allocating overhead costs, while financial accounting has limitations, such as the reliance on historical financial data that may not reflect current or future conditions.

In summary, cost accounting and financial accounting differ in their approach, purpose, audience, level of detail, and usefulness. While cost accounting provides detailed information for internal decision-making and cost control, financial accounting provides a more high-level overview of a company's financial performance and position for external reporting to stakeholders. Understanding the differences between these two types of accounting is essential for businesses to effectively use both types of accounting information to make informed decisions and report their financial results accurately.

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## 1.6 SUMMARY

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Cost accounting is the reporting and analysis of a company's cost structure. Cost accounting is a process of assigning costs to cost objects that typically include a company's products, services, and any other activities that involve the company. Cost accounting is helpful because it can identify where a company is spending its money, how much it earns, and where money is being lost. Cost accounting aims to report, analyze, and lead to the improvement of internal cost controls and efficiency. In short, cost accounting is a system of operational analysis for management. Even though cost accounting is commonly referred to as a costing method, the scope of cost accounting is far broader than mere cost. Cost accounting has elements of traditional bookkeeping, system development, creating measurable information, and input analysis. Modern methods of cost accounting first emerged in the manufacturing industries, though its advantages helped it spread quickly to other sectors. For many firms, cost accounting helps create and measure business strategy in a more organic way. Companies that are looking to expand their product line would need to understand the cost structure. Cost accounting helps management plan for future capital expenditures, which are large purchases of plant and equipment.

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## 1.7 GLOSSARY

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- **Cost Accounting:** Cost accounting is the reporting and analysis of a company's cost structure.
- **Financial Accounting:** Financial Accounting is the process of documenting, analyzing and reporting every transaction of a business or an organization, in order to assess the financial health and stability of the same.
- **Management accounting:** Managerial accounting is the practice of identifying, measuring, analyzing, interpreting, and communicating financial information to managers for the pursuit of an organization's goals.

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## 1.8 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of cost accounting.

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Q.2 Discuss the difference between cost accounting and finance accounting.

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## 1.9 LESSON END EXERCISE

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Q.1 Discuss the difference between cost accounting and management accounting.

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Q.2 Explain the historical evolution of cost accounting.

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### 1.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

## **INTRODUCTION**

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**M.COM III SEM  
MCOMC354**

**UNIT- I  
LESSON - 2**

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### **ELEMENTS OF COSTS, BASIS OF ASCERTAINING COST AND METHODS OF COSTING**

#### **STRUCTURE**

- 2.1 Introduction
- 2.2 Objectives
- 2.3 Elements of Costs
- 2.4 Basis of Ascertaining Costs
- 2.5 Methods of Costing
- 2.6 Summary
- 2.7 Glossary
- 2.8 Self Assessment Questions
- 2.9 Lesson End Exercise
- 2.10 Suggested Readings

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#### **2.1 INTRODUCTION**

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In the early nineteenth century, these costs were of little importance to most businesses. However, with the growth of railroads, steel and large scale manufacturing, by the late nineteenth century these costs were often more important than the variable cost of a product, and allocating them to a broad range of products led to bad decision making.

Managers must understand fixed costs in order to make decisions about products and pricing.

Some costs tend to remain the same even during busy periods, unlike variable costs, which rise and fall with volume of work. Over time, these “fixed costs” have become more important to managers. Examples of fixed costs include the depreciation of plant and equipment, and the cost of departments such as maintenance, tooling, production control, purchasing, quality control, storage and handling, plant supervision and engineering.

**For example:** A company produced railway coaches and had only one product. To make each coach, the company needed to purchase \$60 of raw materials and components and pay 6 labourers \$40 each. Therefore, the total variable cost for each coach was \$300. Knowing that making a coach required spending \$300, managers knew they could not sell below that price without losing money on each coach. Any price above \$300 would make a contribution to the fixed costs of the company. If the fixed costs were, say, \$1000 per month for rent, insurance and owner’s salary, the company could therefore sell 5 coaches per month for a total of \$3000 (priced at \$600 each), or 10 coaches for a total of \$4500 (priced at \$450 each), and make a profit of \$500 in each case.

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## 2.2 OBJECTIVES

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After reading this lesson, you will be able to understand :

- Elements of costs
- Basis of ascertaining costs
- Methods of costing

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## 2.3 ELEMENTS OF COSTS

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The elements of cost are those elements which constitute the cost of manufacture of a product. We can broadly divide these elements of cost into three categories. In a manufacturing organization, we convert raw materials into a finished product with the help of labour and other services. These services are Material, Labour and Expenses.



### **1. Direct Material**

It represents the raw material or goods necessary to produce or manufacture a product. The cost of direct material varies according to the level of output. For example, Milk is the direct material of ghee.

### **2. Indirect Material**

It refers to the material which we require to produce a product but is not directly identifiable. It does not form a part of a finished product. For example, the use of nails to make a table. The cost of indirect material does not vary in the direct proportion of product.

### **3. Direct Labour**

It refers to the amount which paid to the workers who are directly engaged in the production of goods. It varies directly with the level of output.

### **4. Indirect Labour**

It represents the amount paid to workers who are indirectly engaged in the production of goods. It does not vary directly with the level of output.

### **5. Direct Expenses**

It refers to the expenses that are specifically incurred by the enterprises to produce a product. The production cannot take place without incurring these expenses. It varies directly with the level of production.

### **6. Indirect Expenses**

It represents the expenses that are incurred by the organization to produce a product. These expenses cannot be easily identified accurately. For example, Power expenses for the production of pens.

### **7. Overhead**

It refers to all indirect materials, indirect labour, or and indirect expenses.

## 8. **Factory Overhead**

Factory overhead or Production Overhead or Works Overhead refers to the expenses which a firm incurs in the production area or within factory premises.

Indirect material, rent, rates and taxes of factory, canteen expenses etc. are examples of factory overhead.

## 9. **Administration Overhead**

Administrative or Office Overhead refers to the expenses which are incurred in connection with the general administration of the organizations.

Salary of administrative staff, postage, telegram and telephone, stationery etc. are examples of administration overhead.

## 10. **Selling Overhead**

All expenses that a firm incurs in connection with sales are selling overheads. Salary of sales department staff, travelers' commission, advertisement etc. are examples of selling overhead.

## 11. **Distribution Overhead**

It represents all expenses incurred in connection with the delivery or distribution of finished goods and services from the manufacturer to the consumer. Delivery, van expenses, loading and unloading, customs duty, the salary of deliverymen are examples of distribution overhead.

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## 2.4 **BASIS OF ASCERTAINING COSTS**

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The basis of ascertaining cost refers to the methods used to calculate and allocate costs to products or services. There are several bases of ascertaining cost, including:

- **Historical Cost:** This is the actual cost of producing a product or service, based on the cost of materials, labour, and overhead at the time of production.
- **Replacement Cost:** This is the cost of replacing a product or service at the current market price, including the cost of materials, labour, and overhead.

- **Standard Cost:** This is a predetermined cost that is used as a benchmark for calculating the actual cost of production. Standard costs are typically based on historical data and are used to measure and control costs.
- **Marginal Cost:** This is the additional cost incurred when producing one additional unit of a product or service. Marginal cost includes the cost of materials, labour, and overhead directly associated with producing an additional unit.
- **Absorption Cost:** This is a method of allocating all manufacturing costs, including direct materials, direct labour, and overhead, to the products produced. Absorption cost is often used for financial reporting purposes.
- **Activity-Based Costing (ABC):** This is a method of allocating costs based on the activities that drive costs. ABC involves identifying the activities that consume resources and assigning costs to those activities.
- **Direct Costing:** This is a method of allocating only the direct costs, such as direct materials and direct labour, to the products produced. Direct costing is often used for internal decision-making purposes.
- **Opportunity Cost:** This is the cost of the foregone alternative, which is the benefit that is lost when choosing one option over another. Opportunity cost is not a cash outflow, but it is the cost of the best alternative use of the resources.
- **Sunk Cost:** This is a cost that has already been incurred and cannot be recovered, regardless of the decision made. Sunk costs are not relevant in decision-making as they cannot be changed by future decisions.
- **Joint Cost:** This is the cost of producing two or more products that are produced together up to a certain point. Joint costs are allocated to the final products using a method that considers the relative sales value or relative weight of the products.
- **Period Cost:** This is a cost that is not directly associated with the production of goods or services, but is incurred in a particular period, such as rent, utilities, and salaries of administrative staff.

- **Differential Cost:** This is the difference in cost between two alternatives. Differential cost is used to determine whether a particular decision will increase or decrease costs and profitability.
- **Full Cost:** This is the total cost of producing a product or service, including direct materials, direct labour, and all indirect costs, such as overhead, administrative expenses, and selling costs.
- **Target Costing:** This is a cost-management system used to determine the maximum cost of a product or service based on the price the customer is willing to pay. Target costing involves identifying the target price, deducting the desired profit margin, and determining the maximum allowable cost.

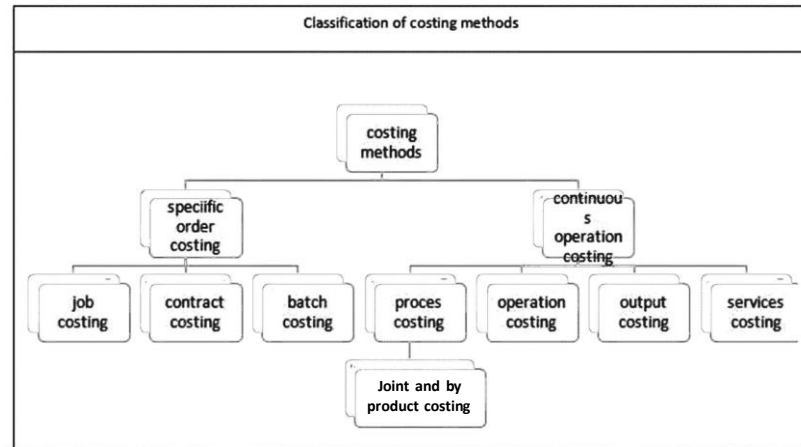
Each basis of ascertaining cost has its strengths and weaknesses and is suitable for different purposes. Therefore, it is essential for businesses to choose the most appropriate basis or combination of bases to accurately calculate and allocate costs and make informed decisions. The choice of basis for ascertaining cost will depend on the nature of the business, the products or services produced, and the purpose of the cost calculation. Businesses may use different bases of ascertaining cost for different purposes, such as financial reporting, pricing decisions, or internal control.

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## 2.5 METHODS OF COSTING

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Every business and organization has different nature and characteristics. So it also needs to employ different costing systems to ascertain the cost of their products. Let us look at some of the most common and popular methods of costing :



**Figure 1 : Methods of Costing**

### 1. Job Costing

Many firms and businesses work on a job work basis. In such cases, we use the job costing method. Here the cost is assigned to a specific job, assignment etc.

There is no pre-production here, each order is made to the specifications needed. If the system is implemented accurately we can find the profitability of each job. Some important features of job costing are,

- It concerns itself with specific order costing, i.e the cost of each order or job regardless of the time taken to finish the job. But usually, the duration of each job is relatively short.
- The costs are collected at the completion of the job
- Prime costs are traced and overheads are assigned to each job on some appropriate proportionate basis.
- Under this method costs are collected and accumulated for each job or work order or project separately. Each job can be identified separately and hence becomes essential to analyze the costs according to each job.
- Normally production consists of distinct jobs or lots so that order number can identify costs. A job card is prepared for each job for cost accumulation. This

method is suitable for Printers, Machine tool manufacturers, Foundries, and general engineering workshops.

## **2. Batch Costing**

Batch costing is used when the goods are not produced to demand but are pre-produced. Here the production process is continuous and occurs in batches.

These batches may be for a specific order or some pre-determined quantity. In this system, the goods are more or less uniform.

The total cost incurred during the production of one such batch of goods is divided by the number of units produced to give us the cost per unit.

This method is very useful for consumer electronic goods such as televisions, washing machines etc.

This is an extension of job costing. A batch may represent a number of small orders or group of identical products passed through the factory in batch. Each batch is treated as a cost unit and cost is ascertained separately.

The cost per unit is determined by dividing the cost of the batch by the number of units produced in a batch. The manufacturers of biscuits, garments, spare parts and components mainly use this method.

## **3. Process Costing**

This is one of the most popular methods of costing. There are many goods that are produced continuously.

These goods are homogeneous and are usually produced in huge quantities. So the method of process costing is used to find the cost of production of each unit.

In continuous processing, the output of one process becomes the input of the next process and so on until we achieve our finished product.

So for the purposes, we find out the costs of each process and divided it by the number of units produced in this process. Some examples of products that use process costing are sugar, edible oil, chemicals, salt etc. A process refers here to a stage of

production. If a product passes through different stages, each distinct and well defined, then in order to ascertain the cost at each stage or process, the process costing is used. Under this method, a separate process account is prepared and all costs incurred in that process are charged.

Normally the finished product of one process becomes the raw material of the subsequent process and a final product is obtained in the last process. As the products are manufactured in continuous process, this is also known as continuous costing. Process costing method is generally followed in textile units, chemical industries, refineries, tanneries, paper manufacture, etc.

#### **4. Operating Costing**

Among all the methods of costing, the one best suited to the service sector is operating costing. We use operating costs to calculate the cost of the services provided to the customers.

The service must be uniform service provided to all customers, not specialized services. And to ascertain the cost we average the total cost over the total services rendered.

It is a further refinement of process costing. It is suitable to industries where mass or repetitive production is carried out or where the goods have to be stocked in semi-finished stage, to enable the execution of special orders, or for the convenient use in later operations. In this method, the cost unit is an operation. It is used in cycle manufacturing, automobile units, etc. This is suitable for industries, which render services as distinct from those, which manufacture goods. This is applied in transport undertakings, power supply companies, gas, water works, municipal services, hospitals, hotels, etc.

It is used to ascertain the cost of services rendered. There is usually a compound unit in such undertakings, for example, tonne-kilometres or passenger-kilometres in transport companies, kilo-watt-hour in power supply, patient-day in hospitals, etc.

#### **5. Contract Costing**

To work out the cost of a contract undertaken we employ contract costing. So it will help us track the costs of a specific contract with a specific customer.

These methods of costing are mainly used for construction contracts, like the construction of complexes, highways, bridges, dams etc.

As you can see there are a lot of similarities between job costing and contract costing. But job costing is usually for a shorter period.

While contract costing is for a much longer time, several years usually. So there is work-in-progress at the end of a year in contract costing

#### **6. Unit Costing:**

This is also known as single or output costing. This method is suitable for industries where the manufacture is continuous and units are identical. This method is applied in industries like mines, quarries, cement works, brick works, etc.

In all these industries there is natural or standard unit of cost, for example, tonne of coal in collieries, tonne of cement, one thousands of bricks, etc. The object of this method is to ascertain the cost per unit of output and the cost of each element of such cost.

Here the cost account takes the form of cost sheet or statement prepared for a definite period. The cost per unit is determined by dividing the total expenditure incurred during a given period by the number of units produced during that period.

#### **8. Multiple Costing:**

It is also called as composite costing. It represents the application of more than one method of costing in respect of the same product. This is suitable for industries where a number of component parts are separately produced and subsequently assembled into a final product. In such industries each component differs from others as to price, materials used, and manufacturing processes.

So it will be necessary to ascertain the cost of each component. For this purpose process costing may be applied. To ascertain the cost of the final product batch costing may be applied. This method is used in factories manufacturing cycles, automobiles, engines, radios, typewriter, aero plane and other complex products.



#### **9. Standard Costing:**

Standard costing is a method of cost accounting that involves setting standard costs for materials, labour, and overhead and then comparing actual costs to the standards. This allows the business to identify areas of inefficiency and make improvements to reduce costs. Standard costing is commonly used in industries such as manufacturing, where production is highly standardized.

#### **10. Activity-Based Costing:**

Activity-Based Costing is used to identify the cost drivers of each activity and allocate costs accordingly. ABC is commonly used in industries where overhead costs are significant and difficult to allocate, such as service industries.

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### **2.6 SUMMARY**

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Cost accounting is a method of managerial accounting which aims to capture the total production cost of a business by measuring the variable costs of each production phase as well as fixed costs, such as a lease expense.

Historians believe that cost accounting was first introduced during the industrial revolution when the new global supply and demand economies forced producers to begin monitoring their fixed and variable costs to automate their manufacturing processes.

Cost accounting allowed rail and steel companies to manage costs and make themselves more competitive. By the early 20th century, cost accounting had become a widely discussed subject in the literature of business management.

A company's internal management department uses cost accounting to define both variable and fixed costs associated with the manufacturing process. It will first individually calculate and report these costs, then compare input costs with production results to assist in assessing financial performance and in making potential business decisions.

Cost accounting provides managers with accurate information on the costs associated with different products, services, and operations. This information enables them to

identify areas of the business that require improvement and make informed decisions on cost reduction and efficiency measures. Additionally, cost accounting helps in setting prices for products and services that ensure profitability while remaining competitive.

Furthermore, cost accounting is crucial for budgeting and forecasting as it provides accurate data on past costs and trends, helping businesses plan for the future. It also assists in evaluating the performance of different departments and employees by providing data on cost and efficiency metrics.

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## 2.7 GLOSSARY

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- **Process costing:** It is used in industries that produce large quantities of identical or similar products, such as chemical processing or food manufacturing.
- **Job Costing:** It is commonly used in industries such as construction, manufacturing, and custom design. In this method, the costs of materials, labour, and overhead are allocated to each job or order.
- **Overhead:** It refers to the ongoing costs to operate a business but excludes the direct costs associated with creating a product or service.
- **Standard cost:** It is an estimated cost determined by the company for the production of the goods and services or operating under normal circumstances

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## 2.8 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the various elements of cost.

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Q.2 Discuss the basis of ascertaining cost.

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## 2.9 LESSON END EXERCISE

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Q.1 Discuss the various methods of costing.

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Q.2 Explain the process costing.

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Q.2 Explain the concept of Job costing.

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## 2.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
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- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

## **INTRODUCTION**

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**UNIT- I  
LESSON - 3**

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### **UNITS OF OUTPT COSTING - OPERATING COSTS**

#### **STRUCTURE**

- 3.1 Introduction
- 3.2 Objectives
- 3.3 Units of Output Costing - Operating Costs
- 3.4 Features of Unit Costing
- 3.5 Cost Sheet
- 3.6 Practical Problems
- 3.7 Summary
- 3.8 Glossary
- 3.9 Self Assessment Questions
- 3.10 Lesson End Exercise
- 3.11 Suggested Readings

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#### **3.1 INTRODUCTION**

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In today's world where there are so many industries ranging from agriculture, mining, manufacturing, electricity, water supply, construction, transportation, hotels to aerospace, telecommunication, computer, education, etc. The diversified nature will further diversify in years to come and the types of industries will keep on increasing so

will the requirements of users to obtain in depth information regarding costs, profits and selling price of the products manufactures or services rendered by these industries. Based on different industries, different costing systems will be implemented because it is not possible to devise a single system to fulfil everyone's needs. These methods depend upon the type of manufacturing done but the basic principle remains same in every method. Now this entire discussion is helpful for presentation of cost accounting information.

Unit costing is a method of costing where identical / same / homogenous products are made on a large scale through continuous manufacturing. Unit cost is the total expenditure incurred by the company to produce, store & sell one unit of a company's product. Unit costing is synonymously known as Single / Output costing and this costing is followed by industries which produce Single output or few variants of a single output. Here costs are accumulated and analysed under various elements of cost and the cost per unit is ascertained by dividing the total cost by the number of units produced. In order to arrive at the Total cost by adding up Direct Materials, Direct labour, Direct expenses, Administration overheads and for factory overheads we recover on the basis of absorption costing.

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### **3.2. OBJECTIVES**

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After reading this lesson, students will be able to learn about:

- Basics of unit costing.
- Various elements of cost sheet.
- Preparation of cost sheet.

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### **3.3 UNITS OF OUTPUT COSTING - OPERATING COSTS**

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Unit or output costing is a method of costing that calculates the cost of producing a single unit of a product or service. It is also known as unit cost or per unit cost. In unit costing, the total cost of production is divided by the total number of units produced to arrive at the cost per unit. This method is commonly used in industries that produce

homogeneous products, such as manufacturing, where the production process is standardized, and the products are identical.

**Unit costing involves the following steps:**

1. **Identification of direct costs:** Direct costs are the costs that can be directly attributed to the production of a unit, such as direct materials, direct labour, and direct expenses.
2. **Allocation of indirect costs:** Indirect costs are the costs that cannot be directly attributed to the production of a unit, such as factory rent, utilities, and depreciation. These costs are allocated to the production process using an allocation basis, such as machine hours or labour hours.
3. **Calculation of total cost:** The direct and indirect costs are added together to arrive at the total cost of production.
4. **Determination of unit cost:** The total cost is divided by the number of units produced to arrive at the cost per unit.

Unit costing provides a clear understanding of the cost of producing a single unit and helps businesses to determine the selling price of their products or services. It also enables businesses to identify areas where they can reduce costs and increase profitability.

However, unit costing may not be suitable for businesses that produce customized or non-standardized products, as the cost of production may vary depending on the specifications of each unit. In such cases, other methods, such as job costing or process costing, may be more appropriate.

**Some definitions of unit or output costing by experts:**

According to **Charles T. Horngren**, “Unit costing is a method of costing in which the cost of a product or service is obtained by dividing the total cost of production by the number of units produced.”

In the words of **Colin Drury**, “Unit costing is a method of determining the cost of producing one unit of output by dividing the total cost of producing a batch or run of

units by the total number of units in the batch or run.”

According to Hrishikesh Bhattacharya, “Unit costing is a method of cost accounting that determines the cost of producing a single unit of a product or service by dividing the total cost of production by the total number of units produced.”

In the words of Maheshwari and Mittal, “Unit costing is a technique of costing where the cost per unit of output is arrived at by dividing the total cost of production by the number of units produced.”

These definitions emphasize that unit costing is a method of determining the cost of producing a single unit of a product or service by dividing the total cost of production by the total number of units produced. Unit costing is suitable for industries that produce homogeneous products and have a standardized production process. It provides businesses with a clear understanding of the cost of producing a single unit and helps them to determine the selling price of their products or services.

In summary, while cost accounting is concerned with the calculation and analysis of costs incurred in the production or service delivery process, financial accounting provides information to external users about the financial performance and position of a company. Understanding the differences between these two branches of accounting is important for businesses to effectively use both types of accounting information for decision-making and financial reporting.

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### **3.4 FEATURES OF OUTPUT COSTING**

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**The important features of output costing are:**

1. Output costing is the method of costing adopted in concerns where there is a production of single product or a few grades of the same product differing only in size, shape or quality by continuous process of manufacture. The units of production or output are identical and the costs of units are physical and natural.
2. Under this method, the cost per unit of output, say, per ton, per barrel, per kilogram, per metre, per quintal, per bag, etc. is ascertained. The cost per unit of output is ascertained by dividing the total cost incurred on a product during a given period of time by output produced during the period.

Where the products manufactured are of different grades, first, the costs of products are ascertained grade-wise, and then the total cost of each grade of the product is divided by the number of units of that grade so as to ascertain the cost per unit of each grade of the product.

3. Equality of cost is an important feature of this method. That is, under this method, cost units, which are identical, will have identical cost.
4. Under this method, the cost of product is ascertained at the end of the accounting period.
5. Under this method, the cost information relating to a product may be presented in the form of either cost sheet or production account.
6. This method is the simplest method of all the methods of costing; in the sense that the cost collection and the cost ascertainment are quite simple.
7. The cost per unit of output, determined under single. Costing enables the management to make real comparison between different periods and between different firms within the same industry, as the unit of output is a common factor between different periods and between different firms within the same industry.

### **Importance of Unit Costing**

1. It discloses the total cost and cost per unit.
2. It helps to determine the selling price of the product.
3. It helps to determine profitable volume of production.
4. Identifying and analysing a company's unit cost is a quick way to check if a company is producing product efficiently or not.
5. It helps us to compare current cost with previous cost and helps identifying variations.
6. Provides useful information to trace wastages, losses & inefficiencies and thus affect economies.



### **Limitations**

1. Not suitable for companies manufacturing varied range of products
2. Not suitable for service organisations.

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### **3.5 COST SHEET**

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Under this method of costing, it is customary to prepare a statement of cost which is popularly known as 'Cost Sheet' at periodical intervals. It shows detailed break-up of the total cost and the cost per unit at each stage. It should contain as much information regarding costs as may be necessary for the purposes of cost analysis and cost control. In actual practice, the corresponding figures of the preceding period are also shown in the Cost Sheet for purposes of comparison. This facilitates cost control.

Meaning: A cost sheet is statement which shows the break-up and build-up of costs, it is a document which provides for the assembly of the detailed cost of a cost centre or a cost unit.

#### ***Uses of the Cost Sheet***

- (a) Presentation of cost information.
- (b) Determination of Selling Price.
- (c) Ascertainment of profitability.
- (d) Product-wise and Location-wise cost Analysis.
- (e) Inter-Firm and Intra-Firm cost comparison.
- (f) Preparation of Cost Estimates for submitting tenders/quotations.
- (g) Preparation of Budgets.
- (h) Disclosure of operational efficiency for cost control.

### **Elements of Costs Sheet**

In case of a typical manufacturing type of operation, the activity may consist of conversion of raw material in the form of finished goods with the help of labour and other services and selling the finished goods in the market to earn the profits. In order to interpret the term cost correctly and to ascertain the cost with respect to the centres,

the cost attached with the manufacturing process may be subdivided into what is known as Elements of Cost. Broadly there can be three elements of costs:

**A) Material :** This is the cost of commodities and materials used by the organization. It can be direct or indirect. Direct Material indicates that material which can be identified with the individual cost centre and which becomes an integral part of the finished goods. It basically consists of all raw materials, either purchased from outside or manufactured in house. Indirect Material indicates that material which cannot be identified with the individual cost centre. This material assists the manufacturing process and does not become an integral part of finished goods. The example of this type of material may be consumable stores, cotton waste, oils and lubricants, stationary material etc.

**B) Labour :** This is the cost of remuneration paid to the employees of the organization. It can direct or indirect. Direct labour cost indicates that labour cost which can be identified with the individual cost centre and is incurred for those employees who are engaged in the manufacturing process. Indirect labour cost indicates that labour cost which cannot be identified with the individual cost centre and is incurred for those employees who are not engaged in the Manufacturing process but only assist in the same. The examples of this type of cost are wages paid to foreman/storekeeper, salary of works manager, Accounts/Personnel department salaries etc.

**C) Expenses :** This is cost of services provided to the organization (and the national cost of assets owned). It can be direct or indirect. Direct Expenses are those expenses, which can be identified with the individual cost centres. The examples of these expenses are hire charges of machinery/equipments required for a particular job, cost of defective work for a particular job etc. Indirect expenses are those expenses, which cannot be identified with individual cost centres. The examples of these expenses are rent, telephone expenses, insurance, lighting etc. The above elements of cost can be shown as below. The aggregate of Direct Material Cost, Direct Labour Cost and Direct Expenses is termed as 'Prime Cost'. The aggregate of Indirect Material Cost, Indirect Labour Cost and Indirect Expenses is termed as 'Overheads'.

**D) Overheads:** As discussed above, the aggregate of Indirect Material Cost,

Indirect Labour Cost and Indirect Expenses is termed as 'Overheads'. For the proper interpretation and presentation of cost, the term overheads may be further classified as below. (a) Factory Overheads (Also termed as production/work/manufacturing overheads). (b) Office and Administration Overheads. (c) Selling and Distribution Overheads.

**(a) Factory Overheads** These overheads consist of all overhead costs incurred from the state of procurement of material till the stage of production of finished goods. They include:

- Indirect Material such as stationary items, office supplies etc.
- Indirect Labour cost such as salaries paid to Account and Administration staff,
- Directors remuneration etc. Indirect Expenses such as postage/telephone, rent/insurance/depreciation on office
- building, general lighting, legal/audit charges, bank charges etc.

**(b) Selling and distribution overheads**

These overheads consist of all overhead costs insured from the stage of final manufacturing of finished goods till the stage of sale of goods in the market and collection of dues from the customers. They include:

- Indirect Material such as packing material, samples etc.
- Indirect Labour like salaries paid to sales personnel, commission paid to sales manager etc.
- Indirect Expenses like carriage outwards, warehouse charges, and advertisement, bad debts, repairs, and running of distribution van, discount offered to customer

**Cost Sheet (I)**  
**Performa of Cost Sheet**

<b>Particulars</b>	<b>Total Cost</b>	<b>Cost Per Unit</b>
Opening Stock of Raw Materials	xxx	xxx
Add: Purchases	xxx	xxx
Add: Carriage Inward	xxx	xxx
Add: Octroi and Customs Duty	xxx	xxx
Less: Closing Stock of Raw Materials	xxx	xxx
Cost of Direct Materials Consumed	xxx	xxx
Direct Wages	xxx	xxx
Direct or Chargeable Expenses	xxx	xxx
Prime Cost	xxx	xxx
Add: Works or Factory Overheads:	xxx	xxx
Indirect Materials	xxx	xxx
Indirect Wages	xxx	xxx
Leave Wages	xxx	xxx
Bonus to Workers	xxx	xxx
Overtime Wages	xxx	xxx
Fuel and Power	xxx	xxx
Rent and Taxes	xxx	xxx
Insurance	xxx	xxx
Factory Lightings	xxx	xxx
Supervision	xxx	xxx
Works Stationery	xxx	xxx
Canteen and Welfare Expenses	xxx	xxx
Repairs	xxx	xxx
Works Salaries	xxx	xxx
Depreciation of Plant and Machinery	xxx	xxx
Expenses	xxx	xxx
Works Gas and Water	xxx	xxx
Technical Director's Fees	xxx	xxx
Labouratory Expenses	xxx	xxx

Works Transport Expenses	xxx	xxx
Works Telephone Expenses	xxx	xxx
Add: Opening Stock of Work-in-Progress	xxx	xxx
Less: Closing Stock of Work-in-Progress	xxx	xxx
Less: Sale of Waste scrap	xxx	xxx
<b>Works Costs</b>	xxx	xxx
Add: Office and Administration Overheads:	xxx	xxx
Office Salaries	xxx	xxx
Directors Fees	xxx	xxx
Office Rent and Rates	xxx	xxx
Office Stationery and Printing	xxx	xxx
Sundry Office Expenses	xxx	xxx
Depreciation on Office Furniture	xxx	xxx
Subscription to Trade Journals	xxx	xxx
Office Lightings	xxx	xxx
Establishment Charges	xxx	xxx
Directors Travelling Expenses	xxx	xxx
Consultants' Fees	xxx	xxx
Contribution to Provident Fund	xxx	xxx
Postage	xxx	xxx
Legal Charges	xxx	xxx
Audit Charges	xxx	xxx
Bank Charges	xxx	xxx
Depreciation and Repairs of Office Equipment	xxx	xxx
Bonus to Staff	xxx	xxx
<b>Cost of Production</b>	xxx	xxx
Add: Opening Stock of Finished Goods	xxx	xxx
Less: Closing Stock of Finished Goods	xxx	xxx
<b>Cost of Goods Sold</b>	xxx	xxx
<b>Add: Selling and Distribution Overheads:</b>	xxx	xxx
Advertising	xxx	xxx
Showroom Expenses	xxx	xxx

Salesmen's Salaries and Expenses	xxx	xxx
Packing Expenses	xxx	xxx
Carriage Outward	xxx	xxx
Commssion of Sales Agents	xxx	xxx
Cost of Catalogues	xxx	xxx
Expenses of Delivery Vans	xxx	xxx
Collection Charges	xxx	xxx
Travelling Expenses	xxx	xxx
Cost Tenders	xxx	xxx
Warehouse Expenses	xxx	xxx
Cost of Mailing Literature	xxx	xxx
Sales Managers' Salaries	xxx	xxx
Insurance of Showroom	xxx	xxx
Sales Directors' Fees	xxx	xxx
Sales Office Expenses	xxx	xxx
Rent of Sales Office	xxx	xxx
Depreciation of Delivery Vans	xxx	xxx
Expenses of Sales Branch	xxx	xxx
Establishments	xxx	xxx
Branch Office Expenses	xxx	xxx
<b>Total Cost/Total of Sales</b>	xxx	xxx
Profit or Loss	xxx	xxx
<b>Sales</b>	xxx	xxx

### 3.6 PRACTICAL PROBLEMS

**Illustration 1:** A manufacturing company produced 10,000 units of a product in a month. The direct materials cost was \$30,000, direct labour cost was \$20,000, and indirect expenses were \$10,000. Calculate the unit cost of production.

**Solution:**

Total direct cost = Direct material cost + Direct labour cost

Total direct cost = \$30,000 + \$20,000

Total direct cost = \$50,000

Total cost of production = Total direct cost + Indirect expenses  
Total cost of production = \$50,000 + \$10,000  
Total cost of production = \$60,000

Unit cost of production = Total cost of production / Number of units produced  
Unit cost of production = \$60,000 / 10,000

Unit cost of production = \$6 per unit

Therefore, the unit cost of production is \$6.

**Illustration 2:** A company produces two products, A and B. The total cost of producing 1,000 units of product A is \$30,000, and the total cost of producing 1,500 units of product B is \$50,000. Calculate the unit cost of production for each product.

**Solution:**

Unit cost of production for product A =  $\frac{\text{Total cost of production for product A}}{\text{No. of units produced for product A}}$

Unit cost of production for product A = \$30,000 / 1,000  
Unit cost of production for product A = \$30 per unit

Unit cost of production for product B =  $\frac{\text{Total cost of production for product B}}{\text{No. of units produced for product B}}$

Unit cost of production for product B = \$50,000 / 1,500  
Unit cost of production for product B = \$33.33 per unit

Therefore, the unit cost of production for product A is \$30 per unit and the unit cost of production for product B is \$33.33 per unit.

**Illustration 3:** A company produced 5,000 units of a product in a month. The total cost of production was \$75,000, and the company earned a profit of \$25,000. Calculate the selling price per unit.

**Solution:**

$$\text{Total cost per unit} = \frac{\text{Total cost of production}}{\text{No. of units produced}}$$

$$\text{Total cost per unit} = \$75,000 / 5,000 \quad \text{Total cost per unit} = \$15 \text{ per unit}$$

$$\text{Profit per unit} = \frac{\text{Total profit earned}}{\text{No. of units produced}}$$

$$\text{Profit per unit} = \$25,000 / 5,000 \quad \text{Profit per unit} = \$5 \text{ per unit}$$

$$\begin{aligned} \text{Selling price per unit} &= \text{Total cost per unit} + \text{Profit per unit} \\ \text{Selling price per unit} &= \$15 + \$5 \\ \text{Selling price per unit} &= \$20 \text{ per unit} \end{aligned}$$

Therefore, the selling price per unit is \$20.

**Illustration 4:** Bombay Manufacturing Company submits the following information on 31-3-2023

Particulars	Rupees (Rs)
Sales for the year	2,75,000
Inventories at the beginning of the year-	
- Raw Materials	3,000
- Work in Progress	4,000
- Finished Goods	1,10,000
Purchase of materials	65,000
Direct Labour	6,000
Inventories at the end of the year -	
- Raw Materials	4,000
- Work in Progress	6,000
- Finished Goods	8,000
Other expenses for the year-	
Selling expenses	27,500
Administrative expenses	13,000
Factory overheads	40,000



Prepare Statement of cost

**Solution:**

Bombay Manufacturing Company Statement of cost for the year ended 31-3-2023

	<b>Rs.</b>	<b>Rs.</b>
Materials consumed		
Opening stock	3,000	
Add Purchases	110000	
	113000	
Less Closing stock	4000	
		109000
Direct Labour		65000
Direct Expenses		6000
<b>Prime cost</b>		<b>180000</b>
Factory overheads	40000	
Add Work in Progress (Opening)	4000	
	44000	
Less Work in Progress (Closing)	6000	
		38000
<b>Works cost</b>		<b>2,18,000</b>
Administrative expenses		13,000
<b>Cost of Production</b>		<b>2,31,000</b>
Add Opening Stock of finished goods		7,000
		2,38,000
Less Closing Stock of finished goods		8,000
<b>Cost of Goods Sold</b>		<b>2,30,000</b>
Selling & Distribution expenses		27,500
<b>Cost of Sales</b>		<b>2,57,500</b>
Profit (Bal. Fig)		17,500
<b>Sales</b>		<b>2,75,000</b>

**Illustration 5:** From the following information prepare a statement showing (i) Prime

cost (ii) Works cost (iii) Cost of Production (iv) Cost of Sales (v) Net profit of X Ltd.  
which produced and sold 1000 units in June 2023.

	Rs.
Opening Stock:	
Raw Materials	24,000
Finished goods	16,000
Closing stock:	
Raw Materials	20,000
Finished goods	15,000
Purchase of Raw Materials	80,000
Sales	2,00,000
Direct Wages	35,000
Factory Wages	2,000
Carriage Inward	2,000
Carriage Outward	1,000
Factory Expenses	4,000
Office Salaries	15,000
Office Expenses	12,000
Factory Rent & Rates	2,500
Depreciation - Machinery	2,500
Bad Debts	1,500

### Solution

#### Cost Statement for June, 2023

Particulars	Rs.	Total Cost	Cost per Unit‘
Opening stock of materials	24,000		
Add: Purchase of materials	80,000		
Add: Carriage Inward	2,000		
	1,06,000		
Less: Closing stock of materials	20,000		
Cost of Materials consumed		86,000	86.00

Direct Wages		35,000	35.00
<b>(i) Prime Cost</b>		<b>121,000</b>	<b>121.00</b>
Factory overheads:			
Factory Wages	2,000		
Factory expenses	4,000		
Factory Rent & Rates	2,500		
Depreciation	2,500		
		11,000	11.00
<b>(ii) Works Cost</b>		<b>1,32,000</b>	<b>132.00</b>
Administrative Overheads:			
Office Salaries	15,000		
Office Expenses	12,000		
		27,000	27.00
<b>(iii) Cost of Production</b>		<b>1,59,000</b>	<b>159.00</b>
Selling & Distribution			
Overheads:			
Carriage Outward	1,000		
Bad Debts	1,500		
	2,500	2.50	
Total Cost	1,61,500	161.50	
Add: Opening Stock of finished goods		16,000	
		1,77,500	
Less: Closing Stock of finished goods		15,000	
<b>(iv) Cost of Sales</b>		<b>1,62,500</b>	<b>162.50</b>
Sales		2,00,000	200.00
<b>(v) Net Profit (Bal.Fig)</b>		<b>37,500</b>	<b>37.50</b>

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### 3.7 SUMMARY

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Unit or output costing is that method of costing in which cost are ascertained per unit of a single product in a continuous manufacturing activity. Per unit cost is calculated by dividing total production cost by number of units produced. This method is also known as single costing. This method is known as ‘single costing’ as industries adopting this method manufacture, in most cases, a single variety of product. This method is also known as ‘unit costing’, as not only the cost of the total output, but also the cost per unit of output is ascertained under this method. Under this method cost units are identical. This method is also called ‘output costing’, as cost is ascertained for the total output of a product. The analysis of the cost by adopting the method of unit costing is presented in the form of a statement known as cost sheet or an account i.e. Production account.

Cost sheet is a device used to determine and present the cost under unit costing. It is a statement of costs incurred at each level of manufacturing a product or service. In a Cost sheet all the elements of cost is taken into consideration. It includes Prime cost, Factory/manufacturing cost, cost of production, cost of sale, Profit/loss etc.

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### 3.8 GLOSSARY

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- **Unit costing :** Unit costing or output costing may be defined as single or output cost system is used in business where a standard product is turned out and it is desired to find out the cost of a basic unit of production.
- **Cost Sheet :** Cost sheet is a cost schedule or document which provides for the assembly of the estimated detailed cost in respect of a cost center or cost unit.
- **Prime Cost :** All the expenses directly involved in the production process are prime costs. It also passes as flat, first, or basic cost.
- **Works Cost :** It is the sum of prime costs and factory costs or overhead expenses.

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### **3.9 SELF ASSESSMENT QUESTIONS**

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Q.1 Explain the concept of Unit Costing.

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Q.2 Discuss the various features of unit costing.

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### **3.10 LESSON END EXERCISE**

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Q.1 Bombay Manufacturing company submits the following information on 31-3-2019. Sales for the year Rs. 2,75,000, Inventories at the beginning of the year- Raw Materials Rs.3,000 - Work in Progress Rs.4,000 - Finished Goods Rs.1,10,000 Purchase of materials Rs.65,000 Direct Labour Rs.6,000 Inventories at the end of the year - - Raw Materials Rs.4,000 - Work in Progress Rs.6,000 - Finished Goods Rs.8,000 Other expenses for the year – Selling expenses Rs.27,500 Administrative expenses Rs.13,000 Factory overheads Rs.40,000. Prepare Statement of cost

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Q.2 Explain the various elements of cost sheet.

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### 3.11 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

## **INTRODUCTION**

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**M.COM III SEM  
MCOMC354**

**UNIT- I  
LESSON - 4**

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### **CONTRACT COSTING, JOB COSTING**

#### **STRUCTURE**

- 4.1 Introduction
- 4.2 Objectives
- 4.3 Contract Costing
- 4.4 Meaning of Terms Used in Contract Costing
- 4.5 Cost Plus Contract
- 4.6 Job Costing
- 4.7 Summary
- 4.8 Glossary
- 4.9 Self Assessment Questions
- 4.10 Lesson End Exercise
- 4.11 Suggested Readings

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#### **4.1 INTRODUCTION**

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In today's world where there are so many industries ranging from agriculture, mining, manufacturing, electricity, water supply, construction, transportation, hotels to aerospace, telecommunication, computer, education, etc. The diversified nature will further diversify in years to come and the types of industries will keep on increasing so

will the requirements of users to obtain in depth information regarding costs, profits and selling price of the products manufactures or services rendered by these industries. Based on different industries, different costing systems will be implemented because it is not possible to devise a single system to fulfil everyone's needs. These methods depend upon the type of manufacturing done but the basic principle remains same in every method. Now this entire discussion is helpful for presentation of cost accounting information.

Unit costing is a method of costing where identical / same / homogenous products are made on a large scale through continuous manufacturing. Unit cost is the total expenditure incurred by the company to produce, store & sell one unit of a company's product. Unit costing is synonymously known as Single / Output costing and this costing is followed by industries which produce Single output or few variants of a single output. Here costs are accumulated and analysed under various elements of cost and the cost per unit is ascertained by dividing the total cost by the number of units produced. In order to arrive at the Total cost by adding up Direct Materials, Direct labour, Direct expenses, Administration overheads and for factory overheads we recover on the basis of absorption costing.

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## **4.2 OBJECTIVES**

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After reading this lesson, you will be able to understand the:

- Concepts of contract costing.
- Preparation of contract account.
- Concepts of job costing.

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## **4.3 CONTRACT COSTING**

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Contract costing is a form of specific order costing where job undertaken is relatively large and normally, it takes period longer than a year to complete. Contract costing is usually adopted by the contractors engaged in any type of contracts like construction of building, road, bridge, erection of tower, setting up of plant etc. Contract costing have the following distinct features:



1. The major part of the work in connection with each contract is ordinarily carried out at the site of the contract.
2. The bulk of the expenses incurred by the contractor are considered as direct.
3. The indirect expenses mostly consist of office expenses, stores and works.
4. A separate account is usually maintained for each contract.
5. The number of contracts undertaken by a contractor at a time is usually few.
6. The cost unit in contract costing is the contract itself.

A contract takes longer period to complete and the result of the contract can be known only after the completion of the contract. To have a better control over the contract and cost, it is necessary to have an idea of profitability of contracts at regular intervals or atleast in a year. For this purpose, a contractor needs to calculate expected profit or notional profit for a contract. It also helps in profit comparison for a period and provide a good basis for performance measurement and evaluation of those who are engaged in the contract. The expected or notional profit in respect of each contract in progress (i.e. incomplete contracts) is transferred to the costing profit and loss account (consolidated) for the year to determine overall profitability of the contractor.

#### Recording of Contract Costs

##### (i) **Material Cost**

All materials supplied from the stores or purchased directly for the contract are debited to the concerned contract account.

Contract Account (Contract No: ).....Dr.

To Stores Ledger Control A/c (Issued from stores) or

To Cost Ledger Control A/c (Direct purchase)

In the case of transfer of excess material from one contract to another, cost of these excess materials are adjusted on the basis of Material Transfer Note.

Contract Account (Contract No. XYZ) ..... Dr.

To Contract Account (Contract No. ABC)

In case the return of surplus material appears uneconomical on account of high cost of transportation, the same is sold and the concerned contract account is credited with the price realised. Any loss or profit arising therefrom is transferred to the Costing Profit and Loss Account.

Cost Ledger Control A/c .....Dr.  
Costing Profit & Loss A/c (Loss)      Dr.  
    To Contract A/c

To Costing Profit & Loss A/c (Profit)

Any loss of material due to theft or destruction etc. is transferred to the Costing Profit and Loss Account.

Costing Profit & Loss A/c .....Dr.  
    To Contract A/c

If any stores items are used for manufacturing tools, the cost of such stores items are charged to the work expenses account.

Works expenses A/c..... Dr.  
To Stores Ledger Control A/c (With amount of stores  
used for works) Contract A/c .....Dr.  
To Works expenses  
(With amount of works used in the contract)

If the contractee has supplied some materials without affecting the contract price, no accounting entries will be made in the contract account, only a note may be given about it.

## **(ii) Employee Labour Cost**

Workers employed on the site of the contract is regarded as direct employees (irrespective of the nature of the task performed) and the wages paid to them are charged to the concerned contract directly. If an employee is engaged concurrently in other contract also then the total wages paid is apportioned to the contracts on some reasonable basis, usually on time basis.

Contract A/c .....Dr.

To Wages Control A/c

**(iii) Direct Expenses**

Direct expenses (if any) are directly charged to the concerned contract account. Contract A/c.....Dr.

To Direct Expenses A/c

**(iv) Indirect Expenses**

Indirect expenses (such as expenses of engineers, surveyors, supervisors, corporate office etc.) may be distributed over several contracts on certain reasonable basis as overheads.

Contract A/c .....Dr.

To Overheads A/c

**(v) Plant and Machinery**

The value of the plant in a contract may be either debited to contract account and the written down value thereof at the end of the year entered on the credit side for closing the contract account, or only a charge (depreciation) for use of the plant may be debited to the contract account.

Contract A/c .....Dr.

To Plant and Machinery A/c (with cost) Plant and  
Machinery A/c (with WDV) .... Dr.

To Contract A/c

Or

Contract A/c ..... Dr.

To Depreciation on Plant and Machinery A/c

**(vi) Sub-Contract**

Sub-contract costs are also debited to the Contract Account.

Contract A/c .....Dr.

To Cost of Sub-Contract A/c

Extra work: The extra work amount payable by the contractee should be added

to the contract price. If extra work is substantial, it is better to treat it as a separate contract. If it is not substantial, expenses incurred should be debited to the contract account as "Cost of Extra work".

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#### 4.4. MEANING OF THE TERMS USED IN CONTRACT COSTING

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(i) **Work-in-Progress:** Work-in-progress in contract costing refers to the contract which is not complete at the reporting date. In Contract Accounts, the value of the work-in-progress consists of

- (i) the cost of work completed, both certified and uncertified;
- (ii) the cost of work not yet completed; and
- (iii) the amount of estimated/ notional profit.

In the Balance Sheet (prepared for management), the work-in-progress is usually shown under two heads, viz., certified and uncertified. The cost of work completed and certified and the profit credited will appear under the head 'certified' work-in-progress, while the completed work not yet certified, cost of material, employee and other expenses which has not yet reached the stage of completion are shown under the head "uncertified" work-in-progress.

(ii) **Cost of Work Certified or Value of Work Certified:** A contract is a continuous process and to know the cost or value of the work completed as on a particular date; assessment of the completion of work is carried out by an expert (it may be any professional like surveyor, architect, engineer etc.). The expert, based on his assessment, certifies the work completion in terms of percentage of total work. The cost or value of certified portion is calculated and is known as Cost of work certified or Value of work certified respectively.

$$\begin{aligned}\text{Value of Work Certified} &= \text{Value of Contract} \times \text{Work certified (\%)} \\ \text{Cost of Work Certified} &= \text{Cost of work to date} - (\text{Cost of work uncertified} \\ &\quad + \text{Material in hand} + \text{Plant at site})\end{aligned}$$

*Mathematically:*

(iii) **Cost of Work Uncertified:** It represents the cost of the work which has been

carried out by the contractor but has not been certified by the expert. It is always shown at cost price. The cost of uncertified work may be ascertained as follows:

	(Rs.)	(Rs.)
Total cost to date		xxx
Less: Cost of work	xxx	
certified Material in hand	xxx	
Plant at site	xxx	xxx
Cost of work uncertified		xxx

(iv) **Progress Payment:** A Contractor gets payments for work done on a contract based on work completion. Since, a contract takes longer period to complete and requires large investment in working capital to progress the contract work, hence, it is desirable by the contractor to have periodic payments from the contractee against the work done to avoid working capital shortage. For this a contractor enters into an agreement with the contractee and agrees on payment on some reasonable basis, which generally, includes percentage of work completion as certified by an expert.

$\text{Progress Payment} = \text{Value of work certified} - \text{Retention money} - \text{Payment to date}$
--

*Mathematically:*

(v) **Retention Money:** In a contract, a contractee generally keeps some amount payable to contractor with himself as security deposit. In a contract, a contractor undertakes to completed a job work on the basis of pre- determined terms and conditions and work specifications. To ensure that the work carried out by the contractor is as per the plan and specifications, it is monitored periodically by the contractee. To have a cushion against any defect or undesirable work, the contractee upholds some money payable to contractor. This security money upheld by the contractee is known as retention money. In some contracts the contractor has to deposit some security money before staring of the contract as a term of contract. This is known as Earnest money. If any deficiency or defect is noticed in the work, it is to be rectified by the contractor before the release of the retention money. Retention money provides a safeguard against the risk of loss due to faulty workmanship.

*Mathematically:*

$$\text{Retention Money} = \text{Value of work certified} - \text{Payment actually made/ cash paid}$$

(vi) **Cash Received:** It is ascertained by deducting the retention money from the value of work certified i.e.

$$\text{Cash received} = \text{Value of work certified} - \text{Retention money}$$

(vii) **Notional Profit:** It represents the difference between the value of work certified and cost of work certified. It is determined:

$$\text{Notional profit} = \text{Value of work certified} - (\text{Cost of work to date} - \text{Cost of work not yet certified})$$

(viii) **Estimated Profit:** It is the excess of the contract price over the estimated total cost of the contract.

### **ILLUSTRATION 1:**

*COMPUTE estimated profit on a contract (which has been 90% complete) from the following particulars:*

	(Rs.)
Total expenditure to date	22,50,000
Estimated further expenditure to complete the contract (including contingencies)	2,50,000
Contract price	32,50,000
Work certified	27,50,000
Work uncertified	1,75,000
Cash received	21,25,000

### **SOLUTION**

#### **Calculation of Estimated Profit:**

	(Rs.)
Total expenditure to date	22,50,000

Estimated further expenditure to complete the contract (including contingencies)	2,50,000
	25,00,000
Estimated profit on contract (Balancing figure)	7,50,000
Contract price	32,50,000

#### **4.5 COST PLUS CONTRACT**

Cost- plus contract is a contract where the value of the contract is determined by adding an agreed percentage of profit to the total cost. These types of contracts are entered into when it is not possible to estimate the contract cost with reasonable accuracy due to unstable condition of factors that affect the cost of material, employees, etc.

Cost plus contracts have the following advantages and disadvantages:

*Advantages:*

- (i) The Contractor is assured of a fixed percentage of profit. There is no risk of incurring any loss on the contract.
- (ii) It is useful specially when the work to be done is not definitely fixed at the time of making the estimate.
- (iii) Contractee can ensure himself about 'the cost of the contract', as he is empowered to examine the books and documents of the contractor to ascertain the veracity of the cost of the contract.

*Disadvantages* - The contractor may not have any inducement to avoid wastages and effect economy in production to reduce cost.

#### **ILLUSTRATION 2**

The following expenses were incurred on a contract: (Rs.)

Materials purchased 6,00,000

Material drawn from stores	1,00,000
Wages	2,25,000
Plant issued	75,000
Chargeable expenses	75,000
Apportioned indirect expenses	25,000

The contract was for Rs. 20,00,000 and it commenced on January 1, 2023. The value of the work completed and certified upto 30th November, 2023 was Rs. 13,00,000 of which Rs. 10,40,000 was received in cash, the balance being held back as retention money by the contractee. The value of work completed subsequent to the architect's certificate but before 31st December, 2023 was Rs. 60,000. There were also lying on the site materials of the value of Rs. 40,000. It was estimated that the value of plant as at 31st December, 2023 was Rs. 30,000.

You are required to COMPUTE value of work certified, cost of work not certified and notional profit on the contract till the year ended 31st December, 20X8.

### SOLUTION

#### Contract Account

Particulars	(Rs.)	Particulars	(Rs.)
To Material purchased	6,00,000	By Work-in-progress:	13,00,000
" Stores issued	1,00,000	Value of work certified	
" Wages	2,25,000	Cost of work uncertified	60,000
" Plant 75,000		" Material unused	40,000
" Chargeable expenses	75,000	" Plant less depreciation	30,000
" Indirect expenses	25,000		
" Costing P&LA/c (Notional profit) (bal. figure)	3,30,000		
	14,30,000		14,30,000



### ILLUSTRATION 3

A contractor prepares his accounts for the year ending 31st December each year. He commenced a contract on 1st April, 2023.

The following information relates to the contract as on 31st December, 2023:

	(Rs.)
Material issued	2,51,000
Wages	5,65,600
Salary to Foreman	81,300

A machine costing Rs. 2,60,000 has been on the site for 146 days, its working life is estimated at 7 years and its final scrap value at Rs. 15,000.

A supervisor, who is paid Rs. 8,000 p.m. has devoted one-half of his time to this contract.

All other expenses and administration charges amount to Rs. 1,36,500. Material in hand at site costs Rs. 35,400 on 31st December, 2023.

The contract price is Rs. 20,00,000. On 31st December, 2023 two-third of the contract was completed. The architect issued certificates covering 50% of the contract price, and the contractor had been paid Rs. 7,50,000 on account.

PREPARE Contract A/c and show the notional profit or loss as on 31st December, 2023.

### SOLUTION

Contract Account

Particulars	(Rs.)	Particulars	(Rs.)
To Material issued	2,51,000	By Machine (Working note 1)	2,46,000
" Wages	5,65,600	" Material (in hand)	35,400
" Foreman's salary	81,300	" Works cost (balancing figure)	10,49,000

" Machine	2,60,000		
" Supervisor's salary (Rs.8,000 × 9)/2	36,000		
" Administrative charges	1,36,500		
	13,30,400		13,30,400
" Works cost	10,49,000	" Value of work certified	10,00,000
" Costing P&LA/c	2,12,250	" Cost of work uncertified	2,62,250
(Notional profit)		(Working Note 2)	2,62,250
	<b>12,62,250</b>		<b>12,62,250</b>

**Working notes:**

1. Written down value of Machine:

$$= \text{Rs. } 2,60,000 - \text{Rs. } 15000 / 7 \text{ years} \times 146 \text{ days} / 365 \text{ days} = \text{Rs. } 14,000$$

Hence the value of machine after the period of 146 days = Rs. 2,60,000 - Rs. 14,000 = Rs. 2,46,000

2. The cost of 2/3rd of the contract is Rs. 10,49,000

$$\text{Cost of 100\% " " " " Rs. } \frac{10,49,000 \times 3}{2} = \text{Rs. } 15,73,500$$

Cost of 50% of the contract which has been certified by the architect is

Rs. 7,86,750. Also the cost of 1/3rd of the contract, which has been completed but not certified by the architect is Rs. 2,62,250.

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## **4.6 JOB COSTING**

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### **Meaning of Job Costing**

CIMA London defines Job Costing as "the category of basic costing methods which is applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by specific order or contract." According to this method, costs are collected and accumulated according to jobs, contracts, products or work orders. Each job or unit of production is treated as a separate entity for the purpose of costing. Job costing is carried out for the purpose of ascertaining cost of each job and takes into account the cost of materials, employees and overhead etc. The job costing method is also applicable to industries in which production is carried out in batches. Batch production basically is of the same character as the job order production, the difference being mainly one in the size of different orders.

### **Principles of Job Costing**

The job costing method may be regarded as the principal method of costing since the basic object and purpose of all costing is to:

- Analysis and ascertainment of cost of each unit of production
- Control and regulate cost
- Determine the profitability

The basic principles enunciated for the job costing method are valid essentially for all types of industry. For example, printing; furniture; hardware; ship-building; heavy machinery; interior decoration, repairs and other similar work.

### **Process of Job costing**

- Prepare a separate cost sheet for each job
- Disclose cost of materials issued for the job
- Employee costs incurred (on the basis of bill of material and time cards respectively)

- When job is completed, overhead charges are added for ascertaining total expenditure Suitability of Job Costing
- When jobs are executed for different customers according to their specifications.
- When no two orders are alike and each order/job needs special treatment.
- Where the work-in-progress differs from period to period on the basis of the number of jobs in hand.

### **Job Cost Card/Sheet**

Each job order is asymmetrical to other due to specific and customised requirements. To ascertain cost of a particular job, it is necessary to record all the expenditure related with a job separately. For this purpose, Job Cost card is used. Job cost card is a cost sheet, where the quantity of materials issued, hours spent by different class of employees, amount of other expenses and share of overheads are recorded. This is helpful in knowing the total cost, profitability etc. of a job. The following is an illustrative format of Job Cost card/ sheet.

### Format of Job Cost Sheet:

JOB COST SHEET					
Description: _____			Job No.: _____		
Blue Print No.: _____			Quantity: _____		
Material No.: _____			Date of delivery: _____		
Reference No.: _____			Date commenced: _____		
			Date finished: _____		
Date	Reference	Details	Material	Labour	Overhead
		Total			
Summary of costs		Estimated (Rs.)	Actual (Rs.)	For the job	
Direct material cost				Units produced _____	
Direct wages				Cost/unit _____	
Production overhead				Remarks _____	
PRODUCTION COST				Prepared by: _____	
Administration and				Checked by: _____	
Selling &					
Distribution					
Overheads					
TOTAL COST					
PROFIT/LOSS					
SELLING PRICE					

#### Collection of Costs for a Job

- Collection of Materials Cost**

An essential requirement of job cost accounting is that direct materials and their cost must be traced to and identified with specific job or work order. This segregation of materials cost by jobs or work order is brought by the use of separate stores requisitions for each job or work order. Where a bill of material is prepared, it provides the basis for the preparation of these stores requisitions. But when the entire quantity of materials specified in the bill of materials is drawn in one lot or in installments, the bill itself could be made to serve as a substitute for the stores requisition.

After the materials have been issued and the stores requisitions have been priced, it is usual to enter the value of the stores requisition in a material abstract or

analysis book. It serves to analyse and collect the cost of all direct materials according to job or work orders and departmental standing orders or expense code numbers. From the abstract book, the summary of materials cost of each job is posted to individual job cost sheets or cards in the Work-in-Progress ledger. The postings are usually made weekly or monthly. Similarly, at periodic intervals, from the material abstract books, summary cost of indirect material is posted to different standing orders or expense code numbers in the Overhead Expenses ledger. If any special material has been purchased for a particular job, it is generally the practice to charge such special material direct to the job concerned without passing it through the Stores Ledger, as soon as it is purchased.

If any surplus material is left over in the case of any job, unless it can be immediately and economically used on some other job, the same is returned to the stores with a proper supporting document/stores Debit Note or Shop Credit, and the relevant job account is credited with the value of excess material returned to the stores. If the surplus material is utilised on some other job, instead of being returned to the stores first, a material transfer note is prepared. The transfer note would show the number of the transfer to job as well as transferee job (or jobs) so that, on that basis, the cost thereof can be adjusted in the Work- in-Progress Ledger.

- **Collection of Labour Cost**

All direct labour cost must be analysed according to individual jobs or work orders. Similarly, different types of indirect labour cost also must be collected and accumulated under appropriate standing order or expenses code number. The analysis of labour according to jobs or work orders is, usually, made by means of job time cards or sheets. All direct labour is booked against specific jobs in the job time cards or sheets. All the idle time also is booked against appropriate standing order expense code number either in the job time card for each job or on a separate idle time card for each worker (where the job time card is issued job-wise). The time booked or recorded in the job time and idle time cards is valued at appropriate rates and entered in the labour abstract or analysis book. All direct employee cost is accumulated under relevant job or work order numbers, and the total or the periodical total of each job or work

order is then posted to the appropriate job cost card or sheet in Work-in- Progress ledger. The postings are usually made at the end of each week or month.

The abstraction of idle time costs under suitable standing order or expenses code numbers is likewise done and the amounts are posted to the relevant departmental standing order or expense code number in the Overhead Expenses Ledger at periodical intervals. As regards other items of indirect labour cost these are collected from the payrolls books for the purpose of posting against standing order or expenses code numbers in the Overhead Expenses ledger.

- **Collection of Overheads**

Manufacturing overheads are collected under suitable standing order numbers and selling and distribution overheads against cost accounts numbers. Total overhead expenses so collected are apportioned to service and production departments on some suitable basis. The expenses of service departments are finally transferred to production departments. The total overhead of production departments is then applied to products on some realistic basis, e.g. machine hour; labour hour; percentage of direct wages; percentage of direct materials; etc. It should be remembered that the use of different methods will lead to a different amount being computed for the works overhead charged to a job hence to different total cost. The problem of accurately absorbing, in each individual job or work order, the overhead cost of different cost centres or departments involved in the manufacture is difficult under the job costing method. It is because the cost or the expenses thereof cannot be traced to or identified with any particular job or work order. In such circumstances, the best that can be done is to apply a suitable overhead rate to each individual article manufactured or to each production order. This is essentially an arbitrary method.

- **Treatment of spoiled and defective work**

Spoiled work is the quantity of production that has been totally rejected and cannot be rectified.

Defective work refers to production that is not as perfect as the saleable product but is capable of being rectified and brought to the required degree of perfection provided

some additional expenditure is incurred. Normally, all the manufacturing operations are not fully successful; they result in turning out a certain amount of defective work. Nonetheless, over a period of time it is possible to work out a normal rate of defectives for each manufacturing process which would represent the number of defective articles which a process shall produce in spite of due care. Defects arise in the following circumstances:

<b>Circumstances</b>	<b>Treatment</b>
(1) Where a percentage of defective work is allowed in a particular batch as it cannot be avoided.	When a normal rate of defectives has already been established, if the actual number of defectives is within the normal limit or is near particular batch as it thereto the cost of rectification will be charged to the whole job and spread over the entire output of the batch. If, on the other hand, the number of defective units substantially exceeds the normal, the cost of rectification of the number which exceeds the normal will be written off as a loss in the Costing Profit and Loss Account.
(2) Where defect is due to bad workmanship.	In this case cost of rectification will be abnormal cost, i.e., not a legitimate element of the cost. Therefore, the cost of rectification shall be written off as a loss, unless by an arrangement, it is to be recovered as a penalty from the workman concerned. It is possible, however that the management did provide for a certain proportion of defectives on account of bad workmanship as an unavoidable feature of production. If that be the case, the cost of rectifying to the extent provided for by the management will be treated as a normal cost and charged to the batch.
(3) Where defect is due to the Inspection Department	In this case the cost of rectification will be charged to the department and will not be considered as cost of



wrongly accepting incoming material of poor quality.	manufacture of the batch. Being an abnormal cost, it will be written off to the Costing Profit and Loss Account.
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### Accounting of Costs for a Job

#### Entries in Control Accounts

For purchase of materials-

Stores Ledger Control A/c	Dr.
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To Cost Ledger Control A/c\*

For the value of direct materials issued to jobs-

Work-in-Process Control A/c	Dr.
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To Stores Ledger Control A/c

For return of direct materials from jobs-

Stores Ledger Control A/c	Dr.
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To Work-in-Process Control A/c

For return of materials to suppliers -

Cost Ledger Control A/c	Dr.
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To Stores Ledger Control A/c

For indirect materials-

Factory Overhead Control A/c	Dr.
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To Stores Ledger Control A/c

For wages paid-

Wages Control A/c	Dr.
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To Cost Ledger Control A/c

For direct wages incurred on jobs-

Work-in-Process Control A/c	Dr.
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To Wages Control A/c

For indirect wages -

Factory Overhead Control A/c	Dr.
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To Wages Control A/c

For any indirect expense paid-

Factory Overhead Control A/c	Dr.
------------------------------	-----

To Cost Ledger Control A/c	
For charging overhead to jobs-	
Work-in-Process Control A/c	Dr.
To Factory Overhead Control A/c	
For the total cost of jobs completed-	
Cost of Sales A/c	Dr.
To Work-in-Progress Control A/c	
The balance of Cost of Sales A/c is transferred to	
Costing Profit and Loss a/c; For such transfer -	
Costing Profit and Loss A/c	Dr.
To Cost of Sales A/c	
For the sales value of jobs completed -	
Cost Ledger Control A/c	Dr.
To Costing Profit and Loss A/c**	

\*General ledger adjustment account is another name of Cost Ledger Control Account.

\*\*The balance of Costing Profit and Loss Account shall now represent profit or loss. The balance of Cost Ledger Control Account shall be carried forwarded. With the balance on all the accounts trial balance can be drawn.

#### **ILLUSTRATION 4**

The manufacturing cost of a work order is Rs.1,00,000; 8% of the production against that order spoiled and the rejection is estimated to have a realisable value of Rs.2,000 only. The normal rate of spoilage is 2%. RECORD this in the costing journal.

#### **SOLUTION**

Actual loss due to spoilage = 8% of Rs.1,00,000 = Rs. 8,000 and Normal loss = 2% of Rs. 1,00,000 = Rs. 2,000, therefore abnormal loss = Rs. 6,000.

The rejection has a realisable value of Rs. 2,000, which is to be apportioned between normal loss and abnormal loss in the ratio of 2 : 6.

The accounting entries necessary for recording the above facts would be:

	<b>(Rs.)</b>	<b>(Rs.)</b>
Material Control Account	Dr.	2,000
Overhead Control Account	Dr.	1,500
Costing Profit and Loss Control Account	Dr.	4,500
To Work-in-Progress Control Account		8,000

In the case of defectives being inherent in the manufacturing process, the rectification cost may be charged to the specific jobs in which they have arisen. In case defectives cannot be identified with jobs, the cost of rectification may be treated as factory overheads. Abnormal defectives should be written off to the Costing Profit and Loss Account.

### ILLUSTRATION 5

A shop floor supervisor of a small factory presented the following cost for Job No. 303, to determine the selling price.

	Per unit (Rs)
Materials	70
Direct wages 18 hours @ Rs. 2.50 (Deptt. X 8 hours; Deptt. Y 6 hours; Deptt. Z 4 hours)	45
Chargeable expenses	5
	120
Add : 33-1/3 % for expenses cost	40
	160

### *Analysis of the Profit/Loss Account (for the year 2023)*

	<b>(Rs.)</b>		<b>(Rs.)</b>
Materials used	1,50,000	Sales less returns	2,50,000
Direct wages: Deptt. X 10,000 Deptt. Y 12,000			

Deptt. Z 8,000	30,000		
Special stores items	4,000		
Overheads:			
Deptt. X 5,000			
Deptt. Y 9,000			
Deptt. Z 2,000	16,000		
Works cost	2,00,000		
Gross profit c/d	50,000		
	2,50,000		2,50,000
Selling expenses	20,000	Gross profit b/d	50,000
Net profit	30,000		
	50,000		50,000

It is also noted that average hourly rates for the three Departments X, Y and Z are similar.

You are required to:

- (i) PREPARE a job cost sheet.
- (ii) CALCULATE the entire revised cost using 2023 actual figures as basis.
- (iii) Add 20% to total cost to DETERMINE selling price.

## SOLUTION

### Job Cost Sheet

Customer Details ---

Job No. \_\_\_\_\_

Date of commencement --

Date of completion \_\_\_\_\_

Particulars	Amount
Direct materials	70
Direct wages:	
Deptt. X `2.50 × 8 hrs. = ` 20.00	
Deptt. Y ` 2.50 × 6 hrs. = ` 15.00	
Deptt. Z ` 2.50 × 4 hrs. = ` <u>10.00</u>	45
Chargeable expenses	<u>5</u>
<b>Prime cost</b>	<b>120</b>
Overheads:	
Deptt. X = $\frac{\text{`5,000}}{\text{`10,000}} \times 100 = 50\% \text{ of ` 20} = \text{` 10.00}$	
Deptt. Y = $\frac{\text{`9,000}}{\text{`12,000}} \times 100 = 75\% \text{ of ` 15} = \text{` 11.25}$	
Deptt. Z = $\frac{\text{`2,000}}{\text{`8,000}} \times 100 = 25\% \text{ of ` 10} = \text{` 2.50}$	<u>23.75</u>
<b>Works cost</b>	<b><u>143.75</u></b>

### Advantages and Disadvantages of Job Costing

Some of the advantages and disadvantages of Job costing are summarised as below:

	Advantages	Disadvantages
1.	The details of Cost of material, labour and overhead for all job is available to control.	Job Costing is costly and labourious method
2.	Profitability of each job can be derived.	As lot of clerical process is involved the chances of error is more.
3.	It facilitates production planning.	This method is not suitable in inflationary condition.
4.	Budgetary control and Standard Costing can be applied in job costing.	Previous records of costs will be meaningless if there is any change in market condition.

5.	Spoilage and detective can be identified and responsibilities can be fixed accordingly.	
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#### 4.7. SUMMARY

In any profit-making business or activity, the level of profitability ultimately determines the survival rates. Many businesses, however, fail at this point. While many errors may be made, among the most common ones include the failure to carry out or the use of the wrong costing technique for costs incurred such as manufacturing, processes, products, human resource, and distribution channels, just to name a few. Among factors to consider in the determination of accosting technique include the nature of the industry, classification of products, quality, and quantity of products to be produced. Costing is important in:

- The determination of the exact cost of an item
- Determination of profit margins hence selling prices
- Detect wastage and reduce the cost of manufacture where necessary
- Suggest changes in design when the cost is lower or too high

Some of the most common costing methods include job costing, process costing and contract costing. Although both are important in external and internal reporting, they have several variances.

**Job costing** is the ascertaining of costs that are incurred in the undertaking of a specific job. Often used to accumulate costs in small level projects such as manufacturing of small product batches, construction of custom items, constructions and developing software programs, just to name a few, this method has been deemed effective in determining unrelated costs and the costs paid for, and is used to bill unrelated or unpaid costs to the customer.

**Contract costing** is the ascertaining of costs associated with the production of a specific product as per the contract agreement with the customer. Common in

commercial construction, companies sign a contract with the customer specifying the estimated costs to be incurred to deliver a specific product. The contracting company must track the costs incurred for billing justification.

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#### 4.8 GLOSSARY

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- **Job Costing:** The category of basic costing methods which is applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by specific order or contract.
- **Contract Costing:** It is a form of specific order costing where job undertaken is relatively large and normally takes period longer than a year to complete.
- **Value of Work :** The value of a contract which is certified by an expert in terms of percentage of total work.
- **Cost of Work Uncertified:** It represents the cost of the work which has been carried out by the contractor but has not been certified by the expert.
- **Retention Money:** Portion of value of work certified, which is kept by a contractee as security money for any loss or damage caused by the contractor.
- **Cost-plus Contract:** A contract where the value of the contract is determined by adding an agreed percentage of profit to the total cost.
- **Escalation Clause:** A clause in a contract which empowers a contractor to revise the price of the contract in case of increase in the prices of inputs due to some macro-economic or other agreed reasons.

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#### 4.9 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept and features of contract costing.

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Q.2 Discuss the various features of job costing.

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#### 4.10 LESSON END EXERCISE

Q.1 A contractor has entered into a long term contract at an agreed price of ` 17,50,000 subject to an escalation clause for materials and wages as spelt out in the contract and corresponding actual are as follows:

	Standard		Actual	
Materials	Qty (tons)	Rate (Rs.)	Qty (tons)	Rate (Rs.)
A	5,000	50.00	5,050	48.00
B	3,500	80.00	3,450	79.00
C	2,500	60.00	2,600	66.00
Wages	Hours	Hourly Rate (Rs.)	Hours	Hourly Rate (Rs.)
X	2,000	70.00	2,100	72.00
Y	2,500	75.00	2,450	75.00
Z	3,000	65.00	3,100	66.00

Reckoning the full actual consumption of material and wages, the company has claimed a final price of Rs.17,73,600. Give your ANALYSIS of admissible escalation claim and indicate the final price payable.

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Q.2 Describe job Costing giving example of industries where it is used.

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#### 4.11 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

## **INTRODUCTION**

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**M.COM III SEM  
MCOMC354**

**UNIT- I  
LESSON - 5**

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### **BATCH COSTING - PROCESS COSTING INCLUDING EQUIVALENT PRODUCTION AND METHODS OF TREATMENT OF JOINT PRODUCTS AND BY PRODUCTS**

#### **STRUCTURE**

- 5.1 Introduction
- 5.2 Objectives
- 5.3 Batch Costing
- 5.4 Process Costing
- 5.5 Equivalent Production Units
- 5.6 Methods of Treatment of Joint Products and By Products in Process Costing
- 5.7 Summary
- 5.8 Glossary
- 5.9 Self Assessment Questions
- 5.10 Lesson End Exercise
- 5.11 Suggested Readings

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#### **5.1 INTRODUCTION**

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Batch accounting and process accounting are two techniques used in computer systems to track resource usage and monitor the activities of users and processes. Batch

accounting, also known as job accounting, is a method used to track and record the resource consumption and usage by batch jobs or batch processing tasks in a computer system. In batch processing, multiple jobs or tasks are submitted to a system and executed sequentially without user interaction. Batch accounting allows system administrators to monitor and manage the resource consumption, such as CPU time, memory usage, disk I/O, and network usage, for each batch job. Batch accounting systems typically collect data about the resources used by each job, including start and end times, CPU utilization, memory allocation, and input/output operations. This information is useful for generating reports, analyzing performance, and identifying resource bottlenecks in the system. Batch accounting helps organizations allocate costs, optimize resource allocation, and enforce usage policies. Process accounting is a technique used to track and record the resource usage and activities of individual processes running on a computer system. Unlike batch accounting, which focuses on batch jobs, process accounting provides detailed information about the resource consumption and behavior of specific processes. Process accounting systems monitor various parameters of running processes, including CPU time, memory usage, disk I/O, network activity, and interactions with other processes. By tracking these metrics, system administrators can analyze the performance of individual processes, identify resource-intensive or problematic applications, and diagnose issues related to system stability or security. Process accounting is particularly useful in multi-user environments or shared computing systems where multiple processes from different users are running concurrently. It helps in monitoring resource utilization, identifying inefficient or malicious processes, and enforcing resource quotas or usage policies for individual users or groups. Both batch accounting and process accounting provide valuable insights into resource consumption and user activities, enabling system administrators to optimize system performance, allocate resources efficiently, and maintain security and stability in computer systems.

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## **5.2 OBJECTIVES**

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After reading this lesson, students will be able to learn about:

- Concept of batch costing.

- Various elements of process costing.
- Accounting treatment of process costing.

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### 5.3 BATCH COSTING

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Batch costing is a method of cost accounting used to determine the cost of a batch of products or services. It is particularly useful in industries where products or services are produced in batches rather than on a continuous basis. Batch costing involves the accumulation of costs for a specific batch or group of units, allowing for the determination of the cost per unit or cost per batch.

Here's a step-by-step overview of how Batch costing works:

- 1 **Identifying the batch:** The first step is to determine the specific batch for which the costs will be calculated. A batch typically represents a specific quantity of products or services that are produced together.
- 2 **Cost classification:** Next, the costs associated with the batch need to be identified and classified. These costs can include direct materials, direct labour, and factory overhead.
- 3 **Allocating direct costs:** Direct costs, such as the cost of materials and direct labour, are assigned directly to the batch. These costs can be easily traced to a specific batch.
- 4 **Allocating indirect costs:** Indirect costs, also known as factory overhead or overhead costs, are costs that are not directly tied to a specific batch but still contribute to the production process. These costs need to be allocated to the batch using an appropriate allocation method, such as allocating based on labour hours, machine hours, or material usage.
- 5 **Calculating total batch cost:** Once all the costs are identified and allocated, they are added together to determine the total cost of the batch. This includes the direct costs and the allocated indirect costs.
- 6 **Determining cost per unit or batch:** Finally, the total cost of the batch is divided by the number of units produced in the batch to determine the cost per

unit. Alternatively, if the batch represents a fixed quantity, the total cost of the batch can be divided by the number of batches produced to determine the cost per batch.

Batch costing provides insights into the cost structure and profitability of specific batches, allowing businesses to make informed decisions about pricing, production planning, and resource allocation. It is particularly useful when producing customized or non-standardized products where costs can vary from batch to batch.

### **Definition by experts**

Here are a few definitions of Batch costing provided by experts:

According to the Chartered Institute of Management Accountants (CIMA), “Batch costing is a method of costing which identifies the costs of a batch and assigns those costs to each unit in the batch on an average basis.”

The American Institute of Certified Public Accountants (AICPA) defines batch costing as “the determination of costs associated with a group of identical or similar products or services that are produced together or in a continuous stream.”

Colin Drury, in his book “Management and Cost Accounting,” defines batch costing as “a form of job costing, which applies where a batch of identical or similar products passes through a production system together.”

These definitions highlight the key aspects of batch costing, including the identification of costs for a specific batch, the allocation of those costs to individual units within the batch, and the focus on a group of identical or similar products produced together. Batch costing is a technique used in cost accounting to determine the cost of production for specific batches or groups of products/services.

### **Features of batch costing**

Features of Batch costing are mentioned below :

- 1 **Batch Identification:** Batch costing involves the identification and isolation of a specific batch of products or services. A batch represents a group of identical or similar items that are produced together.

- 2 **Cost Classification:** The costs associated with the batch are classified into direct costs and indirect costs. Direct costs, such as direct materials and direct labour, are directly attributable to the batch. Indirect costs, also known as factory overhead, are allocated to the batch using an appropriate allocation basis.
- 3 **Cost Accumulation:** Batch costing involves the accumulation of costs for the identified batch. The costs incurred during the production process, including direct materials, direct labour, and factory overhead, are recorded and accumulated for each batch separately.
- 4 **Cost Allocation:** The direct costs are assigned directly to the batch, while indirect costs are allocated to the batch based on an appropriate allocation method. Common allocation bases include labour hours, machine hours, or material usage.
- 5 **Average Costing:** Batch costing often utilizes an average costing approach. Instead of tracing individual costs to each unit within the batch, the total costs of the batch are averaged out and allocated to each unit equally. This simplifies the costing process and provides a reasonable approximation of costs.
- 6 **Cost per Unit or Batch:** The total cost of the batch is divided by the number of units produced in the batch to determine the cost per unit. Alternatively, if the batch represents a fixed quantity, the total cost is divided by the number of batches produced to determine the cost per batch.
- 7 **Decision Making:** Batch costing provides information about the cost structure and profitability of specific batches. This information can be used for decision making, such as pricing decisions, production planning, and resource allocation.

These features make batch costing a valuable tool for businesses that produce products or services in batches, allowing for better cost control and informed decision making.

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## 5.4 PROCESS COSTING

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Process costing is a method of operation costing which is used to ascertain the cost of production at each process, operation or stage of manufacture, where processes are carried in having one or more of the following features:

Where the product of one process becomes the material of another process or operation

Where there is simultaneous production at one or more process of different products, with or without by product,

Where, during one or more processes or operations of a series, the products or materials are not distinguishable from one another, as for instance when finished products differ finally only in shape or form.

Process costing is defined by Kohler as: “A method of accounting whereby costs are charged to processes or operations and averaged over units produced; it is employed principally where a finished product is the result of a more or less continuous operation, as in paper mills, refineries, canneries and chemical plants; distinguished from job costing, where costs are assigned to specific orders, lots or units.

### **Characteristics**

Process Costing Method is applicable where the output results from a continuous or repetitive operations or processes. Some of the characteristics as mentioned below:

- 1 Products are identical and cannot be segregated.
- 2 It enables the ascertainment of cost of the product at each process or stage of manufacture.
- 3 The output consists of products, which are homogenous.
- 4 Production is carried on in different stages (each of which is called a process) having a continuous flow.
- 5 The input will pass through two or more processes before it takes the shape of the output.
- 6 The output of each process becomes the input for the next process until the final product is obtained, with the last process giving the final product.
- 7 The output of a process except the last may also be saleable in which case the process may generate some profit.

- 8 The input of a process except the first may be capable of being acquired from the outside sources.
- 9 The output of a process is transferred to the next process generally at cost to the process. It may also be transferred at market price to enable checking efficiency of operations in comparison to the market conditions.
- 10 Normal and abnormal losses may arise in the processes.

### **Difference between Job Costing and Process Costing**

The main points which distinguish job costing and process costing are as below:

<b>S.No.</b>	<b>Job Costing</b>	<b>Process Costing</b>
(i)	A Job is carried out or a product is produced by specific orders.	The process of producing the product has a continuous flow and the product produced is homogeneous.
(ii)	Costs are determined for each job.	Costs are compiled on time basis i.e., for production of a given accounting period for each process or department.
(iii)	Each job is separate and independent of other jobs.	Products lose their individual identity as they are manufactured in a continuous flow.
(iv)	Each job or order has a number and costs are collected against the same job number.	The unit cost of process is an average cost for the period.

### **Costing Procedure**

For each process an individual process account is prepared. Each process of production is treated as a distinct cost centre.

### **Items on the Debit side of Process A/c :**

Each process account is debited with –



- a) Cost of materials used in that process.
- b) Cost of labour incurred in that process.
- c) Direct expenses incurred in that process.
- d) Overheads charged to that process on some pre determined.
- e) Cost of ratification of normal defectives.
- f) Cost of abnormal gain (if any arises in that process)

#### Items on the Credit side of process A/c:

Each process account is credited with-

- a) Scrap value of Normal Loss (if any) occurs in that process.
- b) Cost of Abnormal Loss (if any occurs in that process)

#### Cost of Process:

The cost of the output of the process (Total Cost less Sales value of scrap) is transferred to the next process. The cost of each process is thus made up to cost brought forward from the previous process and net cost of material, labour and overhead added in that process after reducing the sales value of scrap. The net cost of the finished process is transferred to the finished goods account. The net cost is divided by the number of units produced to determine the average cost per unit in that process. Specimen of Process Account when there are normal loss and abnormal losses.

<b>Dr.</b>			<b>Process I A/c.</b>		<b>Cr.</b>
<b>Particulars</b>	<b>Units</b>	<b>Rs.</b>	<b>Particulars</b>	<b>Units</b>	<b>Rs.</b>
To Basic Material	xxx	xx	By Normal Loss	xx	xx
To Direct Material		xx	By Abnormal Loss	xx	xx
To Direct Wages		xx	By Process II A/c.	xx	xx
To Direct Expenses		xx	(output transferred to		
To Production Overheads		xx	Next process)		
To Cost of Rectification of Normal Defects		xx	By Process I Stock A/c.	xx	xx
To Abnormal Gains		xx			
	<b>xx</b>	<b>xxx</b>		<b>xx</b>	<b>xx</b>

### **Process Losses:**

In many process, some loss is inevitable. Certain production techniques are of such a nature that some loss is inherent to the production. Wastages of material, evaporation of material is un avoidable in some process. But sometimes the Losses are also occurring due to negligence of Labourer, poor quality raw material, poor technology etc. These are normally called as avoidable losses. Basically process losses are classified into two categories

(a) Normal Loss

(b) Abnormal Loss

#### **1. Normal Loss:**

Normal loss is an unavoidable loss which occurs due to the inherent nature of the materials and production process under normal conditions. It is normally estimated on the basis of past experience of the industry. It may be in the form of normal wastage, normal scrap, normal spoilage, and normal defectiveness. It may occur at any time of the process.

No of units of normal loss: Input x Expected percentage of Normal Loss.

The cost of normal loss is a process. If the normal loss units can be sold as a scrap then the sale value is credited with process account. If some rectification is required before the sale of the normal loss, then debit that cost in the process account. After adjusting the normal loss the cost per unit is calculates with the help of the following formula:

#### **Cost of good unit:**

$$= \frac{\text{Total cost increased} - \text{Sale Value of Scrap}}{\text{Input} - \text{Normal Loss units}}$$

#### **2. Abnormal Loss:**

Any loss caused by unexpected abnormal conditions such as plant breakdown, substandard material, carelessness, accident etc. such losses are in excess of pre-determined normal losses. This loss is basically avoidable. Thus abnormal losses arrive when actual losses are more than expected losses. The units of abnormal losses in calculated as under:

Abnormal Losses = Actual Loss – Normal Loss

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

### Value of Abnormal Loss:

$$= \frac{\text{Total Cost increase} - \text{Scrap Value of normal Loss}}{\text{loss Input units} - \text{Normal Loss Units}} \times \text{Units of abnormal}$$

Abnormal Process loss should not be allowed to affect the cost of production as it is caused by abnormal (or) unexpected conditions. Such loss representing the cost of materials, labour and overhead charges called abnormal loss account. The sales value of the abnormal loss is credited to Abnormal Loss Account and the balance is written off to costing P & L A/c.

Dr.			Abnormal Loss A/c.	Cr.	
Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A/c.	xx	xx	By Bank	xx	xx
			By Costing P & LA/c.	xx	xx
	xx	xxx		xx	xx

### 3. Abnormal Gains:

The margin allowed for normal loss is an estimate (i.e. on the basis of expectation in process industries in normal conditions) and slight differences are bound to occur between the actual output of a process and that anticipates. This difference may be positive or negative. If it is negative it is called as abnormal Loss and if it is positive it is Abnormal gain i.e. if the actual loss is less than the normal loss then it is called as abnormal gain. The value of the abnormal gain calculated in the similar manner of abnormal loss. The formula used for abnormal gain is:

#### Abnormal Gain

$$= \frac{\text{Total Cost incurred} - \text{Scrap Value of Normal Loss}}{\text{Unites Input units} - \text{Normal Loss Units}} \times \text{Abnormal Gain}$$

The sales values of abnormal gain units are transferred to Normal Loss Account since it arrive out of the savings of Normal Loss. The difference is transferred to Costing P & LA/ c. as a Real Gain.

Dr.		Abnormal Gain A/c.		Cr.	
Particulars	Units	Rs.	Particulars	Units	Rs.
To Normal Loss A/c.	xx	xx	By Process A/c.	xx	xx
To Costing P & LA/c.	xx	xx			
	xx	xx		xx	xx

**Illustration 1:** (Normal / Abnormal Loss)

Prepare a Process Account, Abnormal Loss Account and Normal Loss Account from the following information.

Input of Raw material	1000 units @ Rs. 20 per unit
Direct Material	Rs. 4,200/-
Direct Wages	Rs. 6,000/-
Production Overheads	Rs. 6,000/-
	900 units

**Solution :**

Process – I					
Dr.			Cr.		
Particulars	Units	Amt.	Particulars	Units	Amt.
To Raw material @ 20	1000	20000	By Normal Loss		
To Direct Material		4200	(5% on 1000)	50	400
To Direct Wages		6000	By Abnormal Loss A/c.	50	
To Production Overheads		6000	BY Process – II A/c. (output transferred)	900	
	1000	36200		1000	36200

Abnormal Loss A/c					
Dr.			Cr.		
Particulars	Units	`	Particulars	Units	`
To Process – I A/c.	50		By Bank A/c.	50	400

	50		By Costing P & LA/c.	50	400
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**Normal Loss A/c**

**Dr.**

**Cr.**

Particulars	Units	`	Particulars	Units	`
To Process – I A/c.	50	400	BY Bank	50	400

**Working Notes:**

**(1) Cost of abnormal Loss :**

$$\frac{\text{Total Cost increased} - \text{Sales value of Scrap} \times \text{abnormal units}}{\text{Input units} - \text{Normal Loss Units}}$$

$$= \frac{36200 - 400}{1000 - 50} \times 50$$

(2) It has been assumed that units of abnormal loss have also been sold at the same rate i.e. of Normal Scrap

**Illustration 2:** (Normal / Abnormal Loss and Abnormal Gain)

The product of a company passes through three distinct process. The following information is obtained from the accounts for the month ending January 31, 2023.

Particulars	Process – A	Process – B	Process – C
Direct Material	7800	5940	8886
Direct Wages	6000	9000	12000
Production Overheads	6000	9000	12000

3000 units @ ` 3 each were introduced to process – I. There was no stock of materials or work in progress. The output of each process passes directly to the next process and finally to finished stock A/c.

The following additional data is obtained :

Process	Output	Percentage of Normal Loss to Input	Value of Scrap per unit(₹)
Process – I	2850	5 %	2
Process – II	2520	10 %	4
Process – III	2250	15 %	5

Prepare Process Cost Account, Normal Cost Account and Abnormal Gain or Loss Account.

**Solution:**

**Process – A**

Dr.			Cr.		
A/c.					
Particulars	Units	₹	Particulars	Units	₹
To Units introduced	3000	9000	By Normal Loss A/c.	150	300
To Direct Material		7800	By Process – B A/c.	2850	28500
To Direct Wages		6000	(Units transferred		
To Production			@ Rs. 10/-)		
Overheads		6000			
		3000	28800	3000	28800

**Process – B**

Dr.			Cr.		
A/c.					
Particulars	Units	₹	Particulars	Units	₹
To Process – IA/c.	2850	28500	By Normal Loss A/c.	285	1140
To Direct Material		5940	By Abnormal Loss A/c.	45	9000
To Direct Wages		9000	By Process – C A/c.	2520	50400
To Production					
Overheads		9000			
<b>2850</b>	<b>52440</b>		<b>2850</b>	<b>52440</b>	

**Process – C**

<b>Dr.</b>			<b>Cr.</b>		
<b>A/c.</b>					
<b>Particulars</b>	<b>Units</b>	<b>₹</b>	<b>Particulars</b>	<b>Units</b>	<b>₹</b>
To Process – II A/c.	2520	50400	By Normal Loss A/c.	378	1890
To DirectMaterial A/c		8886	By Finished Stock A/c.	2250	85500
To Direct Wages		12000			
To Production					
Overheads		12000			
To AbnormalGain A/c.	108	4104			
	<b>2628</b>	<b>87390</b>		<b>2628</b>	<b>87390</b>

**Abnormal Loss A/c**

<b>Dr.</b>			<b>Cr.</b>		
<b>Particulars</b>	<b>Units</b>	<b>Rs.</b>	<b>Particulars</b>	<b>Units</b>	<b>Rs.</b>
To Normal Loss A/c.	108	540	By Process – C A/c.	108	4104
To Costing P&LA/c.		3564			
	<b>108</b>	<b>4104</b>		<b>108</b>	<b>4104</b>

## 5.5 EQUIVALENT PRODUCTION UNITS

This represents the production of a process in terms of complete units. In other words, it means converting the incomplete production into its equivalent of complete units. The term equivalent unit means a notional quantity of completed units substituted for an actual quantity of incomplete physical units in progress, when the aggregate work content of the incomplete units is deemed to be equivalent to that of the substituted quantity. The principle applies when operation costs are apportioned between work in progress and completed units.

Equivalent units of work in progress = Actual no. of units in progress x Percentage of work completed

Equivalent unit should be calculated separately for each element of cost (viz. material, labour and overheads) because the percentage of completion of the different cost component may be different.

**Accounting Procedure:**

The following procedure is followed when there is Work-in- Progress

- (1) Find out equivalent production after taking into account of the process losses, degree of completion of opening and / or closing stock.
- (2) Find out net process cost according to elements of costs i.e. material, labour and overheads.
- (3) Ascertain cost per unit of equivalent production of each element of cost separately by dividing each element of costs by respective equivalent production units.
- (4) Evaluate the cost of output finished and transferred work in progress

The total cost per unit of equivalent units will be equal to the total cost divided by effective units and cost of work-in- progress will be equal to the equivalent units of work-in- progress multiply by the cost per unit of effective production. In short the following from steps an involved.

- |        |   |  |
|--------|---|--|
| Step 1 | – | Prepare statement of Equivalent production Step    |
| Step 2 | – | Prepare statement of cost per Equivalent unit Step |
| Step 3 | – | Prepare of Evaluation                              |
| Step 4 | – | Prepare process account                            |

The problem on equivalent production may be divided into four groups.

- I. when there is only closing work-in-progress but without process losses
- II. when there is only closing work-in-progress but with process losses
- III. when there is only opening as well as closing work-in- progress without process losses



IV. when there is opening as well as closing work-in-progress with process losses

**Situation I :**

**Only closing work-in-progress without process losses :**

In this case, the existence of process loss is ignored. Closing work-in-progress is converted into equivalent units on the basis of estimates on degree of completion of materials, labour and production overhead. Afterwards, the cost per equivalent unit is calculated and the same is used to value the finished output transferred and the closing work-in-progress

**Situation II:**

**When there is closing work-in-progress with process loss or gain.**

If there are process losses the treatment is same as already discussed in this chapter. In case of normal loss nothing should be added to equivalent production. If abnormal loss is there, it should be considered as good units completed during the period. If units scrapped (normal loss) have any reliable value, the amount should be deducted from the cost of materials in the cost statement before dividing by equivalent production units. Abnormal gain will be deducted to obtain equivalent production.

**Situation III:**

**Opening and closing work-in-progress without process losses.**

Since the production is a continuous activity there is possibility of opening as well as closing work-in-progress. The procedure of conversion of opening work-in-progress will vary depending on the method of apportionment of cost followed viz, FIFO, Average cost Method and LIFO.

Let us discuss the methods of valuation of work-in-progress one by one.

- (a) **FIFO Method:** The FIFO method of costing is based on the assumption of that the opening work-in-progress units are the first to be completed. Equivalent production of opening work-in-progress can be calculated as follows:

Equivalent Production = Units of Opening WIP x Percentage of work needed to finish the units

- (b) **Average Cost Method:** This method is useful when price fluctuate from period to period. The closing valuation of work-in-progress in the old period is added to the cost of new period and an average rate obtained. In calculating the equivalent production opening units will not be shown separately as units of work-in-progress but included in the units completed and transferred.
- (c) **Weighted Average Cost Method:** In this method no distinction is made between completed units from opening inventory and completed units from new production. All units finished during the current accounting period are treated as if they were started and finished during that period. The weighted average cost per unit is determined by dividing the total cost (opening work-in-progress cost + current cost) by equivalent production.
- (d) **LIFO Method:** In LIFO method the assumption is that the units entering into the process is the last one first to be completed. The cost of opening work-in-progress is charged to the closing work-in-progress and thus the closing work-in-progress appears cost of opening work-in-progress. The completed units are at their current cost.

(1) Format of statement of Equivalent Production :

Input		Output		Equivalent Production					
Particulars	Units	Particulars	Units	Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Opening Stock	xx	Units completed	xx	xx	xx	xx	xx		
Units Introduced	xx	Normal Loss	xx	—	—	—	—		
		Abnormal Loss	xx	xx	xx	xx	xx		
	xx	Equivalent Units	xx	xx	xx	xx	xx	xx	Xx

(2) Statement of cost per Equivalent Units :

Element of costing	Cost Rs.	Equivalent Units.	Cost per Equivalent Units Rs
Material Cost (Net)	Xx	Xx	Xx
Labour Cost Xx	Xx	Xx	
Overheads Cost	Xx	xx	Xx
	xx		Xx

(3) Statement of Evaluation

Particulars	Element of cost	Equivalent Units.	Cost per equivalent unitsRs.	Cost	Total Cost Rs.
Units completed	Material	xx	xx	xx	
	Labour	xx	xx	xx	
	Overheads	xx	xx	xx	Xx
Closing WIP	Material	xx	xx	xx	
	Labour	xx	xx	xx	
	Overheads	xx	xx	xx	Xx
Abnormal Loss	Material	xx	xx	xx	
	Labour	xx	xx	xx	
	Overheads	xx	xx	xx	Xx

### Illustration 3: (Average Costing)

Prepare a statement of equivalent production, statement of cost, process account from the following information using average costing method.

Opening Stock	50000 Units
Material	` 25000
Labour	` 10000

Overheads	₹. 25000
Units Introduced	2000000 Units
Material	₹. 100000
Wages	₹ 75000
Overheads	₹ 70000

During the period 1,50,000 units were completed and transferred to Process II.

Closing stock 1,00,000 units. Degree of completion.

Material	100 %
Labour	50 %
Overheads	40 %

**Solution :**

Input		Output		Equivalent Production					
Particulars	Units	Particulars	Units	Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Opening		Units							
Stock	50,000	Produced	150000	100	150000	100	150000	100	150000
Introduced	200,000	Closing							
		Stock	100000	100	100000	50	50000	40	40000
	250000		250000		250000		200000		190000

**Statement of Cost :**

Element	Opening cost ₹	Current cost ₹	Total cost ₹	Equivalent units	Cost per unit
Material	25,000	1,00,000	1,25,000	2,50,000	0.500
Labour	10,000	75,000	85,000	2,00,000	0.425
Overheads	25,000	70,000	95,000	1,90,000	0.500
	60,000	2,45,000	3,05,000		1.425

**Statement of Apportionment of Cost**

Particulars	Units	Cost per unit	Cost	Total cost
1. Units introduced & transferred	1,50,000	1.425		213750
2. Closing work-in-progress				
Material	1,00,000	0.500	50,000	
Labour	50,000	0.425	21,250	
Overheads	40,000	0.500	20,000	91,250
				3,05,000

**Dr.****Process I A/c.****Cr.**

Particulars	Units	₹	Particulars	Units	₹
To Opening Stock	50,000	60,000	By Units completed		
To Materials	2,00,000	1,00,000	& transfer	50,000	2,13,750
To Labour		75,000	By Closing Stock	50,000	91,250
To Overheads		70,000			
	2,50,000	3,05,000		2,50,000	3,05,000

**5.6 METHODS OF TREATMENT OF JOINT PRODUCTS AND BY PRODUCTS IN PROCESS COSTING**

Joint products and by-products are often produced simultaneously during a manufacturing process, making it difficult to determine the cost of each individual product. Process costing is a method used to allocate costs to each product or by-product based on the proportion of resources consumed by each.

In the case of joint products, the first step in the process costing method is to identify the joint process and determine the point at which the joint products can be identified and separated. Once this is done, the total costs incurred during the joint process are allocated to each joint product based on their relative sales value at the split-off point.

The sales value method is commonly used to allocate joint costs, which involves dividing the total joint costs by the total sales value of all joint products at the split-off point.

In the case of by-products, these are products that are produced as a result of the manufacturing process but are not the main focus of the production process. By-products typically have a lower sales value than the main product but can still generate revenue. The cost of the by-product is usually allocated based on its net realizable value (NRV), which is the estimated selling price of the by-product minus the estimated cost of completion and disposal.

In the case of multi-products, these are products that are produced using the same production process but have different features, specifications, or uses. In process costing, the cost of each individual product is determined by using the weighted average method, which involves dividing the total cost of production by the total number of units produced. The weighted average cost is then assigned to each individual unit based on its specific features or characteristics.

Overall, the treatment of joint products and multi-products in process costing involves identifying the products produced, allocating costs based on their relative sales value or NRV, and using the weighted average method to determine the cost of each unit produced.

Some key points to explain the treatment of joint products and multi-products in process costing:

#### **Treatment of Joint Products:**

Joint products are products that are produced together during a manufacturing process.

The total costs incurred during the joint process are allocated to each joint product based on their relative sales value at the split-off point.

The sales value method is commonly used to allocate joint costs, which involves dividing the total joint costs by the total sales value of all joint products at the split-off point.

By using the sales value method, each joint product is assigned a proportionate share of the joint costs based on its relative contribution to the total sales value.

This method is used to determine the cost of each joint product and is important for pricing decisions and profitability analysis.

#### **Treatment of By-Products:**

By-products are products that are produced as a result of the manufacturing process but are not the main focus of the production process.

By-products typically have a lower sales value than the main product but can still generate revenue.

The cost of the by-product is usually allocated based on its net realizable value (NRV), which is the estimated selling price of the by-product minus the estimated cost of completion and disposal.

The NRV method is used to determine the cost of the by-product and is important for pricing decisions and profitability analysis.

#### **Treatment of Multi-Products:**

Multi-products are products that are produced using the same production process but have different features, specifications, or uses.

The cost of each individual product is determined by using the weighted average method, which involves dividing the total cost of production by the total number of units produced.

The weighted average cost is then assigned to each individual unit based on its specific features or characteristics.

This method is used to determine the cost of each individual unit produced and is important for pricing decisions and profitability analysis.

some examples of joint products, by-products, and multi-products, along with their treatment in process costing:

#### **Joint Products:**

A lumber mill that produces both lumber and sawdust as joint products. The total cost

of production is allocated to each joint product based on their relative sales value at the split-off point. The lumber might have a higher sales value and would therefore be assigned a larger proportion of the joint costs.

A dairy farm that produces both milk and cream as joint products. The total cost of production is allocated to each joint product based on their relative sales value at the split-off point. The cream might have a higher sales value and would therefore be assigned a larger proportion of the joint costs.

### **By-Products:**

A refinery that produces gasoline as the main product and propane gas as a by-product. The cost of the propane gas is allocated based on its net realizable value (NRV), which is the estimated selling price of the gas minus the estimated cost of completion and disposal.

A brewery that produces beer as the main product and spent grains as a by-product. The cost of the spent grains is allocated based on its NRV, which might be lower than the main product but can still generate revenue.

### **Multi-Products:**

A clothing manufacturer that produces t-shirts, hoodies, and sweatpants using the same production process. The cost of each individual product is determined by using the weighted average method, which involves dividing the total cost of production by the total number of units produced. The weighted average cost is then assigned to each individual unit based on its specific features or characteristics.

A computer manufacturer that produces laptops, desktops, and tablets using the same production process. The cost of each individual product is determined by using the weighted average method, which involves dividing the total cost of production by the total number of units produced. The weighted average cost is then assigned to each individual unit based on its specific features or specifications.

### **Illustration 4: (Joint Products)**

A company produces two joint products, Product A and Product B, from a single



manufacturing process. The total cost of the manufacturing process is `100,000, and the products are separated at the split-off point. The sales value of Product A at the split-off point is `80,000, and the sales value of Product B is `20,000.

### **Solution**

To allocate the joint costs to each product, we can use the sales value method. Here's how:

Calculate the total sales value of both products at the split-off point:  $\$80,000 + \$20,000 = \$100,000$

Calculate the proportion of the total sales value that each product represents:

Product A:  $\$80,000 / \$100,000 = 0.8$

Product B:  $\$20,000 / \$100,000 = 0.2$

Allocate the total joint costs based on each product's proportionate share:

Product A:  $\$100,000 \times 0.8 = \$80,000$

Product B:  $\$100,000 \times 0.2 = \$20,000$

So, the total joint costs of `100,000 are allocated to Product A and Product B based on their relative sales value at the split-off point. Product A is assigned `80,000 in joint costs, while Product B is assigned `20,000 in joint costs.

This method allows the company to determine the cost of each joint product and make informed pricing decisions. For example, if the production cost of Product A is higher than Product B, the company may choose to price Product A higher to ensure profitability.

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## **5.7 SUMMARY**

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Process costing is an accounting method typically used by companies that mass produce very similar or identical products or units of output on a mass scale. It's common in manufacturing industries where the costs of producing each unit of output are very similar, and it doesn't make sense to try to track costs for each individual unit

throughout the production process. For example, process costing is used by oil companies that produce millions of gallons of fuel and by processed food companies that make millions of identical packages of snacks. With process costing, companies determine item cost by tracking the cost of each stage in the production process, instead of tracking costs for each individual item. After adding up the cost of all the steps in the process, they divide the total cost by the number of items. This is called the cost per unit. For example, a paper company might track the cost of each stage in the process of turning wood pulp into reams of paper, then divide the total cost by the number of reams to get the cost per ream. Homogeneous items are products that cannot be distinguished from one another — for example, a bin of screws of the same size and type. These similar products all generally flow through a number of stages during the production process. To use the process costing approach to accounting, companies determine the direct costs and manufacturing overhead for each of those stages.

These stages include direct and indirect costs. Direct costs are those directly incurred for production, such as raw materials and machine operators' wages. Overhead often includes indirect costs such as equipment maintenance and facility rent, as well as the wages of administrative staff who aren't directly involved in making the products.

Companies often break down these costs into direct materials and conversion costs. Direct materials are the materials consumed at each stage; conversion costs are process-related costs such as payroll and manufacturing overhead.

At many companies, a different department handles each stage in the production process. Each department prepares a report that details its direct materials, direct labour and manufacturing overhead costs. The company then aggregates these reports to analyze total product cost.

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## 5.8 GLOSSARY

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- ◆ **Process Costing:** Process costing is an important accounting method for manufacturers that make large volumes of identical items, such as companies in the food processing, oil and chemicals industries.

- ◆ **Batch Costing:** Batch costing is a cost accounting method used by companies that manufacture or produce goods in batches. The production process is divided into batches, and the costs incurred during the production of each batch are recorded separately.
- ◆ **Normal Loss:** This is also called **expected loss** in the production process. They are always provided for in the production budget and the normal loss is always sold using scrap value that will be provided by the management.
- ◆ **Abnormal Loss:** This is also called an unexpected loss in the production process. They represent the losses that are deemed to be above the normal loss. An abnormal loss is difficult to be predicted hence they are not always provided for in the production budget. They are always valued using the value of the good unit.

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## 5.9 SELFASSESSMENT QUESTIONS

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Q.1 Explain the concept and features of batch costing.

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Q.2 Discuss the various features of process costing.

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## 5.10 LESSON END EXERCISE

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Q.1 During a particular period 2,000 units at a cost of `60,000 were introduced into Process 'A' (at the beginning). The normal loss was estimated at 5% of the input. At the end, 1,400 units were produced and transferred to the Process 'B', 460 units being partially completed and 140 units scrapped. The partially completed units had reached the following state of production:

Materials                      100% complete

Labour 50% complete

Overheads 50% complete

Additional costs incurred during the process were:

Materials ` 17,000

Labour ` 33, 400

Overheads ` 16,700

The units scrapped realised ` 10 per unit.

Prepare Process 'A' A/c with all relevant statements.

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Q.2 XYZ Ltd. is engaged in process industry. During the month August 2000, 2000 Units were introduced in process 'X'. The normal loss was estimated at 5% of input. At the end of the month 1,400 units had been produced and transferred to process 'Y'. 460 units were incomplete and 140 units, after passing through fully the entire process had to be scrapped. The incomplete units had reached the following state of completion:

Materials 75% Completed

Labour 50% Completed

Overheads 50% Completed

Following are the further information on the process 'X' :

Cost of the 2000 units ` 58,000

Additional Direct materials ` 14,400

Direct Labour ` 33,400

Direct Overheads ` 16,700

Units scrapped realised ` 10 each

Prepare statement of equivalent production, statement of cost, statement of evaluation and process 'X' account.

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### 5.11 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounting*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.

## **UNIFORM COSTS, INTERFIRM COMPARISONS AND COST AUDIT**

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**M.COM III SEM  
MCOMC354**

**UNIT- II  
LESSON - 6**

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### **UNIFORM COSTING, BASICS OF UNIFORM COSTING, UNIFORM COSTING MANUAL**

#### **STRUCTURE:**

- 6.1 Introduction
- 6.2 Objectives
- 6.3 Uniform Costing
- 6.4 Basics of Uniform Costing
- 6.5 Uniform Costing Manual
- 6.6 Summary
- 6.7 Glossary
- 6.8 Self Assessment Questions
- 6.9 Lesson End Exercise
- 6.10 Suggested Readings

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#### **6.1 INTRODUCTION**

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Uniform costing is a method of cost accounting that involves the use of a standard or uniform method of cost accounting across multiple companies or divisions within an organization. This method aims to provide a consistent approach to costing and to facilitate the comparison of costs across different units within the same organization or across different organizations in the same industry.

In uniform costing, companies or divisions agree to use a common set of accounting policies, procedures, and cost accounting methods. These can include methods for allocating overhead costs, valuing inventory, and determining product costs. By using a common set of accounting practices, companies can more easily compare costs and performance across different units within the same organization, or across different companies in the same industry.

Uniform costing can be particularly useful in industries where there are high levels of competition and where companies need to closely monitor their costs in order to remain competitive. By adopting uniform costing practices, companies can identify areas where they are performing well and where they need to improve, and can work to implement best practices across their entire organization.

Overall, uniform costing can provide a number of benefits for organizations, including improved cost control, greater efficiency, and enhanced competitiveness. However, it requires a high level of cooperation and coordination among the participating companies or divisions, and may not be appropriate in all circumstances.

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## **6.2 OBJECTIVES**

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After reading this lesson, you will be able to understand:

- Basics of uniform costing.
- Various features, objective and importance of process costing.
- The uniform costing manual.

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## **6.3 UNIFORM COSTING**

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Uniform Costing is not a distinct method of costing. In fact, when several undertakings start using the same costing principles and or practices they are said to be following uniform costing. The basic idea behind uniform costing is that the different concerns in an industry should adopt a common method of costing and apply uniformly the same principles and techniques for better cost comparison and common good. The principles and methods of compilation, analysis, apportionment and absorption of overheads differ from one concern to the other in the same industry; but if a common or uniform

pattern is adopted by all, it helps mutually in cost control and cost reduction. Therefore, it is necessary that a uniform method of costing should be adopted by the member unit of an industry.

### **Definition of uniform costing**

Here are a few definitions of uniform costing by experts:

According to the **Institute of Cost and Management Accountants (ICMA)**, uniform costing is “the use of common or standardized costing methods and techniques, procedures and policies within an industry or group of industries. It is designed to achieve a fair comparison of costs between comparable units of production.”

The **Chartered Institute of Management Accountants (CIMA)** defines uniform costing as “the use of a common cost accounting system by a number of firms or divisions within a firm. It is designed to achieve a fair comparison of costs between comparable units of production, to identify opportunities for cost reduction and to facilitate benchmarking.”

**Horngren, Datar, and Rajan**, in their book “Cost Accounting: A Managerial Emphasis,” define uniform costing as “a system in which several firms in the same industry agree to use common accounting procedures and principles in computing and reporting costs.”

Overall, these definitions highlight the key aspects of uniform costing, including the use of common or standardized costing methods, the comparison of costs between comparable units of production, and the identification of opportunities for cost reduction and benchmarking.

Uniform costing is a method of cost accounting that involves the standardized collection, analysis, and reporting of costs within an industry or a group of companies. It is primarily used to facilitate cost comparison and control among different organizations operating in the same industry.

Uniform costing aims to establish uniformity in cost accounting practices, ensuring that companies within a specific industry follow similar cost accounting principles and methodologies. This allows for meaningful cost comparisons between different



organizations, which can be useful for benchmarking and identifying areas of improvement.

### **Key features of uniform costing**

The feature of uniform costing are given below :

- 1    **Standardization:** Uniform costing promotes the adoption of standardized cost accounting methods, chart of accounts, and reporting formats within an industry. This enables consistency and comparability of cost data.
- 2    **Cost Comparison:** With uniform costing, companies can compare their cost performance with industry benchmarks and competitors. This comparison helps identify variations, inefficiencies, and areas for improvement.
- 3    **Cost Control:** By analyzing and comparing costs across multiple companies, uniform costing facilitates cost control efforts. It helps organizations identify cost-saving opportunities, optimize resource allocation, and implement best practices.
- 4    **Decision Making:** Uniform costing provides reliable cost data for decision-making processes. Managers can make informed decisions based on standardized cost information, leading to improved efficiency and effectiveness.
- 5    **Costing Studies:** Uniform costing allows for industry-wide costing studies, where costs related to specific activities, products, or processes can be analyzed across multiple companies. This information can be used to improve industry-wide practices and drive performance improvements.
- 6    **Collabouration and Learning:** Uniform costing encourages collabouration and knowledge-sharing among companies within an industry. Companies can learn from each other's best practices, exchange ideas, and collectively work towards industry-wide improvements.

It is important to note that uniform costing is usually voluntary and requires the active participation and cooperation of companies within the industry. Industry associations or regulatory bodies may play a role in facilitating the implementation and administration of uniform costing systems.

**Objectives of Uniform Costing:**

The main objectives of Uniform Costing are as follows:—

1. **Facilitates Comparison:** To facilitate the comparison of costs and performances of different units in the same industry; it provides objective basis.
2. **Eliminates Unhealthy Competition:** To eliminate unhealthy competition among the different units of an industry.
3. **Improves Efficiency:** To improve production capacity level and labour efficiency by comparing the production costs of different units with each other.
4. **Provides Relevant Data:** To provide relevant cost information/data to the Government for fixing and regulating prices of the products.
5. **Ensures Standardisation:** To bring standardisation and uniformity in the operation of participating units.
6. **Reduces Cost:** To reduce production, administration, selling and distribution costs, and to exercise control on fixed costs.
7. **Cost Comparison:** One of the primary objectives of uniform costing is to enable cost comparison among different companies within the same industry. By adopting standardized cost accounting methods and reporting formats, companies can compare their costs with industry benchmarks and identify variations, inefficiencies, and areas for improvement.
8. **Cost Control:** Uniform costing helps in cost control efforts by providing a framework for analyzing and comparing costs across multiple organizations. It allows companies to identify cost-saving opportunities, optimize resource allocation, and implement best practices identified within the industry.
9. **Performance Evaluation:** Uniform costing facilitates the evaluation of performance among companies in the same industry. It provides a basis for comparing the cost efficiency and effectiveness of different organizations. By identifying the best performers, companies can learn from their practices and improve their own performance.

10. **Decision Making:** Reliable and standardized cost information provided by uniform costing is essential for effective decision making. Managers can make informed decisions based on comparable cost data, leading to improved efficiency and profitability.
11. **Industry-wide Improvements:** Uniform costing encourages collaboration and knowledge-sharing among companies within an industry. By analyzing cost data collectively, industry-wide costing studies can be conducted to identify best practices, drive performance improvements, and enhance overall competitiveness.
12. **Benchmarking:** Uniform costing facilitates benchmarking, which involves comparing a company's performance against industry standards or best practices. Companies can identify areas where they lag behind industry benchmarks and take appropriate measures to bridge the gaps.
13. **Resource Allocation:** Uniform costing assists in optimizing resource allocation within the industry. By identifying areas of excess or underutilization of resources, companies can make informed decisions on resource allocation, leading to improved efficiency and productivity.
14. **Facilitating Standardization:** Uniform costing promotes the adoption of standardized cost accounting methods, chart of accounts, and reporting formats within an industry. This helps in achieving consistency, comparability, and transparency in cost data across different organizations.

It is important to note that the objectives of uniform costing may vary depending on the specific industry and the needs of the participating companies.

#### **Essential requisites for the installation of Uniform Costing System:**

The installation of a uniform costing system requires careful planning and coordination among the participating companies. The following are essential requisites for the successful implementation of a uniform costing system:

1. **Agreement among Participating Companies:** There must be a consensus among the companies within the industry to participate in the uniform costing system. All participating companies should be willing to adopt standardized cost

accounting methods, share cost data, and collabourate for the benefit of the industry as a whole.

2. **Clear Objectives:** The objectives of implementing a uniform costing system should be clearly defined and agreed upon by all participating companies. The objectives could include cost comparison, cost control, performance evaluation, and industry-wide improvements. The clarity of objectives ensures that efforts are aligned and focused.
3. **Standardization of Cost Accounting Methods:** Uniformity in cost accounting methods is crucial for meaningful cost comparison. Participating companies need to agree on standardized cost accounting principles, methodologies, and terminology. This includes adopting a common chart of accounts, cost classification system, and cost allocation methods.
4. **Consistent Reporting Format:** To facilitate cost comparison, a consistent reporting format should be established. Participating companies need to agree on the format, structure, and content of cost reports to be shared among the members. This ensures that the cost data is presented in a standardized manner for easy comparison and analysis.
5. **Data Collection and Sharing Mechanism:** A robust data collection and sharing mechanism is essential for the uniform costing system. Participating companies should establish procedures and systems for collecting, collating, and sharing cost data in a timely and accurate manner. This could involve the use of standardized templates, software systems, or online platforms for data exchange.
6. **Confidentiality and Data Security:** Confidentiality and data security are critical considerations when implementing a uniform costing system. Appropriate measures should be in place to ensure the confidentiality of cost data shared among the participating companies. Data access controls, non-disclosure agreements, and secure data transmission protocols may be implemented to safeguard sensitive information.
7. **Monitoring and Review Mechanism:** A monitoring and review mechanism should be established to ensure the effectiveness and relevance of the uniform

costing system. Regular meetings, audits, and reviews should be conducted to assess the progress, address challenges, and make necessary adjustments to the system.

8. **Industry Association or Regulatory Support:** Industry associations or regulatory bodies can play a facilitative role in the installation of a uniform costing system. They can provide guidance, coordination, and support in terms of organizing meetings, disseminating best practices, resolving disputes, and ensuring compliance with relevant regulations.
9. **Training and Awareness:** Adequate training and awareness programs should be conducted to familiarize employees of participating companies with the uniform costing system. Training sessions can be organized to educate employees about standardized cost accounting methods, data collection procedures, and the benefits of the system. This helps ensure that all stakeholders understand and actively participate in the implementation process.
10. **Continuous Improvement:** The uniform costing system should be dynamic and open to continuous improvement. Feedback from participating companies should be sought and incorporated into the system to address any shortcomings or evolving needs. Regular evaluation and refinement of the system contribute to its effectiveness and sustainability.

By considering these essential requisites, companies can establish a robust and effective uniform costing system that promotes cost comparison, control, and industry-wide collaboration for the benefit of all participants.

### **Advantages of Uniform Costing:**

Uniform costing offers several advantages to companies and industries implementing it. Here are some of the key advantages:

1. **Cost Comparison:** Uniform costing enables cost comparison among companies within the same industry. It provides a standardized framework for analyzing and comparing costs, allowing companies to benchmark their performance against industry averages or best practices. This comparison helps identify variations,

inefficiencies, and areas for improvement.

2. **Cost Control:** By analyzing and comparing costs across multiple organizations, uniform costing facilitates cost control efforts. It helps companies identify cost-saving opportunities, optimize resource allocation, and implement best practices identified within the industry. This leads to improved cost efficiency and profitability.
3. **Performance Evaluation:** Uniform costing allows for the evaluation of performance among companies in the same industry. By comparing cost data and performance metrics, companies can identify the best performers and learn from their practices. This evaluation encourages healthy competition and drives performance improvements within the industry.
4. **Enhanced Decision Making:** Reliable and standardized cost information provided by uniform costing is essential for effective decision making. Managers can make informed decisions based on comparable cost data, leading to improved efficiency and effectiveness. It helps in evaluating the financial viability of projects, setting prices, and determining product profitability.
5. **Industry-wide Improvements:** Uniform costing promotes collaboration and knowledge-sharing among companies within an industry. By analyzing cost data collectively, industry-wide costing studies can be conducted to identify best practices, drive performance improvements, and enhance overall competitiveness. This collaborative approach benefits the industry as a whole.
6. **Standardization and Consistency:** Uniform costing promotes the adoption of standardized cost accounting methods, chart of accounts, and reporting formats within an industry. This ensures consistency and comparability of cost data among different organizations. Standardization simplifies data analysis, streamlines reporting, and enhances transparency.
7. **Resource Allocation Optimization:** Uniform costing assists in optimizing resource allocation within the industry. By identifying areas of excess or underutilization of resources, companies can make informed decisions on resource

allocation. This leads to improved efficiency, productivity, and resource utilization across the industry.

8. **Facilitates Industry-wide Policy Decisions:** Uniform costing provides valuable cost data for policy decisions at the industry level. It helps industry associations, regulatory bodies, and policymakers make informed decisions regarding pricing policies, subsidies, incentives, and regulations. These decisions are based on a comprehensive understanding of cost structures and industry dynamics.
- 9.. **Learning and Best Practice Sharing:** Through uniform costing, companies within an industry can learn from each other's best practices. It encourages knowledge-sharing, exchange of ideas, and collaboration on improvement initiatives. This collective learning fosters innovation, efficiency, and continuous improvement within the industry.
10. **Improved Industry Reputation:** Implementing uniform costing demonstrates a commitment to transparency, collaboration, and professionalism within an industry. This can enhance the industry's reputation, attract investments, and foster trust among stakeholders such as customers, suppliers, and financial institutions.

Overall, uniform costing offers numerous advantages to companies and industries, including cost comparison, cost control, performance evaluation, improved decision making, industry-wide improvements, and enhanced collaboration. It provides a structured approach to cost management and helps drive efficiency, competitiveness, and profitability.

### **Limitations of Uniform Costing:**

While uniform costing has its advantages, it also has certain limitations. Here are some of the key limitations of uniform costing:

1. **Voluntary Participation:** The success of uniform costing relies on voluntary participation from companies within the industry. If some companies choose not to participate or do not adopt standardized cost accounting methods, it can limit the effectiveness of the system and the comparability of cost data.

2. **Limited Applicability:** Uniform costing may not be suitable for all industries or types of businesses. Industries with significant variations in product mix, processes, or cost structures may find it challenging to implement uniform costing due to the complexity of cost comparisons and standardization.
3. **Confidentiality Concerns:** Sharing cost data among participating companies raises concerns about the confidentiality and sensitive nature of the information. Companies may be reluctant to disclose their cost data, especially if it gives competitors insights into their cost structures, pricing strategies, or operational efficiencies.
4. **Cost Allocation Challenges:** Uniform costing often requires the allocation of shared costs among participating companies. Determining an equitable and accurate method of allocating costs can be challenging, especially when companies have different cost drivers, production processes, or organizational structures.
5. **Limited Flexibility:** Uniform costing systems may lack flexibility to accommodate the specific needs and variations among participating companies. Industries with diverse operations or unique cost drivers may find it difficult to fit their cost accounting practices into a standardized framework.
6. **Time and Resource Intensive:** Implementing and maintaining a uniform costing system can be time-consuming and resource-intensive. It requires coordination, training, data collection, and reporting efforts from participating companies. The costs associated with establishing and operating the system may outweigh the benefits for some organizations.
7. **Data Reliability and Consistency:** Achieving complete consistency and reliability of cost data across participating companies can be challenging. Differences in accounting systems, data collection methods, and interpretations of cost accounting principles can lead to inconsistencies or discrepancies in reported cost figures.
8. **Lack of Industry Diversity:** If the industry is dominated by a few major players or if there is limited diversity in terms of products, processes, or cost structures, the benefits of uniform costing may be limited. The lack of sufficient data and



variation can restrict meaningful cost comparisons and limit the scope of improvement initiatives.

9. **Competitive Concerns:** Companies may be hesitant to share their cost data in a uniform costing system due to concerns about revealing competitive advantages or pricing strategies. This can result in incomplete or inaccurate cost data, reducing the effectiveness of the system.
10. **Dynamic Nature of Costs:** Costs in industries can be subject to frequent changes due to factors such as inflation, market dynamics, technological advancements, or regulatory changes. Uniform costing systems may struggle to keep up with these changes and may require regular updates or revisions to remain relevant and useful.

It is important to carefully evaluate these limitations and consider the specific circumstances of an industry or organization before implementing a uniform costing system. Flexibility, data security, and a clear understanding of the benefits and limitations are essential for the successful adoption and operation of a uniform costing system.

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## 6.4 BASICS OF UNIFORM COSTING

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Uniform costing involves the use of a common or standardized method of cost accounting across multiple companies or divisions within an organization. Here are some basics of uniform costing:

1. **Purpose:** The primary purpose of uniform costing is to achieve a fair comparison of costs between comparable units of production. This is important for companies within the same industry who need to closely monitor their costs in order to remain competitive.
2. **Common Costing Methods:** Companies or divisions that participate in uniform costing agree to use a common set of accounting policies, procedures, and cost accounting methods. These methods can include methods for allocating overhead costs, valuing inventory, and determining product costs.
3. **Standardization:** Uniform costing requires a high level of standardization across

different units within the same organization, or across different companies in the same industry. This helps ensure that costs are being calculated consistently and that comparisons can be made accurately.

4. **Benchmarking:** By using a common set of accounting practices, companies can more easily compare costs and performance across different units within the same organization or across different companies in the same industry. This allows for benchmarking and the identification of areas where a company may need to improve its performance.
5. **Coordination:** Uniform costing requires a high level of cooperation and coordination among the participating companies or divisions. This includes agreeing on common accounting practices and sharing data and information to facilitate cost comparisons and benchmarking.
6. **Overall,** uniform costing can provide a number of benefits for organizations, including improved cost control, greater efficiency, and enhanced competitiveness. However, it requires a significant investment in standardization and coordination, and may not be appropriate in all circumstances.
7. **Concept:** Uniform costing is a method of cost accounting that aims to standardize cost accounting practices within an industry or a group of companies. It involves adopting common cost accounting principles, methods, and reporting formats to facilitate cost comparison, control, and collaboration among participating organizations.
8. **Participation:** Uniform costing requires the voluntary participation of companies within the industry. Companies that choose to participate agree to adopt the standardized cost accounting methods and share cost data with other members of the uniform costing system. Participation is typically facilitated by industry associations or regulatory bodies.
9. **Standardization:** A key aspect of uniform costing is the standardization of cost accounting practices. Participating companies agree to follow common cost accounting principles, chart of accounts, cost classification methods, and cost

allocation techniques. This ensures consistency and comparability of cost data across organizations.

10. **Data Collection:** Participating companies collect cost data based on the standardized cost accounting methods and principles. The data collection process involves identifying relevant cost elements, tracking cost drivers, and capturing cost information related to activities, products, or processes. Accurate and timely data collection is essential for meaningful cost comparison and analysis.
11. **Reporting:** Uniform costing requires participating companies to prepare standardized cost reports based on the agreed-upon reporting formats. These reports typically include information such as direct costs, indirect costs, overheads, cost per unit, and key performance indicators. The standardized reporting format facilitates easy comparison and analysis of cost data.
12. **Cost Comparison and Analysis:** Once the cost data is collected and reported, participating companies can compare their costs with industry benchmarks or other members of the uniform costing system. Cost comparison and analysis help identify variations, inefficiencies, and areas for improvement. It enables companies to benchmark their performance and make informed decisions to enhance cost efficiency and profitability.
13. **Collabouration and Learning:** Uniform costing promotes collabouration and knowledge-sharing among participating companies. Companies can learn from each other's best practices, exchange ideas, and collectively work towards industry-wide improvements. This collabouration fosters innovation, efficiency, and continuous improvement within the industry.
14. **Continuous Improvement:** Uniform costing systems should be dynamic and open to continuous improvement. Feedback from participating companies should be sought and incorporated into the system. Regular evaluations and refinements ensure that the system remains relevant, effective, and aligned with the changing needs of the industry.

It's important to note that the specific details and processes of uniform costing can

vary depending on the industry, participating companies, and the agreed-upon guidelines. The successful implementation of uniform costing requires clear objectives, effective communication, cooperation among participants, and a commitment to standardized cost accounting practices.

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## 6.5 UNIFORM COSTING MANUAL

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A uniform costing manual is a document that outlines the common accounting policies, procedures, and cost accounting methods agreed upon by companies or divisions participating in a uniform costing system. The manual is designed to ensure that all participating units use the same methods for calculating costs and that cost comparisons can be made accurately.

A uniform costing manual is a document that provides detailed guidelines and instructions for implementing and operating a uniform costing system within an industry or group of companies. It serves as a reference and resource for participating companies, outlining the standardized cost accounting methods, procedures, and reporting requirements.

Here are some of the **key components** typically included in a uniform costing manual:

1. **Introduction:** The manual begins with an introduction that explains the purpose, objectives, and benefits of implementing a uniform costing system. It provides an overview of the manual and its intended audience.
2. **Scope and Applicability:** This section clarifies the scope of the uniform costing system, including the industries or companies it applies to. It specifies the boundaries, limitations, and specific cost elements covered under the uniform costing framework.
3. **Cost Accounting Principles:** The manual outlines the standardized cost accounting principles and concepts that participating companies should follow. It includes guidelines on cost classification, cost allocation, treatment of overheads, inventory valuation methods, and other relevant cost accounting principles.
4. **Chart of Accounts:** A uniform chart of accounts is provided, specifying the

codes and descriptions for different cost elements and cost centers. This standardized chart of accounts ensures consistency and comparability of cost data across participating companies.

5. **Cost Data Collection:** The manual provides instructions on how to collect and record cost data using the standardized cost accounting methods. It outlines the data collection procedures, including the identification of cost drivers, data sources, frequency of data collection, and data validation techniques.
6. **Reporting Requirements:** This section details the reporting formats, templates, and schedules for cost reporting within the uniform costing system. It specifies the information to be included in the cost reports, such as direct costs, indirect costs, overheads, and key performance indicators. The reporting requirements ensure consistency and facilitate cost comparison and analysis.
7. **Data Analysis and Interpretation:** The manual may include guidelines on how to analyze and interpret the cost data reported within the uniform costing system. It may provide key performance indicators and benchmarks for performance evaluation and cost analysis. This section helps participating companies derive meaningful insights from the cost data.
8. **Confidentiality and Data Security:** Given the sensitive nature of cost data, the manual may outline measures to ensure confidentiality and data security. It may include guidelines on data access controls, non-disclosure agreements, data transmission protocols, and procedures for handling confidential information.
9. **Roles and Responsibilities:** This section clarifies the roles and responsibilities of various stakeholders involved in the uniform costing system. It specifies the responsibilities of participating companies, industry associations, regulatory bodies, and any other entities involved in the implementation and operation of the system.
10. **Monitoring and Review:** The manual may include guidelines on monitoring and review mechanisms to ensure the effectiveness and continuous improvement of the uniform costing system. It outlines procedures for conducting regular audits, evaluations, and reviews of the system's performance.

11. **Appendices:** The manual may include additional supporting information, such as sample cost reports, data collection templates, glossary of terms, and references to relevant accounting standards or guidelines.

It is important to note that the specific content and structure of a uniform costing manual may vary depending on the industry, participating companies, and the agreed-upon guidelines. The manual should be regularly reviewed and updated to reflect any changes in cost accounting practices, reporting requirements, or industry-specific considerations.

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## 6.6 SUMMARY

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Uniform costing is a method of cost accounting that aims to standardize cost accounting practices within an industry or group of companies. It involves the adoption of common cost accounting principles, methods, and reporting formats to facilitate cost comparison, control, and collaboration among participating organizations.

The key objectives of uniform costing are cost comparison, cost control, performance evaluation, and industry-wide improvements. By standardizing cost accounting practices and sharing cost data, participating companies can benchmark their performance, identify cost-saving opportunities, and drive efficiency and profitability within the industry.

The installation of a uniform costing system requires agreement among participating companies, clear objectives, standardization of cost accounting methods and reporting formats, a robust data collection and sharing mechanism, and a monitoring and review mechanism. Industry associations or regulatory bodies can provide support and guidance in implementing the system.

Uniform costing offers several advantages, including cost comparison, cost control, improved decision making, industry-wide improvements, and enhanced collaboration. It promotes standardized and consistent cost accounting practices, facilitates resource allocation optimization, and enables learning and best practice sharing within the industry.

However, uniform costing also has limitations. These include the need for voluntary

participation, concerns about data confidentiality, challenges in cost allocation, limited flexibility, and the time and resource-intensive nature of implementation.

Overall, uniform costing provides participating companies with a structured approach to cost management, fosters collaboration and industry-wide improvements, and helps drive efficiency, competitiveness, and profitability within the industry.

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## 6.7 GLOSSARY

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- **Uniform Costing:** Uniform costing is the application of the same accounting and costing principles, methods or procedures uniformly by various undertakings in the same industry. It is a particular technique which applies the usual accounting methods like standard costing, marginal costing, and budgetary control.
- **Standard Costing:** It is a system of cost accounting that establishes predetermined standard costs for various elements of production or services.
- **Cost Centers:** These are specific departments, sections, or units within an organization that incur costs and contribute to the production or delivery of goods and services.
- **Cost Units:** These are the individual items or products for which costs are calculated. They could be a specific product, service, or any identifiable unit of output.

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## 6.8 SELFASSESSMENT QUESTIONS

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Q.1 Explain the basics of uniform costing?

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Q.2 Discuss the various features of uniform costing?

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## 6.9 LESSON END EXERCISE

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Q.1 How the modern organisations can efficiently implement Uniform costing?

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Q.2 Elucidate the uniform costing manual.

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## 6.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounting*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.



## **UNIFORM COSTS, INTERFIRM COMPARISONS AND COST AUDIT**

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**M.COM III SEM  
MCOMC354**

**UNIT- II  
LESSON - 7**

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### **BASICS - INTER-FIRM COMPARISONS**

#### **STRUCTURE:**

- 7.1 Introduction
- 7.2 Objectives
- 7.3 Inter-Firm Comparison
- 7.4 Basics of Inter-Firm Comparison
- 7.5 Summary
- 7.6 Glossary
- 7.7 Self Assessment Questions
- 7.8 Lesson End Exercise
- 7.9 Suggested Readings

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#### **7.1 INTRODUCTION**

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Inter-firm comparison means a comparison of two or more similar business units with the objective of finding the competitive position to improve the profitability and productivity of those business units. Thus, inter-firm comparison is a tool used by the management of a company to compare its operating performance and financial results with those of similar companies engaged in the same industry. The results of this give him an instant and vivid picture of how his firm's profitability, its costs, its stock turnover, and other key factors affecting the success of a business compare with other firms in

his industry. The firms which agree to follow inter-firm comparison should create a central organisation for collecting, comparing and providing information to the member firms. In U.K. and other foreign countries there are professional organisations independent of the member firms which act as the central organisations. As they do not have any personal interest in the information collected by them, they work in a completely impartial way and member-firms also provide information to them without any hesitation. In India trade associations, Chambers of Commerce, trade journals and periodicals and National Productivity Councils act as the central organisations for collection, codification, calculation of ratios and providing the ratios to firms for making inter-firm comparison. Without such central organisation inter-firm comparison is not possible.

The member-firms should have mutual trust in each other and they should have confidence that the inter-firm comparison will be beneficial to all member firms.

The member-firms should have clear idea about the areas in which the cost data and other information is to be provided by them. They should know the requirements of the management and the extent to which information should be provided so that it will prove useful for member-firms to achieve improvement in their working.

Firms desirous to use inter-firm comparison must already be using uniform costing system so that there is already uniformity about cost unit, costing method and techniques, procedures followed for cost calculation, items to be included and excluded from costs, etc. In other words, the base in the form of uniform costing must already be in existence before introduction of the inter-firm comparison among the member-firms.

For collecting the information from member-firms the necessary forms should be prepared and copies supplied to each member-firm. Information obtained is analysed, studied and converted in the form of agreed ratios and by allotting codes to each member-firm the information in ratios is provided to each member-firm. Identity of the firms is not disclosed and each member-firm knows only its code.

By comparing its ratio with that of other member-firms and also with the average ratios for the member-firms considered together, a member-firm can understand where it stands and how much further progress in efficiency can still be made by it.

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## **7.2 OBJECTIVES**

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After reading this lesson, students will be able to understand the:

- Basics of Inter-firm comparison.
- .Procedure of inter-firm comparison.

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## **7.3 INTER-FIRM COMPARISON**

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It is technique of evaluating the performance, efficiency, costs and profits of firms in an industry. It consists of voluntary exchange of information/data concerning costs, prices, profits, productivity and overall efficiency among firms engaged in similar type of operations for the purpose of bringing improvement in efficiency and indicating the weaknesses. Such a comparison will be possible where uniform costing is in operation.

An inter-firm comparison indicates the efficiency of production and selling, adequacy of profits, weak spots in the organisation, etc. and thus demands from the firm's management an immediate suitable action. Inter-firm comparison may enable the management to challenge the standards which it has set for itself and to improve upon them in the light of the current information gathered from more efficient units. Such a comparison may be carried out in electrical industry, printing firms, cotton spinning firms, pharmaceuticals, cycle manufacturing, etc.

Inter-firm comparison is the practice of comparing the financial performance and results of two or more companies within the same industry. The purpose of inter-firm comparison is to identify differences in financial performance, operational efficiency, and management practices, with the goal of identifying areas where a company can improve its performance and competitiveness.

Inter-firm comparison refers to the process of analyzing and evaluating the performance of multiple companies operating in the same industry or sector. It involves comparing various financial and non-financial metrics to identify differences and similarities between the firms.

Inter-firm comparison is a process of comparing the financial performance and operational efficiency of two or more companies operating within the same industry or sector. According to experts, inter-firm comparison involves analyzing various financial and non-financial metrics, such as revenue, profit margins, return on investment, market share, employee productivity, and customer satisfaction, to determine the relative strengths and weaknesses of each company.

Inter-firm comparison is a valuable tool for benchmarking, which enables companies to assess their performance against industry peers and identify areas for improvement. By identifying best practices and performance gaps, companies can develop strategies to enhance their operations and competitiveness, reduce costs, and increase profitability.

Inter-firm comparison requires careful consideration of several factors, including differences in size, industry structure, operating models, and strategic objectives. As a result, companies must select appropriate comparison metrics and accounting methods to ensure accurate and meaningful comparisons.

Overall, inter-firm comparison is an essential component of competitive analysis and strategic planning for companies operating in a highly competitive marketplace. By understanding the relative performance of their peers, companies can better position themselves to succeed and thrive in their respective industries.

When conducting an inter-firm comparison following key factors are taken into consideration :

1. **Financial Performance:** Compare financial indicators such as revenue, profit margin, return on investment (ROI), earnings per share (EPS), and debt-to-equity ratio. These metrics help assess the financial health and profitability of each company.
2. **Operational Efficiency:** Evaluate operational metrics such as production costs, inventory turnover, and asset utilization. This analysis provides insights into how efficiently each firm utilizes its resources to generate output.
3. **Market Share and Positioning:** Analyze market share data and market

positioning strategies to understand each company's competitive position. This can include evaluating factors such as brand strength, customer satisfaction, and market growth rates.

4. **Innovation and Research:** Assess the level of innovation and research and development (R&D) investments made by each company. This can include reviewing the number of patents, new product launches, and technology advancements.
5. **Human Resources:** Compare employee productivity, employee turnover rates, and training programs to evaluate the quality of the workforce and the effectiveness of human resource management.
6. **Corporate Governance:** Analyze corporate governance practices, including board structure, executive compensation, and transparency. This assessment helps determine the overall governance quality and accountability of each firm.
7. **Sustainability and Corporate Social Responsibility (CSR):** Evaluate the environmental and social impact of each company's operations. This can include assessing their carbon footprint, social initiatives, and ethical practices.

It's important to note that when conducting an inter-firm comparison, it's crucial to consider companies that are similar in terms of size, industry, and business model. Comparing companies with different characteristics may yield inaccurate or misleading results. Additionally, it's essential to consider the specific context and goals of the comparison to draw meaningful insights.

**Inter-firm comparison** can be conducted using various financial ratios and performance metrics. Here are some **examples**:

- 1 **Profitability ratios:** Profitability ratios compare a company's profit to its sales, assets, or equity. Examples include gross profit margin, net profit margin, return on assets, and return on equity. These ratios can be used to compare the profitability of two or more companies within the same industry.
- 2 **Liquidity ratios:** Liquidity ratios measure a company's ability to meet its short-term obligations. Examples include current ratio and quick ratio. These ratios

can be used to compare the liquidity of two or more companies within the same industry.

- 3 **Efficiency ratios:** Efficiency ratios measure a company's ability to use its assets and resources efficiently. Examples include asset turnover and inventory turnover. These ratios can be used to compare the efficiency of two or more companies within the same industry.
- 4 **Market-based ratios:** Market-based ratios compare a company's market value to its financial performance. Examples include price-to-earnings ratio and price-to-book ratio. These ratios can be used to compare the market performance of two or more companies within the same industry.

Overall, inter-firm comparison is a useful tool for companies looking to improve their performance and competitiveness. By identifying areas of strength and weakness relative to their competitors, companies can develop strategies to improve their operations and financial results.

### **Features of inter firm comparison**

Inter-firm comparison involves comparing the performance, financial ratios, and other relevant metrics of one company with those of its competitors or industry peers. It provides valuable insights into a company's relative position within the industry and helps identify areas of strength and weakness. Here are some key features of inter-firm comparison:

1. **Financial Performance Analysis:** Inter-firm comparison allows companies to assess their financial performance against their competitors. Key financial ratios such as profitability ratios (e.g., gross profit margin, net profit margin), liquidity ratios (e.g., current ratio, quick ratio), and solvency ratios (e.g., debt-to-equity ratio, interest coverage ratio) can be compared to evaluate the financial health and efficiency of the company.
2. **Benchmarking:** Comparing a company's performance to that of its competitors helps establish benchmarks for various metrics. By identifying industry leaders

or best practices, companies can set realistic performance targets and work towards improving their operational efficiency, profitability, or market share.

3. **Identifying Strengths and Weaknesses:** Inter-firm comparison enables companies to identify their competitive advantages and areas where they lag behind their peers. By analyzing the differences in performance, companies can gain insights into their strengths and weaknesses in terms of product quality, customer satisfaction, cost structure, market positioning, or operational efficiency.
4. **Strategic Decision Making:** Comparative analysis helps in strategic decision making by providing a broader perspective on the industry landscape. It can aid in identifying market opportunities, potential threats, and areas for improvement. For example, if a company identifies that its competitors have a more diversified product portfolio, it may consider expanding its own product range to remain competitive.
5. **Investor Relations:** Inter-firm comparison is also valuable for investors and stakeholders who want to evaluate a company's performance and prospects. By comparing financial ratios, growth rates, and other relevant metrics of different companies in the same industry, investors can assess the relative attractiveness and potential of different investment options.
6. **Industry and Market Analysis:** Comparative analysis can provide insights into industry trends, market dynamics, and competitive forces. By comparing the financial and operational performance of different companies, industry-wide patterns can be identified, helping companies and investors understand the overall health and direction of the industry.

Overall, inter-firm comparison is a valuable tool for companies to evaluate their performance, identify areas for improvement, make informed strategic decisions, and stay competitive in their industry.

#### **Advantages of inter firm comparison**

Inter-firm comparison offers several advantages for companies. Here are some key advantages:

1. **Performance Evaluation:** Inter-firm comparison allows companies to evaluate their performance relative to their competitors or industry peers. By benchmarking their financial ratios, market share, growth rates, and other performance metrics, companies can assess their strengths and weaknesses and identify areas for improvement. This evaluation helps in setting realistic performance targets and tracking progress over time.
2. **Competitive Analysis:** Comparing the performance of different companies within the same industry provides valuable insights into competitive dynamics. It helps identify industry leaders, market trends, and emerging competitors. Companies can learn from the strategies and best practices of their successful peers and make informed decisions to stay competitive in the market.
3. **Strategic Planning:** Inter-firm comparison aids in strategic planning by providing a broader perspective on the industry landscape. Companies can identify market opportunities, potential threats, and areas where they have a competitive advantage. This information helps in formulating effective strategies, allocating resources efficiently, and making informed business decisions.
4. **Performance Improvement:** By analyzing the performance of competitors, companies can identify areas where they are lagging behind and take steps to improve their performance. It could involve enhancing operational efficiency, optimizing cost structures, improving product quality, or enhancing customer service. Inter-firm comparison acts as a catalyst for continuous improvement and innovation.
5. **Investor Confidence:** Comparative analysis is valuable for investors and stakeholders who want to evaluate a company's performance and potential. By comparing a company's financial ratios, growth rates, and market position with those of its competitors, investors can assess its attractiveness as an investment option. Strong performance relative to peers can instill investor confidence and attract capital.
6. **Learning Opportunities:** Inter-firm comparison provides learning opportunities for companies. By studying the strategies, tactics, and successes of their



competitors, companies can gain insights and adapt best practices to their own operations. It promotes a culture of learning, innovation, and continuous improvement within the organization.

7. **Industry Insights:** Comparative analysis offers valuable industry insights. By examining the performance of multiple companies within an industry, trends, patterns, and industry dynamics can be identified. This knowledge helps companies stay informed about market developments, customer preferences, and technological advancements, allowing them to make proactive business decisions.

Overall, inter-firm comparison provides a range of advantages, including performance evaluation, competitive analysis, strategic planning, performance improvement, investor confidence, learning opportunities, and industry insights. It serves as a valuable tool for companies to stay competitive, identify growth opportunities, and make informed business decisions.

### **Limitations of inter firm comparison**

While inter-firm comparison offers several advantages, it also has some limitations that should be considered. Here are some key limitations:

1. **Lack of Comparable Data:** Obtaining reliable and comparable data for inter-firm comparison can be challenging. Companies may have different accounting policies, fiscal periods, or reporting standards, making it difficult to directly compare financial statements. Adjustments and assumptions may be required to make the data comparable, which can introduce subjectivity and affect the accuracy of the analysis.
2. **Industry Differences:** Even within the same industry, companies may have unique characteristics, business models, or strategies that make direct comparison challenging. Differences in product offerings, customer segments, geographical presence, or operational structures can significantly impact performance metrics. It is important to consider these industry-specific factors when interpreting inter-firm comparison results.

3. **Limited Disclosure:** Companies may not disclose all relevant information needed for a comprehensive inter-firm comparison. Some strategic or sensitive data may be confidential or not publicly available. This limited disclosure can hinder the completeness and accuracy of the analysis, as crucial data points may be missing.
4. **Timing Differences:** Inter-firm comparison relies on comparing data from different companies at a specific point in time. However, companies may have different fiscal year ends or reporting periods, which can lead to timing differences in financial data. Changes in market conditions or industry dynamics between these periods can affect the comparability and relevance of the data.
5. **Non-Financial Factors:** Inter-firm comparison often focuses on financial metrics, such as profitability ratios or market share. However, important non-financial factors that contribute to a company's success, such as customer satisfaction, brand reputation, or intellectual property, may not be captured in financial statements. Ignoring these factors can limit the overall understanding of a company's performance and competitive position.
6. **Lack of Context:** Inter-firm comparison provides a snapshot of a company's relative performance but may not provide a comprehensive understanding of the underlying reasons behind the differences observed. Factors such as strategic decisions, industry trends, competitive advantages, or external market forces may not be fully captured in the analysis. Contextual information is necessary to interpret the comparison accurately.
7. **Changing Dynamics:** Industries and companies are subject to constant change. Market conditions, regulations, technology advancements, or competitive landscape can evolve rapidly, affecting the relevance of historical inter-firm comparison. It is important to consider the dynamic nature of the business environment and the need for ongoing monitoring and adjustment in the comparison process.

Despite these limitations, inter-firm comparison remains a valuable tool for performance evaluation and strategic decision making. However, it is important to exercise caution,

consider the limitations, and supplement the analysis with other relevant information to gain a comprehensive understanding of a company's performance and competitive position.

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## 7.4 BASICS OF INTER FIRM COMPARISON

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Let's cover some basics of inter-firm comparison.

1. **Purpose:** Inter-firm comparison is performed to assess and benchmark the performance of multiple companies within the same industry or sector. It helps identify strengths, weaknesses, and areas for improvement, allowing companies to learn from each other and make informed business decisions.
2. **Data Collection:** To compare companies effectively, relevant data must be collected and analyzed. This can include financial statements (e.g., income statement, balance sheet, cash flow statement), annual reports, industry reports, market research, and other sources of information.
3. **Key Metrics:** Various metrics and ratios can be used for comparison, depending on the industry and specific objectives. Some common financial metrics include revenue, profitability ratios (e.g., gross margin, net profit margin), liquidity ratios (e.g., current ratio, quick ratio), and efficiency ratios (e.g., asset turnover, inventory turnover). Non-financial metrics can include market share, customer satisfaction scores, employee productivity, and sustainability indicators.
4. **Time Period:** It's important to compare companies over the same time period to ensure accuracy and consistency. Comparing financial data from different years may lead to misleading conclusions due to changes in market conditions, company strategies, or industry dynamics.
5. **Industry Context:** Companies within the same industry may have unique characteristics, competitive dynamics, and market conditions. It's crucial to consider these factors while performing inter-firm comparisons to gain meaningful insights. Additionally, it's often helpful to compare companies with similar business models, market segments, or geographical reach.

6. **Limitations:** Inter-firm comparison has limitations that need to be considered. Companies may have different accounting policies, reporting practices, or fiscal year ends, which can affect comparability. Additionally, variations in company size, capital structure, or growth stage can impact the results. Therefore, it's essential to interpret the comparison results cautiously and consider the broader context.
7. **Competitive Analysis:** Inter-firm comparison can provide valuable insights into a company's competitive position. By comparing performance metrics, market share, and strategic initiatives, companies can identify areas where they are lagging behind competitors and develop strategies to gain a competitive edge.
8. **Inter-firm** comparison is a valuable tool for strategic planning, performance evaluation, and decision-making. By identifying best practices and areas for improvement, companies can enhance their performance and adapt to changing market conditions.
9. **Industry Benchmarks:** Comparing a company's performance against industry benchmarks can provide valuable context. Industry benchmarks represent average or best-in-class performance metrics for companies within a specific industry. They help identify areas where a company is outperforming or underperforming relative to its peers.
10. **Geographic Factors:** When comparing companies, it's important to consider geographic factors. Companies operating in different regions or countries may face unique challenges, regulatory environments, or cultural differences that can impact their performance. Adjusting for these factors can provide a more accurate comparison.
11. **Qualitative Factors:** While financial and operational metrics are essential, qualitative factors should not be overlooked. Consider aspects such as corporate culture, leadership quality, brand reputation, customer loyalty, and innovation capabilities. These factors can significantly influence a company's long-term success and competitive advantage.

12. **Risk Assessment:** Assessing and comparing risks among companies is crucial. Evaluate factors such as industry risks, market volatility, technological disruptions, regulatory compliance, and financial stability. Understanding the risk profiles of different companies can help in making informed investment or partnership decisions.
13. **Growth Strategies:** Analyze the growth strategies employed by each company. This can include evaluating organic growth (expansion through increased sales and market share) versus inorganic growth (mergers, acquisitions, partnerships). Understanding how companies approach growth can shed light on their future prospects and potential for value creation.
14. **Investor Perspective:** Consider the perspective of investors when comparing companies. Evaluate factors such as stock performance, dividend yield, earnings per share growth, and return on equity. This analysis provides insights into how the market perceives each company's financial performance and growth potential.
15. **Long-Term Sustainability:** Assess the long-term sustainability of each company's business model. Evaluate factors such as product diversification, customer retention rates, competitive advantages, and adaptability to technological advancements. A company with a sustainable business model is more likely to thrive in the long run.
16. **Peer Group Analysis:** When conducting inter-firm comparison, it can be beneficial to select a peer group of companies that closely resemble the company being analyzed. This ensures a more meaningful comparison, as companies facing similar market conditions and operating dynamics are being evaluated.

Remember that inter-firm comparison should be conducted with the right context and goals in mind. It's essential to define the specific objectives of the comparison and select appropriate metrics accordingly. Additionally, using multiple sources of information and applying critical thinking skills will contribute to a more comprehensive and accurate analysis.

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## 7.5 SUMMARY

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In conclusion, inter-firm comparison is a valuable tool for companies to gain insights into their performance and competitive position within their industry. By benchmarking against similar firms, companies can identify their strengths and weaknesses, understand industry dynamics, and make informed strategic decisions. It allows companies to assess their financial and operational metrics, such as profitability, efficiency, and market share, and identify areas for improvement. Inter-firm comparison provides a valuable perspective on how a company stacks up against its competitors and can help guide strategic planning, resource allocation, and performance improvement efforts. By leveraging the insights gained from inter-firm comparison, companies can strive for excellence, enhance their competitiveness, and achieve sustainable growth in their respective industries. Inter-firm comparison helps companies identify their competitive advantages and disadvantages relative to their peers. By understanding where they excel or lag behind, companies can focus on leveraging their strengths to gain a competitive edge and address areas of weakness to catch up or differentiate themselves. Through inter-firm comparison, companies can gain insights into industry trends, emerging practices, and successful strategies employed by their competitors. This information can be used to stay ahead of the curve, adapt to changing market dynamics, and adopt best practices to improve their own operations.

**Investor and Stakeholder Perspective:** Inter-firm comparison is not only valuable for internal decision-making but also for external stakeholders. Investors, shareholders, and other stakeholders often assess a company's performance by comparing it to industry peers. A strong performance in inter-firm comparison can enhance investor confidence and attract potential investors. Inter-firm comparison is an ongoing process that encourages companies to continuously monitor and evaluate their performance. By regularly benchmarking against competitors, companies can identify emerging threats, capitalize on new opportunities, and continuously improve their operations to stay ahead in a dynamic business environment. Inter-firm comparison can promote collaborative learning within an industry. Companies can share insights and best practices with each other, leading to mutual learning and industry-wide improvement. This can foster innovation, efficiency, and overall advancement within the industry as

companies strive to outperform each other. By engaging in inter-firm comparison, companies can make data-driven decisions with greater confidence. The comparative analysis provides a broader context and helps validate the effectiveness of strategic initiatives. It reduces reliance on intuition and subjective judgments, leading to more informed and objective decision-making.

In summary, inter-firm comparison provides valuable insights into a company's competitive position, industry dynamics, and areas for improvement. It helps companies capitalize on their strengths, adapt to industry trends, attract stakeholders, drive continuous improvement, foster collaboration, and make confident data-driven decisions. Ultimately, inter-firm comparison is a powerful tool that can drive sustainable growth and success in the competitive business landscape.

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## 7.6 GLOSSARY

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- **Return on Investment (ROI):** A measure of the profitability of an investment. It is calculated by dividing the net profit from an investment by the initial cost of the investment.
- **Return on Equity (ROE):** A measure of a company's profitability relative to the shareholders' equity. It indicates how effectively a company generates profits from the shareholders' investment.
- **Benchmarking:** The process of comparing a company's performance or metrics against industry peers or best practices. It helps identify areas of improvement and set performance targets.
- **Profitability Ratios:** Financial ratios that measure a company's ability to generate profits relative to its revenue or investment. Common profitability ratios include gross margin, operating margin, and net profit margin.
- **Liquidity Ratios:** Ratios that assess a company's ability to meet its short-term financial obligations. Examples of liquidity ratios include the current ratio and the quick ratio.

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## 7.7 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of inter-firm comparison.

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Q.2 Discuss the various features of inter-firm comparison.

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## 7.8 LESSON END EXERCISE

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Q.1 How the modern organisations can efficiently implement inter-firm comparison.

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Q.2 Elucidate the basics of inter-firm comparison.

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## 7.9 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounting*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.



## **UNIFORM COSTS, INTERFIRM COMPARISONS AND COST AUDIT**

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**M.COM III SEM  
MCOMC354**

**UNIT- II  
LESSON - 8**

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### **PROCEDURE FOR INTER-FIRM COMPARISONS, PURPOSE OF INTER-FIRM COMPARISONS AND PROBLEMS IN INTER-FIRM COMPARISON**

#### **STRUCTURE**

- 8.1 Introduction
- 8.2 Objectives
- 8.3 Procedure of Inter-Firm Comparison
- 8.4 Purpose of Inter-Firm Comparison
- 8.5 Problems in Inter-Firm Comparison
- 8.6 Summary
- 8.7 Glossary
- 8.8 Self Assessment Questions
- 8.9 Lesson End Exercise
- 8.10 Suggested Readings

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#### **8.1 INTRODUCTION**

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Inter-firm comparison means a comparison of two or more similar business units with the objective of finding the competitive position to improve the profitability and productivity of those business units. Thus inter-firm comparison is a tool used by the

management of a company to compare its operating performance and financial results with those of similar companies engaged in the same industry. The results of this give him an instant and vivid picture of how his firm's profitability, its costs, its stock turnover, and other key factors affecting the success of a business compare with other firms in his industry. The firms which agree to follow inter-firm comparison should create a central organisation for collecting, comparing and providing information to the member firms. In U.K. and other foreign countries there are professional organisations independent of the member firms which act as the central organisations. As they do not have any personal interest in the information collected by them, they work in a completely impartial way and member-firms also provide information to them without any hesitation.

In India trade associations, Chambers of Commerce, trade journals and periodicals and National Productivity Councils act as the central organisations for collection, codification, calculation of ratios and providing the ratios to firms for making inter-firm comparison. Without such central organisation inter-firm comparison is not possible.

The member-firms should have mutual trust in each other and they should have confidence that the inter-firm comparison will be beneficial to all member firms.

The member-firms should have clear idea about the areas in which the cost data and other information is to be provided by them. They should know the requirements of the management and the extent to which information should be provided so that it will prove useful for member-firms to achieve improvement in their working.

Firms desirous to use inter-firm comparison must already be using uniform costing system so that there is already uniformity about cost unit, costing method and techniques, procedures followed for cost calculation, items to be included and excluded from costs, etc. In other words, the base in the form of uniform costing must already be in existence before introduction of the inter-firm comparison among the member-firms.

For collecting the information from member-firms the necessary forms should be prepared and copies supplied to each member-firm. Information obtained is analysed,

studied and converted in the form of agreed ratios and by allotting codes to each member-firm the information in ratios is provided to each member-firm. Identity of the firms is not disclosed and each member-firm knows only its code.

By comparing its ratio with that of other member-firms and also with the average ratios for the member-firms considered together, a member-firm can understand where it stands and how much further progress in efficiency can still be made by it.

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## 8.2 OBJECTIVES

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After reading this lesson, students will be able to understand the:

- Procedure of inter-firm comparison.
- Purpose of inter-firm comparison.
- Limitations of inter-firm comparison.

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## 8.3 PROCEDURE OF INTER-FIRM COMPARISON

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The procedure of inter-firm comparison involves analyzing and comparing the financial and operational performance of multiple companies within the same industry or sector. It helps to assess a company's relative performance, identify strengths and weaknesses, and benchmark against competitors. Here is a step-by-step procedure for conducting inter-firm comparison:

1. **Identify Comparable Companies** : Select a group of companies operating in the same industry or sector as the target company. Ensure that the companies have similar business models, product lines, and market presence for meaningful comparisons.
2. **Gather Financial Statements** : Collect the financial statements of the target company and the selected comparable companies. Financial statements typically include the balance sheet, income statement, and cash flow statement. These statements provide crucial financial information for comparison purposes.
3. **Normalize Financial Data**: Adjust the financial data to ensure comparability. Normalize the financial statements by eliminating any inconsistencies or one-

time events that might distort the analysis. For example, exclude non-recurring expenses or extraordinary gains/losses to obtain a clearer picture of the companies' ongoing performance.

4. **Choose Key Performance Indicators (KPIs):** Identify the key financial and operational metrics that are relevant to the industry and provide meaningful insights. Common KPIs include revenue growth, profitability ratios (e.g., gross margin, operating margin), return on investment (ROI), liquidity ratios, market share, and customer satisfaction metrics.
5. **Calculate and Compare KPIs :** Calculate the selected KPIs for each company based on their financial statements. Compute the ratios and percentages to compare and benchmark the performance of the target company against its peers. This analysis helps to identify areas of strength or weakness relative to the industry average or competitors.
6. **Analyze Deviations and Trends:** Analyze the differences in performance between the target company and its peers. Look for any significant deviations from the industry average and assess the reasons behind them. Identify trends over time to understand whether the target company's performance is improving or declining relative to its competitors.
7. **Qualitative Analysis:** Besides quantitative data, consider qualitative factors such as management expertise, brand reputation, innovation capabilities, and competitive strategies. These factors can have a significant impact on a company's performance and should be taken into account during the comparison.
8. **Interpret the Results:** Interpret the findings from the inter-firm comparison and draw conclusions. Identify the areas where the target company excels and where it lags behind competitors. This analysis helps to identify potential improvement opportunities and develop strategies to enhance performance.
9. **Limitations and Considerations:** Acknowledge the limitations of inter-firm comparison. Factors like differences in accounting methods, business models, and economic conditions can affect the comparability of data. Exercise caution

and consider additional qualitative and contextual information while drawing conclusions.

10. **Regular Review and Monitoring:** Perform regular inter-firm comparisons to track the target company's performance over time and identify changes in industry dynamics. This ongoing monitoring helps to stay competitive and adapt to market conditions effectively.

Remember that inter-firm comparison is just one tool among many used for financial analysis. It should be combined with other techniques and considerations to get a comprehensive understanding of a company's performance and competitive position.

Here's some further explanation on the procedure of inter-firm comparison:

1. **Identify Comparable Companies:** When selecting comparable companies, it's important to consider factors such as the size of the company, geographic location, business model, target market, and product/service offerings. The closer the match between the target company and its peers, the more meaningful the comparison will be.
2. **Gather Financial Statements:** Obtain the financial statements of the target company and the selected comparable companies. These statements provide detailed information about the companies' financial health, including their assets, liabilities, revenues, expenses, and cash flows. Financial statements can be obtained from company websites, financial databases, or regulatory filings.
3. **Normalize Financial Data:** Normalizing the financial data involves adjusting the figures to make them comparable and eliminate any distortions. For example, if one company has an unusually high expense due to a one-time event, such as a legal settlement, it may be necessary to exclude that expense to obtain a clearer view of the ongoing performance.
4. **Choose Key Performance Indicators (KPIs):** Selecting appropriate KPIs is crucial for a meaningful comparison. The choice of KPIs will depend on the industry and the specific aspects of performance you want to assess. Some commonly used KPIs include revenue growth rate, gross margin, net profit margin,

return on equity (ROE), debt-to-equity ratio, inventory turnover, customer retention rate, and market share.

5. **Calculate and Compare KPIs:** Calculate the selected KPIs for each company based on their financial statements. Compute the ratios or percentages for each company and compare them against one another. This comparison allows you to identify the relative strengths and weaknesses of the target company compared to its competitors.
6. **Analyze Deviations and Trends:** Look for significant deviations or variations in the KPIs between the target company and its peers. Analyze the reasons behind these deviations to understand the factors driving the differences in performance. Additionally, analyze trends over time to see if the target company's performance is improving, deteriorating, or staying relatively stable compared to its competitors.
7. **Qualitative Analysis:** In addition to quantitative data, consider qualitative factors that may impact performance. These factors can include the quality of management, brand reputation, innovation capabilities, customer satisfaction, supply chain efficiency, competitive advantages, and strategic initiatives. Qualitative analysis provides valuable context and insights into the overall performance of the companies being compared.
8. **Interpret the Results:** Interpret the findings from the inter-firm comparison to gain insights into the target company's competitive position and performance relative to its peers. Identify areas where the target company outperforms its competitors and areas where it lags behind. This analysis can help identify improvement opportunities and guide strategic decision-making.
9. **Limitations and Considerations:** It's important to recognize the limitations of inter-firm comparison. Companies may have different accounting policies, reporting periods, or business models, which can affect comparability. Additionally, external factors such as changes in the industry or economic conditions may impact performance. Consider these limitations and supplement the analysis with additional information and context.

10. **Regular Review and Monitoring:** Inter-firm comparison should be an ongoing process. Regularly review and update the analysis to monitor changes in the target company's performance and industry dynamics. This ensures that the company remains competitive and can adapt to evolving market conditions.

By following this procedure, you can conduct a thorough and insightful inter-firm comparison that helps you understand a company's performance relative to its competitors, identify areas for improvement, and make informed strategic decisions.

Let's consider an example of inter-firm comparison between two companies in the retail industry: Company A and Company B.

1. **Identify Comparable Companies:** Company A operates a chain of clothing stores, while Company B is a competitor with a similar business model and target market.
2. **Gather Financial Statements:** Obtain the annual financial statements of Company A and Company B, including their balance sheets, income statements, and cash flow statements for the same period.
3. **Normalize Financial Data:** Adjust the financial data to ensure comparability. For instance, if Company A incurred a significant one-time expense due to store renovations, it may be excluded from the analysis to provide a clearer view of ongoing performance.
4. **Choose Key Performance Indicators (KPIs):** Select relevant KPIs for the retail industry. In this example, we could use KPIs such as revenue growth rate, gross margin, net profit margin, inventory turnover, and customer satisfaction ratings.
5. **Calculate and Compare KPIs:** Calculate the selected KPIs for both companies based on their financial statements. For instance, Company A achieved a revenue growth rate of 10% while Company B achieved a growth rate of 8%. Company A's gross margin is 40%, while Company B's is 35%. Continue calculating and comparing all the chosen KPIs.

6. **Analyze Deviations and Trends:** Analyze the deviations between Company A and Company B in each KPI. For example, if Company A has a higher gross margin compared to Company B, it suggests that Company A may have better cost control or pricing strategies. Additionally, analyze trends over time to determine if Company A's revenue growth rate is consistently higher or if Company B's customer satisfaction ratings have improved over the years.
7. **Qualitative Analysis:** Consider qualitative factors such as brand reputation, marketing strategies, customer service, and innovation. Company A may have a strong brand reputation and a reputation for excellent customer service, while Company B may be known for its innovative product offerings. Evaluate how these factors contribute to each company's performance and competitive advantage.
8. **Interpret the Results:** Based on the inter-firm comparison, you may find that Company A outperforms Company B in terms of revenue growth, gross margin, and customer satisfaction. However, Company B may have a more innovative product line. These findings suggest that Company A could focus on leveraging its strong customer satisfaction ratings to drive further growth, while Company B may explore strategies to improve its gross margin and compete effectively.
9. **Limitations and Considerations:** Acknowledge any limitations of the analysis, such as differences in accounting methods or the impact of external factors like economic conditions. Adjust the interpretation accordingly and consider additional information or context to gain a comprehensive understanding of the companies' performances.
10. **Regular Review and Monitoring:** Repeat the inter-firm comparison regularly to monitor changes in performance and industry dynamics. This will help both Company A and Company B to stay competitive, adapt to market conditions, and make informed strategic decisions.

By following this example procedure, you can conduct an inter-firm comparison that provides insights into the relative performance of two companies within the retail industry and helps identify areas for improvement and strategic focus.



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## 8.4 PURPOSE OF INTER-FIRM COMPARISONS

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The purpose of inter-firm comparison is to evaluate the financial performance and position of two or more companies in the same industry, in order to identify strengths, weaknesses, and opportunities for improvement.

The specific purposes of inter-firm comparison can include:

1. **Identifying best practices:** By comparing the financial performance and position of different companies, businesses can identify best practices that they can adopt to improve their own financial performance.
2. **Evaluating investment opportunities:** Investors can use inter-firm comparison to evaluate investment opportunities, by comparing the financial performance of different companies in the same industry.
3. **Benchmarking performance:** Businesses can use inter-firm comparison to benchmark their own financial performance against that of their competitors, in order to identify areas where they can improve their performance.
4. **Identifying trends:** By comparing financial performance over time, inter-firm comparison can help businesses identify trends and patterns in their own performance, as well as in the performance of their competitors.
5. **Facilitating strategic decision-making:** Inter-firm comparison can provide businesses with valuable information for making strategic decisions, such as whether to enter a new market, pursue a merger or acquisition, or implement a new business strategy.
6. **Identifying areas of competitive advantage:** By comparing their financial performance to that of their competitors, businesses can identify areas where they have a competitive advantage, such as in cost structure, product differentiation, or customer service.
7. **Assessing risk:** Inter-firm comparison can help businesses assess the risk associated with investing in a particular company or industry, by comparing financial ratios such as liquidity and solvency.

8. **Evaluating management effectiveness:** Inter-firm comparison can help businesses evaluate the effectiveness of their own management team, as well as that of their competitors, by analyzing financial performance measures such as return on equity and return on assets.
9. **Evaluating the impact of external factors:** Inter-firm comparison can help businesses evaluate the impact of external factors, such as changes in the regulatory environment or shifts in consumer preferences, on their financial performance and position.
10. **Setting performance targets:** Inter-firm comparison can help businesses set realistic and achievable performance targets, by identifying the performance of top-performing companies in the same industry.

In summary, inter-firm comparison is a valuable tool for businesses, investors, and other stakeholders to evaluate financial performance, identify areas of strength and weakness, and make informed decisions. By comparing financial ratios and other financial metrics across multiple companies in the same industry, businesses can gain valuable insights into their own performance, as well as that of their competitors. Overall, the purpose of inter-firm comparison is to provide businesses with valuable insights into their own financial performance and position, as well as that of their competitors, in order to make informed decisions and improve their financial performance.

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## 8.5 PROBLEMS IN INTER-FIRM COMPARISON

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While inter-firm comparison can provide valuable insights into the financial performance and position of different companies, there are also several problems and limitations that must be taken into consideration. Some of the problems of inter-firm comparison include:

1. **Differences in accounting methods:** Different companies may use different accounting methods and standards, which can make it difficult to compare their financial statements and ratios.
2. **Differences in business models:** Companies in the same industry may have

different business models, which can make it difficult to compare their financial performance and position.

3. **Differences in size:** Companies of different sizes may have different financial ratios, which can make it difficult to compare their financial performance and position.
4. **Differences in timing:** Companies may report their financial statements at different times, which can make it difficult to compare their financial performance and position over time.
5. **Incomplete information:** Financial statements may not include all relevant information, such as off-balance sheet items or contingent liabilities, which can distort the picture of a company's financial performance and position.
6. **Industry-specific ratios:** Some industries may have unique financial ratios that are not comparable across industries, which can limit the usefulness of inter-firm comparison.
7. **External factors:** Inter-firm comparison may not take into account external factors, such as changes in the regulatory environment or macroeconomic conditions, which can impact the financial performance and position of companies in the same industry.
8. **Differences in organizational structure:** Companies may have different organizational structures, such as decentralized versus centralized decision-making, which can impact their financial performance and position and make inter-firm comparison more difficult.
9. **Differences in risk profiles:** Companies may have different risk profiles, such as variations in credit risk or exposure to interest rate risk, which can impact their financial performance and position and make inter-firm comparison more complex.
10. **Data availability:** It may be difficult to obtain accurate and reliable data for some companies, particularly if they are privately held or located in countries with less transparent financial reporting requirements.

11. **Lack of qualitative information:** Financial ratios and other quantitative measures may not provide a complete picture of a company's financial performance and position, as they may not take into account qualitative factors such as management expertise, brand strength, or customer loyalty.
12. **Seasonal or cyclical variations:** Companies may experience seasonal or cyclical variations in their financial performance and position, which can make inter-firm comparison more challenging.
13. **Strategic differences:** Companies may have different strategic objectives, such as pursuing growth versus maintaining profitability, which can impact their financial performance and position and make inter-firm comparison more complex.
14. **Limited scope of financial statements:** Financial statements provide a limited view of a company's operations and performance, and may not take into account other factors such as social and environmental impacts or the quality of a company's products or services.

In summary, while inter-firm comparison can provide valuable insights into the financial performance and position of different companies, there are also several limitations and potential problems that must be taken into consideration. It is important to use a combination of quantitative and qualitative analysis, adjust for differences in accounting methods and other factors, and consider the industry and external factors when conducting inter-firm comparison.

Overall, inter-firm comparison can provide valuable insights into the financial performance and position of different companies, but it is important to consider the limitations and potential problems associated with this type of analysis. It is important to ensure that the companies being compared are similar in nature, that the financial statements are adjusted for comparability, and that the analysis is done in the context of the industry and external factors.

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## 8.6 SUMMARY

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In summary, inter-firm comparison involves analyzing and comparing the financial and operational performance of multiple companies within the same industry or sector.

The procedure includes various steps namely, Identify comparable companies in the same industry or sector, gather financial statements of the target company and its comparable peers, normalize financial data by adjusting for any inconsistencies or one-time events, choose key performance indicators (KPIs) relevant to the industry, calculate and compare the KPIs for each company, analyze deviations and trends in performance to identify strengths and weaknesses, consider qualitative factors such as management expertise, brand reputation, and innovation capabilities, interpret the results to draw conclusions about the target company's relative performance, be aware of limitations and consider additional contextual information, regularly review and monitor performance to stay competitive and adapt to market conditions. By following this procedure, companies can gain valuable insights into their own performance relative to competitors, identify areas for improvement, and make informed strategic decisions.

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## 8.7 GLOSSARY

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- **Return on Investment (ROI):** A measure of the profitability of an investment. It is calculated by dividing the net profit from an investment by the initial cost of the investment.
- **Return on Equity (ROE):** A measure of a company's profitability relative to the shareholders' equity. It indicates how effectively a company generates profits from the shareholders' investment.
- **Benchmarking:** The process of comparing a company's performance or metrics against industry peers or best practices. It helps identify areas of improvement and set performance targets.

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## 8.8 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the purpose of inter-firm comparison.

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Q.2 Discuss the various problems of inter-firm comparison.

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### 8.9 LESSON END EXERCISE

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Q.1 How the modern organisations can efficiently implement inter-firm comparison?

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Q.2 Elucidate the procedure of inter-firm comparison.

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### 8.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
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## **UNIFORM COSTS, INTERFIRM COMPARISONS AND COST AUDIT**

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**M.COM III SEM  
MCOMC354**

**UNIT- II  
LESSON - 9**

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### **COST AUDIT - BASICS OF COST AUDIT**

#### **STRUCTURE**

- 9.1 Introduction
- 9.2 Objectives
- 9.3 Cost Audit
- 9.4 Basics of Cost Audit
- 9.5 Summary
- 9.6 Glossary
- 9.7 Self Assessment Questions
- 9.8 Lesson End Exercise
- 9.9 Suggested Readings

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#### **9.1 INTRODUCTION**

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Cost audit is a systematic examination and verification of an organization's cost accounting records, systems, and procedures. It aims to ensure the accuracy, reasonableness, and compliance of cost-related information, providing assurance to management, stakeholders, and regulatory authorities. Cost audit involves independent professionals, known as cost auditors, who evaluate the organization's cost accounting practices to identify inefficiencies, control costs, detect fraud, and support decision-

making processes. The primary objective of cost audit is to verify the accuracy of cost accounting records and the adherence to cost accounting principles, ensuring that costs are appropriately allocated and reported. It helps organizations improve their cost management practices, enhance cost control mechanisms, and identify areas for cost reduction or optimization. Cost audit goes beyond traditional financial audits by focusing specifically on cost-related aspects of an organization's operations. It examines various elements, including cost classification, cost allocation methods, inventory valuation, pricing policies, budgeting processes, and compliance with legal and regulatory requirements.

The cost audit process typically involves the examination of cost accounting records, internal controls, and supporting documentation. Cost auditors review cost data, verify the accuracy of calculations, assess the effectiveness of cost control measures, and analyze cost variances. They also evaluate the organization's compliance with relevant laws, regulations, and cost accounting standards. The findings of the cost audit are documented in a detailed report that includes an analysis of the organization's cost accounting practices, identification of areas for improvement, and recommendations for corrective actions. This report is presented to management, the board of directors, and other stakeholders, providing them with valuable insights to enhance cost transparency, control, and decision-making. Cost audit is particularly relevant for organizations operating in industries with complex cost structures, where accurate cost information is crucial for effective decision-making. It helps organizations optimize their cost management processes, comply with legal requirements, prevent fraud, and gain stakeholders' confidence in the reliability of cost-related information. Overall, cost audit serves as a valuable tool for organizations to evaluate, monitor, and improve their cost accounting practices, leading to enhanced operational efficiency and financial performance.

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## **9.2 OBJECTIVES**

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After reading this lesson, students will be able to understand the:

- Basics of inter-firm comparison.
- Procedure of inter-firm comparison.



- Purpose of inter-firm comparison.
- Limitations of inter-firm comparison.

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### 9.3 COST AUDIT

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Cost audit is a systematic examination of a company's cost accounting records, systems, and procedures to ensure that the reported costs are accurate, reasonable, and in compliance with applicable laws and regulations. It focuses on verifying the accuracy of cost data, evaluating the efficiency and effectiveness of cost management practices, and identifying areas for improvement.

The primary objective of a cost audit is to determine whether the cost accounting principles, methods, and practices used by an organization are appropriate and adequate to provide reliable cost information for decision-making, control, and reporting purposes. It aims to detect errors, inefficiencies, wastage, and fraud in cost accounting and control systems and to suggest corrective measures.

Cost audits are typically conducted by independent professionals or firms known as cost auditors. They examine various aspects of cost accounting, such as the classification and allocation of costs, inventory valuation methods, cost control procedures, pricing policies, and compliance with relevant laws and regulations.

#### **Definition of cost audit by experts**

**The Institute of Cost Accountants** of India defines cost audit as follows: "Cost audit is the verification of the correctness of cost accounts and the adherence to the cost accounting plan."

**The Chartered Institute of Management Accountants (CIMA)** defines cost audit as: "An examination of cost accounting records and verification of facts to ascertain that the cost of the product has been arrived at, in accordance with principles of cost accounting, and statutory requirements."

**The International Federation of Accountants (IFAC)** provides the following definition: "Cost audit is an examination of cost accounting records and related records

with a view to ascertaining the accuracy of the cost accounts and compliance with the cost accounting objectives, principles, and procedures.”

These definitions highlight the key aspects of cost audit, which involve verifying the accuracy of cost accounts, ensuring compliance with cost accounting principles and legal requirements, and assessing the reliability of cost information for decision-making purposes.

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## 9.4 BASICS OF COST AUDIT

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The basics of cost audit involve understanding its fundamental principles and key elements. Here are the basics of cost audit:

1. **Objective:** The primary objective of cost audit is to verify the accuracy, reasonableness, and compliance of cost accounting records, systems, and procedures. It aims to provide assurance to management, stakeholders, and regulatory bodies that the reported costs are reliable and in adherence with applicable laws and regulations.
2. **Independent examination:** Cost audit is typically conducted by independent professionals or firms known as cost auditors. They are separate from the organization’s management and provide an unbiased evaluation of the cost accounting practices.
3. **Scope:** The scope of cost audit may vary based on industry-specific requirements, regulatory guidelines, and organizational needs. It includes the examination of cost accounting records, systems, and procedures related to cost allocation, cost control, compliance, and accuracy of cost information.
4. **Compliance assessment:** Cost audit evaluates the organization’s compliance with relevant laws, regulations, and cost accounting standards. It ensures that the organization adheres to legal requirements related to cost reporting, pricing policies, tax regulations, and other applicable guidelines.
5. **Verification of cost records:** Cost auditors verify the accuracy and reliability of cost accounting records. They examine the classification and allocation of

costs, inventory valuation methods, and ensure that cost data is properly recorded and documented.

6. **Identification of inefficiencies:** Cost audit helps identify areas of inefficiency, wastage, and potential cost-saving opportunities within the organization. It assesses cost management practices, budgeting processes, cost variance analysis, and other measures taken to control and manage costs.
7. **Fraud detection and prevention:** Cost auditors evaluate internal controls and procedures to detect and prevent fraudulent activities related to cost accounting. They identify irregularities, manipulation of cost data, misappropriation of assets, and suggest measures to strengthen fraud prevention mechanisms.
8. **Reporting and recommendations:** The findings of the cost audit are documented in a detailed report. This report includes an analysis of the cost accounting practices, identification of areas for improvement, and recommendations for corrective actions. The report is typically presented to the management or board of directors.
9. **Periodicity:** Cost audit is often conducted periodically, such as annually or at regular intervals, to ensure ongoing monitoring of cost accounting practices and controls. This allows for continuous improvement and ensures the effectiveness of cost management measures.

These basics provide a foundation for understanding the purpose, scope, and process of cost audit. It helps organizations enhance cost transparency, comply with regulations, identify cost-saving opportunities, and improve overall cost management practices.

10. **Cost audit standards:** Cost audit follows specific standards and guidelines established by regulatory bodies or professional organizations. These standards provide a framework for conducting cost audits and ensure consistency, quality, and comparability in the audit process.
11. **Documentation and working papers:** Cost auditors maintain comprehensive documentation and working papers to support their audit findings and conclusions.

These documents include relevant cost records, analysis, calculations, audit procedures performed, and evidence obtained during the audit.

12. **Sampling techniques:** Cost audit may involve the use of sampling techniques to select representative items for examination. Sampling helps in evaluating the overall accuracy and reasonableness of cost accounting records without the need to examine each individual transaction or item.
13. **Continuous monitoring:** While cost audit is typically conducted periodically, organizations may also establish mechanisms for continuous monitoring of cost accounting practices. This may involve regular internal reviews, self-assessments, or the use of technology-based tools to monitor and analyze cost data on an ongoing basis.
14. **Stakeholder engagement:** Cost audit may involve engagement with various stakeholders, such as management, board of directors, regulatory authorities, and external auditors. Stakeholder engagement ensures transparency, facilitates understanding of audit findings, and promotes collaboration in implementing recommended improvements.
15. **Integration with financial audits:** Cost audit may be integrated with financial audits to ensure a comprehensive evaluation of an organization's financial and cost management processes. This integration helps identify interdependencies and ensures consistency between financial statements and cost accounting records.
16. **Evolution of cost audit:** The practice of cost audit continues to evolve to keep pace with changing business environments and regulatory requirements. New technologies, such as data analytics and automation, are increasingly being employed in cost audit processes to enhance efficiency, accuracy, and the depth of analysis.
17. **Industry-specific considerations:** Cost audit may have specific considerations and requirements based on the industry in which an organization operates. Different industries may have unique cost structures, regulations, and reporting obligations that impact the scope and focus of cost audits.

18. **Cost audit report:** The cost audit report summarizes the findings, conclusions, and recommendations of the audit. It communicates the results of the audit to the organization's management, board of directors, and other stakeholders. The report may include both qualitative and quantitative information, supporting data, and suggested actions for improvement.

It is important to note that the specifics of cost audit can vary based on the jurisdiction, industry, and specific organizational needs. Therefore, it is advisable to consult relevant regulations, standards, and professional guidelines to ensure compliance and effectiveness in conducting cost audits.

### **Scope of Cost Audit**

The scope of a cost audit may vary depending on the industry, regulatory requirements, and the specific needs of the organization. Some common areas covered in a cost audit include:

1. **Verification of cost records:** Cost auditors examine the company's cost records to ensure that they accurately reflect the cost of goods produced or services provided. This involves checking the accuracy of cost allocations, overhead allocations, and inventory valuations.
2. **Evaluation of cost control systems:** Cost auditors assess the effectiveness of the organization's cost control systems and procedures. They examine cost reduction programs, budgeting processes, cost variance analysis, and other measures taken to control and manage costs.
3. **Compliance with legal requirements:** Cost auditors verify whether the company complies with applicable laws and regulations related to cost accounting and reporting. This includes adherence to cost accounting standards, tax laws, pricing regulations, and other relevant guidelines.
4. **Identification of inefficiencies and improvement opportunities:** Cost auditors identify areas where the organization can improve its cost management practices. They may recommend changes in processes, procedures, or systems to reduce costs, eliminate waste, or enhance efficiency.

5. **Fraud detection and prevention:** Cost auditors look for signs of fraudulent activities, such as manipulation of cost data, misappropriation of assets, or irregularities in cost reporting. They assess the adequacy of internal controls and suggest measures to strengthen fraud prevention mechanisms.

The findings and recommendations of a cost audit are typically presented in a detailed report to the management or board of directors. This report helps the organization in identifying cost-saving opportunities, improving cost control processes, and ensuring compliance with legal requirements. It also provides stakeholders with an independent assessment of the reliability and accuracy of cost information.

### **Features of cost audit**

The features of cost audit typically include the following:

1. **Independent examination:** Cost audit is conducted by independent professionals or firms known as cost auditors who are separate from the organization's management. This independence ensures an objective and unbiased evaluation of the cost accounting records and systems.
2. **Systematic review:** Cost audit follows a structured and systematic approach to examine the cost accounting records, systems, and procedures of an organization. It involves a thorough review of cost data, allocations, controls, and compliance with relevant laws and regulations.
3. **Focus on cost accuracy and reasonableness:** The primary objective of cost audit is to verify the accuracy and reasonableness of the reported costs. It ensures that the costs recorded and allocated by the organization are based on appropriate accounting principles and are reasonable in relation to the goods produced or services provided.
4. **Compliance assessment:** Cost audit assesses the organization's compliance with applicable laws, regulations, and cost accounting standards. It ensures that the company adheres to legal requirements related to cost reporting, pricing policies, tax regulations, and other relevant guidelines.

5. **Identification of inefficiencies and opportunities:** Cost audit helps identify areas of inefficiency, waste, and potential cost savings within the organization. By examining cost management practices, budgeting processes, and cost control measures, cost auditors can suggest improvements to enhance efficiency and reduce costs.
6. **Fraud detection and prevention:** Cost audit includes an evaluation of internal controls and procedures to detect and prevent fraudulent activities related to cost accounting. It helps identify irregularities, manipulation of cost data, misappropriation of assets, and other fraudulent practices.
7. **Reporting and recommendations:** The findings and recommendations of the cost audit are presented in a detailed report to the management or board of directors. This report highlights areas for improvement, suggests corrective measures, and provides an independent assessment of the reliability and accuracy of cost information.
8. **Continuous process:** Cost audit is often conducted periodically, such as annually or at regular intervals, to ensure ongoing monitoring of cost accounting practices. It helps organizations maintain cost transparency, accuracy, and compliance over time.

These features collectively contribute to the effectiveness of cost audit in evaluating cost accounting systems, providing insights for decision-making, and ensuring cost-related transparency and control within an organization.

### **Importance of cost audit**

Cost audit holds significant importance for organizations due to the following reasons:

1. **Accuracy and reliability of cost information:** Cost audit helps ensure the accuracy and reliability of cost accounting records and information. By verifying the correctness of cost data, allocations, and calculations, it enhances the trustworthiness of cost information used for decision-making, budgeting, pricing, and performance evaluation.

2. **Cost control and efficiency improvement:** Cost audit identifies areas of inefficiency, wastage, and potential cost-saving opportunities within the organization. By examining cost management practices, it helps management identify and implement measures to control costs, eliminate waste, and improve overall efficiency.
3. **Compliance with laws and regulations:** Cost audit ensures compliance with applicable laws, regulations, and cost accounting standards. It helps organizations adhere to legal requirements related to cost reporting, pricing policies, tax regulations, and other relevant guidelines, reducing the risk of non-compliance penalties and legal issues.
4. **Fraud detection and prevention:** Cost audit plays a crucial role in detecting and preventing fraudulent activities related to cost accounting. By evaluating internal controls and procedures, it helps identify irregularities, manipulation of cost data, misappropriation of assets, and other fraudulent practices, contributing to fraud prevention and risk mitigation.
5. **Decision-making support:** Reliable cost information is essential for effective decision-making. Cost audit provides assurance that the cost data used for decision-making is accurate and reasonable. This enables management to make informed decisions regarding pricing, product mix, cost reduction initiatives, investments, and other strategic matters.
6. **Stakeholder confidence:** Cost audit provides stakeholders, including investors, creditors, and regulators, with an independent assessment of the organization's cost accounting practices and controls. It enhances stakeholder confidence in the accuracy and transparency of cost information, leading to better trust and credibility for the organization.
7. **Continuous improvement:** Cost audit is often conducted periodically, allowing for ongoing monitoring and evaluation of cost accounting systems and practices. This supports a culture of continuous improvement within the organization by identifying areas for enhancement, suggesting corrective measures, and ensuring the effectiveness of cost control mechanisms.



Overall, cost audit helps organizations enhance cost transparency, improve decision-making, comply with regulations, control costs, prevent fraud, and gain stakeholder confidence. It is a valuable tool for organizations to optimize cost management practices and drive financial performance.

### **Limitations of cost audit**

While cost audit offers several benefits, it also has certain limitations that should be acknowledged. Some of the limitations of cost audit include:

1. **Subjectivity in cost allocation:** Cost allocation involves making decisions on how to allocate costs among different products, services, or departments. Different cost allocation methods can lead to varying results, and cost auditors may have to make subjective judgments in this process. This subjectivity can introduce a level of uncertainty and may limit the objectivity of cost audit findings.
2. **Inability to capture all costs:** Cost audit focuses on examining the cost accounting records and systems of an organization. However, it may not capture all costs associated with the organization's activities. Certain costs, such as opportunity costs, intangible costs, and externalities, are challenging to quantify and may not be fully reflected in cost accounting records.
3. **Limited scope of non-financial aspects:** Cost audit primarily focuses on financial aspects of cost accounting, such as cost allocation, cost control systems, and compliance with regulations. It may not delve into non-financial aspects like the qualitative impact of cost management decisions, the effectiveness of non-financial performance measures, or the alignment of costs with strategic objectives.
4. **Time lag:** Cost audit is often conducted retrospectively, examining historical cost accounting records. This time lag between the occurrence of costs and the audit process can limit the ability to provide real-time insights and immediate corrective actions. Timeliness can be a challenge when addressing cost-related issues that require immediate attention.
5. **Limited focus on external factors:** Cost audit primarily focuses on internal cost accounting systems and procedures within the organization. It may not

consider external factors that can impact costs, such as market conditions, changes in regulations, or industry-specific cost drivers. These external factors can have a significant influence on cost management but may fall outside the scope of cost audit.

6. **Cost of conducting audits:** Cost audit itself can be resource-intensive and involve costs for hiring external auditors or dedicating internal resources. The cost of conducting audits can be a limitation, particularly for smaller organizations with limited budgets or resources.
7. **Dependence on cost accounting methods and systems:** Cost audit relies on the accuracy and adequacy of the organization's cost accounting methods and systems. If the cost accounting systems are outdated, inadequate, or prone to errors, it can limit the effectiveness of cost audit in providing reliable and meaningful insights.

While recognizing these limitations, cost audit still plays a valuable role in evaluating cost accounting practices, ensuring compliance, and identifying areas for improvement. Organizations should consider these limitations and supplement cost audit with other management tools and techniques to gain a comprehensive understanding of their cost management processes.

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## 9.5 SUMMARY

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Cost audit is a systematic and independent examination of an organization's cost accounting records, systems, and procedures. Its primary objective is to verify the accuracy, reasonableness, and compliance of cost-related information. Cost audit helps organizations improve cost management practices, control costs, detect fraud, and make informed decisions.

Cost audit aims to ensure the accuracy, reasonableness, and compliance of cost accounting records and information. Cost audit is conducted by independent professionals known as cost auditors, who provide an unbiased evaluation of cost accounting practices. Cost audit includes the examination of cost accounting records, systems, and procedures related to cost allocation, cost control, compliance, and

accuracy of cost information. Cost audit ensures the organization's compliance with relevant laws, regulations, and cost accounting standards. Cost auditors verify the accuracy and reliability of cost accounting records, including cost classification, allocation methods, and inventory valuation. Cost audit identifies areas of inefficiency, wastage, and potential cost-saving opportunities within the organization. Cost audit evaluates internal controls and procedures to detect and prevent fraudulent activities related to cost accounting. The findings of the cost audit are documented in a detailed report that includes analysis, areas for improvement, and recommendations for corrective actions. Cost audit is often conducted periodically to ensure ongoing monitoring of cost accounting practices and controls. Cost audit involves engaging with various stakeholders, such as management, board of directors, regulatory authorities, and external auditors. Cost audit serves as a valuable tool for organizations to enhance cost transparency, comply with regulations, improve cost management practices, and gain stakeholders' confidence in the reliability of cost-related information. It helps organizations optimize their operations and financial performance by identifying areas for improvement and implementing appropriate corrective measures.

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## 9.6 GLOSSARY

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- **Cost audit:** It is a systematic examination of a company's cost accounting records, practices, and procedures to ensure their accuracy, efficiency, and compliance with relevant laws and regulations. Here are some common terms used in cost audit:
- **Cost Accounting:** The process of recording, classifying, analyzing, and allocating costs within an organization.
- **Cost Audit Report:** A comprehensive document prepared by the cost auditor, summarizing the findings of the cost audit, including any recommendations or observations.
- **Cost Auditor:** A qualified professional appointed to conduct the cost audit and provide an objective assessment of a company's cost accounting practices.

- **Cost Compliance:** Ensuring that an organization's cost accounting practices comply with relevant laws, regulations, and industry standards.
- **Cost Control:** The process of managing and regulating costs to ensure that they are within budgeted limits and aligned with organizational objectives.

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## 9.7 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of cost audit.

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Q.2 Discuss the various features of cost audit.

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## 9.8 LESSON END EXERCISE

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Q.1 Explain the basics of cost audit.

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Q.2 Elucidate the importance of cost audit.

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## 9.9 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
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## **UNIFORM COSTS, INTERFIRM COMPARISONS AND COST AUDIT**

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**M.COM III SEM  
MCOMC354**

**UNIT- II  
LESSON - 10**

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### **OBJECTS OF COST AUDIT, IMPORTANT LEGAL PROVISIONS OF COST AUDIT, COST AUDIT VS FINANCIAL AUDIT**

#### **STRUCTURE:**

- 10.1 Introduction
- 10.2 Objectives
- 10.3 Objects of Cost Audit
- 10.4 Important Legal Provisions of Cost Audit
- 10.5 Cost Audit Vs Financial Audit
- 10.6 Summary
- 10.7 Glossary
- 10.8 Self Assessment Questions
- 10.9 Lesson End Exercise
- 10.10 Suggested Readings

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#### **10.1 INTRODUCTION**

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Cost audit is a systematic examination and verification of a company's cost accounting records, practices, and procedures. It involves reviewing the methods used by the

company to determine and allocate costs, analyzing cost variances, assessing the efficiency and effectiveness of cost controls, and ensuring compliance with relevant laws, regulations, and accounting standards.

The primary objective of cost audit is to provide an independent assessment of the company's cost accounting system and its ability to generate accurate and reliable cost information. This helps in identifying areas of inefficiency, waste, and potential cost savings. Cost audit also helps in evaluating the performance of management in controlling costs and making informed decisions.

The scope of a cost audit can vary depending on the specific requirements of the company and the industry it operates in. It may cover various aspects such as the cost of production, cost of sales, cost of services, cost of distribution, and overhead costs. The auditor examines the cost records, supporting documents, and procedures followed by the company to ensure that costs are properly recorded, allocated, and accounted for.

During a cost audit, the auditor may compare the actual costs incurred with the standard costs, assess the reasonableness of cost variances, and investigate any significant deviations. The auditor may also review the adequacy and effectiveness of cost control measures, such as budgeting, variance analysis, and cost reduction programs.

The findings and recommendations of a cost audit are typically presented in a comprehensive report to management. This report highlights areas where cost savings can be achieved, identifies inefficiencies or deviations from standard practices, and suggests measures to improve cost management and control.

Cost audit is an essential tool for businesses to enhance their cost management practices, identify areas of improvement, and drive cost reduction initiatives. It helps in promoting transparency, accountability, and compliance with relevant regulations. By conducting regular cost audits, companies can optimize their cost structures, improve profitability, and gain a competitive edge in the market.

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## **10.2 OBJECTIVES**

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After reading this lesson, students will be able to get the knowledge about:

- Objects of cost audit.
- Legal provisions of cost audit.
- Cost audit vs Financial audit.

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### 10.3 OBJECTS OF COST AUDIT

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The primary objects of cost audit are as follows:

1. **Verification of Cost Accounting Records:** Cost audit aims to verify the accuracy and reliability of a company's cost accounting records. It involves examining the cost data, supporting documents, and accounting procedures to ensure that costs are correctly recorded, allocated, and reported in accordance with relevant accounting standards.
2. **Detection of Errors and Irregularities:** Cost audit helps in identifying errors, omissions, or irregularities in the cost accounting system. By comparing actual costs with standard costs and analyzing cost variances, the auditor can pinpoint areas of inefficiency, waste, or potential fraud. This enables corrective actions to be taken to rectify errors and improve cost control measures.
3. **Evaluation of Cost Control Measures:** Cost audit assesses the effectiveness of cost control measures implemented by a company. It examines budgeting processes, variance analysis, cost reduction programs, and other cost management techniques to determine their efficiency and impact on overall cost performance. The objective is to identify areas where cost control can be strengthened and cost savings can be achieved.
4. **Compliance with Legal and Regulatory Requirements:** Cost audit ensures that a company complies with relevant laws, regulations, and accounting standards pertaining to cost accounting and reporting. The auditor reviews the company's adherence to cost accounting principles, government directives, and industry-specific guidelines to ensure legal and regulatory compliance.
5. **Assessment of Management Performance:** Cost audit evaluates the performance of management in controlling costs and making informed decisions.



By examining cost management practices, the auditor can provide insights into management's effectiveness in utilizing resources, managing expenses, and achieving cost targets. This enables management to assess their performance and take corrective actions, if required.

6. **Cost Optimization and Value Enhancement:** The ultimate objective of cost audit is to optimize costs and enhance the value of the company. By identifying cost-saving opportunities, improving cost control measures, and promoting efficiency, cost audit helps in streamlining operations, increasing profitability, and creating value for shareholders.
7. **Identification of Cost Reduction Opportunities:** Cost audit aims to identify potential areas for cost reduction within the organization. By analyzing cost drivers, cost structures, and cost allocation methods, the auditor can suggest measures to minimize expenses, improve operational efficiency, and enhance cost competitiveness.
8. **Benchmarking and Comparative Analysis:** Cost audit may involve benchmarking and comparative analysis to assess the company's cost performance against industry standards or competitors. This helps in identifying areas where the company may lag or excel in terms of cost efficiency, providing insights for improvement or highlighting areas of competitive advantage.
9. **Risk Assessment and Mitigation:** Cost audit may involve evaluating risks associated with cost management and suggesting measures for their mitigation. This includes identifying risks related to inaccurate cost data, cost overruns, cost control failures, and potential fraud. The auditor can provide recommendations to strengthen internal controls and risk management practices.
10. **Support for Decision-making:** Cost audit provides valuable information and insights to support management in making informed decisions. By analyzing cost data and performance metrics, the auditor can help management evaluate the financial implications of different alternatives, assess the cost-effectiveness of projects or investments, and determine the profitability of various business segments.

11. **Enhancing Transparency and Stakeholder Confidence:** Cost audit contributes to the transparency and accountability of an organization's cost management practices. It ensures that cost information is accurate, reliable, and transparently reported to stakeholders, including shareholders, regulators, and lenders. This helps in building stakeholder confidence in the company's financial performance and integrity.
12. **Continuous Improvement:** Cost audit encourages a culture of continuous improvement within the organization. By highlighting areas of inefficiency, waste, or non-compliance, the audit process prompts management to take corrective actions and implement measures for ongoing enhancement of cost management practices.
13. **Legal Compliance and Dispute Resolution:** Cost audit assists in ensuring compliance with legal requirements related to cost accounting and reporting. It helps the organization in avoiding penalties, legal disputes, or regulatory non-compliance. In case of disputes or disagreements related to costs, the findings of a cost audit can provide an objective and independent assessment to resolve the issues.

Overall, the objects of cost audit are to ensure the accuracy of cost accounting records, detect and rectify errors or irregularities, evaluate cost control measures, ensure compliance with regulations, assess management performance, and optimize costs for the benefit of the organization. These additional points demonstrate the broader benefits and objectives of cost audit, including cost reduction, risk management, decision support, transparency, and compliance.

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#### **10.4 IMPORTANT LEGAL PROVISIONS OF COST AUDIT**

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The legal provisions related to cost audit can vary depending on the jurisdiction and applicable laws. However, here are some important legal provisions that are commonly associated with cost audit:

1. **Companies Act or Corporate Laws:** In many countries, the Companies Act or other corporate laws contain provisions related to cost audit. These provisions

may require certain categories of companies to conduct a cost audit and provide guidelines on the scope, frequency, and reporting requirements of the audit. The Companies Act may also prescribe the qualifications and appointment of cost auditors.

2. **Cost Accounting Standards (CAS):** Some countries have established Cost Accounting Standards (CAS) that prescribe the principles and guidelines for cost accounting and reporting. These standards provide a framework for maintaining uniformity and consistency in cost accounting practices across industries. Cost auditors need to ensure compliance with the relevant CAS while conducting the audit.
3. **Regulatory Authorities:** Regulatory authorities, such as the Securities and Exchange Commission (SEC) or other regulatory bodies, may have specific requirements related to cost audit for companies operating in certain sectors. These authorities may issue guidelines, regulations, or directives that mandate cost audit for specific industries, such as manufacturing, mining, or infrastructure.
4. **Tax Laws:** Tax laws may have provisions related to cost audit, especially when it comes to claiming tax deductions, incentives, or exemptions based on cost-related information. In some cases, companies may be required to submit cost audit reports to tax authorities as part of their tax compliance.
5. **Financial Reporting Standards:** Cost audit may also have implications for financial reporting standards, such as Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS). Cost auditors need to ensure that the cost accounting records and reporting are in line with the applicable financial reporting standards.
6. **Government Contracts and Tenders:** In government procurement processes, there may be specific requirements for cost audit when companies bid for contracts or tenders. These requirements ensure transparency, accuracy, and accountability in cost-related information provided by the bidding companies.
7. **Fraud and Forensic Accounting Laws:** Cost audit may also be guided by laws

related to fraud prevention and forensic accounting. These laws may require cost auditors to have a thorough understanding of fraud detection techniques, investigative procedures, and reporting obligations in case any fraudulent activities are detected during the audit.

8. **Penalties and Enforcement:** Legal provisions related to cost audit may include penalties and enforcement mechanisms for non-compliance. Companies failing to conduct a required cost audit or violating the reporting requirements may face financial penalties, sanctions, or other legal consequences. These provisions ensure that companies take their cost audit obligations seriously and comply with the prescribed regulations.
9. **Independence and Professional Ethics:** Legal provisions may emphasize the independence and professional ethics of cost auditors. They may outline the qualifications, eligibility criteria, and code of conduct for cost auditors to maintain objectivity, integrity, and confidentiality while performing their audit duties. Compliance with ethical standards enhances the credibility and reliability of the cost audit process.
10. **Reporting and Disclosures:** Legal provisions often specify the format, content, and timelines for cost audit reporting. The cost audit report typically includes findings, recommendations, and observations regarding cost management practices, compliance, and areas for improvement. The report may need to be submitted to regulatory authorities, shareholders, and other relevant stakeholders as required by the applicable laws.
11. **Audit Committee and Board of Directors:** In some jurisdictions, legal provisions may require the formation of an Audit Committee or impose specific responsibilities on the Board of Directors regarding cost audit. The Audit Committee oversees the cost audit process, appoints cost auditors, reviews the audit findings, and ensures compliance with legal requirements. The Board of Directors may have reporting obligations related to cost audit to fulfill their governance responsibilities.

12. **Periodic Review and Amendments:** Legal provisions related to cost audit may undergo periodic review and amendments to align with evolving business practices, accounting standards, and regulatory changes. Companies and cost auditors need to stay updated with any amendments to the legal provisions to ensure continued compliance.
13. **International Standards:** In addition to national or regional laws, international standards and guidelines may also play a role in cost audit. For example, the International Federation of Accountants (IFAC) provides guidance on cost auditing practices through its International Standards on Auditing (ISAs) or other relevant pronouncements. Compliance with international standards helps maintain consistency and quality in cost audit practices.

It is important for companies and cost auditors to stay updated with the specific legal provisions applicable in their jurisdiction and industry. Compliance with these provisions helps ensure that the cost audit is conducted in accordance with the relevant laws and regulations, promoting transparency, accountability, and good governance in cost management practices.

It is important to note that the specific legal provisions of cost audit can vary significantly between jurisdictions. It is advisable to consult the relevant laws, regulations, and professional bodies in the specific country or region to understand the precise legal framework governing cost audit practices.

### **Cost audit provisions in India**

In India, the legal provisions related to cost audit are primarily governed by the Companies Act, 2013 and the rules prescribed under it. The key provisions regarding cost audit in India are as follows:

1. **Applicability:** Section 148 of the Companies Act, 2013 mandates cost audit for certain classes of companies. This includes companies engaged in the production of prescribed goods or providing prescribed services as specified by the government.
2. **Cost Audit Rules:** The Ministry of Corporate Affairs (MCA) has issued the

Companies (Cost Records and Audit) Rules, 2014, which provide detailed guidelines and procedures for cost audit. These rules prescribe the manner of cost accounting, maintenance of cost records, appointment of cost auditors, and reporting requirements.

3. **Cost Auditor Appointment:** Companies falling under the applicability criteria must appoint a qualified cost auditor for conducting the cost audit. The appointment is subject to the approval of the Board of Directors and shareholders of the company.
4. **Cost Audit Report:** The cost auditor is required to prepare a cost audit report based on the examination of the cost accounting records and practices of the company. The report must be submitted to the company's Board of Directors and the Central Government within a specified time frame.
5. **Compliance with Cost Accounting Standards:** The Cost Accounting Standards (CAS) issued by the Institute of Cost Accountants of India (ICAI) are applicable for cost audit in India. The cost auditor needs to ensure compliance with these standards while conducting the audit.
6. **Penalties for Non-compliance:** Non-compliance with the provisions related to cost audit can attract penalties under the Companies Act, 2013. The penalties may include monetary fines and other legal consequences.
7. **Cost Accounting Records:** The Companies (Cost Records and Audit) Rules, 2014 prescribe the maintenance of cost accounting records by companies falling under the cost audit requirements. These rules define the format, content, and maintenance requirements for cost accounting records, ensuring that accurate and detailed cost information is maintained.
8. **Cost Audit Report Format:** The cost audit report prepared by the cost auditor must adhere to the prescribed format as per the Companies (Cost Records and Audit) Rules, 2014. The report includes details on the audit methodology, examination of cost records, observations, findings, and recommendations regarding cost management and compliance.

9. **Cost Audit Threshold Limits:** The Central Government has the authority to prescribe threshold limits for the applicability of cost audit. These limits may be based on factors such as turnover, net worth, or other criteria determined by the government. Companies meeting or exceeding the specified thresholds are required to conduct cost audit.
10. **Cost Audit Exemptions:** The government has the power to exempt certain classes of companies or industries from the requirement of cost audit. Exemptions may be provided based on factors such as the nature of business, turnover, or industry-specific considerations. Companies seeking exemptions must follow the prescribed procedures and obtain necessary approvals.
11. **Cost Audit for Government Companies:** In addition to private companies, cost audit provisions are also applicable to government companies as per the Companies Act, 2013. Government companies falling under the specified criteria are required to conduct cost audit and comply with the relevant reporting and disclosure requirements.
12. **Role of Cost Auditors:** Cost auditors are responsible for conducting an independent examination of cost accounting records and practices of the company. They are required to exercise professional judgment, ethics, and objectivity while performing the audit. Cost auditors play a vital role in evaluating cost management practices, identifying inefficiencies, and providing recommendations for improvement.
13. **Cost Audit Compliance Report:** The cost auditor is required to submit a compliance report to the Board of Directors and the Central Government, indicating the level of compliance with the cost accounting records and audit provisions. The compliance report provides an assessment of the company's adherence to cost audit requirements and highlights any non-compliance or deviations.

It is important for companies falling under the ambit of cost audit in India to comply with the relevant provisions, including the maintenance of accurate cost records, appointment of qualified cost auditors, and submission of the cost audit report within

the prescribed timelines. The specific requirements and reporting formats may be updated from time to time by the MCA, and it is essential for companies to stay updated with any amendments or notifications issued by the government authorities. These provisions aim to promote transparency, accountability, and accuracy in cost accounting and reporting practices in India. Companies falling under the purview of cost audit must ensure compliance with the prescribed rules, maintain proper cost accounting records, appoint qualified cost auditors, and submit the required reports within the specified timelines.

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## 10.5 COST AUDIT VS FINANCIAL AUDIT

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**Cost Audit:** Cost audit is a systematic examination of the cost accounting records, practices, and procedures of an organization to ensure the accuracy of cost data, adherence to cost accounting principles, and effective cost control. The primary objective of cost audit is to verify the correctness of cost accounting records, detect errors or irregularities, evaluate cost control measures, and provide recommendations for cost optimization and improvement. Cost audit focuses on the analysis of costs, cost structures, cost variances, and cost management practices within the organization.

**Financial Audit:** Financial audit, also known as statutory audit or external audit, is an independent examination and evaluation of the financial statements, records, and transactions of an organization. The main purpose of a financial audit is to express an opinion on the fairness, accuracy, and reliability of the financial statements, ensuring that they present a true and fair view of the company's financial position, performance, and cash flows. Financial audit is conducted by external auditors who assess the compliance of financial statements with applicable accounting standards, laws, and regulations. It includes verifying the completeness and accuracy of financial records, testing internal controls, and providing an opinion on the reliability of financial information presented to stakeholders.

Cost audit and financial audit are two distinct types of audits that serve different purposes within an organization. Here's a comparison between cost audit and financial audit:



### **1. Scope and Focus:**

**Cost Audit:** Cost audit primarily focuses on the examination of cost accounting records, practices, and cost management within an organization. It analyzes costs, cost structures, cost variances, and cost control measures to ensure accuracy, compliance, and optimization of costs.

**Financial Audit:** Financial audit focuses on the examination of financial statements, records, and transactions of an organization. It aims to express an opinion on the fairness, accuracy, and reliability of the financial statements, ensuring compliance with accounting standards, laws, and regulations.

### **2. Purpose:**

**Cost Audit:** The primary objective of cost audit is to verify the correctness of cost accounting records, detect errors or irregularities, evaluate cost control measures, and provide recommendations for cost optimization and improvement. It helps in analyzing and managing costs effectively.

**Financial Audit:** The main purpose of a financial audit is to provide an independent assurance on the financial statements. It aims to ensure that the financial statements present a true and fair view of the company's financial position, performance, and cash flows. Financial audit verifies the accuracy, completeness, and compliance of financial records and transactions.

### **3. Regulatory Requirements:**

**Cost Audit:** Cost audit is typically mandated by specific laws or regulations in certain jurisdictions. Companies engaged in specific industries or meeting certain criteria may be required to conduct cost audits as per the applicable legal provisions.

**Financial Audit:** Financial audit is generally required by law or regulation for all companies, irrespective of the industry or size. It is commonly mandated by company laws, securities regulations, or stock exchange listing requirements.

### **4. Auditor's Expertise:**

**Cost Audit:** Cost audit is often performed by cost accountants or professionals with

expertise in cost accounting, management accounting, and cost analysis. They possess knowledge and skills specific to cost management and control.

**Financial Audit:** Financial audit is typically conducted by chartered accountants or certified public accountants with expertise in financial accounting and auditing. They have a broader understanding of financial reporting standards, auditing principles, and regulatory requirements.

In summary, while cost audit focuses on cost accounting records, practices, and cost optimization, financial audit examines financial statements, transactions, and compliance with accounting standards. Both audits serve different purposes, involve different areas of expertise, and are driven by distinct regulatory requirements.

## **5. Reporting:**

**Cost Audit:** The outcome of a cost audit is typically a cost audit report. This report includes findings, observations, and recommendations related to cost management, cost control measures, and compliance with cost accounting principles. The report may be submitted to the management of the organization or regulatory authorities, depending on the applicable legal provisions.

**Financial Audit:** The outcome of a financial audit is an audit report. This report provides an opinion on the fairness, accuracy, and reliability of the financial statements. It includes an assessment of internal controls, identification of material misstatements or irregularities, and recommendations for improvement. The audit report is usually addressed to the shareholders, board of directors, or regulatory authorities.

## **6. Nature of Audit Procedures:**

**Cost Audit:** Cost audit involves detailed examination and verification of cost accounting records, cost allocation methods, pricing mechanisms, and cost control systems. It may include scrutiny of cost ledgers, cost allocation methods, pricing policies, cost variances, and cost reduction initiatives. Cost auditors may perform various analytical procedures and interviews with personnel to assess cost management practices.

**Financial Audit:** Financial audit includes a comprehensive review of financial statements, accounting policies, underlying transactions, and internal controls. Auditors

examine supporting documentation, perform substantive testing, and verify the accuracy, completeness, and validity of financial data. They may also assess the adherence to accounting standards, compliance with laws and regulations, and the reliability of financial reporting.

## **7. Internal vs. External Focus:**

**Cost Audit:** Cost audit primarily focuses on the internal operations of the organization. It aims to evaluate and improve the cost management practices, cost control mechanisms, and cost-efficiency within the organization.

**Financial Audit:** Financial audit focuses on the external reporting of the organization. It aims to provide assurance to external stakeholders, such as shareholders, investors, creditors, and regulatory authorities, regarding the accuracy and reliability of the financial statements.

## **8. Frequency:**

**Cost Audit:** The frequency of cost audit may vary depending on the legal requirements and industry-specific regulations. In some cases, cost audit may be required annually, while in others, it may be conducted on a periodic basis or based on specific events or thresholds.

**Financial Audit:** Financial audit is typically conducted annually for most companies. However, in some cases, it may be required more frequently based on regulatory requirements, such as quarterly audits for publicly listed companies.

It's important to note that the specific characteristics and requirements of cost audit and financial audit can vary based on the jurisdiction, industry, and applicable laws and regulations. It is crucial for organizations to understand the specific requirements and engage qualified professionals to ensure compliance and effective audit processes.

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## **10.6 SUMMARY**

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Cost audit is a systematic examination of the cost accounting records, practices, and procedures of an organization. It aims to verify the accuracy, compliance, and optimization of costs within the organization. The main objectives of cost audit include:

Cost audit ensures that the cost accounting records are maintained accurately and in accordance with the prescribed accounting principles and standards. It helps in identifying errors, inconsistencies, or irregularities in cost accounting records, practices, and procedures, allowing for timely correction and prevention of future inaccuracies. Cost audit assesses the effectiveness of cost control measures implemented by the organization. It helps in identifying areas where costs can be reduced, efficiency can be improved, and resources can be better utilized. Cost audit ensures compliance with the relevant Cost Accounting Standards (CAS) or other cost accounting principles issued by professional bodies. It verifies whether the organization's cost accounting practices are in line with the prescribed standards. Based on the findings of the cost audit, recommendations are provided to management on cost optimization, cost reduction strategies, and improvement in cost management practices. These recommendations aim to enhance the organization's profitability and efficiency. Cost audit ensures compliance with the applicable legal provisions and regulatory requirements related to cost accounting and reporting. It helps organizations meet their legal obligations and avoid penalties or legal consequences.

Overall, cost audit plays a crucial role in providing insights into cost management practices, detecting errors or irregularities, and suggesting measures to optimize costs and improve operational efficiency. By conducting regular cost audits, organizations can ensure accurate cost accounting records, better cost control, and effective utilization of resources.

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## 10.7 GLOSSARY

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- **Cost Accounting:** Cost accounting refers to the process of recording, classifying, analyzing, and allocating costs to various products, services, processes, or activities within an organization.
- **Cost Accounting Standards (CAS):** Cost Accounting Standards are guidelines or principles issued by professional bodies, such as the Institute of Cost Accountants of India (ICAI), to establish uniformity and consistency in cost accounting practices.

- **Cost Records:** Cost records refer to the detailed records maintained by an organization to capture and document cost-related information.
- **Cost Audit Report:** The cost audit report is the final output of the cost audit process. It includes the findings, observations, and recommendations of the cost auditor based on the examination of the cost accounting records and practices. The report may highlight areas of cost inefficiencies, non-compliance with cost accounting standards, and suggest measures for cost optimization and improvement.
- **Cost Variance Analysis:** Cost variance analysis involves comparing actual costs incurred with budgeted or standard costs to identify differences or variances.

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## 10.8 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of cost audit.

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Q.2 Discuss the various objects of cost audit.

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## 10.9 LESSON END EXERCISE

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Q.1 Explain the various legal provisions of cost audit.

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Q.2 Elucidate cost audit vs financial audit.

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#### 10.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounting*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.

## **AACTIVITY BASED COSTINGAND MARGINAL COSTING**

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**M.COM III SEM**  
**MCOMC354**

**UNIT- III**  
**LESSON - 11**

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### **ACTIVITY BASED COSTING, BASICS OF ACTIVITY BASED COSTING AND STAGES OF ACTIVITY BASED COSTING**

#### **STRUCTURE:**

- 11.1 Introduction
- 11.2 Objectives
- 11.3 Activity Based Costing
- 11.4 Basics of Activity Based Costing
- 11.5 Stages of Activity Based Costing
- 11.6 Summary
- 11.7 Glossary
- 11.8 Self Assessment Questions
- 11.9 Lesson End Exercise
- 11.10 Suggested Readings

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#### **11.1 INTRODUCTION**

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In traditional costing system, overhead costs are grouped together under cost center and then absorbed into product costs on one of the basis such as direct labour hours, machine hours, volume etc. In certain cases this traditional costing system gives inaccurate cost information. Though, It should not be assumed that all traditional

absorption costing systems are not accurate enough to give adequate information for pricing purposes or other long-run management decision purposes. Some traditional systems treat overheads in a detailed way and relate them to service cost centres as well as production cost centres. The service centre overheads are then spread over the production cost centres before absorption rates are calculated. The main cause of inaccuracy is in the calculation of the overhead rate itself, which is usually based on direct labour hours or machine hours. These rates assume that products that take longer to make, generate more overheads and so on.

Organisations, who do not wish to know how much it costs to make a product with precise accuracy, may be happy with traditional costing system. Others however fix their price on cost and need to be able to determine it with reasonable accuracy. The latter organisations have been greatly benefitted from the development of activity based costing (ABC), which is more a modern absorption costing method, and was evolved to give more accurate product costs.

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## **11.2 OBJECTIVES**

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After going through this lesson, students will be able to get the knowledge about:

- Concept of activity based costing.
- Basics of activity based costing.
- Stages of activity based costing.

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## **11.3 ACTIVITY BASED COSTING**

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Activity Based Costing is an accounting methodology that assigns costs to activities rather than products or services. This enables resources & overhead costs to be more accurately assigned to products & services that consume them. ABC is a technique which involves identification of cost with each cost driving activity and making it as the basis for apportionment of costs over different cost objects/ jobs/ products/ customers or services.

ABC assigns cost to activities based on their use of resources. It then assigns cost to cost objects, such as products or customers, based on their use of activities. ABC



can track the flow of activities in organization by creating a link between the activity (resource consumption) and the cost object.

CIMA defines 'Activity Based Costing' as "An approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs. Resources are assigned to activities, and activities to cost objects based on consumption estimates. The latter utilise cost drivers to attach activity costs to outputs."

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#### 11.4 BASICS OF ACTIVITY BASED COSTING

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- Activity – Activity, here, refers to an event that incurs cost.
- A Cost Object–It is an item for which cost measurement is required e.g. a product or a customer.
- A Cost Driver–It is a factor that causes a change in the cost of an activity. For example Production run.

There are two categories of cost driver.

*A Resource Cost Driver*– It is a measure of the quantity of resources consumed by an activity. It is used to assign the cost of a resource to an activity or cost pool.

*An Activity Cost Driver*–It is a measure of the frequency and intensity of demand, placed on activities by cost objects. It is used to assign activity costs to cost objects.

*Cost Pool*–It represents a group of various individual cost items. It consists of costs that have same cause effect relationship. Example Machine set-up.

#### Examples of Cost Drivers:

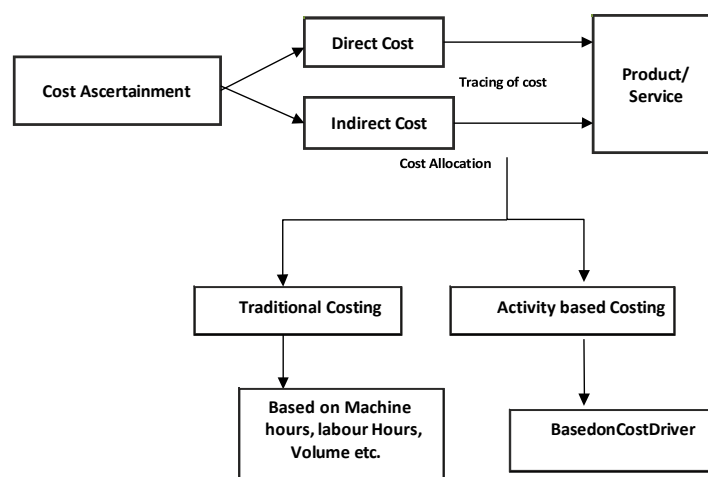
Business functions	Cost Driver
Research and Development	Number of research projects Personnel hours on a project
Design of products, services and procedures	Number of products in design Number of parts per product

	Number of engineering hours
Customer Service	Number of service calls Number of products serviced
	Hours spent on servicing products
Marketing	Number of advertisements Number of sales personnel Sales revenue
Distribution	Number of units distributed Number of customers

### Cost Allocation Under ABC

Under activity based cost allocation overheads are attributed to products on an activity base. Traditionally, overhead costs are grouped together under cost centre and then absorbed into product costs on some basis such as direct labour hours. Activity based costing identifies the activities which cause cost to be incurred and searches for fundamental cost drivers of these activities. Once the activities and there cost drivers have been identified, this information can be used to assign overheads to cost objects (e.g. products) which have actually caused cost to be incurred.

### Traditional Absorbtion Costing vs ABC



**Table 11.1 Cost Allocation under Traditional and Activity Based Costing System**

In traditional absorption costing overheads are first related to cost centres (Production & Service Centres) and then to cost objects, i.e., products. In ABC overheads are related to activities or grouped into cost pools. Then they are related to the cost objects, e.g., products. The two processes are, therefore, very similar, but the first stage is different as ABC uses activities instead of functional departments (cost centres). The problem with functional departments is that they tend to include a series of different activities, which incur a number of different costs that behave in different ways. Activities also tend to run across functions; for instance, procurement of materials often includes raising a requisition note in a manufacturing department or stores. It is not raised in the purchasing department where most procurement costs are incurred. Activity costs tend to behave in a similar way to each other i.e., they have the same cost driver. Therefore, ABC gives a more realistic picture of the way in which costs behave.

	<b>Activity Based Costing</b>	<b>Traditional Absorption Costing</b>
1.	Overheads are related to activities and grouped into activity cost pools.	Overheads are related to cost centers/ departments.
2.	Costs are related to activities and hence are more realistic.	Costs are related to cost centers and hence not realistic of cost behaviour.
3	Activity-wise cost drivers are determined.	Time (Hours) are assumed to be the only cost driver governing costs in all departments.
4.	Activity-wise recovery rates are determined and there is no concept of a single overhead recovery rate.	Either multiple overhead recovery rate (for each department) or a single overhead recovery rate may be determined for absorbing overheads.
5.	Cost are assigned to cost objects, e.g. customers, products, services, departments, etc.	Costs are assigned to Cost Units i.e. to products, or jobs or hours.
6.	Essential activities can be simplified and unnecessary activities can be eliminated. Thus the corresponding costs are also reduced/ minimized. Hence ABC aids cost control.	Cost Centers/ departments cannot be eliminated. Hence not suitable for cost Control.

### **Level of Activities Under ABC Methodology/Cost Hierarchy**

These categories are generally accepted today but were first identified by Cooper (1990). The categories of activities help to determine the type of activity cost driver required.

**The categories of various activities are:**

<b>Level of Activities</b>	<b>Meaning</b>	<b>Example</b>
1. Unit level activities	These are those activities for which the consumption of resources can be identified with the number of units produced.	The use of indirect materials / consumables tends to increase in proportion to the number of units produced. The inspection or testing of every item produced, if this was deemed necessary or, perhaps more likely, every 100th item produced.
2. Batch level activities	The activities such as setting up of a machine or processing a purchase order are performed each time a batch of goods is produced. The cost of batch related activities varies with number of batches made, but is common (or fixed) for all units within the batch.	Material ordering—where an order is placed for every batch of production Machine set-up costs—where machines need resetting between each different batch of production. Inspection of products where the first item in every batch is inspected rather than every 100th item quoted above.
3. Product level activities	These are the activities which are performed to support different products in product line	Designing the product, Producing parts specifications keeping technical drawings of products up to date.
4. Facilities level activities	These are the activities which cannot be directly attributed to individual products. These activities are necessary to sustain the manufacturing process and are common and joint to all products manufactured	Maintenance of buildings Plant security

### **Advantages of Activity Based Costing**

The main advantages of using Activity Based Costing are:

- 1 More accurate costing of products/services.
- 2 Overhead allocation is done on logical basis.
- 3 It enables better pricing policies by supplying accurate cost information.
- 4 Utilizes unit cost rather than just total cost
- 5 Help to identify non-value added activities which facilitates cost reduction.
- 6 It is very much helpful to organization with multiple product.
- 7 It highlights problem areas which require attention of the management.

### **Limitations of Activity Based Costing**

The main limitations using Activity Based Costing are:

- 1 It is more expensive particularly in comparison with Traditional costing system.
- 2 It is not helpful to small Organization.
- 3 It may not be applied to organization with very limited products.
- 4 Selection of most suitable cost driver may not be useful.

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### **11.5 STAGES IN ACTIVITY BASED COSTING (ABC)**

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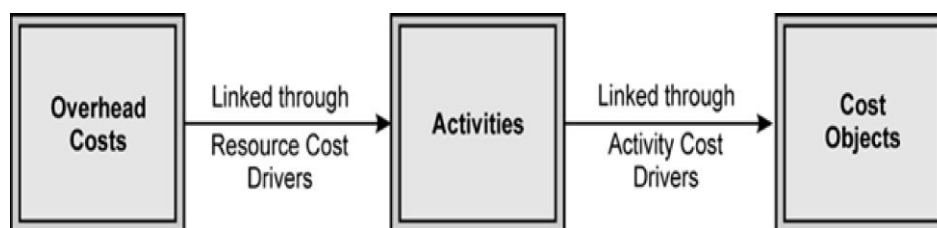
The different stages in ABC calculations are listed below:

1. **Identify the different activities within the organisation:** Usually the number of cost centres that a traditional overhead system uses are quite small, say up to fifteen. In ABC the number of activities will be much more, say 200; the exact number will depend on how the management subdivides the organisation's activities. It is possible to break the organisation down into many very small activities. But if ABC is to be acceptable as practical system it is necessary to use larger groupings, so that, say, 40 activities may be used in practice. The additional number of activities over cost centres means that ABC should be more accurate than the traditional method regardless of anything else. Some activities may be listed as follows:-

- Production schedule changes
    - Customer liaison
    - Purchasing
    - Production process set up
    - Quality control
    - Material handling
    - Maintenance
2. **Relate** the overheads to the activities, both support and primary, that caused them. This creates 'cost pools' or 'cost buckets'. This will be done using resource cost drivers that reflect causality.
  3. **Support** activities are then spread across the primary activities on some suitable base, which reflects the use of the support activity. The base is the cost driver that is the measure of how the support activities are used.
  4. **Determine** the activity cost drivers that will be used to relate the overheads collected in the cost pools to the cost objects/products. This is based on the factor that drives the consumption of the activity. The question to ask is – what causes the activity to incur costs? In production scheduling, for example, the driver will probably be the number of batches ordered.
  5. **Calculate** activity cost driver rates for each activity, just as an overhead absorption rate would be calculated in the traditional system.

$$\text{Activity cost driver rate} = \frac{\text{Total cost of activity}}{\text{Activity driver}}$$

The activity driver rate can be used to cost products, as in traditional absorption costing, but it can also cost other cost objects such as customers/customer segments and distribution channels. The possibility of costing objects other than products is part of the benefit of ABC. The activity cost driver rates will be multiplied by the different amounts of each activity that each product/other cost object consumes.



### *Cost allocation under ABC*

Let us take a small example to understand the steps stated above:

Assume that a company makes widgets and the management decides to install an ABC system. The management decides that all overhead costs will have only three cost drivers viz. Direct labour hours, Machine hours and number of purchase orders and the general ledger of the company shows the following overhead costs –

<b>General Ledger</b>	<b>Amount (₹)</b>
Payroll taxes	1,000
Machine maintenance	500
Purchasing Dept. labour	4,000
Fringe benefits	2,000
Purchasing Dept. Supplies	250
Equipment depreciation	750
Electricity	1,250
Unemployment insurance	1,500
<b>Total</b>	<b>11,250</b>

So, which overheads do you think are driven by direct labour hours?

The answer is

Payroll taxes	₹ 1,000
Fringe benefits	₹ 2,000
Unemployment insurance	₹ 1,500
<b>Total</b>	<b>₹ 4,500</b>

Similarly, overheads driven by machine hours include Machine maintenance, depreciation and Electricity totaling `2,500 and finally overheads driven by number of purchase orders include purchasing department labour and purchasing department supplies totaling `4,250.

Now, overhead rate is calculated by the formula total cost in the activity pool / Base, base being the total number of labour hours, machine hours and total number of purchase orders in the given case.

Assume that the total number of labour hours be 1,000 hours, machine hours be 250 hours and total purchase orders be 100 orders.

So, Cost driver rate would be

<b>Cost Driver Rate</b>	<b>(`)</b>
`4,500/ 1,000	`4.50 per labour hour
`2,500/ 250	`10 per machine hour
`4,250/ 100	`42.50 per purchase order

Now, let's allocate the overheads between two widgets A and B the details of which are given below:

<b>Particulars</b>	<b>Widget A</b>	<b>Widget B</b>
Labour hours	400	600
Machine Hours	100	150
Purchase Orders	50	50

So, total overhead costs applied to widget A =  $(400 \times 4.50) + (100 \times 10) + (50 \times 42.50)$   
= `4,925

And total overheads applied to widget B =  $(600 \times 4.50) + (150 \times 10) + (50 \times 42.50)$  =  
`6,325

So total overheads = `4,925 + `6,325 = `11,250.

Generally, in the traditional costing method, overheads are applied on the basis of



direct labour hours (total 1,000 labour hours in the given case). So, in that case the overhead absorption rate would be –  $\text{₹}11,250 / 1000 = \text{₹}11.25$  per hour and the total overheads applied to Widget A would have been =  $400 \times 11.25 = \text{₹}4,500$  and to Widget B =  $600 \times 11.25 = \text{₹}6,750$ .

Hence Widget A would have been undervalued and Widget B overvalued by ₹425.

Example of cost drivers for different activity pools in a production department can be explained below:

Activity Cost Pools	Related Cost Drivers
Ordering and Receiving Materials cost	Number of purchase orders
Setting up machines costs	Number of set-ups
Machining costs	Machine hours
Assembling costs	Number of parts
Inspecting and testing costs	Number of tests
Painting costs Supervising Costs	Number of parts Direct labour hours

## 11.6 SUMMARY

Activity- Based Costing is a costing system that focuses on the activities conducted in producing the products. It is the system in which the cost of various production activities is identified, and the final cost is added to the product. The idea behind this costing system is that activities incur costs at every stage for the production of any product, so it is logical to do an accounting of incurred costs based on activities. In the traditional absorption costing system, costs are traced to the organizational units, like any department, and then the cost incurred is traced to the final product. While in the ABC system of costing, the cost is first assigned to the activities and then passed on to the product. The important and common fact about both costing systems is that the cost is assigned to the product at the second or final stage. Activity-based costing (ABC) is a methodology for more precisely allocating overhead costs by assigning them to activities. Once costs are assigned to activities, the costs can be assigned to the cost objects that use those activities. The system can be employed for the targeted

reduction of overhead costs. ABC works best in complex environments, where there are many machines and products, and tangled processes that are not easy to sort out. Conversely, it is of less use in a streamlined environment where production processes are abbreviated, so that costs are easy to assign.

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## 11.7 GLOSSARY

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- **Activity Based Costing:** is an accounting methodology that assigns costs to activities rather than products or services. This enables resources & overhead costs to be more accurately assigned to products & services that consume them.
- **Value-Added Activities:** These are those activities which are indispensable in order to complete the process.
- **NVAActivity:** These activities represent work that is not valued by the external or internal customer. NVA activities do not improve the quality or function of a product or service, but they can adversely affect costs and prices.
- **Activity-Based Budgeting:** It is a process of planning and controlling the expected activities for the organisation to derive a cost-effective budget that meets forecast workload and agreed strategic goals.

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## 11.8 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of activity based costing?

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Q.2 Discuss the various advantages of ABC?

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### 11.9 LESSON END EXERCISE

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Q.1 Explain the various basics of ABC?

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Q.2 Elucidate the various stages of ABC?

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### 11.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
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## **ACTIVITY BASED COSTING AND MARGINAL COSTING**

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**M.COM III SEM**  
**MCOMC354**

**UNIT- III**  
**LESSON - 12**

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### **COST ANALYSIS UNDER ACTIVITY BASED COSTING (PRACTICAL PROBLEMS)**

#### **STRUCTURE:**

- 12.1 Introduction
- 12.2 Objectives
- 12.3 Requirements in ABC Implementation
- 12.4 Cost Analysis Under Activity Based Costing
- 12.5 Summary
- 12.6 Glossary
- 12.7 Self Assessment Questions
- 12.8 Lesson End Exercise
- 12.9 Suggested Readings

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#### **12.1 INTRODUCTION**

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Activity Based Costing is a costing system that focuses on the activities conducted in producing the products. It is the system in which the cost of various production activities is identified, and the final cost is added to the product.

The idea behind this costing system is that activities incur costs at every stage for the

production of any product, so it is logical to do an accounting of incurred costs based on activities.

In the traditional absorption costing system, costs are traced to the organizational units, like any department, and then the cost incurred is traced to the final product. While in the ABC system of costing, the cost is first assigned to the activities and then passed on to the product. The important and common fact about both costing systems is that the cost is assigned to the product at the second or final stage.

Activity Based costing is allocating costs to the activities involved in the production. It can be defined as a system of costing that recognizes activities involved in producing a product and then traces the cost incurred in performing each activity. ABC costing system consists of two stages of the cost of the product. In the first stage, the cost is assigned to the production activities, and then in the final stage, the cost is allocated to the final product. It follows the approach of accumulated activity-related costing. The activity considered for estimation of cost should be any task undertaken for the production of any product or for delivering any services. ABC system follows the concept that the products consume activities, and the activities consume resources. ABC costing method can be used by any manufacturing or service delivery firm that wants to ease cost accounting. ABC costing method is important to bridge the cost to its cost drivers. This method allows us to determine the cost of the activities involved rather than the centre of the cost. It helps to assign the cost with greater effectiveness due to the cost related to its activities. It eliminates the blanket expenses used in the traditional absorption method of costing. ABC method effectively reduces and controls costs due to the effective identification and allocation of overheads. It presents the cost associated with the product in the most accurate form.

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## **12.2 OBJECTIVES**

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After going through this lesson, students will be able to get the knowledge about:

- Requirements in activity based costing.
- Practical applications of activity based costing.
- Accounting treatment of activity based costing.

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### 12.3 REQUIREMENTS IN ABC IMPLEMENTATION

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A number of distinct practical stages are required in the ABC implementation which are given as below:

1. **Staff Training:** The co-operation of the workforce is critical to the successful implementation of ABC. Staff training should be done to create an awareness of the purpose of ABC.
2. **Process Specification:** Informal, but structured, interviews with key members of personnel will identify the different stages of the production process, the commitment of resources to each, processing times and bottlenecks.
3. **Activity Definition:** Early activity should be clearly defined the problem must be kept manageable at this stage, despite the possibility of information overload from new data, much of which is in need of codification.
4. **Activity Driver Selection:** Cost driver for each activity shall be selected.
5. **Assigning Cost:** A single representative activity driver can be used to assign costs from the activity pools to the cost objects.

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### 12.4 COST ANALYSIS UNDER ACTIVITY BASED COSTING

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- **As a Decision-Making Tool :**

ABC can act as a decision making tools in the following ways:

1. ABC along with some other Cost Management technique can be utilized to improve performance and profitability of an organization.
2. Wholesale distributors can gain significant advantage in the decision- making process through implementation of ABC concepts by correlating costs to various activity. Introduction of new product or vendor can be better decided through ABC.
3. ABC can assist in decisions related to facility and resource expansion. Often the basis for relocation or opening of a new distribution center is based on cost associations. Reduction in freight or other logistic costs can offset the expense

of the new facility, staff or equipment. The ABC model can identify the specific cost elements being targeted, providing a much clearer picture from which management can act.

4. Decision support for human resources can be augmented by ABC. Where activity, and therefore cost, can be associated to an individual, new levels of financial performance can be determined. This might be appropriate in cases of branch management or sales.
5. Companies who wish to determine price based on cost plus markup basis find ABC method of costing very relevant and are able to determine competitive prices for their products.

- **As Activity Based Management :**

#### Meaning of Activity Based Management

The term Activity based management (ABM) is used to describe the cost management application of ABC. The use of ABC as a costing tool to manage costs at activity level is known as Activity Based Cost Management (ABM). ABM is a discipline that focuses on the efficient and effective management of activities as the route to continuously improving the value received by customers. ABM utilizes cost information gathered through ABC.

- **Various analysis in Activity Based Management:**

The various types of analysis involved in ABM are as follows:

1. **Cost Driver Analysis:** The factors that cause activities to be performed need to be identified in order to manage activity costs. Cost driver analysis identifies these causal factors.
2. **Activity Analysis.**
  - a. **Value-Added Activities (VA):** The value-added activities are those activities which are indispensable in order to complete the process. The customers are usually willing to pay (in some way) for these services. For example, polishing furniture by a manufacturer dealing in furniture is a value added activity.

- b. **Non-Value-Added Activities (NVA):** The NVA activity represents work that is not valued by the external or internal customer. NVA activities do not improve the quality or function of a product or service, but they can adversely affect costs and prices. Moving materials and machine set up for a production run are examples of NVA activities.
3. **Performance Analysis:** Performance analysis involves the identification of appropriate measures to report the performance of activity centres or other organisational units, consistent with each unit's goals and objectives.
- **Activity Based Management in Business :**

Activity based management can be used in the following ways

1. **Cost Reduction:** ABM helps the organisation to identify costs against activities and to find opportunities to streamline or reduce the costs or eliminate the entire activity, especially if there is no value added.
2. **Business Process Re-engineering:** Business process re-engineering involves examining business processes and making substantial changes to how organisation currently operates. ABM is a powerful tool for measuring business performance, determining the cost of business output and is used as a means of identifying opportunities to improve process efficiency and effectiveness.
3. **Benchmarking:** Benchmarking is a process of comparing of ABC-derived activity costs of one segment of company with those of other segments. It requires uniformity in the definition of activities and measurement of their costs.
4. **Performance Measurement:** Many organisations are now focusing on activity performance as a means of facing competitors and managing costs by monitoring the efficiency and effectiveness of activities.

Area	Measure
Quality of purchased component	Zero defects
Quality of output	% yield
Customer awareness	Orders; number of complaints



- **Facilitate Activity Based Budgeting :**

Activity based budgeting analyse the resource input or cost for each activity. It provides a framework for estimating the amount of resources required in accordance with the budgeted level of activity. Actual results can be compared with budgeted results to highlight both in financial and non-financial terms those activities with major discrepancies from budget for potential reduction in supply of resources. It is a planning and control system which seeks to support the objectives of continuous improvement. It means planning and controlling the expected activities of the organization to derive a cost-effective budget that meet forecast workload and agreed strategic goals. ABB is the reversing of the ABC process to produce financial plans and budgets.

The three key elements of activity based budgeting are as follows:-

- 1 Type of work to be done
- 2 Quantity of work to be done
- 3 Cost of work to be done

- **Benefits of ABB :**

Few benefits of activity based budgeting are as follows:-

- 1 Activity Based Budgeting (ABB) can enhance accuracy of financial forecasts and increasing management understanding.
- 2 When automated, ABB can rapidly and accurately produce financial plans and models based on varying levels of volume assumptions.
- 3 ABB eliminates much of the needless rework created by traditional budgeting techniques.

### **ILLUSTRATION 1**

MST Limited has collected the following data for its two activities. It calculates activity cost rates based on cost driver capacity.

Activity	Cost Driver	Capacity	Cost
Power	Kilowatt hours	50,000 kilowatt hours	`2,00,000
Quality Inspections	Number of Inspections	10,000 Inspections	`3,00,000

The company makes three products M, S and T. For the year ended March 31, 20X9, the following consumption of cost drivers was reported:

Product	Kilowatt hours	Quality Inspections
M	10,000	3,500
S	20,000	2,500
T	15,000	3,000

**Required:**

Compute the costs allocated to each product from each activity.

Calculate the cost of unused capacity for each activity.

Discuss the factors the management considers in choosing a capacity level to compute the budgeted fixed overhead cost rate.

**SOLUTION**

Statement of cost allocation to each product from each activity

	Product			
	M ( ` )	S ( ` )	T ( ` )	Total ( ` )
Power (Refer to working note)	40,000 (10,000 kWh × `4)	80,000 (20,000 kWh × `4)	60,000 (15,000 kWh × `4)	1,80,000
Quality Inspections (Refer to working note)	1,05,000 (3,500 inspections × `30)	75,000 (2,500 inspections × `30)	90,000 (3,000 inspections × `30)	2,70,000

Working note

Rate per unit of cost driver:

Power	(` 2,00,000 / 50,000 kWh)	` 4/kWh
Quality Inspection	(` 3,00,000 / 10,000 inspections)	` 30 per inspection

Computation of cost of unused capacity for each activity:

	(`)
Power (` 2,00,000 – ` 1,80,000)	20,000
Quality Inspections (` 3,00,000 – ` 2,70,000)	30,000
Total cost of unused capacity	50,000

Factors management consider in choosing a capacity level to compute the budgeted fixed overhead cost rate:

- Effect on product costing & capacity management
- Effect on pricing decisions.
- Effect on performance evaluation
- Effect on financial statements
- Regulatory requirements.
- Difficulties in forecasting chosen capacity level concepts.

## ILLUSTRATION 2

ABC Ltd. Manufactures two types of machinery equipment Y and Z and applies/absorbs overheads on the basis of direct-labour hours. The budgeted overheads and direct-labour hours for the month of December, 20X8 are ` 12,42,500 and 20,000 hours respectively. The information about Company's products is as follows:

	Equipment Y	Equipment Z
Budgeted Production volume	2,500 units	3,125 units
Direct material cost	` 300 per unit	` 450 per unit
Direct labour cost		
Y : 3 hours @ ` 150 per hour		
X : 4 hours @ ` 150 per hour	` 450	` 600

ABC Ltd.'s overheads of `12,42,500 can be identified with three major activities:

Order Processing (`2,10,000), machine processing (`8,75,000), and product inspection (`1,57,500). These activities are driven by number of orders processed, machine hours worked, and inspection hours, respectively. The data relevant to these activities is as follows:

	<b>Orders processed</b>	<b>Machine hours worked</b>	<b>Inspection hours</b>
Y	350	23,000	4,000
Z	250	27,000	11,000
<b>Total</b>	<b>600</b>	<b>50,000</b>	<b>15,000</b>

**Required:**

- Assuming use of direct-labour hours to absorb/apply overheads to production, compute the unit manufacturing cost of the equipment Y and Z, if the budgeted manufacturing volume is attained.
- Assuming use of activity-based costing, compute the unit manufacturing costs of the equipment Y and Z, if the budgeted manufacturing volume is achieved.
- ABC Ltd.'s selling prices are based heavily on cost. By using direct-labour hours as an application base, calculate the amount of cost distortion (under-costed or over-costed) for each equipment.

**SOLUTION**

**(i) Overheads application base: Direct labour hours**

	<b>Equipment Y (`)</b>	<b>Equipment Z (`)</b>
Direct material cost	300	450
Direct labour cost	450	600
Overheads*	186.38	248.50
	<b>936.38</b>	<b>1,298.50</b>

$$\text{*Pre-determined rate} = \frac{\text{Budgeted overheads}}{\text{Budgeted direct labour hours}} = \frac{\text{`12,42,500}}{20,000 \text{ hours}} = \text{`62.125}$$

**(ii) Estimation of Cost-Driver rate**

Activity	Overhead cost (`)	Cost-driver level	Cost driver rate (`)
Order processing	2,10,000	600 Orders processed	350
Machine processing	8,75,000	50,000 Machine hours	17.50
Inspection	1,57,500	15,000 Inspection hours	10.50
		Equipment	Equipment
		Y (`)	Z (`)
Direct material cost		300	450
Direct labour cost		450	600
Prime Cost		750	1,050
Overhead Cost			
Order processing 350 : 250		1,22,500	87,500
Machine processing 23,000 : 27,000		4,02,500	4,72,500
Inspection 4,000 : 11,000		42,000	1,15,500
Total overhead cost		5,67,000	6,75,500
Per Unit			
5,67,000 / 2,500		` 226.80	` 216.16
6,75,500 / 3,125			
Unit manufacturing cost		` 976.80	` 1,266.16

	<b>Equipment Y (₹)</b>	<b>Equipment Z (₹)</b>
Unit manufacturing cost—using direct labour hours as an application base	936.38	1,298.50
Unit manufacturing cost-using activity based costing	976.80	1,266.16
Cost distortion	(-)40.42	+ 32.34

Low volume product Y is under-costed and high volume product Z is over costed using direct labour hours for overhead absorption.

## 12.5 SUMMARY

Activity based costing is an accounting methodology that assigns costs to activities rather than products or services. This enables resources & overhead costs to be more accurately assigned to products & services that consume them. Unit level activities, batch level activities, product level activities and facility level activities are the categories of activities helps to determine the type of activity cost driver required. ABC is very much useful to the organization with multiple product. One of the few weakness of ABC is, it is very costly and cannot be applied to all companies. The use of ABC as a costing tool to manage costs at activity level is known as Activity Based Cost Management (ABM). ABM is a discipline that focuses on the efficient and effective management of activities as the route to continuously improving the value received by customers. ABM utilizes cost information gathered through ABC. The value-added activities are those activities which are indispensable in order to complete the process. NVA activity represents work that is not valued by the external or internal customer. NVA activities do not improve the quality or function of a product or service, but they can adversely affect costs and prices. Activity-based budgeting is a process of planning and controlling the expected activities for the organisation to derive a cost-effective budget that meets forecast workload and agreed strategic goals. Key elements of ABB are type of work/activity to be performed, quantity of work/activity to be performed and cost of work/activity to be performed.

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## 12.6 GLOSSARY

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- **Cost Driver:** In an ABC system, the allocation bases that are used for applying costs to services or procedures are called cost drivers. It is a factor that causes a change in the cost of an activity. Few examples of cost driver as under:
- **Unit level cost:** Traditionally, cost drivers were viewed only at the unit level. These drivers create unit-level costs meaning that they are caused by the production or acquisition of a single unit of product or the delivery of a single unit or service.
- **Batch level cost:** Costs are caused by a group of things being made, handled or processed at a single time are referred to as batch level costs.
- **Product-level cost:** A cost caused by the development, production or acquisition of different items is called a product level or process level cost. These include engineering change orders, equipment maintenance, product development and scrap, if related to product design.
- **Facility-level cost:** Some costs cannot be related to a particular product line. These are instead related to providing a facility. For e.g. Cost of maintaining a building or plant security or advertisement promoting the organization.
- **Organizational-level cost:** Certain costs are incurred at organizational level for the single purpose of supporting continuing facility operations. These organizational level costs common too many different activities and products and services can be prorated among services and products on an arbitrary basis only. These costs are not product related .thus they should be subtracted from net product revenues instead of an arbitrary and illogical apportionment.
- **Cost Pool:** Costs are grouped into pools according to the activities, which drive them. In this all costs associated with procurement i.e. ordering, inspection, storing etc would be included in this cost pool and cost driver identified.

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## 12.7 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of activity based costing.

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Q.2 Discuss the implementation procedure of ABC.

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## 12.8 LESSON END EXERCISE

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Q.1 Alpha Limited has decided to analyse the profitability of its five new customers. It buys bottled water at ‘ 90 per case and sells to retail customers at a list price of ‘ 108 per case. The data pertaining to five customers are:

Customers

	A	B	C	D	E
Cases sold	4,680	19,688	1,36,800	71,550	8,775
List Selling Price	108	108	108	108	108
Actual Selling Price	108	106.20	99	104.40	97.20
Number of Purchase orders	15	25	30	25	30
Number of Customer visits	2	3	6	2	3
Number of deliveries Kilometers travelled per delivery	10	30	60	40	20
	20	6	5	10	30
Number of expedited deliveries	0	0	0	0	1

Its five activities and their cost drivers are:



Activity	Cost Driver Rate
Order taking	`750 per purchase order
Customer visits	`600 per customer visit
Deliveries	`5.75 per delivery Km travelled
Product handling	`3.75 per case sold
Expedited deliveries	`2,250 per expedited delivery

Required:

Compute the customer-level operating income of each of five retail customers now being examined (A, B, C, D and E). Comment on the results.

State what insights are gained by reporting both the list selling price and the actual selling price for each customer?

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Q.2 Elucidate the various stages of ABC.

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## 12.9 SUGGESTED READINGS

- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi
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- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.

## **ACTIVITY BASED COSTING AND MARGINAL COSTING**

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**M.COM III SEM**  
**MCOMC354**

**UNIT- III**  
**LESSON - 13**

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### **MARGINAL COSTING : BASICS**

#### **STRUCTURE:**

- 13.1 Introduction
- 13.2 Objectives
- 13.3 Basics of Marginal Costing
  - 13.3.1 Characteristics of Marginal Costing
  - 13.3.2 Advantages and Limitations of Marginal Costing
- 13.4 Summary
- 13.5 Glossary
- 13.6 Self Assessment Questions
- 13.7 Lesson End Exercise
- 13.8 Suggested Readings

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#### **13.1 INTRODUCTION**

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Marginal costing is a cost accounting technique that focuses on analyzing the impact of variable costs on the overall profitability of a product or service. It involves segregating costs into fixed and variable components to determine the contribution margin, which is the difference between the sales revenue and variable costs.

In marginal costing, fixed costs such as rent, salaries, and depreciation are considered period costs and are not directly attributed to the production of a specific product or service. On the other hand, variable costs, such as raw materials, direct labour, and direct expenses, vary in direct proportion to the level of production or sales.

The key concept in marginal costing is the contribution margin. It represents the amount of money available to cover fixed costs and contribute towards the profit of the business. By subtracting the variable costs from the sales revenue, the contribution margin per unit or per product/service can be calculated.

Marginal costing also employs the concept of contribution margin ratio, which is the contribution margin expressed as a percentage of sales. This ratio helps in assessing the profitability and the breakeven point of a product or service.

One of the major advantages of marginal costing is its simplicity and ease of use in decision-making. By analyzing the incremental costs and revenues associated with a specific decision, such as introducing a new product or changing the sales volume, managers can make informed choices based on the impact on the contribution margin.

Marginal costing is often contrasted with absorption costing, where fixed production costs are allocated to products and services based on a predetermined rate. While absorption costing is required for external reporting purposes, marginal costing provides valuable insights for internal decision-making and helps in understanding the behavior of costs at different production levels.

Overall, marginal costing provides a useful tool for managers to analyze the cost and profitability dynamics of their products or services. It enables them to make informed decisions, optimize resource allocation, and improve the overall financial performance of the business.

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## **13.2 OBJECTIVES**

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After going through this lesson, students will be able to get the knowledge about:

- Basics of marginal costing.
- Advantages and limitations of marginal costing.

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### 13.3 BASICS OF MARGINAL COSTING

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In order to appreciate the concept of marginal costing, it is necessary to study the definition of marginal costing and certain other terms associated with this technique. The important terms have been defined as follows:

**Marginal Cost:** Marginal cost as understood in economics is the incremental cost of production which arises due to one-unit increase in the production quantity. As we understood, variable costs have direct relationship with volume of output and fixed costs remains constant irrespective of volume of production. Hence, marginal cost is measured by the total variable cost attributable to one unit. For example, the total cost of producing 10 units and 11 units of a product is '10,000 and '10,500 respectively. The marginal cost for 11th unit i.e. 1 unit extra from 10 units is '500. Marginal cost can precisely be the sum of prime cost and variable overhead.

#### ILLUSTRATION 1:

Arnav Ltd. produces 10,000 units of product Z by incurring a total cost of `3,50,000. Break-up of costs are as follows:

Direct Material @ `10 per unit, `1,00,000,

Direct employee (labour) cost @ `8 per unit, `80,000

Variable overheads @ `2 per unit, `20,000

Fixed overheads `1,50,000 (upto a volume of 50,000 units)

In this example, if Arnav Ltd. wants to know marginal cost of producing one extra unit from the current production i.e. 10,001st unit. The marginal cost would be the change in the total cost due production of this 10,001st extra unit. The extra cost would be `20, as calculated below:

	10,000 units	10,001 units	Change in Cost
	(A)	(B)	(c) = (B) - (A)
(i) Direct Material @ `10 per unit	1,00,000	1,00,010	10
(ii) Direct employee (labour) cost @ `8 per unit	80,000	80,008	8

(iii) Variable overheads @ `2 per unit	20,000	20,002	2
(iv) Fixed overheads	1,50,000	1,50,000	0
<b>Total Cost</b>	<b>3,50,000</b>	<b>3,50,020</b>	<b>20</b>

**Marginal Costing:** It is a costing system where products or services and inventories are valued at variable costs only. It does not take consideration of fixed costs. This system of costing is also known as direct costing as only direct costs forms the part of product and inventory cost. Costs are classified on the basis of behavior of cost (i.e. fixed and variable) rather functions as done in absorption costing method.

**Direct Costing:** Direct costing and Marginal Costing is used synonymously at various places and it is so also. But the relation of costs with respect to activity level must be understood. Some costs are variable at batch level but fixed for unit level and likewise variable at production line level but fixed for batches and units.

## ILLUSTRATION 2

Arnav Ltd. produces 10,000 units of product Z by incurring a total cost of `4,80,000. Break-up of costs are as follows:

Direct Material @ `10 per unit, `1,00,000,

Direct employee (labour) cost @ `8 per unit, `80,000

Variable overheads @ `2 per unit, `20,000

Machine set up cost @ `1,200 for a production run (100 units can be manufactured in a run)

Depreciation of a machine specifically used for production of Z `10,000

(iv) Apportioned fixed overheads `1,50,000.

Analysis of the costs:

	10,000 units	10,001 units	Change in Cost	Direct Cost
	(A)	(B)	(c) = (B) - (A)	
(i) Direct Material @ ` 10 per unit	1,00,000	1,00,010	10	Unit level Direct Cost.
(ii) Direct employee (labour) cost @ ` 8 per unit	80,000	80,008	8	Unit level Direct Cost.
(iii) Variable overheads @ ` 2 per unit	20,000	20,002	2	Unit level Direct Cost.
(iv) Machine set up cost	1,20,000	1,21,200	1,200	Batch level Direct Cost
(v) Depreciation of a machine	10,000	10,000	0	Product level Direct Cost.
(iv) Apportioned fixed overheads	1,50,000	1,50,000	0	Department level Direct Cost
Total Cost	4,80,000	4,81,220	1,220	

In the example, the direct cost of producing 10,001st unit is 1,220 but it is not the marginal cost of producing one extra unit rather marginal cost of running one extra production run (batch).

**Differential and Incremental Cost:** Differential cost is difference between the costs of two different production levels. It is a relative representation of costs for two different levels either increase or decrease in cost. Incremental cost, on the other hand, is the increase in the costs due change in the volume or process of production activities. Incremental costs are sometime compared with marginal cost but in reality there is a thin line difference between the two. Marginal cost is the change in the total cost due to production of one extra unit while incremental cost can be both for increase in one unit or in total volume. In this Illustration, ` 1,220 is the incremental cost of producing one extra unit but not marginal cost for producing one extra unit.

### 13.3.1 Characteristics of Marginal Costing

The technique of marginal costing is based on the distinction between product costs and period costs. Only the variables costs are regarded as the costs of the products while the fixed costs are treated as period costs which will be incurred during the

period regardless of the volume of output. The main characteristics of marginal costing are as follows:

- All elements of cost are classified into fixed and variable components. Semi-variable costs are also analyzed into fixed and variable elements.
- The marginal or variable costs (as direct material, direct labour and variable factory overheads) are treated as the cost of product.
- Under marginal costing, the value of finished goods and work-in-progress is also comprised only of marginal costs. Variable selling and distribution are excluded for valuing these inventories. Fixed costs are not considered for valuation of closing stock of finished goods and closing WIP.
- Fixed costs are treated as period costs and are charged to profit and loss account for the period for which they are incurred.
- Prices are determined with reference to marginal costs and contribution margin.
- Profitability of departments and products is determined with reference to their contribution margin.

Some of the facts about marginal costing are depicted below:

1. **Not a distinct method:** Marginal costing is not a distinct method of costing like job costing, process costing, operating costing, etc., but a special technique used for managerial decision making. Marginal costing is used to provide a basis for the interpretation of cost data to measure the profitability of different products, processes and cost centres in the course of decision making. It can, therefore, be used in conjunction with the different methods of costing such as job costing, process costing, etc., or even with other techniques such as standard costing or budgetary control.
2. **Cost Ascertainment:** In marginal costing, cost ascertainment is made on the basis of the nature of cost. It gives consideration to behaviour of costs. In other words, the technique has developed from a particular conception and expression

of the nature and behaviour of costs and their effect upon the profitability of an undertaking.

3. **Decision Making:** In the orthodox or total cost method, as opposed to marginal costing, the classification of costs is based on functional basis. Under this method the total cost is the sum total of the cost of direct material, direct labour, direct expenses, manufacturing overheads, administration overheads, selling and distribution overheads. In this system, other things being equal, the total cost per unit will remain constant only when the level of output or mixture is the same from period to period. Since these factors are continually fluctuating, the actual total cost will vary from one period to another. Thus, it is possible for the costing department to say one day that an item costs `20 and the next day it costs `18. This situation arises because of changes in volume of output and the peculiar behavior of fixed expenses included in the total cost. Such fluctuating manufacturing activity, and consequently the variations in the total cost from period to period or even from day to day, poses a serious problem to the management in taking sound decisions. Hence, the application of marginal costing has been given wide recognition in the field of decision making.

### 13.3.2 Advantages and Limitations of Marginal Costing

- **Advantages**

1. **Simplified Pricing Policy:** The marginal cost remains constant per unit of output whereas the fixed cost remains constant in total. Since marginal cost per unit is constant from period to period within a short span of time, firm decisions on pricing policy can be taken. If fixed cost is included, the unit cost will change from day to day depending upon the volume of output. This will make decision making task difficult.
2. **Proper recovery of Overheads:** Overheads are recovered in costing on the basis of pre-determined rates. If fixed overheads are included on the basis of pre-determined rates, there will be under- recovery of overheads if production is less or if overheads are more. There will be over- recovery of overheads if production is more than the budget or actual expenses are less than the estimate.



This creates the problem of treatment of such under or over-recovery of overheads. Marginal costing avoids such under or over recovery of overheads.

3. **Shows Realistic Profit:** Advocates of marginal costing argues that under the marginal costing technique, the stock of finished goods and work-in-progress are carried on marginal cost basis and the fixed expenses are written off to profit and loss account as period cost. This shows the true profit of the period.
4. **How much to produce:** Marginal costing helps in the preparation of break-even analysis which shows the effect of increasing or decreasing production activity on the profitability of the company.
5. **More control over expenditure:** Segregation of expenses as fixed and variable helps the management to exercise control over expenditure. The management can compare the actual variable expenses with the budgeted variable expenses and take corrective action through analysis of variances.
6. **Helps in Decision Making:** Marginal costing helps the management in taking a number of business decisions like make or buy, discontinuance of a particular product, replacement of machines, etc.
7. **Short term profit planning:** It helps in short term profit planning by B.E.P charts.

### **Limitations**

1. **Difficulty in classifying fixed and variable elements:** It is difficult to classify exactly the expenses into fixed and variable category. Most of the expenses are neither totally variable nor wholly fixed. For example, various amenities provided to workers may have no relation either to volume of production or time factor.
2. **Dependence on key factors:** Contribution of a product itself is not a guide for optimum profitability unless it is linked with the key factor.
3. **Scope for Low Profitability:** Sales staff may mistake marginal cost for total cost and sell at a price; which will result in loss or low profits. Hence, sales staff should be cautioned while giving marginal cost.

4. **Faulty valuation:** Overheads of fixed nature cannot altogether be excluded particularly in large contracts, while valuing the work-in- progress. In order to show the correct position fixed overheads have to be included in work-in-progress.
5. **Unpredictable nature of Cost:** Some of the assumptions regarding the behaviour of various costs are not necessarily true in a realistic situation. For example, the assumption that fixed cost will remain static throughout is not correct. Fixed cost may change from one period to another. For example, salaries bill may go up because of annual increments or due to change in pay rate etc. The variable costs do not remain constant per unit of output. There may be changes in the prices of raw materials, wage rates etc. after a certain level of output has been reached due to shortage of material, shortage of skilled labour, concessions of bulk purchases etc.
6. **Marginal costing ignores time factor and investment:** The marginal cost of two jobs may be the same but the time taken for their completion and the cost of machines used may differ. The true cost of a job which takes longer time and uses costlier machine would be higher. This fact is not disclosed by marginal costing.
7. **Understating of W-I-P:** Under marginal costing stocks and work in progress are understated.

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## 13.4 SUMMARY

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Marginal costing is a cost accounting technique that focuses on analyzing the impact of variable costs on profitability. It involves segregating costs into fixed and variable components to determine the contribution margin. Fixed costs are considered period costs and are not directly attributed to specific products or services, while variable costs vary with production or sales levels.

The key concept in marginal costing is the contribution margin, which represents the amount of money available to cover fixed costs and contribute towards profit. By subtracting variable costs from sales revenue, the contribution margin per unit or per

product/service can be calculated. The contribution margin ratio, expressed as a percentage of sales, helps assess profitability and the breakeven point.

Marginal costing is simple to use and supports decision-making. It allows managers to analyze incremental costs and revenues associated with decisions and make informed choices based on the impact on the contribution margin. It contrasts with absorption costing, which allocates fixed production costs to products/services based on a predetermined rate and is primarily used for external reporting.

In summary, marginal costing provides a valuable tool for managers to analyze costs and profitability. It facilitates decision-making, resource allocation optimization, and overall financial performance improvement.

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### 13.5 GLOSSARY

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- **Variable Costs:** These are costs that vary in direct proportion to the level of production or sales. Examples include raw materials, direct labour, and direct expenses.
- **Fixed Costs:** These costs remain constant regardless of the level of production or sales within a certain time period. Fixed costs include rent, salaries, depreciation, and other expenses not directly tied to production volume.
- **Contribution Margin:** It is the difference between sales revenue and variable costs. It represents the amount of money available to cover fixed costs and contribute towards profit.
- **Contribution Margin per Unit:** This is the contribution margin generated by a single unit of a product or service. It is calculated by subtracting the variable cost per unit from the selling price per unit.
- **Contribution Margin Ratio:** It is the contribution margin expressed as a percentage of sales. The ratio helps assess the profitability and breakeven point of a product or service.
- **Break even Point:** It is the point at which total revenue equals total costs, resulting in neither profit nor loss. The breakeven point can be calculated by

dividing fixed costs by the contribution margin per unit or by the contribution margin ratio.

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### 13.6 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of Marginal costing.

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Q.2 Discuss the various advantages of Marginal costing.

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### 13.7 LESSON END EXERCISE

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Q.1 Explain the various basics of Marginal costing.

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Q.2 Elucidate the various characteristics of Marginal costing.

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### 13.8 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
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- Gupta, R.L. *Advanced Cost Accounting*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.

## **ACTIVITY BASED COSTING AND MARGINAL COSTING**

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**M.COM III SEM**  
**MCOMC354**

**UNIT- III**  
**LESSON - 14**

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### **DISTINCTION BETWEEN ABSORPTION COSTING AND MARGINAL COSTING**

#### **STRUCTURE:**

- 14.1 Introduction
- 14.2 Objectives
- 14.3 Distinction between Absorption costing and Marginal Costing
- 14.4 Summary
- 14.5 Glossary
- 14.6 Self Assessment Questions
- 14.7 Lesson End Exercise
- 14.8 Suggested Readings

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#### **14.1 INTRODUCTION**

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Marginal costing is a cost accounting technique that focuses on analyzing the impact of variable costs on the overall profitability of a product or service. It involves segregating costs into fixed and variable components to determine the contribution margin, which is the difference between the sales revenue and variable costs.

In marginal costing, fixed costs such as rent, salaries, and depreciation are considered period costs and are not directly attributed to the production of a specific product or

service. On the other hand, variable costs, such as raw materials, direct labour, and direct expenses, vary in direct proportion to the level of production or sales.

Absorption Costing technique is also termed as Traditional or Full Cost Method. According to this method, the cost of a product is determined after considering both fixed and variable costs. The variable costs, such as those of direct materials, direct labour, etc. are directly charged to the products, while the fixed costs are apportioned on a suitable basis over different products manufactured during a period. Thus, in case of Absorption Costing all costs are identified with the manufactured products.

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## 14.2 OBJECTIVES

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After going through this lesson, students will be able to get the knowledge about:

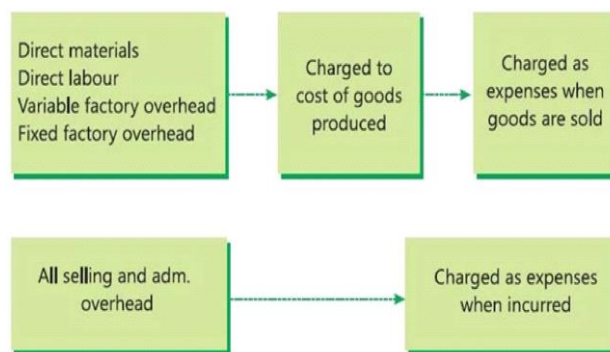
- Difference between marginal and absorption costing.
- Practical problems of absorption costing.

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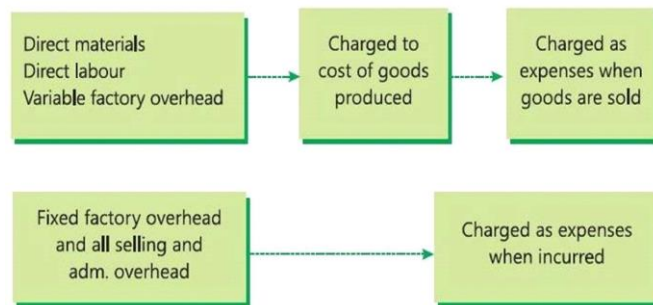
## 14.3 DISTINCTION BETWEEN MARGINAL AND ABSORPTION COSTING

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The distinctions in these two techniques are illustrated by the following diagram



**Figure 14.1: Absorption Costing Approach**



**Figure 14.2 Marginal Costing Approach**

The main points of distinction between marginal costing and absorption costing are as below:

	<b>Marginal costing</b>	<b>Absorption costing</b>
1.	Only variable costs are considered for product costing and inventory valuation.	Both fixed and variable costs are considered for product costing and inventory valuation.
2.	Fixed costs are regarded as period costs. The Profitability of different products is judged by their P/V ratio.	Fixed costs are charged to the cost of production. Each product bears a reasonable share of fixed cost and thus the profitability of a product is influenced by the apportionment of fixed costs.
3.	Cost data presented highlight the total contribution of each product.	Cost data are presented in conventional pattern. Net profit of each product is determined after subtracting fixed cost along with their variable costs.
4.	The difference in the magnitude of opening stock and closing stock does not affect the unit cost of production.	The difference in the magnitude of opening stock and closing stock affects the unit cost of production due to the impact of related fixed cost.
5.	In case of marginal costing the cost per unit remains the same, irrespective of the production as it is valued at variable cost	In case of absorption costing the cost per unit reduces, as the production increases as it is fixed cost which reduces, whereas, the variable cost remains the same per unit.

### **Difference in profit under Marginal and Absorption costing**

The above two approaches will compute the different profit because of the difference in the stock valuation. This difference is explained as follows in different circumstances.

No opening and closing stock: In this case, profit / loss under absorption and marginal costing will be equal.

When opening stock is equal to closing stock: In this case, profit / loss under two approaches will be equal provided the fixed cost element in both the stocks is same amount.

When closing stock is more than opening stock: In other words, when production during a period is more than sales, then profit as per absorption approach will be more than that by marginal approach. The reason behind this difference is that a part of fixed overhead included in closing stock value is carried forward to next accounting period.

When opening stock is more than the closing stock: In other words, when production is less than the sales, profit shown by marginal costing will be more than that shown by absorption costing. This is because a part of fixed cost from the preceding period is added to the current year's cost of goods sold in the form of opening stock.

### **Absorption Costing**

In absorption costing the classification of expenses is based on functional basis whereas in marginal costing it is based on the nature of expenses.

In absorption costing, the fixed expenses are distributed over products on absorption costing basis that is, based on a pre-determined level of output. Since fixed expenses are constant, such a method of recovery will lead to over or under-recovery of expenses depending on the actual output being greater or lesser than the estimate used for recovery. This difficulty will not arise in marginal costing because the contribution is used as a fund for meeting fixed expenses.

The presentation of information to management under the two costing techniques is as under:



### Income Statement (Absorption costing)

	( )	
Sales	XXXXXX	
Production Costs:		
Direct material consumed	XXXXXX	
Direct labour cost		
Variable manufacturing overhead	XXXXXX	
Fixed manufacturing overhead	XXXXXX	
Cost of Production	XXXXXX	
Add: Opening stock of finished goods	XXXXXX	
(Value at cost of previous period's production)	XXXXXX	
	XXXXXX	
	XXXXXX	
Less: Closing stock of finished goods	XXXXXX	
(Value at production cost of current period)		
Cost of Goods Sold		
Add: (or less) Under (or over) absorption of fixed		
Manufacturing overhead	XXXXXX	
	XXXXXX	
Add: Administration costs	XXXXXX	XXXXXX
Selling and distribution costs	XXXXXX	
Total Cost		XXXXXX
Profit (Sales – Total cost)		XXXXXX

### Income Statement (Marginal costing)

		( )
Sales		XXXXXX
Variable manufacturing costs:		
	– Direct material consumed	XXXXXX
	– Direct labour	XXXXXX
	– Variable manufacturing overhead	XXXXXX
	Cost of Goods Produced	XXXXXX
Add:	Opening stock of finished goods	XXXXXX
	(Value at cost of previous period)	
Less :	Closing stock of finished goods (Value at current variable cost)	
	Cost of Goods Sold	XXXXXX
Add:	Variable administration, selling and dist. overhead	XXXXXX
	Total Variable Cost	XXXXXX
Add:	Selling and distribution costs	
	Contribution (Sales – Total variable costs)	XXXXXX
Less :	Fixed costs (Production, admin., selling and dist.)	XXXXXX
	Net Profit	XXXXXX

It is evident from the above that under marginal costing technique the contributions of various products are pooled together and the fixed overheads are met out of such total contribution. The total contribution is also known as gross margin. The contribution minus fixed expenses yields net profit. In absorption costing technique cost includes fixed overheads as well.

### Illustration 1:

Tripura Ltd. is manufacturing three products: A, B and C. The costs of manufacture are as follows:

	A`	B`	C
Direct Labour	2	3	4
Selling Price	10	15	20
Output	1,000 units	1,000 units	1,000 units'

The total overheads are Rs. 12,000 out of which Rs. 9,000 are fixed and the rest are variable. It is decided to apportion these costs over different products in the ratio of output. We would prepare a statement showing the cost and profit of each product according to Absorption Costing.

Statement Showing Costs and Profit (According to Absorption Costing Technique)

	<b>A</b>		<b>B</b>		<b>C</b>	
	<i>Per Unit</i>	<i>Total</i>	<i>Per Unit</i>	<i>Total</i>	<i>per Unit</i>	<i>Total</i>
	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
Direct Materials	3	3,000	4	4,000	5	5,000
Direct Labour	2	2,000	3	3,000	4	4,000
Overheads:						
Fixed	3	3,000	3	3,000	3	3,000
Variable	1	1,000	1	1,000	1	1,000
Total Cost	9	9,000	11	11,000	13	13,000
Profit	1	1,000	4	4,000	7	7,000
Selling Price	10	10,000	15	15,000	20	20,000
Total profit		Rs. 1,000+ Rs. 4,000 + Rs. 7,000= Rs. 12,000				

This system of costing has a number of disadvantages:

It assumes prices are simply a function of costs.

- It does not take account of demand.
- It includes past costs which may not be relevant to the pricing decision at hand.
- It does not provide information which aids decision-making in a rapidly changing market environment

As a result of these disadvantages, fallacious conclusions may be derived as shown by the following Illustration

### **Illustration 2**

With the data given in Illustration 1, we would calculate the amount of profit or loss made by Tripura Ltd. in the first two years of its existence, presuming that:

In the first year, it manufactures 1,000 units of each of the products A, B and C but fails to effect any sales.

In the second year, it does not produce anything but sells the entire stock carried forward from the first year.

The profit or loss for the first two years can be ascertained by preparing the Profit and Loss Account for each of these years.

#### **Tripura Ltd. Profit & Loss Account for the 1st year**

Direct Material	Rs.		Rs. Sales.	Rs.
A	3,000		Closing Stock	33,000
B	4,000			
C	5,000			
	-	12,000		
Direct Material				
A	2,000		Closing Stock	33,000
B	3,000			
C	4,000			
	-	9,000		
Overheads :				
Variable				
A 1,000				
B 1,000				
C 1,000	3,000			
Fixed -	9,000	12,000		
		33,000		33,000

**Tripura Ltd.**  
**Profit & Loss Account for the 2nd year**

	Rs.			Rs.
Opening Stock	33,000	Sales		
Fixed Overheads	9,000			
Profit	3,000	A	10,000	
		B	15,000	
		C	20,000	<u>45,000</u>
	<u>45,000</u>			<u>45,000</u>

The above Profit and Loss Accounts show that in the first year in spite of the fact that the company does not make any sales, there is no loss what so ever; while in the second year, it makes a profit of Rs.3,000. As a matter of fact, the company losses Rs, 9,000 on account of non-recovery of fixed cost in the first year. The Profit and Loss Account does not show any loss because these fixed costs have been included in the closing inventory values and thus carried forward to the next year. As a result, the Profit and Loss Account for the second year has to bear Rs.18,000 on account of fixed costs (i.e. Rs. 9,000 for the first year + Rs. 9,000 for the second year). The real profit in the second year should have been Rs.12,000 and not Rs. 3,000. This will be elaborated a little later.

Thus, the technique of Absorption Costing may lead to rather odd results particularly for seasonal businesses in which the stock levels fluctuate widely from one period to another. Their profits for the two periods will be influenced by the transfer of overheads in and out of stock, showing falling profits when the sales are high and increasing profits when the sales are low.

Marginal Costing and Absorption Costing are the two techniques which can be used for ascertaining the cost of a product, job or a process. Absorption Costing is also termed as Traditional or full Cost method. According to this technique, the cost of a product is determined after considering both fixed and variable costs. in other words, all costs are identified with or absorbed into the manufactured products. Marginal Costing is a technique where only the variable costs are considered while computing

the cost of products. The fixed costs are met against the total contribution of all the products taken together.

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#### 14.4 SUMMARY

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Marginal Costing is regarded as superior to traditional costing so far as managerial decision-making is concerned. It identifies only such costs with the jobs or products which directly vary with the level of output. The uncertainty and irrationality associated with apportionment of fixed cost in traditional costing is thus avoided.

The technique of Marginal costing greatly helps the management in taking appropriate managerial decisions, viz., dropping a product line, making or buying a component, shut-down or continuation of operations in periods of trade depression, fixation of minimum selling price of a product, etc.

Marginal Costing involves computation of marginal cost. The term marginal cost is synonymous with the term 'variable cost'. It comprises of direct material, direct labour, variable direct expenses and variable overheads.

The semi-variable overheads are also segregated into fixed and variable categories according to some suitable method. Such segregation of costs into fixed and variable categories helps also in determining the break-even or no profit no loss point. A firm will start making profits only after it reaches the break even level. The sooner it reaches this level, the better it will be. Hence, the break-even level of activity is also of considerable significance to management.

Marginal Costing technique has some limitations. The categorisation of costs into fixed and variable elements is a difficult and tedious task. However, in spite of these limitations, marginal costing is regarded as a highly useful technique of analysis for several business decisions.

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#### 14.5 GLOSSARY

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- **Absorption Costing:** A technique where all costs, fixed as well as variable, are allotted to cost units.
- **Break-even Point:** It refers to the level of activity where the income of the

business exactly equals its expenditure. It is also termed as ‘no profit, no loss’ point.

- **Contribution:** It refers to the excess of selling price over variable cost.
- **Marginal Cost:** The variable cost of one more unit of a product or service, i.e. a cost which would be avoided if the unit was not produced or service not provided.
- **Marginal Costing:** A technique whereby marginal cost of a product is ascertained. Only variable costs are charged to production. Fixed costs are charged against the contribution of the period. It is also termed as ‘variable costing’.

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#### 14.6 SELFASSESSMENT QUESTIONS

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Q.1 Explain the concept of absorption costing.

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Q.2 Discuss the difference between marginal costing and absorption costing.

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#### 14.7 LESSON END EXERCISE

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Q.1 From the following data, prepare statements of cost according to both absorption costing and marginal costing technique:

Sales	Product X	Products Y	Product Z
	Rs. 15,000	Rs. 30,000	Rs. 40,000
Direct Material	6,000	12,500	18,000
Direct Labour	4,000	5,000	7,000
Factory overheads:Fixed	3,000	4,000	3,000

Variable	1,000	1,500	2,500
Administrative overheadsFixed	500	1,000	1,000
Selling OverheadsFixed	1,000	1,000	1,500
Variable	500	1,500	1,500

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Q.2 In what ways you consider the absorption costing technique useful in Management Accounting.

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#### 14.8 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
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- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.



**ACTIVITY BASED COSTING AND MARGINAL COSTING**

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**M.COM III SEM  
MCOMC354**

**UNIT- III  
LESSON - 15**

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**CONTRIBUTION, BREAK EVEN ANALYSIS, MARGIN OF  
SAFETY, PROFIT VOLUME GRAPH AND PRACTICAL  
APPLICATION OF MARGINAL COSTING**

**STRUCTURE:**

- 15.1 Introduction
- 15.2 Objectives
- 15.3 CVP Analysis
- 15.4 Contribution
- 15.5 Break Even Analysis
- 15.6 Margin of Safety
- 15.7 Profit Volume graph
- 15.8 Practical application of Marginal Costing
- 15.9 Summary
- 15.10 Glossary
- 15.11 Self Assessment Questions
- 15.12 Lesson End Exercise
- 15.13 Suggested Readings

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## **15.1 INTRODUCTION**

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Cost volume profit (CVP) is a managerial tool showing the relationship between various ingredients of profit planning viz., cost, selling price and volume of activity. As the name suggests, cost volume profit (CVP) analysis is the analysis of three variables cost, volume and profit. Such an analysis explores the relationship between costs, revenue, activity levels and the resulting profit. It aims at measuring variations in cost and volume.

Changes in the levels of revenues and costs arise only because of changes in the number of product (or service) units produced and sold – for example, the number of television sets produced and sold by Sony Corporation or the number of packages delivered by Overnight Express. The number of output units is the only revenue driver and the only cost driver. Just as a cost driver is any factor that affects costs, a revenue driver is a variable, such as volume, that causally affects revenues.

Total costs can be separated into two components; a fixed component that does not vary with output level and a variable component that changes with respect to output level. Furthermore, variable costs include both direct variable costs and indirect variable costs of a product. Similarly, fixed costs include both direct fixed costs and indirect fixed costs of a product

When represented graphically, the behaviours of total revenues and total costs are linear (meaning they can be represented as a straight line) in relation to output level within a relevant range (and time period).

Selling price, variable cost per unit, and total fixed costs (within a relevant range and time period) are known and constant.

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## **15.2 OBJECTIVES**

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After going through this lesson, students will be able to get the knowledge about:

- Contribution, Margin of safety and BEP analysis.
- Practical application of marginal costing.
- Profit volume graph.

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### 15.3 CVPANALYSIS

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The analysis either covers a single product or assumes that the proportion of different products when multiple products are sold will remain constant as the level of total units sold changes. All revenues and costs can be added, subtracted, and compared without taking into account the time value of money.

Cost-Volume-Profit (CVP) analysis is a financial management tool used by businesses to understand how changes in costs, sales volume, and selling prices affect their profits. Here are the key components of CVP analysis:

- **Cost:** CVP analysis starts with identifying and categorizing costs into fixed and variable. Fixed costs remain constant regardless of production or sales volume (e.g., rent, salaries), while variable costs fluctuate with production or sales (e.g., raw materials, direct labor).
- **Sales Volume:** This represents the number of units a company plans to sell or produce. It's a critical factor in CVP analysis as it directly impacts revenues and costs.
- **Selling Price:** The price at which a product or service is sold per unit. It's essential to consider how changes in price affect profit.
- **Contribution Margin:** Contribution margin is calculated as the difference between total sales revenue and total variable costs. It represents the amount of revenue that contributes to covering fixed costs and generating profit.
- **Break-Even Point:** This is the level of sales at which a company covers all its costs, resulting in zero profit or loss. It's calculated by dividing total fixed costs by the contribution margin per unit.
- **Profit Analysis:** CVP analysis helps companies evaluate different scenarios by assessing the impact of changes in sales volume or selling prices on profit. For example, it can determine how many units need to be sold to achieve a specific profit target.

- **Margin of Safety:** This measures how far actual sales are above the break-even point. It provides a cushion against unexpected sales declines.

CVP analysis can be a powerful tool for decision-making, such as setting pricing strategies, determining production levels, and assessing the feasibility of new projects. It's especially valuable for understanding how changes in key variables affect a company's financial performance.

### **Importance Of CVP Analysis**

The importance of Cost-Volume-Profit (CVP) analysis lies in its ability to provide valuable insights and support informed decision-making for businesses. Here are some key reasons why CVP analysis is important:

- **Profit Planning:** CVP analysis helps businesses set realistic profit targets by understanding the relationship between costs, sales volume, and selling prices. It enables companies to develop strategies to achieve their desired profit levels.
- **Pricing Decisions:** CVP analysis assists in determining optimal pricing strategies. By assessing how changes in selling prices affect profit margins and break-even points, businesses can make pricing decisions that maximize profitability.
- **Cost Control:** It aids in identifying areas where cost control is most critical. By distinguishing between fixed and variable costs, companies can focus on managing variable costs to improve profitability.
- **Break-Even Analysis:** Understanding the break-even point is crucial for assessing the risk associated with a business venture. It helps answer questions like, "How many units must be sold to cover costs?" and "Is a new project financially viable?"
- **Scenario Analysis:** CVP analysis allows for "what-if" scenarios. Companies can evaluate the impact of different sales volume scenarios or cost changes on their financial performance, aiding in risk assessment and decision-making.
- **Product Mix Decisions:** When a company offers multiple products or services, CVP analysis can help determine the optimal mix to maximize overall profitability.
- **Investment Decisions:** When considering investments in new equipment, facilities,

or projects, CVP analysis can assess their potential returns and whether they align with the company's financial goals.

- **Margin of Safety:** Calculating the margin of safety provides a buffer against unexpected downturns in sales. This information is vital for risk management and financial stability.
- **Performance Evaluation:** CVP analysis can be used to evaluate the performance of different segments or divisions within a company, helping management make decisions about resource allocation and improvement strategies.

In summary, CVP analysis is a versatile tool that aids in understanding the financial dynamics of a business. It equips businesses with the information needed to make informed decisions about pricing, cost management, profit planning, and investments, ultimately contributing to better financial performance and sustainability.

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## 15.4 CONTRIBUTION

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Marginal costing, also known as variable costing, is a costing technique used in managerial accounting to determine the contribution of each product or service towards covering fixed costs and generating profits. The contribution margin is the difference between the sales revenue and the variable costs associated with producing or delivering a particular product or service.

Contribution in marginal costing refers to the amount that each unit of a product contributes towards covering fixed costs and generating profit. It is calculated by subtracting the variable cost per unit from the selling price per unit.

Contribution per unit = Selling price per unit - Variable cost per unit

The total contribution is obtained by multiplying the contribution per unit by the number of units sold or produced. The total contribution helps in determining the break-even point, analyzing the profitability of different products or services, and making pricing decisions.

Contribution margin ratio is another important metric calculated by dividing the contribution per unit by the selling price per unit and multiplying it by 100 to express

it as a percentage. It represents the proportion of each sales dollar that contributes towards covering fixed costs and generating profit.

$$\text{Contribution margin ratio} = (\text{Contribution per unit} / \text{Selling price per unit}) * 100$$

By analyzing the contribution of each product or service, managers can make informed decisions about resource allocation, product mix, pricing strategies, and determining the profitability of different business segments. Marginal costing provides valuable insights into the cost structure and profitability of a company, helping management in making effective financial decisions.

### **Illustration 1:**

Suppose a company manufactures and sells a product called XYZ Widget. The selling price per unit of XYZ Widget is \$50. The variable cost per unit, which includes direct materials, direct labour, and variable manufacturing overhead, is \$30. The fixed costs associated with producing and selling XYZ Widget amount to \$10,000 per month.

Solution:

To calculate the contribution per unit, we subtract the variable cost per unit from the selling price per unit:

$$\text{Contribution per unit} = \text{Selling price per unit} - \text{Variable cost per unit} = \$50 - \$30 = \$20$$

Therefore, the contribution per unit for XYZ Widget is \$20.

Now, let's assume that in a particular month, the company sells 500 units of XYZ Widget. To calculate the total contribution, we multiply the contribution per unit by the number of units sold:

$$\text{Total contribution} = \text{Contribution per unit} * \text{Number of units sold} = \$20 * 500 = \$10,000$$

Hence, the total contribution from the sale of 500 units of XYZ Widget is \$10,000.

The contribution margin ratio can be calculated as follows:

$$\text{Contribution margin ratio} = (\text{Contribution per unit} / \text{Selling price per unit}) * 100 =$$

$$(\$20 / \$50) * 100 = 40\%$$

This means that 40% of each sales dollar from XYZ Widget contributes towards covering fixed costs and generating profit.

By analyzing the contribution, the company can determine whether XYZ Widget is generating enough contribution to cover fixed costs and contribute to the overall profitability of the business. It can also compare the contribution of XYZ Widget with other products to make informed decisions regarding resource allocation, pricing, and product mix.

### **Illustration 2:**

ABC Company produces and sells two products: Product A and Product B. The selling prices and variable costs per unit for each product are as follows:

Product A: Selling Price per unit: \$80 Variable Cost per unit: \$50

Product B: Selling Price per unit: \$100 Variable Cost per unit: \$70

The fixed costs associated with the production and selling of both products amount to \$20,000 per month. In a particular month, the company sells 200 units of Product A and 150 units of Product B.

Solution: To find the contribution for each product, we need to calculate the contribution per unit and the total contribution.

For Product A: Contribution per unit = Selling price per unit - Variable cost per unit = \$80 - \$50 = \$30

Total contribution for Product A = Contribution per unit \* Number of units sold = \$30 \* 200 = \$6,000

For Product B: Contribution per unit = Selling price per unit - Variable cost per unit = \$100 - \$70 = \$30

Total contribution for Product B = Contribution per unit \* Number of units sold = \$30 \* 150 = \$4,500

To calculate the total contribution for both products combined, we sum up the individual contributions:

Total contribution = Total contribution for Product A + Total contribution for Product B  
 $= \$6,000 + \$4,500 = \$10,500$

Now, we can calculate the contribution margin ratio for each product:

Contribution margin ratio for Product A = (Contribution per unit / Selling price per unit) \* 100 =  $(\$30 / \$80) * 100 = 37.5\%$

Contribution margin ratio for Product B = (Contribution per unit / Selling price per unit) \* 100 =  $(\$30 / \$100) * 100 = 30\%$

The contribution margin ratios provide insights into the profitability of each product and their contribution towards covering fixed costs.

By analyzing the total contribution and contribution margin ratios, the company can make informed decisions regarding pricing strategies, resource allocation, and product mix to maximize profitability and ensure adequate coverage of fixed costs.

### **Marginal Cost Equation**

The contribution theory explains the relationship between the variable cost and selling price. It tells us that selling price minus variable cost of the units sold is the contribution towards fixed expenses and profit. If the contribution is equal to fixed expenses, there will be no profit or loss and if it is less than fixed expenses, loss is incurred. Since the variable cost varies in direct proportion to output, therefore if the firm does not produce any unit, the loss will be there to the extent of fixed expenses. These points can be described with the help of following marginal cost equation:

$$\text{Marginal Cost Equation} = S - V = C = F \pm P$$

Where,

S=Selling price per unit, V=Variable cost per unit, C=Contribution, F Fixed Cost,

Marginal Cost Statement



	( )
Sales	xxxx
Less: Variable Cost	xxxx
Contribution	xxxx
Less: Fixed Cost	xxxx
Profit	xxxx

Contribution to Sales Ratio (Profit Volume Ratio or P/V ratio)

$$P / V \text{ Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 \quad \text{or, } P/V \text{ Ratio} = \frac{\text{Change in contribution / Profit}}{\text{Change in sales}} \times 100$$

This ratio shows the proportion of sales available to cover fixed costs and profit. Contribution represent the sales revenue after deducting variable costs. This ratio is usually expressed in percentage.

A higher contribution to sales ratio implies that the rate of growth of contribution is faster than that of sales. This is because, once the breakeven point is reached, profits shall grow at a faster rate when compared to a product with a lesser contribution to sales ratio.

By transposition, we have derived the following equations:

$$C = S \times P/V \text{ ratio}$$

$$S = C / P / V \text{ Ratio}$$

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## 15.5 BREAK EVEN ANALYSIS

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Break-even analysis is a generally used method to study the CVP analysis. This technique can be explained in two ways:

In narrow sense it is concerned with computing the break-even point. At this point of production level and sales there will be no profit and loss i.e. total cost is equal to total sales revenue.

In broad sense this technique is used to determine the possible profit/loss at any given level of production or sales

## **Methods of Break -Even Analysis**

Break even analysis may be conducted by the following two methods:

Algebraic computations

Graphic presentations

### **(A) Algebraic Calculations**

Breakeven Point

$$\text{Break-even point in units} = \frac{\text{Fixed costs}}{\text{Contribution per unit}}$$

The word contribution has been given its name because of the fact that it literally contributes towards the recovery of fixed costs and the making of profits. The contribution grows along with the sales revenue till the time it just covers the fixed cost. This is the point where neither profits nor losses have been made is known as a break-even point. This implies that in order to break even the amount of contribution generated should be exactly equal to the fixed costs incurred. Hence, if we know how much contribution is generated from each unit sold we shall have sufficient information for computing the number of units to be sold in order to break even. Mathematically,

### **Illustration 3:**

ABC Ltd. manufacturing a single product, incurring variable costs of `300 per unit and fixed costs of `2,00,000 per month. If the product sells for `500 per unit, the breakeven point shall be calculated as follows;

$$\text{Break- even point in units} = \text{Fixed costs/Contribution per unit} = `2,00,000 / 200 = 1,000 \text{ units}$$

$$\text{Break- even points (in Value)} = \text{Total fixed cost/Contribution}$$

$$\text{Break- even point (in Value)} = \text{Total fixed cost/P / V Ratio}$$

Cash Break-even point

When break-even point is calculated only with those fixed costs which are payable in

cash, such a break-even point is known as cash break-even point. This means that depreciation and other non-cash fixed costs are excluded from the fixed costs in computing cash break-even point. Its formula is

$$\text{Cash break-even point} = \frac{\text{Cash fixed costs}}{\text{Contribution per unit}}$$

#### Illustration 4:

MNP Ltd sold 2,75,000 units of its product at ₹ 37.50 per unit. Variable costs are ₹ 17.50 per unit (manufacturing costs of ₹ 14 and selling cost ₹ 3.50 per unit). Fixed costs are incurred uniformly throughout the year and amounting to ₹ 35,00,000 (including depreciation of ₹ 15,00,000). There is no beginning or ending inventories.

Compute breakeven sales level quantity and cash breakeven sales level quantity.

Break even Sales Quantity = Fixed cost/Contribution margin per unit = ₹ 35,00,000/₹ 20 = 1,75,000 units

Cash Break-even Sales Quantity = Cash Fixed Cost/ Contribution margin per unit = ₹ 20,00,000/₹ 20 = 1,00,000 units.

#### Multi- Product Break-even Analysis

In a multi-product environment, where more than one product is manufactured by using a common fixed cost, the break-even point formula needs some adjustments. The contribution is calculated by taking weights for the products. The weights may be of sales mix quantity or sales mix values.

#### Solution:

		Fixed Cost
(i) Break-even point	=	$\frac{\text{Selling Price per unit} - \text{Variable Cost per unit}}{\text{Variable Cost per unit}}$
		$= \frac{₹ 12 + 3}{₹ 15}$
Variable Cost per unit	=	₹ 60,000 + 12,000 = ₹ 72,000
Total Fixed Cost	=	
B.E.P.	=	$\frac{72,000}{24 - 15} = 8,000 \text{ units}$
B.E.P. (in sales values)	=	$8,000 \times 24 = ₹ 1,92,000$
(ii) Number of units that must be sold to earn profit of ₹ 90,000		
		Fixed Cost + Profit
	=	$\frac{\text{Selling Price per unit} - \text{Variable Cost per unit}}{\text{Selling Price per unit} - \text{Variable Cost per unit}}$
	=	$\frac{72,000 + 90,000}{24 - 15} = \frac{1,62,000}{9} = 18,000 \text{ units.}$

**Illustration 6: From the following data, you are required to calculate:**

- (a) P/V ratio
- (b) Break-even sales with the help of P/V ratio.
- (c) Sales required to earn a profit of Rs. 4,50,000

Fixed Expenses = Rs. 90,000

Variable Cost per unit:

Direct Material = Rs. 5

Direct Labour = Rs. 2

Direct Overheads = 100% of Direct Labour

Selling Price per unit = Rs. 12.

**Solution:**

Selling Price per unit		₹ 12
Less : Variable Cost per unit :		
Direct Material	5	
Direct Labour	2	
Direct Overheads	<u>2</u>	
Contribution per unit		<u>9</u> <u>3</u>
(a) P/V ratio	$= \frac{\text{Contribution}}{\text{Sales}} \times 100$ $= \frac{3}{12} \times 100 = 25\%$	
(b) Break-even Sales	$= \frac{\text{Fixed Expenses}}{\text{P/V ratio}}$ $= \frac{90,000}{25} = \frac{90,000 \times 100}{25} = \text{Rs. } 3,60,000.$	
(c) Sales required to earn a profit of ₹4,50,000	$= \frac{\text{Fixed Expenses} + \text{Desired Profit}}{\text{P/V ratio}}$ $= \frac{90,000 + 4,50,000}{25\%} = \frac{5,40,000}{25}$ $= \frac{5,40,000 \times 100}{25} = \text{Rs. } 21,60,000$	

**Illustration 7: From the following data, you are required to calculate break-even point and net sales value at this point:**

	(C)
Direct material cost per unit	10
Direct Labour cost per unit	5
Fixed overhead	50,000
Variable overhead @ 60% on direct labour	
Selling price per unit	25
Trade discount	4%

If sales are 10% and 25% above the break even volume, determine the net profits.

**Solution:**

Selling price per unit		₹	25
Less : Trade discount (25 × 4/100)			1
Net selling price per unit			24
Less : Variable cost per unit	₹		
Direct material	10		
Direct labour	5		
Variable overheads (5 × 60/100)	3		18
Contribution per unit			6

**Break-even point (in units)** =  $\frac{\text{Fixed Cost}}{\text{Contribution Per Unit}}$   
 $= \frac{50,000}{6} = 8,333 \text{ units}$

**Break - even Point (in sales value)** =  $\frac{\text{Fixed Cost}}{\text{P/V Ratio}}$   
 $\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$   
 $= \frac{6}{24} \times 100 = 25\%$   
 Hence, B.E.P. (in sales value) =  $\frac{50,000}{25\%} = 50,000 \times \frac{100}{25}$   
 $= ₹ 2,00,000$

Profit when sales are 10% above the break even volume  
 Sales = 2,00,000 + 10% of 2,00,000 = ₹ 2,20,000  
 Contribution = Sales × P/V Ratio = 2,20,000 × 25/100 = ₹ 55,000  
 Contribution = Fixed Cost + Profit  
 ₹ 55,000 = 50,000 + Profit  
 Profit = ₹ 5,000

Profit when sales are 25% above the break even volume  
 Sales = 2,00,000 + 25% of 2,00,000 = ₹ 2,50,000  
 Contribution = 2,50,000 × 25/100 = ₹ 62,500  
 Contribution = Fixed Cost + Profit  
 62,500 = 50,000 + Profit  
 Profit = ₹ 12,500

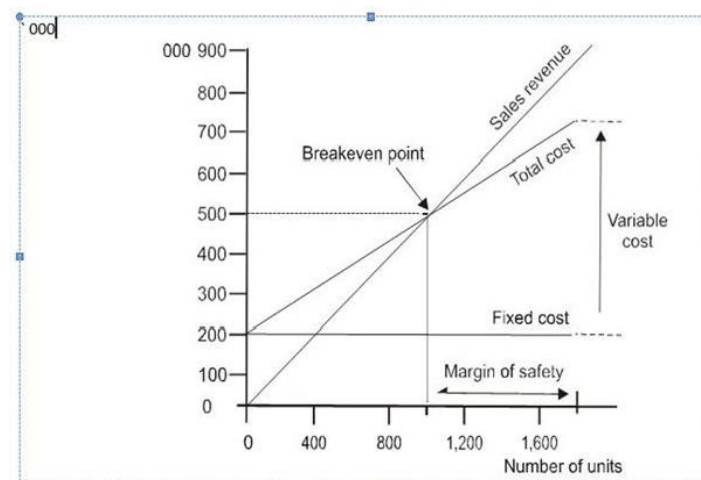
## B. Graphical Presentation of Break Even Chart

### Break-even Chart

A breakeven chart records costs and revenues on the vertical axis and the level of activity on the horizontal axis. The making of the breakeven chart would require you to select appropriate axes. Subsequently, you will need to mark costs/revenues on the Y axis whereas the level of activity shall be traced on the X axis. Lines representing (i) Fixed costs (horizontal line at ₹ 2,00,000 for ABC Ltd), (ii) Total costs at maximum level of activity (joined to the Y-axis where the Fixed cost of ₹ 2,00,000 is marked) and (iii) Revenue at maximum level of activity (joined to the origin) shall be drawn next.

The breakeven point is that point where the sales revenue line intersects the total cost line. Other measures like the margin of safety and profit can also be measured from the chart.

The breakeven chart for ABC Ltd (Illustration-3) is drawn below.

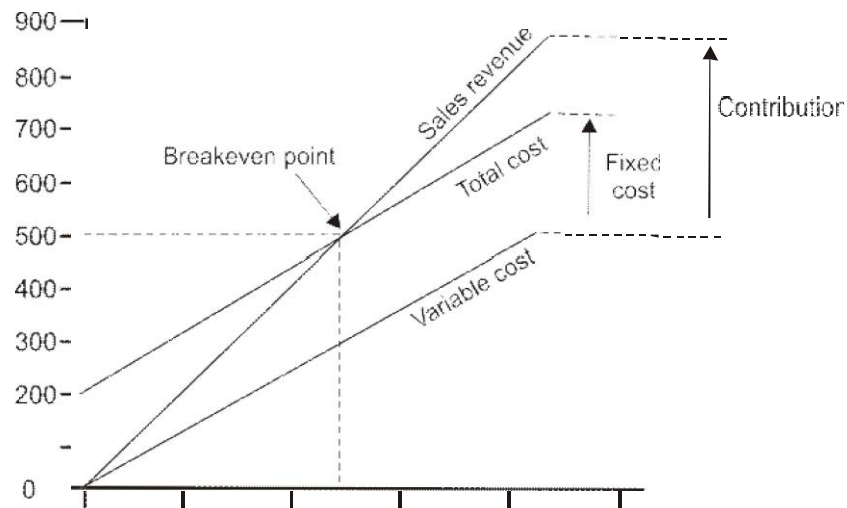


### Contribution Breakeven chart

It is not possible to use a breakeven chart as described above to measure contribution. This is one of its major limitations especially so because contribution analysis is literally

the backbone of marginal costing. To overcome such a limitation, accountants frequently resort to the making of a contribution breakeven chart which is based on the same principles as a conventional breakeven chart except for that it shows the variable cost line instead of the fixed cost line. Lines for Total cost and Sales revenue remain the same. The breakeven point and profit can be read off in the same way as with a conventional chart. However, it is also possible to read the contribution for any level of activity.

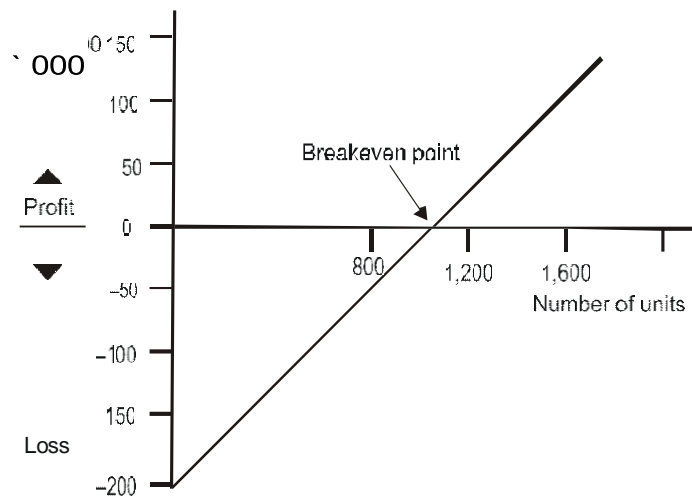
Using the same example of ABC Ltd as for the conventional chart, the total variable cost for an output of 1,700 units is  $1,700 \times \text{Rs. } 300 = \text{Rs. } 5,10,000$ . This point can be joined to the origin since the variable cost is nil at zero activity.



### Profit-volume chart

This is also very similar to a breakeven chart. In this chart the vertical axis represents profits and losses and the horizontal axis is drawn at zero profit or loss.

In this chart each level of activity is taken into account and profits marked accordingly. The breakeven point is where this line intersects the horizontal axis. A profit-volume graph for our example (ABC Ltd) will be as follows,



The loss at a nil activity level is equal to £2,00,000, i.e. the amount of fixed costs. The second point used to draw the line could be the calculated breakeven point or the calculated profit for sales of 1,700 units.

### Limitations of Break-Even Analysis

The limitations of the practical applicability of breakeven analysis and breakeven charts stem mostly from the assumptions underlying CVP which have been mentioned above. Assumptions like costs behaving in a linear fashion or sales revenue remain constant at different sales levels or the stocks shall remain constant period after period are unrealistic. Similarly, the assumption that the only factor which influences costs is the 'activity level achieved' is erroneous because other factors like inflation also have a bearing on costs.

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## 15.6 MARGIN OF SAFETY

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In cost-volume-profit (CVP) analysis, the margin of safety (MOS) is a crucial concept that measures the amount by which sales can decrease before a company reaches its break-even point. In other words, it is the cushion or safety buffer a company has in its sales revenue above the break-even point.

The break-even point is the level of sales at which total revenue equals total costs,



resulting in zero profit or loss. Once a company's sales exceed the break-even point, it starts generating a profit.

The formula for calculating the margin of safety is as follows:

Margin of Safety (MOS) = Actual Sales - Break-Even Sales

Here's a breakdown of the terms used in the formula:

**Actual Sales:** The total revenue from sales that a company has generated over a specific period.

**Break-Even Sales:** The level of sales at which total revenue equals total costs, and there is no profit or loss.

**Interpreting the Margin of Safety:**

A positive margin of safety indicates that a company's actual sales are higher than its break-even sales, suggesting that the company is operating above the break-even point and making a profit.

For example, if a company has actual sales of \$100,000 and its break-even sales are \$80,000, the margin of safety would be:

$$\text{MOS} = \$100,000 - \$80,000 = \$20,000$$

This means the company has a \$20,000 buffer or cushion before it reaches the break-even point. If sales decline by \$20,000, the company will still break even. Any sales above this level will result in a profit.

On the other hand, a negative margin of safety indicates that a company's actual sales are below its break-even sales. This scenario implies that the company is operating at a loss and needs to increase sales or reduce costs to reach the break-even point and avoid losses.

It's important to note that the margin of safety is a useful tool for assessing a company's risk and its ability to withstand fluctuations in sales. A higher margin of safety implies a more robust position, while a lower margin of safety indicates higher risk. Management

can use this information to make informed decisions about pricing, cost control, and sales strategies.

**Illustration 8:** ABC Company manufactures and sells a single product. The selling price per unit is \$50, the variable cost per unit is \$30, and the total fixed costs are \$100,000. The company wants to determine the number of units it needs to sell in order to break even and the margin of safety. Additionally, they are considering a pricing strategy that would increase the selling price to \$55 per unit and result in a 10% increase in sales volume. They want to know the impact of this pricing strategy on their break-even point and margin of safety.

**Solution: Step 1:** Calculating the Break-Even Point The break-even point can be determined by using the following formula:

Break-Even Point (in units) = Fixed Costs / Contribution Margin per unit

Contribution Margin per unit = Selling Price per unit - Variable Cost per unit

Contribution Margin per unit = \$50 - \$30 = \$20

Break-Even Point (in units) = \$100,000 / \$20 = 5,000 units

So, the company needs to sell 5,000 units to break even.

**Step 2:** Calculating the Margin of Safety To calculate the margin of safety, we need to determine the actual sales and then subtract the break-even sales.

Margin of Safety = Actual Sales - Break-Even Sales

Assuming the company currently sells 6,000 units:

Actual Sales = 6,000 units x \$50 per unit = \$300,000

Break-Even Sales = 5,000 units x \$50 per unit = \$250,000

Margin of Safety = \$300,000 - \$250,000 = \$50,000

Therefore, the margin of safety is \$50,000.

**Step 3:** Evaluating the Impact of Pricing Strategy The company is considering a price increase to \$55 per unit, along with a 10% increase in sales volume. Let's determine

the new break-even point and margin of safety.

New Selling Price per unit = \$55 New Variable Cost per unit = \$30

Contribution Margin per unit = New Selling Price per unit - New Variable Cost per unit

Contribution Margin per unit = \$55 - \$30 = \$25

New Break-Even Point (in units) = \$100,000 / \$25 = 4,000 units

New Break-Even Sales = 4,000 units x \$55 per unit = \$220,000

New Margin of Safety = Actual Sales - New Break-Even Sales

Assuming the 10% increase in sales volume: New Actual Sales = 6,600 units x \$55 per unit = \$363,000

New Margin of Safety = \$363,000 - \$220,000 = \$143,000

Therefore, with the pricing strategy, the new break-even point is 4,000 units, and the new margin of safety is \$143,000.

By analyzing the impact of the pricing strategy, the company can assess the changes in its break-even point and margin of safety, allowing them to make informed decisions about their pricing and sales strategies.

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## 15.7 PROFIT VOLUME GRAPH

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A profit-volume graph, also known as a profit-volume chart or a break-even chart, is a graphical representation that illustrates the relationship between sales volume, profit, and the break-even point. It provides a visual depiction of how changes in sales volume impact the profitability of a business.

Here's how to create a profit-volume graph:

**Step 1:** Identify the Fixed Costs and Selling Price per unit: Determine the fixed costs, which are expenses that do not change with the level of sales, such as rent, salaries, and utilities. Also, determine the selling price per unit of the product or service.

**Step 2:** Calculate the Variable Cost per unit: Determine the variable costs, which are costs that vary with the level of sales, such as direct materials and direct labour. Calculate the variable cost per unit.

**Step 3:** Calculate the Contribution Margin per unit: Subtract the variable cost per unit from the selling price per unit to calculate the contribution margin per unit. This represents the amount of each sale that contributes towards covering fixed costs and generating profit.

**Step 4:** Determine the Break-Even Point: Use the following formula to calculate the break-even point in units:  $\text{Break-Even Point (in units)} = \text{Fixed Costs} / \text{Contribution Margin per unit}$

**Step 5:** Plot the Profit-Volume Graph:

Draw a horizontal axis to represent the sales volume (in units) and label it accordingly.

Draw a vertical axis to represent the profit or loss and label it accordingly.

Plot the break-even point on the graph as the point where the profit is zero.

Plot the sales volume and corresponding profit or loss points above and below the break-even point.

Connect the plotted points to form the profit-volume graph.

The profit-volume graph typically starts below the horizontal axis, indicating a loss, and gradually rises above the axis as sales volume increases, representing increasing profits. The point at which the graph intersects the horizontal axis represents the break-even point, where the profit is zero. The slope of the graph represents the contribution margin ratio, which indicates how much profit is earned for each additional unit sold.

The profit-volume graph provides a visual representation of the relationship between sales volume, profit, and the break-even point. It helps businesses analyze the impact of different sales scenarios, pricing strategies, and cost changes on their profitability.

### **Understanding Profit-Volume (PV) Chart**

The profit-volume chart gives a company a visual of how much product must be sold

to achieve profitability. The total costs of a company include variable and fixed costs. Fixed costs represent the money spent on assets needed to produce the product, which can include the cost of the building and equipment. Variable costs represent the costs that fluctuate with sales volumes, such as raw materials and inventory. If a company produces zero sales, they would still have the expense of their fixed costs but would have no variable costs, assuming they didn't buy any inventory.

A company must generate enough sales to cover both their variable costs and fixed costs. When pricing the product for sale, management would need to cover the variable costs to produce each unit, but also some portion of the fixed costs. Over time and with enough sales volume, the company would reach its breakeven point, which is when they've generated enough sales volume so that the cumulative total of the profit-per-unit covers all of the fixed costs.

For example, let's say a company has \$1,000 in fixed costs, and they earn \$50 per unit in profit, which covers the variable costs for each unit. The company would need to sell 20 units to achieve breakeven ( $20 * \$50 = \$1,000$ ).

### **PLOTTING THE PROFIT-VOLUME (PV) CHART**

When plotting the profit-volume chart, where the total sales line intersects with the total cost line is the approximate breakeven point of a product in terms of volume.

Profits or (losses) are plotted on the Y-axis (the vertical axis) while sales volume (quantity or units) is plotted on the X-axis (the horizontal axis). Initially, the line will begin to the left and below zero at the amount of the fixed costs. In other words, if a company has \$20,000 in fixed costs, the line will begin at -\$20,000, and as each sale is made, the line would slope upwards until it reaches zero or breakeven.

As the volume of sales increases, the line rises from left to right in an upward sloping manner so that profits rise as sales increase. Sales volumes to the right of the breakeven point on the chart indicate profits, while volumes to the left result in losses.

The slope of the total sales line is important; the steeper the slope, the less volume required to earn a profit. The steepness of the slope is a function of the price of the product. Aside from pricing strategy, management can impact how a PV chart appears

by manipulating a variable and fixed cost components. Obviously, any successful efforts to lower costs will shift the breakeven volume point to the left.

### **Example of a Profit-Volume (PV) Chart**

A company with significant fixed costs depends heavily on sales volume to achieve its profit goals. Hotels, for example, have a fixed number of rooms and for the rooms, the hotel purchased furniture, bedding, window treatments, air conditioning units, lighting, and televisions. The hotel also has to maintain its common areas regardless of the number of visitors it has on a given night.

Thus, in order to cover the costs of running the hotel restaurant, keeping the hotel pool clean, heating or cooling the hotel lobby and hallways, and employing front desk staff, the hotel must sell a certain number of room nights before it starts to earn a profit on a given night. The PV chart can approximate that breakeven point and help guide hotel management meet and exceed that number.

As an example, let's say the hotel spent \$20,000 on fixed costs for materials. Below is the per-room rental fee, the variable costs-per room, and the resulting profit-per room.

- \$350 per-night rental rate
- \$75 variable costs per-room
- \$275 profit per-room

However, the \$275 profit per-room doesn't account for the fixed costs. As a result, it would take 73 room rentals before the hotel paid for its fixed costs ( $\$20,000 / \$275$ ).

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## **15.8 PRACTICALAPPLICATION OF MARGINAL COSTING**

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Marginal costing, also known as variable costing, is a cost accounting technique that separates costs into fixed costs and variable costs. The technique allocates variable costs to units of production or sales, while fixed costs are treated as period costs and are not allocated to individual units. Here are some practical applications of marginal costing:

1. **Pricing Decisions:** Marginal costing can be used to determine the appropriate selling price of a product or service. By understanding the variable costs associated with producing and selling each unit, businesses can set prices that ensure the contribution margin per unit covers fixed costs and generates a desired profit.
2. **Profit Planning and Decision Making:** Marginal costing provides insights into the contribution margin of each product or service. This information helps businesses analyze the profitability of different products, make decisions regarding product mix, and determine the impact of changes in production levels on overall profitability. It allows managers to identify the most profitable products and focus resources on them.
3. **Make or Buy Decisions:** When faced with the decision of whether to produce a component or buy it from an external supplier, marginal costing can be used to compare the variable costs associated with in-house production versus the purchase cost. By considering only the variable costs, businesses can evaluate which option is more cost-effective.
4. **Special Order Decisions:** When businesses receive special order requests that are different from their regular product offerings, marginal costing can be utilized to evaluate the profitability of accepting the order. By analyzing the incremental revenue and incremental variable costs associated with the special order, businesses can determine if it will contribute positively to their overall profitability.
5. **Inventory Valuation:** Marginal costing is useful for valuing inventory in certain circumstances, such as when there are significant fluctuations in the production volume or when inventory is being valued for short-term decision making. In marginal costing, inventory is valued at the variable cost per unit, excluding any fixed production overhead.
6. **Performance Evaluation:** Marginal costing allows for better evaluation of the performance of cost centers or departments within an organization. By focusing on the variable costs associated with each cost center, managers can assess the efficiency and profitability of each department separately.

7. **Break-Even Analysis:** Marginal costing is instrumental in conducting break-even analysis, which helps determine the level of sales required to cover all costs and achieve a zero-profit position. By considering the fixed costs and contribution margin per unit, businesses can calculate the break-even point in terms of sales volume or revenue.
8. **Sales Mix Decisions:** When a business offers multiple products or services, marginal costing can assist in determining the optimal sales mix. By analyzing the contribution margin per unit of each product/service and considering the demand and production capacity, businesses can allocate resources effectively to maximize overall profitability.
9. **Contract Pricing:** Marginal costing can be applied to determine appropriate pricing for long-term contracts or projects. By analyzing the variable costs associated with the contract and considering any additional fixed costs, businesses can calculate a target price that ensures profitability.
10. **Profitability Analysis of Market Segments:** Marginal costing facilitates the analysis of different market segments or customer groups. By examining the contribution margin generated from each segment and considering associated variable costs, businesses can identify the most profitable segments and tailor their marketing and pricing strategies accordingly.
11. **Cost Control and Cost Reduction:** Marginal costing provides insights into variable costs and their relationship to production and sales volume. This information enables businesses to focus on cost control measures that directly impact variable costs, such as optimizing material usage, reducing wastage, or improving production efficiency.
12. **Sensitivity Analysis:** Marginal costing allows for sensitivity analysis, which involves assessing the impact of changes in key variables on profitability. By manipulating variables such as selling price, variable cost, or sales volume, businesses can evaluate the sensitivity of their profitability to different scenarios and make more informed decisions.



Overall, marginal costing offers practical applications in areas such as pricing decisions, profit planning, make or buy decisions, special order evaluation, inventory valuation, performance evaluation, break-even analysis, sales mix decisions, contract pricing, profitability analysis, cost control, cost reduction, and sensitivity analysis. By utilizing marginal costing techniques, businesses can enhance their cost management, profitability analysis, and decision-making processes. These practical applications of marginal costing demonstrate its usefulness in various decision-making scenarios, enabling businesses to analyze costs, determine pricing strategies, evaluate profitability, and make informed decisions that contribute to their overall financial success.

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## **15.9 SUMMARY**

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Cost-volume-profit (CVP) analysis is a powerful tool used in managerial accounting to examine the interplay between costs, volume of production or sales, and profits. It enables businesses to gain a deeper understanding of how changes in these factors impact their financial performance and aids in decision-making. At the core of CVP analysis is the calculation of the contribution margin, which reveals the amount available to cover fixed costs and generate profits after deducting variable costs from sales revenue. Fixed costs, such as rent and salaries, remain constant regardless of sales volume. The break-even point, another key concept in CVP analysis, signifies the level of sales at which total revenue matches total costs, resulting in neither profit nor loss. It is determined by dividing fixed costs by the contribution margin ratio. By comparing actual or projected sales volume to the break-even point, businesses can determine their profit or loss situation. Moreover, the margin of safety indicates the buffer between current sales volume and the break-even point, offering insight into the company's ability to withstand fluctuations. CVP analysis can also be utilized to establish the sales volume required to achieve a specific target profit. By incorporating the desired profit into fixed costs and dividing it by the contribution margin ratio, businesses can determine the necessary sales volume to attain their goals. Additionally, CVP analysis facilitates sensitivity analysis, allowing businesses to assess how changes in variables such as selling price, variable costs, or fixed costs affect their profitability. Overall, CVP analysis provides valuable insights into the relationship between costs,

volume, and profits, assisting businesses in making informed decisions regarding pricing, cost management, and overall financial performance.

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## 15.10 GLOSSARY

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- **Contribution Margin:** CVP analysis starts by calculating the contribution margin, which is the difference between sales revenue and variable costs. It represents the amount available to cover fixed costs and contribute to profits.
- **Fixed Costs:** Fixed costs are expenses that do not change with changes in the volume of production or sales. Examples include rent, salaries, and depreciation. These costs must be covered by the contribution margin.
- **Break-Even Point:** The break-even point is the level of sales at which total revenue equals total costs, resulting in zero profit or loss. It can be calculated by dividing fixed costs by the contribution margin ratio (contribution margin per unit divided by selling price per unit).
- **Profit Analysis:** CVP analysis helps assess the impact of changes in sales volume on profits. By comparing sales volume to the break-even point, businesses can determine whether they are operating at a profit or loss.
- **Margin of Safety:** The margin of safety indicates the cushion a business has between its current sales volume and the break-even point. It is calculated by subtracting the break-even point from the actual or projected sales volume.

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## 15.11 SELFASSESSMENT QUESTIONS

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Q.1 Explain the concept of contribution and margin of safety.

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Q.2 Discuss the various methods of BEP analysis.

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**15.12 LESSON END EXERCISE**

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Q.1 A company can make any one of the 3 products X, Y or Z in a year. It can exercise its option only at the beginning of each year.

Relevant information about the products for the next year is given below.

	X	Y	Z
Selling Price (₹ / unit)	10	12	12
Variable Costs (₹ / unit)	6	9	7
Market Demand (unit)	3,000	2,000	1,000
Production Capacity (unit)	2,000	3,000	900
Fixed Costs (₹)	30,000		

Required

Compute the opportunity costs for each of the products.

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Q.2 You are given the following particulars calculate :

Break-even point

Sales to earn a profit of ₹ 20,000

Fixed cost ₹ 1,50,000

Variable cost ₹ 15 per unit

Selling price is ₹ 30 per unit

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**15.13 SUGGESTED READINGS**

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
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- Shukla, Grewal & Gupta. *Cost Accounting*. S. Chand, New Delhi.

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## **THEORY OF CONSTRAINTS AND THROUGHPUT ACCOUNTING**

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**M.COM III SEM  
MCOMC354**

**UNIT- IV  
LESSON - 16**

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### **THEORY OF CONSTRAINTS : IDENTIFYING AND EXPLORING CONSTRAINTS**

#### **STRUCTURE:**

- 16.1 Introduction
- 16.2 Objectives
- 16.3 Theory of Constraints (TOC)
- 16.4 Identifying and Exploring Constraints
- 16.5 Summary
- 16.6 Glossary
- 16.7 Self Assessment Questions
- 16.8 Lesson End Exercise
- 16.9 Suggested Readings

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#### **16.1 INTRODUCTION**

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The Theory of Constraints (TOC) is a management philosophy and methodology developed by Dr. Eliyahu Goldratt in the 1980s. It provides a systematic approach to identify and overcome constraints or bottlenecks that limit the performance of a system, whether it is a manufacturing process, a supply chain, or an organization as a whole. At the core of the Theory of Constraints is the idea that every system has at least one

constraint that prevents it from achieving higher levels of performance or throughput. By identifying and addressing these constraints, the overall system can be improved. A constraint is anything that limits a system from achieving its desired goal. It can be a physical limitation, such as a machine with a limited capacity, or a policy or rule that restricts the flow of work. Constraints can be internal or external to the system. Throughput refers to the rate at which a system generates the desired outcome, usually measured in terms of the number of units produced, services delivered, or sales made. Maximizing throughput is a primary goal of the Theory of Constraints. The first step in TOC is to identify the system's constraint and focus on fully utilizing its capacity. This involves identifying the activities or processes that are dependent on the constraint and ensuring they are prioritized and optimized. Once the constraint is exploited, the next step is to align all other activities and processes in the system to support the constraint. Non-constraints should be subordinated to the constraint to avoid overloading the system and wasting resources. If the constraint is still limiting the system's performance even after exploiting and subordinating, the next step is to elevate the constraint. This can involve adding more capacity, improving the constraint's efficiency, or modifying the system to remove the constraint. The drum-buffer-rope (DBR) is a scheduling mechanism used in TOC. The drum is the constraint, the buffer is a protective inventory placed in front of the constraint to ensure continuous flow, and the rope is a communication system that synchronizes the release of work into the system. TOC emphasizes the importance of ongoing improvement. Once a constraint is addressed, it is important to identify the new constraint and repeat the process to continually optimize the system. The Theory of Constraints provides a holistic approach to systems thinking and management. By identifying and addressing constraints, organizations can improve overall performance, increase throughput, and achieve their goals more effectively.

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## **16.2 OBJECTIVES**

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After going through this lesson, students will be able to understand:

- .Theory of constraints.
- The five focusing steps of theory of constraints..

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### 16.3 THEORY OF CONSTRIANTS (TOC)

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The Theory of Constraints is a methodology for identifying the most important limiting factor (i.e., constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. In manufacturing, the constraint is often referred to as a bottleneck. The Theory of Constraints takes a scientific approach to improvement. It hypothesizes that every complex system, including manufacturing processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system (i.e., the constraint activity is the “weakest link in the chain”). The **theory of constraints (TOC)** is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints. There is always at least one constraint, and TOC uses a focusing process to identify the constraint and restructure the rest of the organization around it. TOC adopts the common idiom “a chain is no stronger than its weakest link”. That means that organizations and processes are vulnerable because the weakest person or part can always damage or break them, or at least adversely affect the outcome.

#### **History of Constraints**

The theory of constraints (TOC) is an overall management philosophy, introduced by Eliyahu M. Goldratt in his 1984 book titled *The Goal*, that is geared to help organizations continually achieve their goals. Goldratt adapted the concept to project management with his book *Critical Chain*, published in 1997.

An earlier propagator of a similar concept was Wolfgang Mewes in Germany with publications on power-oriented management theory (*Machtorientierte Führungstheorie*, 1963) and following with his *Energo-Kybernetic System* (EKS, 1971), later renamed *Engpasskonzentrierte Strategie* (Bottleneck-focused Strategy) as a more advanced theory of bottlenecks. The publications of Wolfgang Mewes are marketed through the FAZ Verlag, publishing house of the German newspaper *Frankfurter Allgemeine Zeitung*. However, the paradigm Theory of constraints was first used by Goldratt.

### **Key Assumption**

The underlying premise of the theory of constraints is that organizations can be measured and controlled by variations on three measures: throughput, operational expense, and inventory. Inventory is all the money that the system has invested in purchasing things which it intends to sell. Operational expense is all the money the system spends in order to turn inventory into throughput. Throughput is the rate at which the system generates money through sales.

Before the goal itself can be reached, necessary conditions must first be met. These typically include safety, quality, legal obligations, etc. For most businesses, the goal itself is to make profit. However, for many organizations and non-profit businesses, making money is a necessary condition for pursuing the goal. Whether it is the goal or a necessary condition, understanding how to make sound financial decisions based on throughput, inventory, and operating expense is a critical requirement.

### **Key Concepts of TOC**

The key concepts of the Theory of Constraints are as follows:

1. **Constraint:** A constraint is anything that limits a system from achieving its desired goal. It can be a physical limitation, such as a machine with a limited capacity, or a policy or rule that restricts the flow of work. Constraints can be internal or external to the system.
2. **Throughput:** Throughput refers to the rate at which a system generates the desired outcome, usually measured in terms of the number of units produced, services delivered, or sales made. Maximizing throughput is a primary goal of the Theory of Constraints.
3. **Exploiting the Constraint:** The first step in TOC is to identify the system's constraint and focus on fully utilizing its capacity. This involves identifying the activities or processes that are dependent on the constraint and ensuring they are prioritized and optimized.
4. **Subordinating Non-Constraints:** Once the constraint is exploited, the next step is to align all other activities and processes in the system to support the



constraint. Non-constraints should be subordinated to the constraint to avoid overloading the system and wasting resources.

5. **Elevating the Constraint:** If the constraint is still limiting the system's performance even after exploiting and subordinating, the next step is to elevate the constraint. This can involve adding more capacity, improving the constraint's efficiency, or modifying the system to remove the constraint.
6. **Drum-Buffer-Rope:** The drum-buffer-rope (DBR) is a scheduling mechanism used in TOC. The drum is the constraint, the buffer is a protective inventory placed in front of the constraint to ensure continuous flow, and the rope is a communication system that synchronizes the release of work into the system.
7. **Continuous Improvement:** TOC emphasizes the importance of ongoing improvement. Once a constraint is addressed, it is important to identify the new constraint and repeat the process to continually optimize the system.

The Theory of Constraints provides a holistic approach to systems thinking and management. By identifying and addressing constraints, organizations can improve overall performance, increase throughput, and achieve their goals more effectively.

### **Features of TOC**

The Theory of Constraints (TOC) has several distinguishing features that set it apart from other management philosophies and methodologies. Some key features of TOC include:

1. **Focus on Constraints:** TOC places a strong emphasis on identifying and managing constraints or bottlenecks in a system. It recognizes that a system's performance is often limited by a few critical constraints, and by addressing these constraints, overall system performance can be significantly improved.
2. **Systems Thinking:** TOC adopts a systems thinking approach, which means viewing the organization as a whole and understanding the interdependencies and interactions between its various components. It recognizes that optimizing individual parts of a system may not necessarily lead to optimal overall performance.

3. **Throughput as the Primary Goal:** TOC emphasizes that the primary goal of any system is to generate throughput, which refers to the rate at which the system produces its desired outcome (e.g., products, services, sales). Maximizing throughput is crucial for the success and profitability of the organization.
4. **Exploitation, Subordination, and Elevate:** TOC provides a structured methodology for managing constraints. It involves exploiting the constraint by fully utilizing its capacity, subordinating non-constraints to the constraint, and elevating the constraint through measures like increasing capacity or improving efficiency.
5. **Drum-Buffer-Rope (DBR) Approach:** DBR is a scheduling mechanism used in TOC. It ensures that work is released into the system at a pace that the constraint can handle, buffers are created to protect the constraint, and synchronization is maintained throughout the system.
6. **Continuous Improvement:** TOC recognizes that improvement is an ongoing process. Once a constraint is addressed, another constraint may emerge, and the cycle of identification, exploitation, subordination, and elevation continues. Continuous improvement is vital to maintaining and enhancing system performance.
7. **Measurements and Metrics:** TOC promotes the use of specific measurements and metrics to evaluate the performance of the system. It emphasizes the use of throughput, inventory, and operational expense as the key performance indicators (KPIs) to monitor and guide decision-making.
8. **Conflict Resolution:** TOC provides tools and techniques for resolving conflicts that arise in organizations. It encourages a collaborative approach to problem-solving and decision-making, with a focus on finding win-win solutions.

These features make TOC a powerful methodology for optimizing systems, improving performance, and achieving the goals of an organization. It provides a structured framework for identifying and managing constraints while promoting a holistic and continuous improvement mindset.

## **Advantages of TOC**

The Theory of Constraints (TOC) offers several advantages that make it a valuable management methodology for organizations. Here are some key advantages of TOC:

1. **Focus on Key Constraints:** TOC helps organizations identify and prioritize the critical constraints that limit system performance. By addressing these constraints, organizations can achieve significant improvements in overall throughput and efficiency. This focused approach allows resources to be allocated more effectively, leading to better results.
2. **Holistic Systems Thinking:** TOC promotes a systems thinking mindset, encouraging organizations to view the entire system and understand the interdependencies between its components. This perspective helps identify the ripple effects of decisions and actions, preventing local optimizations that may harm overall performance. It allows organizations to take a more comprehensive and integrated approach to problem-solving and decision-making.
3. **Improved Throughput and Profitability:** TOC's primary goal is to maximize throughput, which directly contributes to higher revenue and profitability. By identifying and managing constraints, organizations can increase the rate at which they produce desired outcomes (e.g., products, services), resulting in improved customer satisfaction, market share, and financial performance.
4. **Optimized Resource Utilization:** TOC emphasizes the efficient utilization of resources by aligning non-constraints with the constraints. It helps organizations avoid overloading non-constraints, reducing unnecessary inventory and work-in-progress, and optimizing the flow of work through the system. This leads to better resource utilization, reduced lead times, and improved overall productivity.
5. **Clear Focus on Continuous Improvement:** TOC promotes a culture of continuous improvement by identifying and addressing constraints in an iterative manner. It encourages organizations to regularly review and adapt their processes, systems, and policies to enhance performance. This dynamic approach to improvement helps organizations stay competitive and responsive to changing market conditions.

6. **Conflict Resolution and Collaboration:** TOC provides tools and techniques for resolving conflicts and making decisions that benefit the entire organization. By fostering collaboration and seeking win-win solutions, TOC helps overcome internal conflicts and promotes a culture of cooperation and shared objectives.
7. **Practical and Applicable Methodology:** TOC offers a structured and practical methodology that can be applied to various types of systems and industries, including manufacturing, supply chain, project management, and service organizations. It provides a clear framework, tools, and metrics that help guide decision-making and problem-solving.
8. **Simplicity and Clarity:** TOC emphasizes the identification of the few critical constraints that have the most significant impact on system performance. This simplicity and clarity make it easier for organizations to understand and implement TOC principles and practices without getting overwhelmed by excessive complexity.

Overall, the advantages of TOC include improved system performance, increased throughput and profitability, optimized resource utilization, a focus on continuous improvement, conflict resolution, and practical applicability across various industries. By adopting TOC principles, organizations can achieve better results and gain a competitive edge in their respective markets.

### **Limitations of TOC**

While the Theory of Constraints (TOC) offers numerous advantages, it is important to consider its limitations and potential challenges. Here are some of the limitations of TOC:

1. **Simplified View of Complex Systems:** TOC's focus on identifying and managing constraints may oversimplify the complexity of real-world systems. Organizations often face multiple interacting constraints, and the interactions between them can be intricate. TOC's singular focus on the most significant constraint may neglect the subtler interdependencies within the system.
2. **Difficulty in Identifying Constraints:** Identifying the true constraints within a

system can be challenging. Constraints may not always be obvious or easily quantifiable. It may require in-depth analysis, data collection, and expert judgment to accurately identify and prioritize constraints. Incorrectly identifying constraints can lead to misallocation of resources and ineffective improvement efforts.

3. **Potential for Sub-Optimizations:** While TOC aims to optimize the system as a whole, there is a risk of sub-optimizing non-constraints. By solely focusing on the constraint, there may be missed opportunities to improve other parts of the system, resulting in imbalances or inefficiencies in overall performance.
4. **Limited Scope of Application:** TOC originated in the manufacturing sector and has been successfully applied in various industries. However, its principles may not be directly applicable to certain complex systems or industries with unique characteristics. Adapting TOC to these contexts may require additional customization and tailoring.
5. **Reliance on Assumptions:** TOC relies on certain assumptions, such as the presence of a single constraint that significantly impacts system performance and the ability to control and manipulate constraints. These assumptions may not always hold true in complex systems or unpredictable environments, leading to challenges in applying TOC effectively.
6. **Resource Requirements for Elevation:** When a constraint is elevated, additional resources may be required to increase capacity or improve efficiency. Allocating resources to address constraints can be costly and may not always be feasible, particularly for resource-constrained organizations.
7. **Resistance to Change:** Implementing TOC often involves making changes to existing processes, systems, and organizational structures. Resistance to change from employees or stakeholders can hinder successful implementation and adoption of TOC principles.
8. **Potential Overemphasis on Throughput:** While maximizing throughput is a central goal of TOC, other important factors such as quality, customer satisfaction, employee morale, and environmental impact may receive less attention.

Organizations need to ensure a balanced approach that considers multiple dimensions of performance.

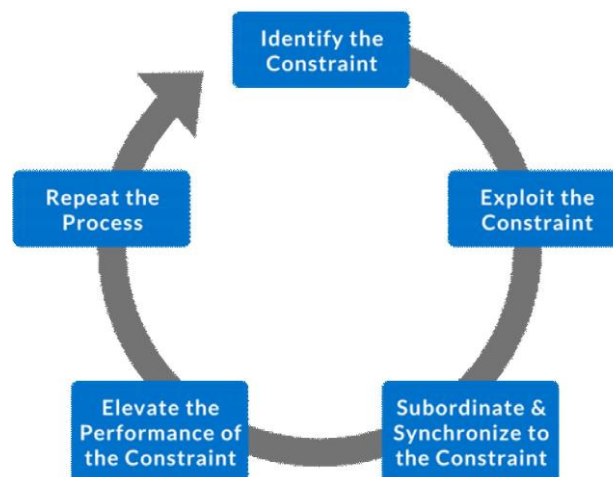
It is important to recognize these limitations and adapt TOC principles accordingly to suit the specific context and challenges faced by an organization. Combining TOC with other management methodologies and frameworks can also help overcome some of these limitations and achieve more comprehensive results.

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## 16.4 IDENTIFYING AND EXPLOITING CONSTRAINTS

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The Theory of Constraints provides a specific methodology for identifying and eliminating constraints, referred to as the Five Focusing Steps. As shown in the following diagram, it is a cyclical process.



**FIGURE 16.1**

The Theory of Constraints uses a process known as the Five Focusing Steps to identify and eliminate constraints (i.e., bottlenecks).

**The Five Focusing Steps are further described in the following table.**

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Step	Objective
Identify	Identify the current constraint (the single part of the process that limits the rate at which the goal is achieved).

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Exploit	Make quick improvements to the throughput of the constraint using existing resources (i.e., make the most of what you have).
Subordinate	Review all other activities in the process to ensure that they are aligned with and truly support the needs of the constraint.
Elevate	If the constraint still exists (i.e., it has not moved), consider what further actions can be taken to eliminate it from being the constraint. Normally, actions are continued at this step until the constraint has been “broken” (until it has moved somewhere else). In some cases, capital investment may be required.
Repeat	The Five Focusing Steps are a continuous improvement cycle. Therefore, once a constraint is resolved the next constraint should immediately be addressed. This step is a reminder to never become complacent – aggressively improve the current constraint...and then immediately move on to the next constraint.

### **The Thinking Processes**

The Theory of Constraints includes a sophisticated problem solving methodology called the Thinking Processes. The Thinking Processes are optimized for complex systems with many interdependencies (e.g., manufacturing lines). They are designed as scientific “cause and effect” tools, which strive to first identify the root causes of undesirable effects (referred to as UDEs), and then remove the UDEs without creating new ones.

The Thinking Processes are used to answer the following three questions, which are essential to TOC:

What needs to be changed?

What should it be changed to?

What actions will cause the change?

Examples of tools that have been formalized as part of the Thinking Processes include:

<b>Tool</b>	<b>Role</b>	<b>Description</b>
Current Reality Tree	Documents the current state.	Diagram that shows the current state, which is unsatisfactory and needs improvement. When creating the diagram, UDEs (symptoms of the problem) are identified and traced back to their root cause (the underlying problem).
Evaporating Cloud Tree	Evaluates potential improvements.	Diagram that helps to identify specific changes (called injections) that eliminate UDEs. It is particularly useful for resolving conflicts between different approaches to solving a problem. It is used as part of the process for progressing from the Current Reality Tree to the Future Reality Tree.
Future Reality Tree	Documents the future state.	Diagram that shows the future state, which reflects the results of injecting changes into the system that are designed to eliminate UDEs.
Strategy and Tactics Tree	Provides an action plan for improvement.	Diagram that shows an implementation plan for achieving the future state. Creates a logical structure that organizes knowledge and derives tactics from strategy. Note: this tool is intended to replace the formerly used Prerequisite Tree in the Thinking Processes.

### **The Nature of Constraints**

Constraints are anything that prevents the organization from making progress towards its goal. In manufacturing processes, constraints are often referred to as bottlenecks. Interestingly, constraints can take many forms other than equipment. There are differing opinions on how to best categorize constraints; a common approach is shown in the following table.



<b>Constraint</b>	<b>Description</b>
Physical	Typically equipment, but can also be other tangible items, such as material shortages, lack of people, or lack of space.
Policy	Required or recommended ways of working. May be informal (e.g., described to new employees as “how things are done here”). Examples include company procedures (e.g., how lot sizes are calculated, bonus plans, overtime policy), union contracts (e.g., a contract that prohibits cross-training), or government regulations (e.g., mandated breaks).
Paradigm	Deeply engrained beliefs or habits. For example, the belief that “we must always keep our equipment running to lower the manufacturing cost per piece”. A close relative of the policy constraint.
Market	Occurs when production capacity exceeds sales (the external marketplace is constraining throughput). If there is an effective ongoing application of the Theory of Constraints, eventually the constraint is likely to move to the marketplace.

There are also differing opinions on whether a system can have more than one constraint. The conventional wisdom is that most systems have one constraint, and occasionally a system may have two or three constraints.

In manufacturing plants where a mix of products is produced, it is possible for each product to take a unique manufacturing path and the constraint may “move” depending on the path taken. This environment can be modeled as multiple systems – one for each unique manufacturing path.

### **Policy Constraints**

Policy constraints deserve special mention. It may come as a surprise that the most common form of constraint (by far) is the policy constraint.

Since policy constraints often stem from long-established and widely accepted policies, they can be particularly difficult to identify and even harder to overcome. It is typically

much easier for an external party to identify policy constraints, since an external party is less likely to take existing policies for granted.

When a policy constraint is associated with a firmly entrenched paradigm (e.g., “we must always keep our equipment running to lower the manufacturing cost per piece”), a significant investment in training and coaching is likely to be required to change the paradigm and eliminate the constraint.

Policy constraints are not addressed through application of the Five Focusing Steps. Instead, the three questions discussed earlier in the Thinking Processes section are applied:

What needs to be changed?

What should it be changed to?

What actions will cause the change?

The Thinking Processes are designed to effectively work through these questions and resolve conflicts that may arise from changing existing policies.

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## **16.5 SUMMARY**

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The Theory of Constraints (TOC) is a management philosophy and methodology developed by Dr. Eliyahu Goldratt. Every system has at least one constraint that limits its performance. TOC focuses on identifying and managing these constraints to improve overall system throughput and performance. TOC provides a systematic approach to managing constraints. It involves identifying the constraint, exploiting it by maximizing its capacity, subordinating non-constraints to the constraint, and elevating the constraint if necessary. Maximizing throughput, which refers to the rate at which a system generates its desired outcomes (e.g., products, services), is a primary goal of TOC. Throughput directly impacts an organization’s revenue and profitability. DBR is a scheduling mechanism used in TOC. It ensures that work is released into the system at a pace that the constraint can handle (the drum), buffers are created to protect the constraint from disruptions (the buffer), and a communication system synchronizes the flow of work (the rope). TOC emphasizes a holistic approach to systems thinking.

It encourages viewing the organization as a whole and understanding the interdependencies and interactions between its various components. TOC promotes a culture of continuous improvement. Once a constraint is addressed, the focus shifts to identifying the next constraint and repeating the process to continually optimize the system. TOC utilizes specific measurements and metrics to evaluate system performance. Throughput, inventory, and operational expense are key performance indicators (KPIs) that guide decision-making and monitor system effectiveness. TOC provides tools and techniques for resolving conflicts and making decisions that benefit the entire organization. Collaboration and seeking win-win solutions are encouraged. TOC's advantages include a focus on constraints, systems thinking, improved throughput and profitability, optimized resource utilization, continuous improvement, conflict resolution, and practical applicability. However, limitations include potential oversimplification, challenges in identifying constraints, and the need for adaptation to specific contexts. Overall, TOC offers a structured approach for organizations to identify and manage constraints, optimize system performance, and achieve their goals more effectively.

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## 16.6 GLOSSARY

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- **Constraint:** A constraint refers to any factor that limits the system from achieving higher performance or throughput. It can be a physical constraint (e.g., a machine with limited capacity) or a policy or rule that restricts the flow of work.
- **Throughput:** Throughput is the rate at which a system generates its desired outcomes, such as the number of units produced, services delivered, or sales made. Maximizing throughput is a primary goal of TOC.
- **Exploitation:** Exploitation involves fully utilizing the capacity of the constraint to maximize its output. It focuses on optimizing activities or processes that depend on the constraint to achieve higher throughput.
- **Subordination:** Subordination refers to aligning non-constraints or activities that are not limiting the system's performance to the pace of the constraint. By subordinating non-constraints, the flow of work is synchronized and balanced to avoid overburdening the system.

- **Elevate:** Elevating the constraint involves taking actions to remove or mitigate the constraint's limitation on system performance. This can include increasing the capacity of the constraint, improving its efficiency, or modifying the system to eliminate the constraint.
- **Drum-Buffer-Rope (DBR):** DBR is a scheduling mechanism used in TOC. The drum represents the constraint, the buffer is a protective inventory or time reserve placed in front of the constraint to ensure continuous flow, and the rope is a communication system that synchronizes the release of work into the system.

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## 16.7 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of Theory of Constraints.

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Q.2 Discuss the features of TOC.

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## 16.8 LESSON END EXERCISE

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Q.1 Discuss the five focusing steps of TOC.

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Q.2 Explain the nature of constraints.

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## 16.9 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
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## **THEORY OF CONSTRAINTS AND THROUGHPUT ACCOUNTING**

**M.COM III SEM  
MCOMC354**

**UNIT- IV  
LESSON - 17**

### **THROUGHPUT ACCOUNTING : STEPS IN THEORY OF CONSTRAINTS ANALYSIS**

#### **STRUCTURE:**

- 17.1 Introduction
- 17.2 Objectives
- 17.3 Throughput Accounting
- 17.4 Steps in TOC Analysis
- 17.5 Summary
- 17.6 Glossary
- 17.7 Self Assessment Questions
- 17.8 Lesson End Exercise
- 17.9 Suggested Readings

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#### **17.1 INTRODUCTION**

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Have you ever led or contributed to a project team, only to end up bottlenecked and unable to meet deadlines or stay within the project budget? It's frustrating, without a doubt and you want to fix it. But how? How can you figure out what part of your project process needs to be up? And how can you use that information to improve your other projects moving forward? That's where the theory of constraints comes

into play. The theory of constraints is a method for identifying what's holding your project back and improving it, so it's no longer a limiting factor. The theory of constraints (TOC) is a management philosophy developed by Eliyahu M. Goldratt in his 1984 publication, "The Goal: A Process of Ongoing Improvement." Simply put, Goldratt suggested that organizations can achieve their goals by identifying and leveraging a system's constraints. A constraint is something that limits your performance, and this theory assumes that there is always at least one constraint, if not more. Rather than looking at individual components and processes, the idea is that utilizing the constraint is more effective. When you zone in on exactly what's holding you back and improve upon that one piece, it improves profitability and ultimately allows an organization to reach its goals. Keep in mind that organizations are systems of connected departments and individuals with multiple dependencies. The actions of departments may create ripple effects for other groups. Rather than addressing one-off or short-term conflicts amongst different teams, the theory of constraints requires that you step back, identify a single leverage point, and fix that to improve the entire system.

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## **17.2 OBJECTIVES**

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After going through this lesson, students will be able to understand:

- Throughput accounting.
- The steps in TOC analysis.

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## **17.3 THROUGHPUT ACCOUNTING**

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Throughput Accounting is an alternative accounting methodology that attempts to eliminate harmful distortions introduced from traditional accounting practices – distortions that promote behaviors contrary to the goal of increasing profit in the long term.

In traditional accounting, inventory is an asset (in theory, it can be converted to cash by selling it). This often drives undesirable behavior at companies – manufacturing items that are not truly needed. Accumulating inventory inflates assets and generates a

“paper profit” based on inventory that may or may not ever be sold (e.g., due to obsolescence) and that incurs cost as it sits in storage. The Theory of Constraints, on the other hand, considers inventory to be a liability – inventory ties up cash that could be used more productively elsewhere.

In traditional accounting, there is also a very strong emphasis on cutting expenses. The Theory of Constraints, on the other hand, considers cutting expenses to be of much less importance than increasing throughput. Cutting expenses is limited by reaching zero expenses, whereas increasing throughput has no such limitations.

These and other conflicts result in the Theory of Constraints emphasizing Throughput Accounting, which uses as its core measures: Throughput, Investment, and Operating Expense.

Core Measures	Definition
Throughput	The rate at which customer sales are generated less truly variable costs (typically raw materials, sales commissions, and freight). Labour is not considered a truly variable cost unless pay is 100% tied to pieces produced.
Investment	Money that is tied up in physical things: product inventory, machinery and equipment, real estate, etc. Formerly referred to in TOC as Inventory.
Operating Expense	Money spent to create throughput, other than truly variable costs (e.g., payroll, utilities, taxes, etc.). The cost of maintaining a given level of capacity.

In addition, Throughput Accounting has four key derived measures: Net Profit, Return on Investment, Productivity, and Investment Turns.

Net Profit = Throughput – Operating Expenses

Return on Investment = Net Profit / Investment

Productivity = Throughput / Operating Expenses

Investment Turns = Throughput / Investment



In general, management decisions are guided by their effect on achieving the following improvements (in order of priority):

Will Throughput be increased?

Will Investment be reduced?

Will Operating Expenses be reduced?

The strongest emphasis (by far) is on increasing Throughput. In essence, TOC is saying to focus less on cutting expenses (Investment and Operating Expenses) and focus more on building sales (Throughput).

### **Features of throughput accounting**

Throughput accounting is a management accounting technique that focuses on maximizing the flow of products or services through a system to increase profitability. It provides a different perspective from traditional cost accounting methods by emphasizing the importance of throughput, which is the rate at which a system generates money through sales.

Here are some key features of throughput accounting:

1. **Throughput:** Throughput is the rate at which a system generates money through sales. It represents the actual flow of products or services through a process or system. Throughput accounting recognizes that increasing throughput is essential for improving profitability.
2. **Constraint identification:** Throughput accounting emphasizes identifying and managing constraints, which are factors that limit the system's ability to generate more throughput. Constraints can be physical (e.g., a machine that operates at a certain capacity) or non-physical (e.g., market demand). By focusing on constraints, managers can allocate resources effectively and improve the overall throughput of the system.
3. **Throughput contribution margin:** Throughput accounting uses a different measure of profitability called throughput contribution margin (TCM). TCM is calculated by subtracting the direct materials costs from the sales revenue

generated by the throughput. Unlike traditional cost accounting, which allocates overhead costs to products, TCM only considers the direct costs directly associated with generating throughput.

4. **Operating expenses:** Throughput accounting distinguishes between two types of operating expenses: fixed expenses and operating expenses that vary with changes in throughput. Fixed expenses are treated differently from variable expenses because they are not affected by short-term changes in throughput. By focusing on variable expenses related to throughput, managers can make decisions that improve profitability.
5. **Decision-making:** Throughput accounting provides a basis for decision-making by considering the impact on throughput and the constraints of the system. It encourages managers to prioritize activities that increase throughput and optimize the use of constrained resources. This approach helps in identifying opportunities for process improvements and making strategic choices that enhance the overall profitability of the organization.
6. **Simplified performance measurements:** Throughput accounting promotes the use of simple and easily understandable performance measures. Rather than relying on complex cost allocations and variances, managers can focus on metrics like throughput, inventory investment, and operating expenses. These measures provide a clear picture of the system's performance and facilitate timely decision-making.
7. **Bottleneck management:** Throughput accounting places a significant emphasis on managing bottlenecks, which are points in a system where the flow of work is slowed or restricted. By identifying and addressing bottlenecks, managers can optimize the flow of throughput and increase overall system efficiency.
8. **Continuous improvement:** Throughput accounting encourages a continuous improvement mindset. By regularly reviewing and analyzing the system's constraints, managers can identify opportunities for improvement, such as process redesign, capacity enhancement, or investment in bottleneck resources.

9. **Focus on value-added activities:** Throughput accounting emphasizes the importance of distinguishing between value-added and non-value-added activities. Value-added activities directly contribute to the generation of throughput, while non-value-added activities do not. By minimizing non-value-added activities and optimizing value-added activities, the system can increase throughput and profitability.
10. **Time-based analysis:** Throughput accounting incorporates a time-based analysis to assess the impact of decisions on throughput and system performance. It recognizes the time value of money and encourages managers to consider the speed at which money is generated and returned on investments.
11. **Capacity utilization:** Throughput accounting recognizes that maximizing capacity utilization is not necessarily the most effective approach. Instead, it advocates for balancing the flow of work within the system and aligning it with market demand. This ensures that resources are efficiently utilized without causing excess inventory or bottlenecks.
12. **Throughput accounting in decision-making:** Throughput accounting provides a framework for decision-making, particularly in situations involving constraints and investment decisions. Managers can evaluate the impact of decisions on throughput, bottlenecks, and the overall profitability of the system.
13. **Focus on system-wide optimization:** Throughput accounting takes a holistic approach by considering the entire system rather than individual components. It encourages managers to optimize the flow of work across the entire value chain and align different processes and functions to maximize throughput.
14. **Integration with other management approaches:** Throughput accounting can be integrated with other management approaches such as Lean, Theory of Constraints (TOC), and Six Sigma. This integration allows for a comprehensive analysis of the system's performance and identifies improvement opportunities across different dimensions.

These points highlight the key features and principles of throughput accounting, emphasizing its focus on maximizing throughput, managing constraints, and making

informed decisions to improve system performance and profitability. Throughput accounting offers a valuable alternative to traditional cost accounting methods by emphasizing the flow of products or services and the impact on profitability. By considering throughput and constraints, managers can make informed decisions to improve the overall performance of the system and enhance the organization's financial results.

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#### 17.4 STEPS IN THEORY OF CONSTRAINTS ANALYSIS

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The Theory of Constraints (TOC) is a management methodology that aims to identify and manage the constraints or bottlenecks that limit the performance of a system. TOC analysis involves several steps to effectively address constraints and improve overall system performance. Here are the typical steps in TOC analysis:

1. **Identify the system's goal:** The first step is to clearly define the goal or purpose of the system under analysis. This could be maximizing profit, increasing throughput, reducing lead time, or achieving other specific objectives.
2. **Identify the system's constraints:** Identify the factors or elements within the system that limit its ability to achieve the defined goal. Constraints can be physical (e.g., a machine with limited capacity) or non-physical (e.g., market demand or policies). Constraints are usually found at specific points or processes where the flow of work is restricted.
3. **Exploit the constraint:** Once the constraints are identified, the focus shifts to exploiting or leveraging the constraint to maximize its utilization and throughput. This involves allocating resources, optimizing processes, and removing any unnecessary activities or disruptions that may impede the constraint's performance.
4. **Subordinate non-constraints:** Non-constraints refer to elements in the system that has capacity beyond the constraints. In this step, non-constraints are subordinated to the constraint, ensuring that their pace matches the rate of the constraint. This helps prevent overproduction, excess inventory, and imbalances within the system.

5. **Elevate the constraint:** If exploiting the constraint and subordinating non-constraints are insufficient to achieve the system's goal, it may be necessary to elevate the constraint's capacity. This can involve investing in additional resources, upgrading equipment, or finding alternative solutions to remove or alleviate the constraint.
6. **Repeat the process:** TOC analysis is an ongoing and iterative process. Once improvements are made, the system is reevaluated to identify new constraints that emerge or existing constraints that have shifted. The analysis is repeated to address these new constraints and continue improving the system's performance.
7. **Performance measurement:** Throughout the analysis, it is important to establish appropriate performance measures that align with the system's goal. These measures can include throughput, inventory levels, lead time, and other relevant indicators. Regularly monitoring and analyzing these metrics helps track progress, identify areas for improvement, and ensure that the system remains on track to achieve its goal.

By following these steps, organizations can systematically identify and address constraints within their systems, leading to improved overall performance, increased throughput, and better alignment with their desired goals.

### **Case Study 1**

Let's consider an example of a manufacturing company that produces and sells electronic devices. The company wants to increase its profitability by improving the throughput and efficiency of its production process using the Theory of Constraints (TOC) analysis. Here's how the steps of TOC analysis could be applied:

**Identify the system's goal:** The company's goal is to maximize profit by increasing the throughput (sales revenue) of its electronic devices.

**Identify the system's constraints:** After evaluating the production process, the company identifies that the constraint or bottleneck is the assembly line, where the devices are being assembled. The assembly line has a limited capacity to produce a certain number of devices per day.

**Exploit the constraint:** The company focuses on optimizing the assembly line's performance by ensuring it operates at maximum efficiency. They analyze the production schedule, eliminate any unnecessary downtime or delays, and streamline the assembly process to reduce cycle times and increase throughput.

**Subordinate non-constraints:** Non-constraints in this context could be the upstream processes, such as component manufacturing and procurement. The company ensures that these processes align their production rates with the assembly line's capacity. This prevents overproduction of components and avoids creating excess inventory that could slow down the constraint.

**Elevate the constraint:** If exploiting and subordinating the constraint is insufficient to achieve the desired throughput, the company may consider elevating the assembly line's capacity. This could involve investing in additional equipment, hiring more skilled workers, or implementing process improvements to speed up production.

**Repeat the process:** As the changes are implemented, the company continues to monitor and evaluate the system's performance. If new constraints emerge or existing constraints shift, the TOC analysis is repeated to identify and address these constraints. The company iteratively improves the system's performance by focusing on the most critical constraints.

**Performance measurement:** The company establishes performance measures such as daily throughput (number of devices produced and sold), cycle time, and inventory levels. They regularly track these metrics to assess the impact of the TOC analysis and determine if the system is moving closer to achieving its goal of maximizing profit.

By applying TOC analysis in this example, the manufacturing company can identify and address the constraints that limit its production process. This can lead to increased throughput, reduced cycle times, optimized resource utilization, and ultimately improved profitability.

## **Case Study 2**

Let's consider another example, this time focusing on a service-based company, such as a software development agency. The company wants to improve its project delivery

process and increase customer satisfaction using the Theory of Constraints (TOC) analysis. Here's how the steps of TOC analysis could be applied:

**Identify the system's goal:** The company's goal is to maximize customer satisfaction and profitability by delivering high-quality software projects within the agreed timelines.

**Identify the system's constraints:** Upon analyzing the project delivery process, the company identifies that the constraint or bottleneck is the availability of skilled developers. The company has a limited number of developers who possess the necessary expertise to work on complex projects.

**Exploit the constraint:** The company focuses on optimizing the utilization and performance of its skilled developers. They ensure that the developers are assigned to the highest-priority and most critical tasks in projects. The project schedules are adjusted to prioritize the work that aligns with the developers' expertise, maximizing their contribution and throughput.

**Subordinate non-constraints:** Non-constraints in this context could be the supporting functions, such as quality assurance or administrative tasks. The company ensures that these functions align their activities with the pace of the skilled developers. They streamline processes, reduce unnecessary bureaucracy, and eliminate any tasks that do not directly contribute to delivering projects on time.

**Elevate the constraint:** If exploiting and subordinating the constraint is insufficient to meet project deadlines and customer expectations, the company may consider elevating the constraint's capacity. This could involve hiring more skilled developers, investing in training programs to enhance the skills of existing developers, or outsourcing certain tasks to external partners to alleviate the workload.

**Repeat the process:** As the changes are implemented, the company continuously monitors the performance of the system. They assess whether new constraints emerge or existing constraints shift. If necessary, the TOC analysis is repeated to identify and address these constraints, ensuring the system remains aligned with the goal of maximizing customer satisfaction and profitability.

**Performance measurement:** The company establishes performance measures such as

on-time project delivery, customer satisfaction ratings, and revenue generated per project. They regularly track these metrics to evaluate the impact of the TOC analysis and determine if the system is progressing towards its goal.

By applying TOC analysis in this example, the software development agency can identify and address the constraints that limit its project delivery process. This can result in improved resource allocation, optimized project schedules, enhanced customer satisfaction, and increased profitability.

### **Case Study 3**

Let's consider an example of a retail store that wants to improve its inventory management and increase profitability using the Theory of Constraints (TOC) analysis. Here's how the steps of TOC analysis could be applied:

Identify the system's goal: The retail store's goal is to maximize profitability by efficiently managing inventory levels and meeting customer demand.

Identify the system's constraints: After analyzing the store's operations, it is identified that the constraint or bottleneck is the store's storage space. The store has limited shelf space and storage capacity for its products.

Exploit the constraint: The store focuses on optimizing the utilization of its storage space. They analyze the product assortment, rearrange the shelves to maximize display and storage efficiency, and identify slow-moving or obsolete items to free up space for more popular products. This ensures that the available space is utilized effectively to maximize sales and throughput.

Subordinate non-constraints: Non-constraints in this context could be the ordering and replenishment processes. The store ensures that the ordering frequency, quantities, and lead times of products are aligned with the constraint of limited storage space. This prevents overstocking and reduces the risk of carrying excess inventory that ties up capital and occupies valuable shelf space.

Elevate the constraint: If exploiting and subordinating the constraint is insufficient to optimize inventory management, the store may consider elevating the storage capacity. This could involve remodeling the store layout, expanding the storage area, or



implementing technology solutions such as automated inventory management systems to improve space utilization.

**Repeat the process:** As the changes are implemented, the store continuously monitors and evaluates its inventory management performance. If new constraints arise or existing constraints change, the TOC analysis is repeated to identify and address these constraints, ensuring the system remains aligned with the goal of maximizing profitability.

**Performance measurement:** The store establishes performance measures such as inventory turnover, gross margin return on inventory investment (GMROI), and customer satisfaction ratings. These metrics are regularly tracked to assess the impact of the TOC analysis and determine if the system is moving closer to achieving its goal of maximizing profitability.

By applying TOC analysis in this example, the retail store can identify and address the constraints that limit its inventory management. This can lead to optimized shelf space utilization, reduced carrying costs, improved product availability, and increased profitability through enhanced sales and customer satisfaction.

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## **17.5 SUMMARY**

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In conclusion, throughput accounting and the Theory of Constraints (TOC) analysis are two management methodologies that aim to improve system performance and profitability by identifying and managing constraints. While they have distinct focuses and approaches, they share the common goal of optimizing throughput and achieving the desired system goals.

Throughput accounting emphasizes the importance of maximizing the flow of products or services through a system to increase profitability. It involves measuring and managing throughput, identifying constraints, and making decisions based on the impact on throughput and operating expenses. By focusing on throughput and constraints, organizations can allocate resources effectively, improve system efficiency, and enhance overall profitability.

On the other hand, TOC analysis provides a systematic framework for identifying and managing constraints within a system. It involves steps such as identifying the system's

goal, identifying constraints, exploiting the constraint, subordinating non-constraints, elevating the constraint if necessary, and repeating the process. TOC analysis helps organizations optimize resource utilization, streamline processes, and improve system performance by focusing on the most critical constraints.

In combination, throughput accounting and TOC analysis offer powerful tools for organizations to optimize their operations, improve decision-making, and enhance overall performance. Throughput accounting provides a financial perspective that aligns with the flow of products or services, while TOC analysis helps organizations systematically identify and address constraints that limit performance. By integrating these methodologies, organizations can gain insights into their systems, drive continuous improvement, and achieve their desired goals.

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## 17.6 GLOSSARY

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- **Throughput:** Throughput refers to the rate at which a system generates “goal units” or the flow of products or services that contribute to the organization’s goal. It represents the revenue generated by selling products or services and is a key measure of system performance.
- **Operating expenses:** Operating expenses are the costs incurred in running the system or organization, excluding the costs directly attributed to the production or provision of products or services. These expenses include items such as overhead costs, administrative expenses, marketing expenses, and other non-production-related costs.
- **Investment:** Investment refers to the money tied up in the system or organization in terms of inventory, equipment, facilities, and other assets required for production or service delivery. Throughput accounting considers the time value of money and evaluates the return on investment (ROI) in decision-making.
- **Constraint:** A constraint is a factor or element within the system that limits the flow of throughput or hinders the system from achieving its desired goal. Constraints can be physical (e.g., a machine with limited capacity) or non-physical

(e.g., market demand, policy restrictions) and often require special attention and management to optimize system performance.

- **Bottleneck:** A bottleneck is a specific point or process in the system where the flow of work is slowed or restricted, causing a constraint. Bottlenecks can lead to inefficiencies, longer lead times, and reduced throughput. Throughput accounting emphasizes identifying and managing bottlenecks to improve overall system performance.
- **Drum-Buffer-Rope (DBR):** DBR is a scheduling methodology used in throughput accounting to optimize the flow of work through a system. It involves identifying the constraint (drum), buffering the constraint to protect it from disruptions (buffer), and synchronizing the release of work to the constraint based on its capacity (rope).
- **Subordination:** Subordination refers to aligning non-constraints or supporting processes to the pace of the constraint. It involves adjusting the flow of work and resources in the system to prevent overproduction or excess inventory and ensure that non-constraints do not outpace the constraint, maintaining a balanced flow.
- **Throughput contribution:** Throughput contribution is the difference between the revenue generated by the sale of a product or service and the direct variable costs associated with producing or delivering that product or service. It represents the additional profit generated per unit of throughput.

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## 17.7 SELFASSESSMENT QUESTIONS

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Q.1 Explain the concept of Throughput accounting.

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Q.2 Discuss the features of Throughput accounting.

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### 17.8 LESSON END EXERCISE

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Q.1 Discuss the various steps of TOC analysis.

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Q.2 Explain the case studies relating to TOC analysis.

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### 17.9 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

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## **THEORY OF CONSTRAINTS AND THROUGHPUT ACCOUNTING**

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**M.COM III SEM  
MCOMC354**

**UNIT- IV  
LESSON - 18**

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### **TARGET COSTING**

#### **STRUCTURE:**

- 18.1 Introduction
- 18.2 Objectives
- 18.3 Target Costing
- 18.4 Summary
- 18.5 Glossary
- 18.6 Self Assessment Questions
- 18.7 Lesson End Exercise
- 18.8 Suggested Readings

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#### **18.1 INTRODUCTION**

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Target costing is a strategic cost management approach used by organizations to develop cost-effective products or services while meeting customer needs and maintaining desired profit margins. It is a proactive approach that integrates cost management into the product development process from its early stages.

The main objective of target costing is to align costs with customer expectations and market conditions. It starts with market research to determine the price customers are willing to pay for a product or service. Based on this market-driven target selling price, the desired profit margin is subtracted to arrive at the target cost. The target

cost becomes the cost ceiling that the organization aims to achieve to meet profitability goals.

Target costing emphasizes cross-functional collaboration and a customer-oriented approach. It involves various departments such as design, engineering, production, purchasing, and finance working together to identify cost-saving opportunities and make informed decisions. By involving multiple stakeholders, target costing ensures that cost considerations are integrated into all stages of the product development and production process.

Value engineering is a critical component of target costing. It involves analyzing the functions, features, and processes of a product or service to identify areas where costs can be reduced without compromising quality or customer value. Value engineering aims to optimize costs while maintaining or enhancing the value delivered to customers.

Continuous monitoring of costs is an integral part of target costing. Actual costs are compared to the target cost, and any deviations are identified and addressed promptly. This allows for timely corrective actions and ensures that cost management efforts remain effective.

By implementing target costing, organizations can optimize costs, deliver value to customers, enhance profitability, and gain a competitive advantage in the marketplace. It promotes a cost-conscious culture, collaboration, and innovation, leading to improved cost management practices and overall business performance.

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## **18.2 OBJECTIVES**

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After going through this lesson, students will be able to understand:

- Target costing.
- The features, principles, objectives of Target costing.

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## **18.3 TARGET COSTING**

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Target costing is a cost management technique used in the development and production

of products or services. It involves setting a target cost based on the price that customers are willing to pay for the product, while still ensuring the company can achieve its desired profit margin.

Target costing is a cost management approach that is defined by experts in the field. Here are a few definitions provided by experts:

**The Chartered Institute of Management Accountants (CIMA):** “Target costing is a disciplined process for determining and realizing a total cost at which a proposed product with specified functionality and quality must be produced in order to generate the desired profitability at its anticipated selling price over a specified period of time in the future.”

**The Institute of Management Accountants (IMA):** “Target costing is a cost management tool used to reduce product costs by considering the desired profit margin and the price that customers are willing to pay, with a focus on the product’s life cycle costs. It involves setting cost targets, conducting value engineering, and managing costs throughout the product’s development and production phases.”

**The Japan Institute of Cost Management (JICM):** “Target costing is a management approach that aims to systematically determine the cost of a product by analyzing its functions, features, and customer requirements, and setting a target cost based on the selling price and desired profit margin. It involves cross-functional collaboration and continuous monitoring of costs to achieve the target cost.”

These definitions highlight the key elements of target costing, including determining the target cost based on customer price expectations and desired profit margin, conducting value engineering to achieve cost reductions, and actively managing costs throughout the product’s life cycle. Target costing is a proactive approach that helps organizations design and produce products that are cost-effective while meeting customer requirements and profitability objectives.

### **Features of Target Costing**

The features of target costing include the following:

1. **Customer-Oriented:** Target costing places a strong emphasis on understanding

and meeting customer needs and expectations. It starts with market research to determine the price customers are willing to pay for a product. The target cost is derived from this price, ensuring that the product is priced competitively in the market.

2. **Profit-Driven:** Target costing aims to achieve a desired profit margin while considering customer price expectations. It aligns cost management with profit goals, helping companies maintain profitability even in competitive markets.
3. **Early Cost Management:** Target costing is applied during the early stages of product development. By setting cost targets upfront, companies can make informed decisions about product design, production processes, and supply chain management to achieve the target cost. This proactive approach helps avoid cost overruns during later stages.
4. **Cross-Functional Collaboration:** Target costing involves collaboration among different departments and functions within an organization. Design, engineering, production, purchasing, and other relevant teams work together to identify cost-saving opportunities and implement them throughout the product life cycle.
5. **Value Engineering:** Value engineering is a core component of target costing. It involves analyzing the product design, features, and processes to identify areas where costs can be reduced without sacrificing quality or customer value. Value engineering aims to optimize costs while preserving the functionality and performance of the product.
6. **Continuous Monitoring:** Target costing requires ongoing monitoring of costs to ensure they align with the target cost. Companies track actual costs against the target, identify deviations, and take corrective actions as necessary. This ensures that cost management efforts are maintained throughout the product's life cycle.
7. **Cost Transparency:** Target costing promotes cost transparency by making cost information visible and accessible to relevant stakeholders. This helps in



decision-making, identifying cost drivers, and fostering a cost-conscious culture within the organization.

By incorporating these features, target costing enables organizations to manage costs effectively, deliver value to customers, and achieve desired profitability in a competitive marketplace.

### **Objectives of Target costing**

The objectives of target costing can be summarized as follows:

1. **Cost-Effective Product Development:** One of the primary objectives of target costing is to develop products that are cost-effective from the early stages of the product development process. By setting cost targets based on customer price expectations and desired profit margins, companies can design products that can be produced at a target cost while still meeting customer requirements.
2. **Profitability and Competitiveness:** Target costing aims to ensure that products are priced competitively in the market while maintaining the desired profit margins. By aligning cost management with profit goals, companies can enhance their competitiveness by offering products that meet customer expectations at an optimal cost.
3. **Customer Value and Satisfaction:** Target costing emphasizes understanding and meeting customer needs and expectations. By conducting market research and setting cost targets based on customer price expectations, companies can deliver products that provide value to customers and enhance customer satisfaction.
4. **Cost Reduction and Efficiency:** Target costing promotes cost reduction and efficiency throughout the product's life cycle. Through value engineering and cross-functional collaboration, companies identify cost-saving opportunities in product design, production processes, and supply chain management. This leads to more efficient operations and cost reductions without compromising product quality.

5. **Proactive Cost Management:** Target costing enables proactive cost management by setting cost targets early in the product development process. It helps companies avoid cost overruns and allows for informed decision-making regarding design, sourcing, and manufacturing processes. By managing costs from the outset, companies can better control expenses and achieve cost-effective outcomes.
6. **Continuous Improvement:** Target costing encourages continuous improvement in cost management practices. By monitoring costs and comparing them to the target cost, companies can identify deviations and implement corrective actions. This ongoing monitoring and improvement process leads to greater efficiency, cost savings, and overall performance improvement.
7. **Collaborative Decision-Making:** Target costing fosters collaboration and cross-functional decision-making. It brings together different departments, such as design, engineering, production, and purchasing, to jointly work towards cost reduction goals. This collaborative approach ensures that cost considerations are integrated into all stages of the product development and production process.

By pursuing these objectives, target costing helps organizations optimize costs, deliver value to customers, enhance profitability, and achieve a competitive advantage in the marketplace.

### **Advantages of Target costing**

Target costing offers several advantages for organizations. Some of the key advantages include:

1. **Cost Management from the Early Stages:** Target costing enables cost management to be integrated into the product development process from its early stages. By setting cost targets based on customer price expectations, companies can make informed decisions about product design, features, and processes that help achieve the target cost. This proactive approach helps avoid costly redesigns and rework in later stages.

2. **Enhanced Profitability:** By aligning cost management with profit goals, target costing helps companies maintain desired profit margins. It ensures that products are priced competitively in the market while still meeting customer expectations. The focus on cost-effective design and production processes contributes to improved profitability.
3. **Customer-Focused Product Development:** Target costing emphasizes understanding and meeting customer needs and expectations. By conducting market research and setting cost targets based on customer price expectations, companies can develop products that provide value to customers. This customer-centric approach enhances customer satisfaction and loyalty.
4. **Cost Reduction and Efficiency:** Target costing promotes cost reduction and efficiency throughout the product life cycle. Through value engineering and cross-functional collaboration, companies identify and implement cost-saving opportunities. This leads to streamlined processes, optimized resource allocation, and improved operational efficiency.
5. **Competitive Advantage:** Target costing helps companies gain a competitive advantage in the market. By delivering cost-effective products that meet customer needs and offer value, organizations can differentiate themselves from competitors. The ability to offer competitive pricing while maintaining profitability enhances market position and customer perception.
6. **Collaboration and Teamwork:** Target costing encourages collaboration and teamwork among different departments and functions within an organization. It brings together design, engineering, production, and purchasing teams to jointly work towards cost reduction goals. This cross-functional collaboration fosters innovation, knowledge sharing, and improved decision-making.
7. **Continuous Improvement:** Target costing promotes a culture of continuous improvement in cost management practices. By monitoring costs and comparing them to the target cost, companies can identify areas for improvement and implement corrective actions. This ongoing evaluation and improvement process

lead to enhanced cost management capabilities and better performance over time.

Overall, target costing provides organizations with a structured and proactive approach to cost management, helping them develop cost-effective products, enhance profitability, satisfy customer needs, and gain a competitive edge in the market.

### **Key principles of Target Costing**

The key principles of target costing encompass the fundamental concepts and guidelines that guide the implementation and practice of target costing. These principles include:

1. **Customer Value Focus:** The primary principle of target costing is to focus on creating value for customers. It involves understanding customer needs, preferences, and price expectations. By aligning product features and quality with customer value, companies can develop products that customers are willing to pay for.
2. **Cost-Driven Design:** Target costing emphasizes designing products with cost considerations in mind from the early stages of development. It involves evaluating alternative designs, materials, and processes to achieve the desired functionality and quality at the target cost. Cost management is integrated into the design process to ensure cost-effective outcomes.
3. **Profitability Orientation:** Target costing aims to achieve the desired profit margins for the organization. It involves setting profit targets based on market conditions, return on investment expectations, and strategic goals. The target cost is derived by subtracting the desired profit from the target selling price, ensuring profitability is maintained.
4. **Cross-Functional Collabouration:** Target costing requires collabouration and coordination among different departments and functions within the organization. Design, engineering, production, and purchasing teams work together to identify cost-saving opportunities, exchange knowledge, and make informed decisions. This cross-functional collabouration ensures that cost considerations are integrated throughout the product life cycle.

5. **Value Engineering:** Value engineering is a key principle of target costing. It involves analyzing the functions and features of a product to identify areas where costs can be reduced without sacrificing customer value or quality. Value engineering promotes innovation, efficiency, and cost optimization.
6. **Continuous Cost Monitoring:** Target costing emphasizes continuous monitoring of costs throughout the product life cycle. Actual costs are compared to the target cost, and any deviations are identified and addressed promptly. This ongoing monitoring enables timely corrective actions and ensures that cost management efforts remain effective.
7. **Supplier Collaboration:** Target costing extends beyond the organization to involve collaboration with suppliers. Companies work closely with suppliers to identify cost-saving opportunities, negotiate favorable pricing, and improve supply chain efficiency. Supplier collaboration plays a crucial role in achieving target costs.

These principles guide the implementation of target costing and provide a framework for effective cost management, customer value creation, and profitability. By adhering to these principles, organizations can achieve cost-effective outcomes, deliver value to customers, and maintain a competitive edge in the marketplace.

### **Steps in Target Costing**

The target costing process typically involves the following steps:

1. **Market Research:** Companies conduct thorough market research to understand customer preferences, demands, and price expectations for a particular product or service.
2. **Target Price Determination:** Based on the market research, the company determines the target selling price for the product. This price is set based on factors such as competitive pricing, customer value perception, and the company's strategic objectives.

3. **Desired Profit Margin:** The company establishes its desired profit margin for the product, taking into account factors such as return on investment, market conditions, and overall business goals.
4. **Target Cost Calculation:** The target cost is calculated by subtracting the desired profit margin from the target selling price. This target cost represents the maximum cost that the company can incur to produce the product and still achieve its profit goals.
5. **Value Engineering:** Value engineering is used to identify ways to achieve the target cost. This involves analyzing the product design, production processes, and supply chain to identify cost-saving opportunities without compromising the product's quality or functionality. Value engineering often involves collaboration between cross-functional teams, including design, engineering, production, and purchasing.
6. **Cost Reduction Strategies:** Once cost-saving opportunities are identified through value engineering, the company implements various cost reduction strategies. This may involve redesigning the product, optimizing production processes, sourcing components or materials at lower costs, or negotiating better pricing with suppliers.
7. **Continuous Monitoring:** Throughout the product development and production phases, the company continually monitors costs to ensure they align with the target cost. Any deviations are addressed promptly, and adjustments are made as necessary.

The goal of target costing is to proactively manage costs during the product development phase, rather than reactively cutting costs after the product is already in production. By setting a target cost based on market expectations and profit goals, and by actively managing costs throughout the process, companies can enhance their competitiveness, maximize profitability, and deliver products that meet customer expectations while maintaining desired profit margins.

## **Difference between target costing and traditional costing**

Target costing and traditional costing are two different approaches to cost management. Here are the key differences between them:

### **1. Cost Focus:**

**Traditional Costing:** Traditional costing focuses on determining the actual costs incurred in the production process. It allocates costs based on predetermined cost drivers, such as direct labour hours or machine hours.

**Target Costing:** Target costing, on the other hand, focuses on determining the target cost for a product or service based on the desired profit margin and the price customers are willing to pay. It sets a cost target that aligns with customer expectations and profitability goals.

### **2. Timing:**

**Traditional Costing:** Traditional costing is typically applied after the product is developed and produced. It calculates costs based on actual expenses incurred during the production process.

**Target Costing:** Target costing is applied during the early stages of product development. It sets cost targets and guides the design and development process to achieve those targets. It is a proactive approach that aims to manage costs before they are incurred.

### **3. Cost Determination:**

**Traditional Costing:** Traditional costing uses historical data and actual costs to determine the costs of products or services. It may not consider customer price expectations or desired profit margins explicitly.

**Target Costing:** Target costing considers customer price expectations and desired profit margins when determining the cost of a product. It starts with the target selling price and deducts the desired profit margin to arrive at the target cost.

#### 4. **Cost Management Approach:**

**Traditional Costing:** Traditional costing focuses on cost control and cost reduction after the costs are incurred. It may involve cost variance analysis and cost-cutting measures to improve profitability.

**Target Costing:** Target costing takes a proactive cost management approach. It emphasizes cost management during the product development phase to achieve the target cost. Value engineering, collaboration, and continuous monitoring are used to identify cost-saving opportunities and manage costs throughout the product life cycle.

#### 5. **Customer Orientation:**

**Traditional Costing:** Traditional costing may not explicitly consider customer preferences and price expectations in cost determination.

**Target Costing:** Target costing is customer-oriented. It considers customer price expectations and focuses on creating value for customers while maintaining profitability. Customer needs and preferences guide the cost management decisions.

The key distinction between target costing and traditional costing lies in their approach to cost management. Traditional costing looks at actual costs incurred, while target costing proactively sets cost targets based on customer value and desired profit margins. Target costing aims to align costs with customer expectations and achieve cost-effective outcomes throughout the product life cycle.

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## 18.4 SUMMARY

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In conclusion, target costing is a cost management approach that aims to develop cost-effective products while meeting customer expectations and maintaining desired profit margins. It involves setting a target cost based on customer price expectations and desired profitability, and then managing costs throughout the product development and production phases to achieve the target cost. Key principles of target costing include a focus on customer value, cost-driven design, profitability orientation, cross-



functional collaboration, value engineering, continuous cost monitoring, and supplier collaboration.

Target costing offers several advantages for organizations, including early cost management, enhanced profitability, customer-focused product development, cost reduction and efficiency, competitive advantage, collaboration and teamwork, and continuous improvement. By implementing target costing, companies can optimize costs, deliver value to customers, enhance profitability, and gain a competitive edge in the marketplace.

Overall, target costing provides a structured and proactive approach to cost management, guiding organizations in developing cost-effective products, meeting customer needs, and achieving profitability goals. It fosters collaboration, innovation, and continuous improvement, making it a valuable tool for organizations seeking to optimize costs and create value for their customers.

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## 18.5 GLOSSARY

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- **Target Cost:** The target cost is the cost at which a product or service must be produced to meet the desired profit margin at the target selling price. It is derived by subtracting the desired profit margin from the target selling price.
- **Target Selling Price:** The target selling price is the price at which a product or service is expected to be sold in the market. It is determined based on market research, customer price expectations, and competitive factors.
- **Value Engineering:** Value engineering involves analyzing the functions, features, and processes of a product or service to identify areas where costs can be reduced without sacrificing customer value or quality. It aims to optimize costs while maintaining or improving performance.
- **Design to Cost:** Design to cost is an approach that focuses on designing products or services with cost considerations in mind from the early stages of development. It involves designing for cost efficiency without compromising customer value.
- **Cost Target:** The cost target is the specific cost that a company aims to achieve

for a product or service. It is usually set based on the target selling price, desired profit margin, and cost structure analysis.

- **Cost Driver:** A cost driver is a factor that influences or affects the cost of a product or service. It can be a specific activity, process, or resource that directly or indirectly contributes to the costs incurred.
- **Cost Reduction Opportunities:** These are opportunities or areas identified within a product or service where costs can be reduced without compromising quality or customer value. These opportunities are typically identified through value engineering analysis, process improvement, or supplier collaboration.
- **Life Cycle Costing:** Life cycle costing involves considering all costs associated with a product or service throughout its entire life cycle, including the initial development, production, distribution, usage, and disposal phases. It provides a comprehensive view of costs and helps in making informed decisions to manage costs effectively.
- **Cost Management:** Cost management refers to the process of planning, controlling, and optimizing costs throughout the product or service life cycle. It involves setting cost targets, monitoring actual costs, identifying cost-saving opportunities, and implementing strategies to achieve cost-effective outcomes.
- **Supplier Collaboration:** Supplier collaboration involves working closely with suppliers to identify cost-saving opportunities, negotiate favorable pricing, and improve supply chain efficiency. It aims to optimize costs and enhance value throughout the supply chain.

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## 18.6 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of Target costing.

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Q.2 Discuss the features of Target costing.

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### 18.7 LESSON END EXERCISE

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Q.1 Discuss the various steps in the implementation of Target costing.

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Q.2 Explain the various objectives of Target costing.

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### 18.8 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal. D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

## **THEORY OF CONSTRAINTS AND THROUGHPUT ACCOUNTING**

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**M.COM III SEM  
MCOMC354**

**UNIT- IV  
LESSON - 19**

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### **VALUE ENGINEERING, TARGET COSTING AND KAIZEN COSTING**

#### **STRUCTURE:**

- 19.1 Introduction
- 19.2 Objectives
- 19.3 Value Engineering
- 19.4 Kaizen Costing
- 19.5 Target Costing and Kaizen Costing
- 19.6 Summary
- 19.7 Glossary
- 19.8 Self Assessment Questions
- 19.9 Lesson End Exercise
- 19.10 Suggested Readings

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#### **19.1 INTRODUCTION**

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Value Engineering (VE) or Value Analysis (VA) is an important and powerful approach for improvement in the performance of the products, systems or procedures and reduction in costs without jeopardising their function. The terms VE and VA are used almost interchangeably. Other terms used to convey the same concepts are Value

Assurance and Value Management (VM). L.D. Miles defined Value Analysis in his book *Techniques of Value Analysis and Engineering* (1961) as “an organised creative approach which has for its purpose the efficient identification of unnecessary cost i.e., cost which provides neither quality, nor use, nor life, nor appearance, nor customer features”. Various other definitions are proposed such as “an organised systematic study of the function of a material, component, product or service, with the objective of yielding value improvement through the ability to accomplish the desired function at the lowest cost without degradation in quality”. Thus the basic objective of VE/VA is to achieve equivalent or better performance at a lower cost while maintaining all functional and quality requirements. It does this largely by identifying and eliminating hidden, invisible and unnecessary costs. We may simply perceive VE as the systematic application of recognised techniques to identify the functions of a product or service and provide those functions at the lowest total cost. Value Engineering should not be treated as a mere cost reduction technique or cheapening of the product. It is more comprehensive and the improvement in value is attained without any sacrifice in quality, reliability, maintainability, availability, aesthetics, etc. It was traditionally applied in the area of hardware projects, such as product design, though these concepts are equally applicable in software projects, in the systems and procedures. Recently these concepts have been applied to nontraditional areas ` such as urban slum development programmes, staff welfare motivation enhancement and courtesy improvement plans.

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## **19.2 OBJECTIVES**

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After going through this lesson, students will be able to understand:

- The basics of value engineering.
- The features, principles, objectives of value engineering.
- The comparison between target costing and kaizen costing.

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## **19.3 VALUE ENGINEERING**

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Value engineering is a systematic and structured approach used to improve the value of a product, project, or process while reducing costs. It involves analyzing and

evaluating the various components and functions of the subject in order to identify opportunities for improvement.

The primary objective of value engineering is to achieve the desired functionality, quality, and performance of a product or project at the lowest possible cost. It focuses on eliminating unnecessary expenses, reducing waste, and optimizing resources without compromising the intended purpose or customer satisfaction. Value engineering is a widely recognized concept that has been defined by various experts in the field. Here are a few definitions provided by experts:

SAVE International (Society of American Value Engineers): “Value engineering is a systematic method to improve the ‘value’ of goods, products or services through an examination of the function. Value, as defined, is the ratio of function to cost.”

Lawrence D. Miles: “Value engineering is the systematic application of recognized techniques by a multi-disciplinary team, aimed at analyzing function and reducing cost while maintaining or improving performance, quality, reliability, and safety.”

Institute of Value Management (IVM): “Value engineering is an organized effort, by a multidisciplinary team, to analyze functions of systems, equipment, facilities, services, and supplies for the purpose of achieving essential functions at the lowest life cycle cost consistent with required performance, reliability, quality, and safety.”

These definitions emphasize the systematic and multidisciplinary nature of value engineering, where the focus is on analyzing functions, reducing costs, and optimizing performance. The goal is to achieve the desired outcomes and functionality while maximizing value and minimizing expenses. Value engineering is an iterative process that involves collaboration, analysis, creativity, and evaluation to identify and implement improvements.

### **History of Value Engineering**

The history of value engineering can be traced back to the late 1940s in the United States. Here is a brief overview of its key milestones:

1. **World War II:** The origins of value engineering can be traced to the industrial

and production efforts during World War II. As resources became scarce, engineers and manufacturers were forced to find innovative ways to meet the demands of the war effort while conserving materials and reducing costs.

2. **General Electric (GE) and Lawrence Miles:** The formal concept of value engineering began to take shape in the late 1940s. Lawrence D. Miles, an engineer at General Electric, developed and implemented a structured methodology for cost reduction and value enhancement, which he called “value analysis.” His work at GE helped establish the foundation of value engineering.
3. **Society of American Value Engineers (SAVE):** In 1959, the Society of American Value Engineers (SAVE) was founded in the United States. SAVE aimed to promote the practice and advancement of value engineering by providing a platform for knowledge exchange, professional development, and certification.
4. **Government adoption:** The U.S. government recognized the potential benefits of value engineering and started incorporating it into various infrastructure projects. The Federal-Aid Highway Act of 1961 required the use of value engineering on federally funded highway construction projects.
5. **Expansion across industries:** Over time, the application of value engineering expanded beyond the construction and manufacturing sectors. It began to be applied in areas such as aerospace, defense, healthcare, information technology, and service industries to optimize costs, improve efficiency, and enhance value.
6. **International spread:** The practice of value engineering spread beyond the United States and gained international recognition. Value engineering societies and associations were established in various countries, promoting the adoption and advancement of value engineering globally.
7. **Methodological enhancements:** Over the years, the methodology and techniques of value engineering have evolved and improved. Various tools, frameworks, and software applications have been developed to support the implementation of value engineering, facilitating more effective analysis and decision-making.

Today, value engineering is widely practiced across industries and sectors worldwide. It continues to evolve and adapt to meet the changing demands of organizations seeking to optimize costs, enhance value, and improve the performance of their products, projects, and processes.

### **Basics of Value Engineering**

The basics of value engineering involve a systematic and structured approach to improving the value of a product, project, or process. Here are the key elements involved:

1. **Understand the objectives:** Clearly define the objectives of the product, project, or process. This includes identifying the desired functionality, performance requirements, quality standards, and any other relevant criteria.
2. **Form a value engineering team:** Assemble a multidisciplinary team comprising individuals with diverse expertise and perspectives. This may include engineers, designers, cost estimators, project managers, and other stakeholders.
3. **Gather information:** Collect all available information about the subject under consideration. This includes technical specifications, drawings, cost data, performance data, customer requirements, and any other relevant information.
4. **Analyze functions:** Break down the subject into its individual functions, components, or processes. Analyze the purpose and requirements of each function to determine their importance and contribution to the overall value.
5. **Generate ideas:** Encourage creative thinking within the team to generate alternative ideas, concepts, or designs. Brainstorm potential improvements or alternatives that could enhance value, reduce costs, or improve performance.
6. **Evaluate alternatives:** Assess the feasibility, benefits, risks, and trade-offs associated with each alternative. Consider factors such as cost, performance, reliability, safety, and environmental impact. Use tools like cost-benefit analysis, risk analysis, and lifecycle costing to evaluate and compare options.



7. **Develop solutions:** Refine and develop the most promising alternatives into practical solutions. This may involve further analysis, prototyping, simulations, or testing to validate the effectiveness and viability of the proposed improvements.
8. **Implement changes:** Incorporate the recommended changes into the product, project, or process. Ensure effective communication and collaboration with relevant stakeholders to facilitate smooth implementation.
9. **Monitor and measure:** Continuously monitor and measure the performance of the implemented improvements. Evaluate whether the desired outcomes and expected value have been achieved. Make any necessary adjustments or refinements to further enhance value if needed.

Throughout the value engineering process, it's essential to maintain open communication, encourage collaboration, and consider various perspectives. The goal is to achieve the desired functionality, quality, and performance at the lowest possible cost while satisfying customer requirements and maximizing value.

### **Features of Value Engineering**

Value engineering possesses several key features that distinguish it as a unique approach to improving value and reducing costs. Here are some notable features of value engineering:

1. **Systematic approach:** Value engineering follows a systematic and structured approach, involving a series of defined steps and processes. It emphasizes the use of proven techniques and methodologies to analyze and enhance value systematically.
2. **Multidisciplinary collaboration:** Value engineering involves the participation of a diverse team comprising professionals from various disciplines. This multidisciplinary approach brings together different perspectives and expertise to generate innovative ideas and solutions.
3. **Focus on function:** Value engineering emphasizes the examination and analysis of the functions performed by a product, project, or process. It seeks to

understand the essential functions and identify ways to improve their performance, efficiency, or effectiveness.

4. **Cost optimization:** One of the primary objectives of value engineering is to reduce costs without compromising functionality, quality, or performance. It aims to identify cost-saving opportunities, eliminate waste, and optimize the use of resources.
5. **Creativity and innovation:** Value engineering encourages creative thinking and fosters an environment that promotes innovative ideas. It challenges participants to think beyond conventional solutions and explore new approaches to enhance value.
6. **Stakeholder involvement:** Value engineering recognizes the importance of involving relevant stakeholders throughout the process. It seeks input from end-users, customers, suppliers, and other key stakeholders to ensure their requirements and perspectives are considered.
7. **Continuous improvement:** Value engineering is an iterative process that promotes continuous improvement. It involves monitoring and evaluating the implemented changes to assess their effectiveness and identify further opportunities for value enhancement.
8. **Lifecycle perspective:** Value engineering takes a holistic view, considering the entire lifecycle of a product, project, or process. It examines the long-term costs, benefits, and impacts associated with various alternatives to make informed decisions.
9. **Data-driven analysis:** Value engineering relies on data and factual information to support decision-making. It involves collecting and analyzing relevant data, including cost data, performance data, market research, and other quantitative and qualitative information.

By embodying these features, value engineering helps organizations identify and implement cost-effective improvements that enhance value, increase efficiency, and meet stakeholder requirements.

## Steps Involved in Value Engineering

The value engineering process typically involves the following steps:

1. **Information gathering:** Collecting relevant data and information about the product, project, or process under consideration.
2. **Analysis:** Evaluating the various components, functions, and requirements to identify areas that can be improved or optimized.
3. **Creativity:** Generating alternative ideas, concepts, or designs that could enhance value while reducing costs.
4. **Evaluation:** Assessing the potential benefits, risks, and feasibility of the proposed alternatives.
5. **Development:** Refining and developing the most promising alternatives into workable solutions.
6. **Implementation:** Incorporating the recommended changes into the product, project, or process.
7. **Monitoring:** Continuously monitoring and measuring the performance of the implemented improvements to ensure they deliver the expected value.

Value engineering is commonly used in construction, manufacturing, and other industries where cost optimization and value enhancement are critical. It is often applied during the design phase of a project or product development, but it can also be used to identify improvements in existing processes or systems.

By applying value engineering techniques, organizations can achieve cost savings, improve efficiency, enhance functionality, and increase customer satisfaction. It promotes a systematic and collaborative approach that involves cross-functional teams, including engineers, designers, cost estimators, and other stakeholders, to identify and implement value-enhancing solutions.

## Advantages of value engineering

Value engineering offers several advantages to organizations and projects. Here are some key advantages:

1. **Cost savings:** Value engineering is primarily aimed at reducing costs while maintaining or improving functionality and performance. By analyzing the functions, materials, and processes involved, it helps identify areas where costs can be optimized, waste can be eliminated, and resources can be used more efficiently.
2. **Improved value for money:** Value engineering ensures that the desired value is achieved at the lowest possible cost. It helps organizations maximize the benefits and outcomes obtained from their investments by identifying alternatives and improvements that enhance value without compromising quality or performance.
3. **Enhanced functionality and performance:** Value engineering focuses on understanding the functions and requirements of a product, project, or process. By analyzing these functions, it helps identify opportunities for improving performance, reliability, efficiency, safety, and other desired attributes.
4. **Innovation and creativity:** Value engineering encourages creative thinking and the exploration of alternative solutions. It fosters an environment that promotes innovation, enabling teams to generate new ideas, concepts, and designs that can lead to breakthrough improvements and advancements.
5. **Stakeholder satisfaction:** By considering the perspectives and requirements of various stakeholders, value engineering ensures that their needs and expectations are addressed. This leads to improved customer satisfaction, stakeholder engagement, and overall project success.
6. **Risk mitigation:** Value engineering helps identify and mitigate potential risks associated with a product, project, or process. By evaluating alternatives and analyzing their potential impacts, it enables organizations to make informed decisions and proactively address risks, thereby minimizing the likelihood of costly issues or failures.

7. **Time savings:** Value engineering can streamline processes and eliminate unnecessary steps, resulting in time savings. By identifying more efficient methods, workflows, or designs, it can help expedite project timelines and reduce delays.
8. **Continuous improvement culture:** Value engineering promotes a culture of continuous improvement within organizations. By emphasizing the evaluation and enhancement of value, it encourages teams to consistently seek opportunities for improvement, leading to ongoing innovation and efficiency gains.
9. **Cross-functional collaboration:** Value engineering involves collaboration among professionals from different disciplines and departments. This cross-functional collaboration promotes knowledge sharing, synergy, and a holistic approach to problem-solving, resulting in more comprehensive and effective solutions.

Overall, value engineering provides organizations with a structured approach to optimize costs, enhance value, improve performance, and foster innovation. It offers a range of advantages that can contribute to increased competitiveness, improved project outcomes, and long-term success.

### **Limitations of Value engineering**

While value engineering offers several advantages, it is important to consider its limitations. Here are some limitations of value engineering:

1. **Focus on cost reduction:** While cost reduction is a primary objective of value engineering, it can sometimes lead to a narrow focus on minimizing expenses. This singular focus on cost may overlook other important factors such as quality, sustainability, and long-term value creation.
2. **Potential trade-offs:** In the pursuit of cost savings or value enhancement, there may be trade-offs involved. For example, reducing costs in one area may result in compromises in other areas such as performance, durability, or user experience. It is essential to carefully evaluate and balance these trade-offs to ensure overall value is optimized.

3. **Time and resource constraints:** Implementing value engineering can require significant time, effort, and resources. Organizations may face limitations in terms of available resources, project timelines, or expertise. This can impact the thoroughness and effectiveness of the value engineering process.
4. **Resistance to change:** Value engineering often involves proposing changes to existing designs, processes, or established ways of doing things. Resistance to change from stakeholders or team members can hinder the successful implementation of value engineering recommendations.
4. **Subjectivity in evaluation:** Evaluating the value of different alternatives or improvements can involve subjective judgments and assessments. Different stakeholders may have varying perspectives and priorities, leading to differing opinions on what constitutes the most valuable solution.
5. **Limited application during later project stages:** Value engineering is typically more effective when applied during the early stages of a project or product development. As a project progresses and decisions become more fixed, the potential for major changes or cost savings may diminish.
6. **Lack of customer input:** In some cases, value engineering may not adequately incorporate customer input and preferences. The focus on cost reduction and technical analysis may overlook important aspects of customer satisfaction and user experience.
7. **Potential reduction in innovation:** While value engineering promotes optimization and efficiency, it may not always encourage radical innovation or breakthrough ideas. The emphasis on cost reduction and incremental improvements may limit the exploration of truly transformative solutions.

To overcome these limitations, it is important to apply value engineering in a balanced and holistic manner. Organizations should consider multiple perspectives, engage stakeholders, and carefully evaluate the trade-offs involved to ensure the best overall value is achieved.

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## 19.4 KAIZEN COSTING

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Kaizen costing is a cost management technique that focuses on continuous improvement and cost reduction through small, incremental changes over time. It is closely associated with the philosophy of kaizen, which emphasizes the concept of continuous improvement in all aspects of an organization.

The primary goal of kaizen costing is to identify and eliminate waste, inefficiencies, and non-value-added activities in processes, operations, and systems. It aims to achieve cost savings and improve productivity while maintaining or enhancing product quality and customer satisfaction. Kaizen costing is a cost management approach that has been defined by various experts in the field. Here are a few definitions from experts:

**H. William Dettmer**, author of “Strategic Navigation: A Systems Approach to Business Strategy”: “Kaizen costing is a cost management philosophy that views every aspect of cost as a potential target for reduction, focusing on incremental, continuous improvement rather than large, one-time cost savings.”

**David J. Sumanth and Srikanth Natarajan**, authors of “Product Cost Controlling with SAP”: “Kaizen costing is an approach to continually reducing costs through small, incremental improvements in processes and operations. It involves the active participation of employees at all levels of the organization and emphasizes the elimination of waste and non-value-added activities.”

**John Hawken and Robin Cooper**, authors of “Strategic Cost Management: The New Tool for Competitive Advantage”: “Kaizen costing involves continuous improvement and cost reduction through small, ongoing changes. It is a participative approach that encourages employees to contribute ideas for cost savings and efficiency improvements in their respective areas of work.”

**Hiroshi Osada**, author of “Target Costing and Value Engineering”: “Kaizen costing is a technique that systematically analyzes processes, operations, and activities to identify areas of cost improvement. It focuses on small, incremental changes that can be implemented quickly and easily, leading to continuous cost reductions.”

These definitions highlight the key aspects of kaizen costing, which include its incremental nature, employee involvement, focus on waste reduction, and continuous improvement philosophy. Kaizen costing aims to achieve sustained cost savings and operational excellence by making small, continuous improvements throughout the organization.

### **Features of Kaizen Costing**

The features of kaizen costing include the following:

1. **Continuous improvement:** Kaizen costing is based on the principle of continuous improvement. It emphasizes making ongoing, small-scale improvements to processes, operations, and activities to achieve cost reduction and efficiency enhancement. This approach recognizes that small changes, when accumulated over time, can lead to significant improvements.
2. **Small, incremental changes:** Kaizen costing focuses on making small, manageable changes rather than large-scale transformations. It encourages employees to identify and implement small improvements in their daily work processes that contribute to cost reduction, waste elimination, and efficiency enhancement.
3. **Employee involvement:** Kaizen costing promotes a bottom-up approach to improvement, encouraging active employee involvement at all levels of the organization. Employees are encouraged to contribute ideas, suggestions, and feedback related to cost reduction and process improvement. This involvement fosters a sense of ownership and empowers employees to drive change and contribute to the organization's success.
4. **Waste reduction:** Waste elimination is a fundamental aspect of kaizen costing. It aims to identify and eliminate various forms of waste, such as overproduction, excess inventory, waiting time, unnecessary motion, defects, and unnecessary processing. By reducing waste, organizations can improve efficiency, reduce costs, and enhance value for customers.



5. **Data-driven decision-making:** Kaizen costing emphasizes the use of data and objective measurements to drive decision-making. It involves analyzing data related to costs, processes, and performance to identify improvement areas, set improvement targets, and measure the effectiveness of implemented changes. Data-driven decision-making ensures that improvement efforts are based on reliable information and facts.
6. **Cross-functional collaboration:** Successful implementation of kaizen costing requires collaboration and cooperation among different departments and teams within the organization. Cross-functional teams are formed to identify improvement opportunities, share knowledge and expertise, and implement changes that cut across functional boundaries. This collaboration helps to break down silos and ensures a holistic approach to cost reduction and process improvement.
7. **Continuous training and learning:** Kaizen costing promotes a learning culture within the organization. Continuous training and skill development are provided to employees to enhance their problem-solving abilities, encourage innovation, and support their active participation in the improvement process. Training programs focus on developing skills related to process analysis, waste identification, data analysis, and improvement methodologies.

By embracing these features, organizations can leverage kaizen costing to drive continuous improvement, reduce costs, eliminate waste, and enhance overall operational efficiency. It fosters a culture of ongoing improvement and empowers employees to contribute to the organization's success through small, meaningful changes.

### **Key Principles of Kaizen Costing**

1. **Small incremental changes:** Kaizen costing emphasizes making small, manageable improvements rather than large-scale transformations. It encourages employees at all levels to identify and implement small changes in their work processes that lead to cost reduction and efficiency improvement.
2. **Employee involvement:** Kaizen costing promotes a bottom-up approach to continuous improvement, encouraging active employee involvement. Employees

are empowered to identify improvement opportunities, provide suggestions, and participate in the implementation of cost-saving initiatives.

3. **Continuous improvement cycle:** Kaizen costing follows a continuous improvement cycle known as the PDCA (Plan-Do-Check-Act) cycle. This iterative process involves planning for improvements, implementing changes, monitoring the results, and acting upon feedback to further refine and sustain the improvements.
4. **Waste reduction:** Kaizen costing aims to eliminate various types of waste, such as overproduction, excess inventory, unnecessary motion, waiting time, defects, and unnecessary processing. By identifying and eliminating waste, organizations can achieve cost savings and improve efficiency.
5. **Cross-functional collaboration:** Successful implementation of kaizen costing requires collaboration and cooperation among different departments and teams within the organization. Cross-functional teams are formed to identify improvement opportunities, share knowledge, and implement changes that cut across functional boundaries.
6. **Data-driven decision-making:** Kaizen costing emphasizes the use of data and objective measurements to drive decision-making. By analyzing data related to processes, costs, and performance, organizations can identify improvement areas, set improvement targets, and measure the effectiveness of implemented changes.
7. **Continuous training and learning:** Kaizen costing promotes a learning culture within the organization. Continuous training and skill development are provided to employees to enhance their problem-solving abilities, encourage innovation, and support their active participation in the improvement process.

By implementing kaizen costing, organizations can achieve ongoing cost reduction, improved productivity, enhanced quality, and increased customer satisfaction. It fosters a culture of continuous improvement and empowers employees to contribute to the organization's success by identifying and implementing small, meaningful changes that lead to sustained cost savings and operational excellence.

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## 19.5 TARGET COSTING AND KAIZEN COSTING

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Here's a comparison between target costing and kaizen costing:

### 1. Focus:

**Target Costing:** Target costing focuses on setting a specific target cost for a product or project based on the desired profit margin and the price customers are willing to pay. It aims to design and develop products that meet customer expectations while achieving the target cost.

**Kaizen Costing:** Kaizen costing focuses on continuous improvement and cost reduction over time. It involves identifying and implementing small, incremental changes to processes, operations, and activities to achieve gradual cost savings and efficiency improvements.

### 2. Timing:

**Target Costing:** Target costing is typically applied during the early stages of product development or design, before the product is introduced to the market. It helps guide decisions about design, features, and costs to meet the target cost.

**Kaizen Costing:** Kaizen costing is an ongoing process that can be applied throughout the entire product lifecycle. It emphasizes continuous improvement and encourages employees to identify cost-saving opportunities and make small improvements in their daily work.

### 3. Approach:

**Target Costing:** Target costing takes a proactive approach to cost management by setting a predetermined cost target. It involves analyzing costs and identifying areas where costs can be reduced or controlled without sacrificing customer value.

**Kaizen Costing:** Kaizen costing takes a more reactive approach by continuously seeking opportunities for cost reduction and improvement. It encourages employees to identify waste, inefficiencies, and improvement areas in their work processes and implement changes accordingly.

#### **4. Scope:**

**Target Costing:** Target costing focuses on overall product cost management, considering the cost of materials, manufacturing, distribution, and other related factors.

**Kaizen Costing:** Kaizen costing focuses on incremental cost reduction and process improvement within specific areas or processes of the organization. It typically involves cross-functional collaboration to identify and implement improvements.

#### **5. Application:**

**Target Costing:** Target costing is commonly used in the design and development of new products or projects. It helps guide decisions about product features, materials, and manufacturing processes to achieve the target cost.

**Kaizen Costing:** Kaizen costing can be applied to various areas of the organization, including manufacturing, operations, supply chain, and administrative processes. It is applicable to ongoing operations and encourages employees to continuously look for cost-saving opportunities.

#### **6. Emphasis:**

**Target Costing:** Target costing emphasizes the alignment of costs with customer value. It focuses on designing products that meet customer expectations while achieving the desired profit margin.

**Kaizen Costing:** Kaizen costing emphasizes the continuous improvement of processes and operations. It aims to eliminate waste, improve efficiency, and reduce costs while maintaining or enhancing quality.

In summary, target costing and kaizen costing are both cost management techniques but differ in their focus, timing, approach, scope, and application. Target costing is applied during product development to achieve a predetermined cost target, while kaizen costing is an ongoing process of incremental cost reduction and continuous improvement throughout the organization.

## **Case Study of Kaizen Costing**

### **Case Study: Kaizen Costing Implementation at XYZ Manufacturing Company**

**Introduction:** XYZ Manufacturing Company is a medium-sized company specializing in the production of automotive components. In an effort to improve efficiency, reduce costs, and increase competitiveness, the company decided to implement Kaizen costing principles across its operations. This case study examines the application of Kaizen costing and its impact on XYZ Manufacturing Company.

**Background:** Prior to the implementation of Kaizen costing, XYZ Manufacturing Company faced several challenges. The company's costs were relatively high, resulting in reduced profit margins and decreased competitiveness in the market. In addition, the production processes were not as streamlined as they could be, leading to inefficiencies and waste.

**Implementation of Kaizen Costing:** To address these challenges, XYZ Manufacturing Company decided to adopt Kaizen costing principles. The company formed a dedicated cross-functional team consisting of members from various departments, including production, engineering, finance, and quality control. The team was responsible for identifying and implementing cost-saving opportunities throughout the organization.

**Identification of Cost Reduction Opportunities:** The cross-functional team conducted a thorough analysis of the company's operations, focusing on identifying areas of waste and inefficiency. They employed various tools and techniques such as value stream mapping, process flow analysis, and employee suggestion systems to gather data and insights. The team encouraged employees at all levels to contribute ideas for cost reduction.

**Prioritization and Implementation:** Based on the data and insights gathered, the team prioritized the identified cost reduction opportunities. They categorized the opportunities into short-term, medium-term, and long-term goals. Short-term goals focused on quick wins and immediate cost savings, while medium-term and long-term goals aimed at more significant process improvements.

**Employee Engagement and Training:** To ensure successful implementation, XYZ Manufacturing Company placed a strong emphasis on employee engagement and training. Employees at all levels were educated about the principles of Kaizen costing and its benefits. They were encouraged to actively participate in the continuous improvement process, providing feedback and suggestions.

**Monitoring and Evaluation:** Throughout the implementation process, XYZ Manufacturing Company established a robust monitoring and evaluation system. Key performance indicators (KPIs) were identified to measure the effectiveness of the cost reduction initiatives. Regular progress reviews were conducted, allowing the company to make adjustments as necessary and ensure the sustainability of the improvements.

**Results and Impact:** The implementation of Kaizen costing at XYZ Manufacturing Company yielded several positive outcomes:

**Cost Reduction:** The company experienced a significant reduction in costs across various areas, including material usage, labour, and overheads. By eliminating waste and optimizing processes, XYZ Manufacturing Company achieved higher operational efficiency and improved its profitability.

**Enhanced Productivity:** The streamlined processes and employee engagement resulted in increased productivity levels. Employees were empowered to contribute to process improvements and were motivated to identify and eliminate bottlenecks.

**Improved Quality:** The focus on continuous improvement and employee involvement led to improved product quality. Defect rates decreased, and customer satisfaction increased as a result.

**Sustainable Culture of Continuous Improvement:** The implementation of Kaizen costing helped establish a culture of continuous improvement within the organization. Employees became more proactive in identifying cost-saving opportunities and driving innovation.

**Conclusion:** The case study of XYZ Manufacturing Company demonstrates the successful implementation of Kaizen costing principles. By engaging employees,

prioritizing cost reduction opportunities, and monitoring progress, the company achieved significant cost savings, enhanced productivity, and improved product quality. Kaizen costing proved to be a valuable tool in driving continuous improvement and maintaining competitiveness in the market.

### **Case Study of Value Engineering**

#### **Case Study:** Value Engineering Implementation in Construction Project

**Introduction:** Value Engineering (VE) is a systematic approach that aims to optimize the value of a product, system, or process by analyzing its functions and reducing costs while maintaining or improving performance and quality. This case study examines the application of Value Engineering in a construction project to achieve cost savings and improve project outcomes.

**Background:** A large construction company, ABC Builders, was awarded a contract to construct a commercial building. The initial project budget was high, and the client had certain cost constraints. To meet the client's requirements while maintaining profitability, ABC Builders decided to implement Value Engineering throughout the project.

#### **Implementation of Value Engineering:**

**Multidisciplinary Team Formation:** ABC Builders assembled a team of professionals from various disciplines, including architects, engineers, project managers, contractors, and cost estimators. This cross-functional team brought diverse expertise to the project and collaborated to identify and implement value improvement opportunities.

**Function Analysis and Value Identification:** The team conducted a detailed function analysis to understand the project's goals, objectives, and client requirements. They identified the essential functions of each element of the building, focusing on its purpose and performance.

**Brainstorming and Idea Generation:** Through brainstorming sessions and collaborative workshops, the team generated a wide range of ideas to improve the project's value. They explored alternative materials, construction methods, and design

modifications that could potentially reduce costs while maintaining or enhancing the building's functionality and quality.

**Evaluation and Selection:** The team evaluated each generated idea based on criteria such as cost savings potential, impact on project schedule, constructability, maintainability, and sustainability. They shortlisted the most promising ideas for further analysis.

**Cost-Benefit Analysis:** For the shortlisted ideas, the team conducted a comprehensive cost-benefit analysis. They estimated the potential cost savings, evaluated the associated risks, and considered the impact on project performance and quality. This analysis helped prioritize the ideas that would deliver the greatest value to the project.

**Implementation and Monitoring:** The selected ideas were incorporated into the construction project. The team closely monitored the implementation process to ensure that the proposed changes were executed correctly and in compliance with safety regulations and building codes.

**Results and Impact:** The implementation of Value Engineering in the construction project led to several positive outcomes:

**Cost Reduction:** Value Engineering initiatives resulted in significant cost savings. By identifying cost-effective alternatives, optimizing material usage, and streamlining construction processes, ABC Builders reduced project expenses without compromising quality.

**Enhanced Functionality and Performance:** The focus on function analysis and value identification allowed the project team to identify opportunities to enhance the building's functionality and performance. This led to improved efficiency, energy savings, and increased occupant comfort.

**Improved Project Schedule:** Value Engineering helped streamline construction processes, reducing project duration and improving overall project schedule adherence. By identifying potential bottlenecks and proposing alternative solutions, the team optimized the construction timeline.



**Client Satisfaction:** ABC Builders successfully met the client's cost constraints while delivering a high-quality commercial building. The value improvements achieved through Value Engineering were aligned with the client's expectations and requirements, resulting in enhanced client satisfaction.

**Knowledge Transfer:** The implementation of Value Engineering fostered knowledge sharing and collaboration among project team members. The multidisciplinary team approach allowed professionals from different fields to exchange expertise and learn from each other, leading to improved problem-solving and decision-making capabilities.

**Conclusion:** The case study of ABC Builders demonstrates the successful application of Value Engineering in a construction project. By assembling a multidisciplinary team, conducting function analysis, generating and evaluating ideas, and implementing cost-effective solutions, the company achieved significant cost savings, improved functionality, and enhanced project outcomes. Value Engineering proved to be a valuable tool for optimizing value and meeting client requirements in the construction industry.

### **Case Study of Target Costing**

#### **Case Study: Target Costing Implementation in XYZ Electronics Company**

**Introduction:** Target costing is a strategic cost management approach that aims to determine the maximum allowable cost for a product based on the target selling price and desired profit margin. This case study examines the application of target costing in XYZ Electronics Company to improve cost efficiency, enhance competitiveness, and meet customer demands.

**Background:** XYZ Electronics Company is a leading manufacturer of consumer electronic devices. The company faced challenges in maintaining competitive pricing while ensuring profitability. To address these challenges and align with market demands, XYZ Electronics Company decided to implement target costing across its product development and manufacturing processes.

#### **Implementation of Target Costing:**

**Market Research and Customer Analysis:** XYZ Electronics Company conducted extensive market research to identify customer preferences, expectations, and price

sensitivity. They analyzed competitors' products and pricing strategies to gain insights into market dynamics and customer demands.

**Target Selling Price Determination:** Based on the market research findings, XYZ Electronics Company established a target selling price for the product. The target price was set to be competitive in the market while providing an acceptable profit margin for the company.

**Cross-Functional Team Formation:** A cross-functional team was formed, consisting of members from product design, engineering, manufacturing, procurement, and finance. The team worked collaboratively to achieve the target cost by considering cost reduction opportunities at each stage of the product's life cycle.

**Cost Breakdown and Analysis:** The team conducted a comprehensive cost breakdown analysis, identifying all cost elements associated with the product, including materials, labour, overheads, and other expenses. They examined each cost element in detail to identify areas where cost reductions could be achieved without compromising product quality or functionality.

**Design for Cost and Value Engineering:** Using the cost breakdown analysis, the team focused on design for cost and value engineering principles. They explored alternative design options, materials, and manufacturing processes that would help reduce costs while maintaining or enhancing the product's value and performance.

**Supplier Collaboration and Negotiation:** XYZ Electronics Company engaged with suppliers early in the product development process to seek their input and explore cost-saving opportunities. The team worked closely with suppliers to optimize material specifications, negotiate favorable pricing, and explore possibilities for joint value engineering initiatives.

**Cost Reduction and Control Measures:** The cross-functional team implemented various cost reduction measures identified through design improvements, process optimizations, and supplier collaboration. They established cost control mechanisms to monitor and track cost-saving initiatives throughout the product development and manufacturing phases.

## **Results and Impact:**

**Cost Reduction:** The implementation of target costing resulted in significant cost reductions across the product's life cycle. By systematically identifying and implementing cost-saving measures, XYZ Electronics Company achieved cost efficiencies without compromising product quality or performance.

**Enhanced Competitiveness:** The ability to offer products at competitive prices while maintaining profitability improved XYZ Electronics Company's competitiveness in the market. The target costing approach enabled the company to align its pricing strategy with customer expectations and market demands.

**Improved Profitability:** By setting a target selling price based on market research and implementing cost reduction measures, XYZ Electronics Company improved its profitability. The company achieved a balance between customer value and cost efficiency, resulting in sustainable profitability.

**Supplier Collaboration and Relationships:** The early engagement and collaboration with suppliers strengthened the relationships between XYZ Electronics Company and its suppliers. Supplier input and joint value engineering initiatives contributed to cost reduction and improved overall product quality.

**Customer Satisfaction:** The implementation of target costing allowed XYZ Electronics Company to offer products at competitive prices without compromising quality. This resulted in increased customer satisfaction and loyalty, as customers received value for their money.

**Conclusion:** The case study of XYZ Electronics Company highlights the successful implementation of target costing as a strategic cost management approach. By aligning target costs with the desired selling price and profit margin, the company achieved cost efficiencies, enhanced competitiveness, improved profitability,

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## **19.6 SUMMARY**

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In conclusion, value engineering and kaizen costing are two complementary cost

management approaches that organizations can employ to optimize costs, improve efficiency, and enhance value.

Value engineering is a systematic and structured approach that focuses on analyzing functions, processes, and materials to identify opportunities for cost reduction, value enhancement, and innovation. It is typically applied during the early stages of product development or project planning to ensure that the desired value is achieved at the lowest possible cost. Value engineering encourages cross-functional collaboration, stakeholder involvement, and data-driven decision-making to drive improvements and achieve cost savings while maintaining or improving functionality and performance.

Kaizen costing, on the other hand, is a continuous improvement approach that aims to make incremental cost reductions and efficiency improvements over time. It involves the identification of areas for improvement, the setting of improvement targets, and the implementation of small, manageable changes to achieve cost savings and enhance productivity. Kaizen costing promotes a culture of continuous improvement within the organization, empowering employees to contribute to cost reduction efforts and process optimization.

While value engineering primarily focuses on the early stages of product development and design, kaizen costing is an ongoing process that can be applied throughout the entire product lifecycle. Value engineering emphasizes the upfront analysis and optimization of costs, while kaizen costing encourages ongoing improvement and cost reduction through employee involvement and small-scale changes.

By combining value engineering and kaizen costing, organizations can benefit from a comprehensive cost management approach. Value engineering ensures that costs are optimized from the outset, while kaizen costing provides a continuous improvement framework to identify and implement incremental cost reductions and process improvements over time. Together, these approaches help organizations achieve cost efficiency, enhance value, and foster a culture of continuous improvement.

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## 19.7 GLOSSARY

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- **Brainstorming:** The process of generating creative ideas in a group by permitting free and uninhibited discussions among the team members.
- **Decision Matrix:** A technique of evaluating finite number of alternatives against a multiplicity of factors.
- **Esteem Value:** The properties, features or attractiveness which create a desire to possess the article.
- **FAST:** Function Analysis System Technique; it looks like a network representation of various basic and secondary functions showing their inter-relationships.
- **Function:** The term used to mean the purpose or use of a product. Function Analysis: A technique to describe function of a product or system using two words-a verb and a noun.
- **Function Cost Matrix:** A tool for identifying poor value areas by showing percentage importance of a function in a product and percentage cost spent in accomplishing that function.
- **Job Plan:** A systematic procedure consisting of seven phases to carry out a Value Engineering Project.
- **Value:** A composite of product quality and cost considerations expressed as a ratio of quality to cost.
- **Value Engineering (Value Analysis):** A systematic organised approach to determine the function of a product and system and find least cost ways of achieving it.
- **Value Index:** Ratio of relative importance of a function to its relative cost.
- **Vendor:** Supplier of materials, products or services who can play an effective role in cost reduction and value improvement.
- **Worth:** Relative importance of a function.

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## 19.8 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of Value engineering.

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Q.2 Discuss the features of Value engineering.

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## 19.9 LESSON END EXERCISE

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Q.1 Discuss the basics of Kaizen costing.

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Q.2 Compare and contrast Kaizen costing and Target costing.

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## 19.10 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
- Arora, M.N. *Cost and Management Accounting*. Himalaya Publishing House, New Delhi.
- Jain, S.P. and Narang, K.L. *Cost Accounting*. Kalayani Publishers, New Delhi.
- Sehgal, A. and Sehgal, D. *Advanced Accounting*. Taxmann, New Delhi.
- Gupta, R.L. *Advanced Cost Accounts*. Sultan Chand & Sons, New Delhi.
- Shukla, Grewal & Gupta. *Cost Accounts*. S. Chand, New Delhi.

## **THEORY OF CONSTRAINTS AND THROUGHPUT ACCOUNTING**

**M.COM III SEM  
MCOMC354**

**UNIT- IV  
LESSON - 20**

### **LIFE CYCLE COSTING AND VALUE CHAIN ANALYSIS**

#### **STRUCTURE:**

- 20.1 Introduction
- 20.2 Objectives
- 20.3 Life Cycle Costing
  - 20.3.1 Basics of Life Cycle Costing
  - 20.3.2 Features of Life Cycle Costing
  - 20.3.3 Process of Life Cycle Costing
  - 20.3.4 Benefits of Life Cycle Costing
  - 20.3.5 Limitations of Life Cycle Costing
- 20.4 Value Chain Analysis
- 20.5 Summary
- 20.6 Glossary
- 20.7 Self Assessment Questions
- 20.8 Lesson End Exercise
- 20.9 Suggested Readings

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#### **20.1 INTRODUCTION**

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Life cycle costing and value chain analysis are two essential tools used in business and financial management to assess the long-term costs and value creation associated

with a product, service, or project. Life cycle costing takes into account all costs incurred throughout the entire life cycle of a product or project, including its design, production, operation, maintenance, and disposal. By considering these costs over the product's entire lifespan, decision-makers can make more informed choices and allocate resources effectively.

On the other hand, value chain analysis focuses on understanding and analyzing the activities and processes that contribute to the creation of value for customers. It involves breaking down the entire value chain into individual steps or functions and examining how each step adds value to the final product or service. This analysis helps identify potential areas for cost reduction, process improvement, and value enhancement.

Together, life cycle costing and value chain analysis provide a comprehensive framework for evaluating the financial implications and overall performance of a product or project. By considering costs and value creation at each stage of the life cycle, organizations can make informed decisions, optimize resource allocation, and gain a competitive advantage in the marketplace. These tools enable businesses to assess the economic viability of their offerings, identify areas for improvement, and ultimately enhance customer satisfaction and profitability.

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## **20.2 OBJECTIVES**

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After going through this lesson, students will be able to understand:

- The basics of life cycle costing and value chain analysis.
- The features, process, benefits and limitations of life cycle costing and value chain analysis.

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## **20.3 LIFE CYCLE COSTING**

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Life cycle costing (LCC) is a financial analysis tool that takes into account all costs associated with a product, service, or project throughout its entire life cycle. It involves evaluating costs incurred from the initial design and development stage, through production, operation, maintenance, and ultimately disposal or end-of-life.



The purpose of life cycle costing is to provide a more comprehensive and accurate understanding of the total costs involved in owning and using a particular asset over its lifespan. It goes beyond simply considering the upfront purchase or acquisition cost and takes into account the various expenses incurred over time. These costs can include design and development costs, production costs, operating costs, maintenance and repair costs, energy consumption costs, disposal costs, and even potential revenue generated through resale or salvage.

By considering the complete life cycle costs, decision-makers can make better-informed choices about investments, product design, maintenance strategies, and resource allocation. LCC allows for the identification of cost-saving opportunities, optimization of product design or process efficiency, and evaluation of the long-term financial viability of a project or product.

Life cycle costing is particularly valuable in industries where products have long service lives, such as manufacturing, construction, infrastructure development, and transportation. It helps organizations understand the true cost implications of their decisions and facilitates more accurate budgeting, forecasting, and risk assessment.

Overall, life cycle costing enables organizations to make informed financial decisions, improve cost control, and optimize resource allocation by considering the total costs and benefits associated with a product or project throughout its entire life cycle.

According to the International Organization for Standardization (ISO), life cycle costing is defined as “a systematic approach to evaluating the economic performance of a product over its entire life cycle, by quantifying all relevant costs and benefits.”

The American Society of Civil Engineers (ASCE) defines life cycle costing as “a method of economic evaluation that identifies and quantifies all costs of ownership associated with an infrastructure asset throughout its life cycle, including initial capital costs, operating costs, maintenance costs, and disposal costs.”

The Chartered Institute of Building (CIOB) describes life cycle costing as “the systematic consideration of all relevant costs and revenues associated with the acquisition and ownership of an asset, from its inception to its disposal.”

These definitions highlight the systematic and comprehensive nature of life cycle costing, emphasizing the need to consider all costs incurred and benefits generated over the entire life cycle of an asset or product. The focus is on capturing both direct and indirect costs and evaluating the economic performance or financial viability of the investment or project.

### 20.3.1 Basics of Life Cycle Costing

At its core, life cycle costing (LCC) involves assessing and quantifying the costs associated with a product, service, or project throughout its entire life cycle. Here are some of the key basics of life cycle costing:

1. **Cost Categories:** Life cycle costing considers various cost categories. These may include initial or acquisition costs (such as purchase price or development costs), operational costs (e.g., energy consumption, maintenance, repairs), and end-of-life costs (disposal, decommissioning). All relevant costs over the life cycle are taken into account to provide a comprehensive financial analysis.
2. **Timeframe:** Life cycle costing extends beyond short-term considerations and takes a long-term perspective. It involves evaluating costs over the entire life span of the product or project, which can vary depending on the industry or asset involved. This timeframe can range from months to years or even decades.
3. **Discounting:** Future costs and benefits are typically discounted to account for the time value of money. Discounting recognizes that costs or benefits occurring in the future are worth less than those experienced in the present. Applying appropriate discount rates allows for the comparison and aggregation of costs and benefits occurring at different points in time.
4. **Data Collection:** Accurate and reliable data collection is crucial for life cycle costing. This may involve collecting data on costs, energy consumption, maintenance requirements, anticipated lifespan, and potential salvage or resale values. Historical data, industry benchmarks, and expert knowledge can be used to estimate future costs and performance.
5. **Analysis and Comparison:** Life cycle costing involves analyzing and comparing

different alternatives or scenarios. This could include comparing various products, design options, maintenance strategies, or investment decisions. The aim is to identify the most economically viable and cost-effective option based on the total life cycle costs and potential benefits.

6. **Decision Making:** Life cycle costing provides decision-makers with valuable insights to support informed decision-making. It helps identify cost drivers, prioritize investments, optimize resource allocation, and assess the financial implications of different options. By considering the complete life cycle costs, organizations can make more sustainable, efficient, and financially sound decisions.

By considering the comprehensive picture of costs and benefits throughout the life cycle, life cycle costing enables organizations to make informed financial decisions, optimize resource allocation, and enhance long-term profitability and sustainability.

### 20.3.2 Features of Life Cycle Costing

The features of life cycle costing (LCC) include the following:

1. **Comprehensive Cost Assessment:** Life cycle costing takes a holistic approach to cost assessment by considering all relevant costs incurred throughout the life cycle of a product, service, or project. It goes beyond the initial acquisition cost and incorporates costs associated with design, production, operation, maintenance, and disposal.
2. **Long-Term Perspective:** LCC considers the entire life span of the asset or project, rather than focusing solely on short-term costs. It analyzes costs over an extended period, which is particularly important for assets with long service lives.
3. **Time Value of Money:** LCC recognizes the time value of money and applies discounting techniques to account for the fact that costs and benefits occurring in the future have less value than those in the present. Discounting allows for meaningful comparisons and accurate evaluation of costs and benefits across different time periods.

4. **Multiple Cost Categories:** LCC encompasses various cost categories, including direct costs (e.g., acquisition, maintenance, and operation costs), indirect costs (e.g., energy consumption, training, disposal), and even opportunity costs. It ensures that all relevant costs are considered to provide a comprehensive analysis.
5. **Decision Support:** LCC serves as a decision support tool, providing valuable insights to aid decision-making. By evaluating the total life cycle costs, LCC helps identify cost-saving opportunities, optimize resource allocation, and support informed choices among alternatives.
6. **Risk Assessment:** LCC allows for the consideration of potential risks and uncertainties associated with costs. Sensitivity analysis and scenario modeling can be performed to assess the impact of varying factors on overall costs and project outcomes.
7. **Sustainability Analysis:** LCC provides a framework for assessing the environmental and social impact of a product or project over its life cycle. It enables organizations to evaluate the sustainability performance, identify areas for improvement, and make decisions that align with environmental and social goals.
8. **Continuous Improvement:** LCC promotes continuous improvement by monitoring and evaluating costs throughout the life cycle. It enables organizations to identify opportunities for cost reduction, process improvement, and innovation to enhance the overall performance and competitiveness.

By incorporating these features, life cycle costing enables organizations to make informed financial decisions, optimize resource allocation, and enhance their understanding of the long-term costs and benefits associated with their products, services, or projects.

### **20.3.3 Process of Life Cycle Costing**

The process of life cycle costing (LCC) typically involves several steps. While the specific details may vary depending on the context and industry, here is a general overview of the process:

1. **Identify the Scope:** Clearly define the scope of the life cycle costing analysis. Determine the boundaries of the analysis, including the specific product, service, or project to be evaluated, and establish the time frame for the assessment.
2. **Define Cost Categories:** Identify and define the different cost categories that will be considered in the analysis. This may include acquisition costs, operational costs, maintenance costs, energy costs, disposal costs, and any other relevant cost components specific to the asset or project being assessed.
3. **Gather Data:** Collect data related to the costs involved at each stage of the life cycle. This may involve reviewing historical data, obtaining industry benchmarks, conducting surveys, consulting with experts, and considering relevant internal and external factors. Ensure the data is accurate, reliable, and representative of the specific context.
4. **Assign Monetary Values:** Convert the collected data into monetary values to facilitate cost comparison and analysis. This step involves assigning monetary values to each cost category identified in the previous step. It may include estimating future costs and applying appropriate discounting techniques to account for the time value of money.
5. **Perform Cost Analysis:** Analyze the collected and assigned cost data to calculate the total life cycle costs for each alternative or scenario being evaluated. Summarize and present the costs in a clear and understandable manner, allowing for comparisons and decision-making.
6. **Consider Benefits and Risks:** Evaluate the potential benefits and risks associated with each alternative or scenario. This step involves assessing the value created or benefits derived from the asset or project over its life cycle. It may include considering factors such as revenue generation, energy efficiency, environmental impact, and social benefits.
7. **Compare Alternatives:** Compare the total life cycle costs and benefits of the different alternatives being evaluated. This allows decision-makers to identify the most cost-effective and financially viable option that aligns with organizational goals and objectives.

8. **Make Informed Decisions:** Based on the analysis and comparison, make informed decisions regarding the product, service, or project. Consider the financial implications, long-term sustainability, and risk factors associated with each alternative. Select the option that optimizes resources, minimizes costs, and maximizes value creation.
9. **Monitor and Review:** Continuously monitor and review the life cycle costs to track actual costs and performance against the estimated values. This helps identify deviations, opportunities for improvement, and facilitates ongoing cost control and optimization.

The process of life cycle costing is iterative and requires periodic updates and reassessments to account for changes in costs, technology, market conditions, and other relevant factors over time.

#### **20.3.4 Benefits of Life Cycle Costing**

Life cycle costing (LCC) offers several benefits for organizations and decision-makers. Here are some key advantages of implementing life cycle costing:

1. **Comprehensive Cost Assessment:** LCC provides a more accurate and comprehensive understanding of the total costs associated with a product, service, or project. It goes beyond the initial acquisition cost and considers costs incurred throughout the entire life cycle, including design, production, operation, maintenance, and disposal. This allows for better cost control and more informed financial decision-making.
2. **Improved Cost Management:** By considering all relevant costs over the life cycle, LCC helps organizations identify cost-saving opportunities and optimize resource allocation. It enables better cost management by highlighting areas where costs can be reduced, such as through improved design, more efficient processes, or optimized maintenance strategies.
3. **Informed Decision-Making:** LCC supports informed decision-making by providing decision-makers with a comprehensive analysis of costs and benefits. It allows for a comparison of different alternatives or scenarios, helping

organizations select the most economically viable option. By considering long-term costs and benefits, LCC assists in making sustainable and financially sound decisions.

4. **Enhanced Financial Planning and Budgeting:** LCC provides a basis for more accurate financial planning and budgeting. It enables organizations to forecast and allocate resources effectively by considering the complete life cycle costs. LCC helps in estimating the long-term financial implications of a product or project, assisting in developing realistic budgets and financial projections.
5. **Risk Mitigation:** LCC helps organizations identify and mitigate risks associated with costs over the life cycle. By considering uncertainties and potential variations in costs, LCC assists in evaluating and managing financial risks. It allows decision-makers to assess the sensitivity of costs to various factors, enabling better risk assessment and risk management strategies.
6. **Sustainability Assessment:** LCC facilitates the evaluation of the environmental and social impact of a product or project over its life cycle. It helps organizations assess the sustainability performance and identify areas for improvement. LCC supports the adoption of sustainable practices by considering the life cycle costs and benefits associated with environmentally friendly initiatives.
7. **Competitive Advantage:** Implementing LCC can provide a competitive advantage for organizations. By optimizing costs, improving efficiency, and enhancing decision-making, organizations can achieve better profitability and market positioning. LCC enables organizations to offer products or services with lower life cycle costs, which can be attractive to customers and stakeholders.
8. **Continuous Improvement:** LCC promotes a culture of continuous improvement by monitoring costs throughout the life cycle. It helps organizations identify opportunities for cost reduction, process optimization, and innovation. By tracking actual costs and comparing them with estimated values, organizations can make adjustments and refine their strategies for better cost performance.

Overall, life cycle costing offers numerous benefits, including improved cost

management, informed decision-making, enhanced financial planning, and a focus on sustainability. By considering the complete life cycle costs, organizations can achieve greater efficiency, competitiveness, and long-term financial success.

### **20.3.5 Limitations of Life Cycle Costing**

While life cycle costing (LCC) provides valuable insights and benefits, it also has certain limitations that should be considered. Here are some common limitations of life cycle costing:

1. **Data Availability and Accuracy:** Life cycle costing heavily relies on accurate and reliable data. However, obtaining comprehensive and precise data for all cost categories throughout the entire life cycle can be challenging. Data availability and quality can vary, making it difficult to accurately estimate future costs and benefits.
2. **Uncertainty and Assumptions:** Life cycle costing involves making assumptions and estimations about future costs, benefits, and other factors. These assumptions can introduce uncertainties into the analysis and affect the accuracy of the results. Changes in market conditions, technology, regulations, or other external factors can impact the validity of the assumptions made.
3. **Subjectivity in Cost Allocation:** Allocating costs to specific stages of the life cycle or to different activities can be subjective and may vary among different practitioners. Different cost allocation methods can lead to variations in results and affect the comparability of alternatives.
4. **Simplified Analysis:** Life cycle costing involves simplifications and generalizations to manage the complexity of cost assessments. While this allows for practical analysis, it may overlook specific nuances and details that could impact the accuracy of the results.
5. **Discounting Challenges:** Discounting future costs and benefits is a fundamental aspect of life cycle costing. However, selecting appropriate discount rates can be challenging, and different discount rates can yield different results. Choosing an incorrect discount rate can lead to skewed cost comparisons and inaccurate



decision-making.

6. **Limited Scope:** Life cycle costing focuses primarily on financial costs and benefits, often excluding intangible factors such as social and environmental impacts. While sustainability analysis can be integrated to some extent, it may not capture the full range of non-financial aspects, limiting the comprehensive evaluation of a project's overall value.
7. **Changing Variables:** Over the life cycle of a project or product, variables such as inflation rates, interest rates, and exchange rates can change. These fluctuations can impact the accuracy of the cost estimations and the validity of the results obtained through life cycle costing.
8. **Complex Decision Factors:** Life cycle costing primarily considers costs and benefits, but decision-making may involve additional complex factors such as strategic considerations, market dynamics, and qualitative aspects. LCC provides a financial perspective but may not capture all decision-making dimensions.

Despite these limitations, life cycle costing remains a valuable tool for assessing costs and supporting decision-making. It is important to recognize these limitations and use LCC in conjunction with other decision-making methods to gain a more comprehensive understanding of the financial implications and overall value of a project or product.

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## 20.4 VALUE CHAIN ANALYSIS

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Value chain analysis is a strategic management tool used to analyze and understand the activities and processes that create value for a company and its customers. It involves breaking down the various activities involved in the production and delivery of a product or service, examining how each activity adds value, and identifying opportunities for cost reduction, process improvement, and differentiation.

The value chain consists of two main types of activities:

1. **Primary Activities:** These activities are directly involved in the creation, production, and delivery of a product or service. They include inbound logistics (receiving and storing inputs), operations (transforming inputs into finished

products or services), outbound logistics (storing and distributing finished products), marketing and sales (promoting and selling the product or service), and customer service (after-sales support and customer satisfaction).

2. **Support Activities:** These activities support the primary activities and are necessary for the functioning of the value chain. They include procurement (sourcing and purchasing inputs), technology development (research, development, and innovation), human resource management (recruiting, training, and development of employees), and infrastructure (organizational structure, systems, and support functions).

Here are a few definitions of value chain analysis provided by experts:

Michael Porter, a renowned strategy expert, defines value chain analysis as “a systematic way of examining all the activities a firm performs and how they interact, to find the sources of competitive advantage.”

The Chartered Institute of Management Accountants (CIMA) describes value chain analysis as “the process of identifying the primary and support activities that create value for customers and analyzing how these activities can be optimized to improve competitive advantage.”

According to the International Trade Centre (ITC), value chain analysis is “a strategic analytical tool for understanding the value-added at each stage of the production and distribution process, from raw material acquisition to final consumption.”

These definitions emphasize the systematic examination of activities, the focus on creating value for customers, and the goal of achieving a competitive advantage through optimization and strategic decision-making. Value chain analysis helps organizations identify opportunities for cost reduction, process improvement, and differentiation to enhance their overall performance and market position.

### **Features of Value Chain Analysis**

The features of value chain analysis include the following:

1. **Activity Breakdown:** Value chain analysis breaks down the activities within an

organization or industry into primary and support activities. This breakdown helps in understanding the specific tasks and processes involved in creating and delivering a product or service.

2. **Value Addition Assessment:** Value chain analysis assesses the contribution of each activity to the overall value creation process. It identifies activities that directly add value to the product or service and those that do not. This assessment helps in identifying areas for improvement and cost reduction.
3. **Cost and Benefit Analysis:** Value chain analysis evaluates the costs associated with each activity in the value chain. It also considers the benefits or value generated by each activity. This analysis helps in identifying cost drivers, cost-saving opportunities, and areas where value can be enhanced.
4. **Linkages and Relationships:** Value chain analysis examines the linkages and relationships between different activities within the value chain. It recognizes that changes or improvements in one activity can impact others and the overall value created. This understanding enables organizations to optimize the coordination and integration of activities.
5. **Competitive Advantage Identification:** Value chain analysis helps identify sources of competitive advantage within the value chain. By understanding how activities contribute to differentiation and customer value, organizations can develop strategies to leverage their unique strengths and gain a competitive edge.
6. **Benchmarking and Best Practices:** Value chain analysis involves benchmarking against industry standards and best practices. It compares the performance of each activity with industry leaders to identify areas for improvement and learn from successful practices.
7. **Strategic Decision-Making:** Value chain analysis supports strategic decision-making by providing insights into areas of improvement, resource allocation, and differentiation strategies. It helps organizations make informed decisions on optimizing costs, improving processes, and enhancing value creation.
8. **External Focus:** Value chain analysis considers the entire value chain from

suppliers to end customers. It recognizes the importance of external stakeholders and their impact on value creation. This external focus helps organizations understand customer needs, supplier relationships, and market dynamics.

10. **Continuous Improvement:** Value chain analysis promotes a culture of continuous improvement. By regularly assessing and optimizing activities, organizations can identify opportunities for innovation, cost reduction, and process improvement. It supports ongoing efforts to enhance efficiency and competitiveness.

Overall, value chain analysis provides a framework for understanding the activities, costs, and value creation within an organization or industry. It enables organizations to identify areas for improvement, optimize resource allocation, and gain a competitive advantage by delivering enhanced value to customers.

### **Benefits of Value Chain Analysis**

1. Value chain analysis offers several benefits to organizations. Here are some key advantages of implementing value chain analysis:
2. **Cost Optimization:** Value chain analysis helps identify cost-saving opportunities within the different activities of the value chain. By analyzing each activity and its associated costs, organizations can identify areas for efficiency improvements, process optimization, and cost reduction. This can lead to improved cost management and increased profitability.
3. **Process Improvement:** Value chain analysis enables organizations to identify bottlenecks, inefficiencies, and areas for process improvement. By examining the flow of activities and their interrelationships, organizations can streamline processes, eliminate redundancies, and improve overall operational efficiency.
4. **Competitive Advantage:** Value chain analysis helps organizations identify sources of competitive advantage. By understanding how each activity adds value to the final product or service, organizations can identify unique strengths and opportunities for differentiation. This enables them to develop strategies that create a competitive edge in the market.

4. **Customer Value Creation:** Value chain analysis focuses on creating value for customers. By understanding customer needs and preferences, organizations can align their activities to deliver products or services that meet those needs effectively. This enhances customer satisfaction and loyalty, leading to increased market share and improved customer relationships.
5. **Supplier Collabouration:** Value chain analysis extends beyond organizational boundaries to include suppliers and other external stakeholders. By examining supplier relationships and dependencies, organizations can identify opportunities for collabouration, strategic partnerships, and improved supply chain management. This can lead to better supplier performance, cost savings, and increased supply chain resilience.
6. **Strategic Decision-Making:** Value chain analysis provides valuable insights for strategic decision-making. It helps organizations prioritize investments, allocate resources effectively, and identify areas for innovation and improvement. By understanding the value drivers and competitive dynamics within the value chain, organizations can make informed decisions that align with their overall business strategy.
7. **Performance Benchmarking:** Value chain analysis allows organizations to benchmark their performance against industry standards and best practices. By comparing their activities and costs with industry leaders, organizations can identify areas where they can improve and learn from successful practices. This facilitates a continuous improvement mindset and fosters a culture of learning and innovation.
8. **Sustainability Considerations:** Value chain analysis enables organizations to evaluate the environmental and social impact of their activities. By identifying areas of improvement in terms of resource consumption, waste generation, and social responsibility, organizations can integrate sustainability into their value chain and enhance their reputation as responsible corporate citizens.

By leveraging these benefits, organizations can enhance their operational efficiency, reduce costs, create value for customers, and gain a competitive advantage in the

marketplace. Value chain analysis provides a structured approach to optimizing processes, fostering collaboration, and making informed strategic decisions.

### **Limitations of Value Chain Analysis**

While value chain analysis provides valuable insights and benefits, it also has certain limitations that should be considered. Here are some common limitations of value chain analysis:

1. **Complexity and Simplification:** Value chain analysis involves breaking down the activities within an organization or industry, but the real-world value chains can be highly complex and interconnected. Simplifying the analysis to make it manageable can overlook certain nuances, dependencies, and interrelationships, leading to an incomplete understanding of the value chain dynamics.
2. **Data Availability and Accuracy:** Conducting value chain analysis requires accurate and reliable data on costs, activities, and performance. However, obtaining comprehensive and precise data for all activities and cost elements within the value chain can be challenging. Data availability, accuracy, and consistency can vary, impacting the accuracy and reliability of the analysis.
3. **Subjectivity in Value Assessment:** Assessing the value added by each activity in the value chain can be subjective and may vary among different stakeholders. Determining the degree of value contribution and the customer's perception of value can be challenging, as it often involves subjective judgments and assumptions.
4. **Limited Focus on External Factors:** Value chain analysis primarily focuses on internal activities within the organization and may overlook external factors and market dynamics. While it considers suppliers and customers to some extent, it may not fully capture the broader external factors that can influence the value chain, such as regulatory changes, technological advancements, or competitive forces.
5. **Time and Resource Intensive:** Conducting a comprehensive value chain analysis can be a time-consuming and resource-intensive process. It requires

gathering and analyzing data from various sources, engaging stakeholders, and conducting detailed assessments. Organizations may face constraints in terms of time, resources, and expertise to carry out an in-depth value chain analysis.

6. **Lack of Integration with Strategy:** Value chain analysis provides insights into operational aspects and value creation but may not explicitly integrate with the organization's overall strategy. It is important to bridge the gap between value chain analysis and strategic decision-making to ensure that the identified opportunities align with the broader strategic goals of the organization.
7. **Dynamic Nature of Value Chains:** Value chains are not static and can evolve over time due to various factors such as technological advancements, market changes, or shifts in customer preferences. Value chain analysis provides a snapshot at a particular point in time and may not fully capture the dynamic nature of value chains and the need for continuous monitoring and adaptation.

Despite these limitations, value chain analysis remains a valuable tool for understanding activities, optimizing processes, and gaining insights into value creation. It is important to be aware of these limitations and complement value chain analysis with other strategic management tools and perspectives to gain a comprehensive understanding of organizational dynamics.

### **Process of Value Chain Analysis**

The process of conducting a value chain analysis typically involves the following steps:

1. **Identify the Value Chain:** Identify the specific value chain to be analyzed. Determine the scope and boundaries of the analysis, which may focus on a specific industry, business unit, or product/service.
2. **Identify Activities:** Identify the primary and support activities within the value chain. Primary activities are directly involved in the creation, production, and delivery of the product or service (e.g., inbound logistics, operations, marketing). Support activities are necessary to facilitate the primary activities (e.g., procurement, technology development, human resources).

3. **Analyze Value Addition:** Assess how each activity adds value to the product or service. Examine how it contributes to improving quality, meeting customer needs, and creating a competitive advantage. Differentiate between value-adding activities that directly contribute to customer value and non-value-adding activities that can potentially be eliminated or minimized.
4. **Assess Cost Drivers:** Identify the cost drivers associated with each activity. Understand the factors that influence the costs incurred in performing the activity, such as raw material costs, labour costs, technology requirements, or economies of scale. This analysis helps in identifying areas where cost optimization can be targeted.
5. **Analyze Linkages and Relationships :** Examine the linkages and interdependencies between different activities within the value chain. Understand how changes or improvements in one activity can impact others and the overall value creation process. This analysis helps in identifying potential areas for process optimization, coordination, or integration.
6. **Benchmarking and Best Practices:** Compare the performance of each activity within the value chain with industry benchmarks and best practices. Identify areas where the organization lags behind or can learn from successful practices. This analysis helps in identifying improvement opportunities and setting performance targets.
7. **Identify Opportunities and Risks:** Analyze the identified value chain activities, cost drivers, and interrelationships to identify opportunities for improvement, cost reduction, or differentiation. Identify potential risks or vulnerabilities within the value chain that may impact value creation or disrupt operations.
8. **Develop Action Plans:** Based on the analysis, develop action plans to optimize costs, improve processes, and enhance value creation. Prioritize initiatives based on their potential impact and feasibility. Allocate resources and set timelines for implementation.



9. **Monitor and Review:** Continuously monitor the performance of activities within the value chain. Regularly review the effectiveness of implemented actions and reassess the value chain analysis to adapt to changing market conditions, technological advancements, or strategic goals.

The process of value chain analysis is iterative and requires ongoing monitoring and adjustment. It provides organizations with insights to optimize costs, improve processes, and create value for customers. By systematically analyzing the value chain, organizations can enhance their competitiveness, profitability, and overall performance.

### **Case Study 1: Value Chain Analysis**

Let's consider a case study of value chain analysis for a fictional company called XYZ Manufacturing, which produces and sells electronic devices.

1. **Identify the Value Chain:** The value chain for XYZ Manufacturing includes activities such as product design, procurement of components, manufacturing, marketing and sales, and customer support.
2. **Primary Activities Analysis:**
  - a. **Inbound Logistics:** XYZ Manufacturing analyzes its supplier relationships, transportation, and inventory management to ensure timely and efficient delivery of components.
  - b. **Operations:** The company evaluates its manufacturing processes, automation, and quality control measures to optimize production efficiency and ensure product quality.
  - c. **Outbound Logistics:** XYZ Manufacturing assesses its warehousing, distribution, and order fulfillment processes to ensure timely delivery to customers.
  - d. **Marketing and Sales:** The company analyzes its marketing strategies, distribution channels, and sales processes to effectively promote and sell its products.

- e. **Customer Service:** XYZ Manufacturing evaluates its after-sales service, warranty, and support systems to enhance customer satisfaction and loyalty.
3. **Support Activities Analysis:**
- a. **Procurement:** The company assesses its procurement strategies, supplier selection criteria, and negotiation processes to optimize costs and ensure the availability of quality components.
  - b. **Technology Development:** XYZ Manufacturing analyzes its research and development efforts, innovation processes, and technology adoption to stay competitive and introduce new features.
  - c. **Human Resource Management:** The company assesses its employee training, talent acquisition, and performance management practices to ensure a skilled and motivated workforce.
  - d. **Infrastructure:** XYZ Manufacturing evaluates its organizational structure, information systems, and support functions to enable smooth operations across the value chain.
4. **Value Addition Assessment:** The company identifies activities that directly contribute to customer value, such as product design, manufacturing quality, and after-sales service. It identifies non-value-adding activities that can be eliminated or streamlined, such as redundant processes or excessive inventory.
5. **Cost Drivers and Benchmarking:** XYZ Manufacturing identifies the key cost drivers in each activity and compares its performance with industry benchmarks. It analyzes factors such as raw material costs, labour costs, and production efficiency to identify areas for cost optimization.
6. **Opportunities and Risks:** The company identifies opportunities for improvement, such as implementing lean manufacturing practices, improving supply chain management, or enhancing marketing campaigns. It also identifies potential risks, such as reliance on a single supplier or lack of responsiveness to customer needs.

7. **Action Plans:** Based on the analysis, XYZ Manufacturing develops action plans to optimize costs, improve processes, and enhance value creation. It sets specific goals, assigns responsibilities, and allocates resources for implementing the identified initiatives.
8. **Monitoring and Review:** The company continuously monitors and reviews the performance of activities within the value chain. It tracks key performance indicators, evaluates the effectiveness of implemented actions, and adjusts strategies as needed to align with changing market conditions and organizational goals.

Through value chain analysis, XYZ Manufacturing gains insights into its activities, costs, and opportunities for improvement. It can optimize costs, enhance customer value, and improve its competitive position in the market.

### **Case study 2: Life Cycle Costing**

Let's consider a case study of life cycle costing for a renewable energy project.

1. **Identify the Project:** The case study focuses on a solar power plant project.
2. **Define the Life Cycle:** The life cycle of the project includes the design and development phase, construction and installation phase, operation and maintenance phase, and finally, the decommissioning and disposal phase.
3. **Cost Categories Analysis:**
  - a. **Design and Development:** The costs associated with conducting feasibility studies, obtaining permits, conducting environmental assessments, and designing the solar power plant.
  - b. **Construction and Installation:** The costs involved in procuring solar panels, inverters, mounting structures, installation labour, civil works, and grid connection.
  - c. **Operation and Maintenance:** The costs associated with regular maintenance, inspections, cleaning, repairs, monitoring systems, and personnel.

- d. **Decommissioning and Disposal:** The costs involved in dismantling the power plant, managing waste and hazardous materials, and restoring the site.
4. **Gather Data:** Collect data on the costs associated with each phase of the project. This may include obtaining cost estimates from suppliers, analyzing historical data from similar projects, and considering factors such as inflation rates and interest rates.
5. **Assign Monetary Values:** Convert the collected data into monetary values to quantify the costs over the life cycle of the project. Apply appropriate discounting techniques to account for the time value of money.
6. **Perform Cost Analysis:** Calculate the total life cycle costs for each phase of the project. Summarize and present the costs in a clear and understandable manner, allowing for comparisons and decision-making.
7. **Consider Benefits and Revenues:** Assess the benefits and revenues generated throughout the life cycle of the project. This may include the revenue generated from selling electricity, incentives or subsidies, and any other tangible or intangible benefits associated with the project.
8. **Compare Alternatives:** Compare the life cycle costs and benefits of different alternatives. For example, comparing different solar panel technologies, different maintenance strategies, or different project designs. Evaluate the financial viability and sustainability of each alternative.
9. **Decision-Making:** Based on the analysis, make informed decisions about the project. Consider the financial implications, long-term costs and benefits, risk factors, and overall project feasibility. Select the option that optimizes resources, minimizes costs, and maximizes value creation.
- 10 **Monitoring and Review:** Continuously monitor and review the life cycle costs of the project. Track actual costs and performance against the estimated values. Make adjustments and refinements as necessary to optimize cost performance and project outcomes.

Through life cycle costing, the renewable energy project gains a comprehensive understanding of the costs incurred at each phase and the long-term financial implications. It enables informed decision-making, cost control, and optimization of resources throughout the life cycle of the project.

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## **20.5 SUMMARY**

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In conclusion, life cycle costing and value chain analysis are powerful tools that organizations can utilize to enhance their strategic decision-making and operational performance.

Life cycle costing provides a comprehensive assessment of the costs and benefits associated with a product, service, or project throughout its entire life cycle. By considering all relevant costs, including acquisition, operation, maintenance, and disposal, organizations can make informed financial decisions, optimize resource allocation, and evaluate the long-term financial viability of their investments. Life cycle costing promotes cost management, risk mitigation, and sustainability considerations, ultimately leading to improved profitability and competitiveness.

On the other hand, value chain analysis enables organizations to understand the activities and processes that create value for customers and stakeholders. By breaking down the value chain into primary and support activities, organizations can identify areas for cost reduction, process improvement, and differentiation. Value chain analysis helps organizations optimize operational efficiency, enhance customer value, and gain a competitive advantage in the market. It also emphasizes the importance of supplier relationships, technology development, and human resource management in delivering value to customers.

By integrating life cycle costing and value chain analysis, organizations can achieve a holistic perspective on their operations. Life cycle costing provides insights into the financial aspects and long-term implications of the value chain, while value chain analysis enhances the understanding of the operational dynamics and value creation processes. Together, they support organizations in making informed decisions, improving cost management, and driving sustainable and competitive business strategies.

Overall, by leveraging these two analytical approaches, organizations can optimize costs, enhance efficiency, create value for customers, and achieve long-term success in their respective industries.

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## 20.6 GLOSSARY

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- **Life Cycle:** The entire lifespan of a product, service, or project, including its development, production, use, and disposal phases.
- **Cost Categories:** Different categories of costs that are considered in life cycle costing, such as acquisition costs, operational costs, maintenance costs, and disposal costs.
- **Discounting:** The process of adjusting future costs and benefits to their present value by applying an appropriate discount rate to account for the time value of money.
- **Cost Drivers:** Factors or variables that influence the costs incurred in performing an activity, such as raw material costs, labour costs, or energy costs.
- **Sensitivity Analysis:** The process of evaluating the impact of changes or variations in key variables on the overall life cycle costs.
- **Opportunity Costs:** The value of the alternative opportunities or benefits that are foregone when choosing a particular option.
- **Primary Activities:** The activities directly involved in the creation, production, and delivery of a product or service, including inbound logistics, operations, outbound logistics, marketing and sales, and customer service.
- **Support Activities:** The activities that support and enable the primary activities to function efficiently, such as procurement, technology development, human resource management, and infrastructure.
- **Value Addition:** The process of creating value for customers at each stage of the value chain by improving quality, enhancing features, or meeting specific customer needs.

- **Cost Leadership:** A competitive strategy focused on achieving the lowest costs in the industry value chain to offer products or services at competitive prices.

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## 20.7 SELF ASSESSMENT QUESTIONS

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Q.1 Explain the concept of Value chain analysis and Life cycle costing.

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Q.2 Discuss the features and process of Value chain analysis.

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## 20.8 LESSON END EXERCISE

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Q.1 Discuss the advantages and limitations of life cycle costing.

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Q. Explain the process of life cycle costing.

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## 20.9 SUGGESTED READINGS

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- Kishore, R.M. *Cost and Management Accounting*, Taxmann Publications, New Delhi.
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