PREFACE

In the curricular structure introduced by this University for students of Post-Graduate degree programme, the opportunity to pursue Post-Graduate course in a subject introduced by this University is equally available to all learners. Instead of being guided by any presumption about ability level, it would perhaps stand to reason if receptivity of a learner is judged in the course of the learning process. That would be entirely in keeping with the objectives of open education which does not believe in artificial differentiation. I am happy to note that university has been recently accredited by National Assessment and Accreditation Council of India (NAAC) with grade 'A'.

Keeping this in view, study materials of the Post-Graduate level in different subjects are being prepared on the basis of a well laid-out syllabus. The course structure combines the best elements in the approved syllabi of Central and State Universities in respective subjects. It has been so designed as to be upgradable with the addition of new information as well as results of fresh thinking and analysis.

The accepted methodology of distance education has been followed in the preparation of these study materials. Co-operation in every form of experienced scholars is indispensable for a work of this kind. We, therefore, owe an enormous debt of gratitude to everyone whose tireless efforts went into the writing, editing, and devising of a proper layout of the materials. Practically speaking, their role amounts to an involvement in 'invisible teaching'. For, whoever makes use of these study materials would virtually derive the benefit of learning under their collective care without each being seen by the other.

The more a learner would seriously pursue these study materials the easier it will be for him or her to reach out to larger horizons of a subject. Care has also been taken to make the language lucid and presentation attractive so that they may be rated as quality self-learning materials. If anything remains still obscure or difficult to follow, arrangements are there to come to terms with them through the counselling sessions regularly available at the network of study centres set up by the University.

Needless to add, a great deal of these efforts are still experimental— in fact, pioneering in certain areas. Naturally, there is every possibility of some lapse or deficiency here and there. However, these do admit of rectification and further improvement in due course. On the whole, therefore, these study materials are expected to evoke wider appreciation the more they receive serious attention of all concerned.

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Netaji Subhas Open University

Post Graduate Degree Programme

Subject: Commerce (M.Com)

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Module-1

Module-2

Unit 1 ❑ Introduction

Structure

1.0 Objectives

After studying this unit, we will understand the concept and applications of—

- ❖ cost accounting;
- ❖ management accounting; and
- ❖ strategic management accounting.

1.1 Introduction

As the time is passing various businesses are developing and size of the enterprises are increasing rapidly. They are extending their scale of production. Management of the firm has to take more effective and appropriate decisions for the successful running of the business. These decisions are taken on the basis of relevant and appropriate information. Decisions taken without any bases can lead to downfall of the enterprise. So, there is a need for information system that can help managers in discharging their managerial functions properly.

Accounting plays a vital role in the business. It is said to be the language of the business that provides the necessary information to different stakeholders who are also known as users of accounting information. These users are divided into internal users and external users. Different stakeholders like owners, managers, investors, lenders, creditors, government authorities and many others need various kinds of information for the decision-making process which is under their control.

Accounting for managerial decision is the system of accounting for the managers which provides or communicates necessary and relevant information to the management of the enterprise for the use in decision making process. It is also called managerial accounting. This process includes organizing, directing, controlling, planning and decision making. The main objective of this branch of accounting is to maximize the profits and minimize the losses by taking appropriate decision on the basis of various reports.

1.2 Costing

Cost is the expenses incurred for producing goods and services. British Institute of Cost and Works Accountants defined cost as "Cost is the amount of expenditure (actual or notional) incurred on or attributable to a given thing."

Costing is the method and process of determining or ascertaining costs. This method consists of principles and rules which govern the technique of determining cost of products or services. The techniques to be followed for the analysis of expenses and the processes of unlike products or services differ from industry to industry. It is the main objective of the costing is to do analysis of financial records.

1.3 Cost Accounting

Cost Accounting is a procedure of recording, examining and broadcasting of all the company's costs which include both variable costs and fixed costs, connected to the production of a product. With the help of this system, a company's management or administration can make better economic decisions, improve efficiencies and make a perfect statement and report. The objectives of cost accounting are to increase the business net profit margins. CIMA, London has defined Cost Accounting as 'the process of accounting for cost from the point at which expenditure is incurred or committed to establishment of its ultimate relationship with cost centers and cost units.'

It deals with the calculation and management of costs and expenses made to purchase or produce something. It relates to calculation of per unit of cost by different costing methods. It is a primary purpose to enable managers in decision making.

1.3.1 Features of Cost Accounting

Cost Accounting has the following features:—

i) **Correctness:** The cost accounting system should provide correct and accurate information at the time of determination of cost and presentation of reports. Otherwise, wrong reports may mislead the users of cost reports.

ii) **Cost-Effectiveness/Economical:** The expenses of installing and operating must be so cost-effective and economical. So that cost accounting system may be beneficial to the organization.

iii) **Comparability:** The cost records must be prepared in such a way that it may facilitate comparison over some time. The cost records should serve as a basis for the guidance to the future.

iv) **Preparation of Accounts/Statements:** Cost accounting system should prepare the cost accounts and statements periodically so that frequent comparison can be done. Regular comparison of actual result with target result may find a number of inefficiencies which can be removed by the managers for the growth of the organization.

v) **Reconciliation with Financial Accounts:** Cost accounting system must be able to be reconciled with the financial accounting system so that accuracy of accounts of both the system can be checked.

vi) **Uniformity:** The size and quality of the papers, various forms and documents used in the cost accounting system must be uniform. While preparation of accounts and statements, printed papers should be used to avoid delays.

vii) **Recording & Accounting:** Cost accounting is a process of accounting of costs. It records income and expenditure which involved in production of goods and services.

1.3.2 Objectives of Cost Accounting

The main objectives of Cost Accounting are as follows:

i) **Determination of Costs:** One of the main objectives of cost accounting is determination of costs. Firstly, collection and classification of cost is done in the process of determination of cost. Then expenses directly related to product manufactured are allocated and other expenses which are not directly related with products are apportioned separately under suitable basis.

ii) **Cost controlling & Cost reduction:** Cost accounting plays a vital role in the process of cost control with the help of various methods and techniques such as Budgetary control, Inventory control and Standard costing etc. It is also helpful in the unnecessary expenditure which results in cost reduction. This results in increase in the efficiency of the enterprise.

iii) **Ascertainment of Profit:** Cost accounting helps in the determination of costing profit or loss of each and every product, job, process, operation or service rendered by comparing costs and revenues of the activity.

iv) **Classification of Costs:** Cost accounting helps in classification of costs, for the purpose of cost control and recording, under different basis such as element based (i.e., material cost, labour cost, overhead etc.), behaviour based (fixed cost, variable cost and semi-variable cost) and many other bases.

v) **Fixation of Selling price:** It is the cost accounting system which helps management in the fixation selling price of the product or services. It is also helpful in the preparation of tenders and quotations.

vi) **Facilitates in Preparation of Financial and Other statements:** Cost accounting prepares different statements at short intervals as per the requirement of the management. The financial statements are prepared yearly or half yearly to meet the needs of the management.

1.3.3 Advantages of Cost Accounting

The advantages of Cost Accounting are as follows: -

i) **Determination of Cost:** Cost Accounting helps the main purpose of determining the costs of products. It records complete information on concerning all expenditures related with production processes of business which allows manufacturers to ascertain the right cost.

ii) **Measures and Improves Efficiency:** Determining the presentation of the organization and civilizing it is another significant role played by cost accounting. It assembles and records data which relates to cost, time and expenses. This data can be used for examination or comparison with business which estimates the overall efficiency.

iii) **Inventory Control:** Cost Accounting keeps a systematic record of all stock of accounts and raw materials. It allows in avoiding over-stocking or under-stocking of materials and helps always in preserving an ideal stock level within the organization.

iv) **Control Cost:** It plays an effectual role in controlling the cost of the association. Under cost accounting, budgets are organized and standards are fixed for each activity.

v) **Classifies Unprofitable Activities:** Cost Accounting supports management in defining the profitable and unprofitable activities of the business. It provisions all information concerning product cost, their selling price, and profitability

of goods which helps managers in selecting which products are profitable for business or not.

1.3.4 Disadvantages of Cost Accounting

Cost accounting has the following disadvantages:

i) **Lack of Consistency:** Cost Accounting has a lack of a uniform technique. It may provide dissimilar results from the same data. It means, sometimes cost accounting may give unproductive results.

ii) **Costly:** Cost Accounting is an expensive process. It involves many procedures to settle down this process and also it requires lots of paper works which makes it quite costly for the organization.

iii) **Uses Secondary Data:** Cost Accounting uses subordinate data from economic statements for several calculations like standard cost. It does not contain primary data or short-term data. That is why cost accounting does not deliver actual results.

iv) **Ignores Innovative Situation:** Cost Accounting ignores the innovativeness of the product cost. It only archives past cost records whereas management is taking decision about the future. Therefore, the cost data are not very helpful.

1.4 Management Accounting

Management accounting is that branch of accounting which provides financial as well as non-financial information which may be quantitative and qualitative to the management of the organization that can be used as a basis for important decision-making process on various matters. The Management accounting is one step further than the cost accounting. It is also called managerial accounting and accounting for managerial decision.

As per the Institute of Cost and Works Accountant of India (ICWAI), Management Accounting is "a system of collection and presentation of relevant economic information relating to an enterprise for planning, controlling and decision making".

International Federation of Accountants (IFAC) defined "the process of identification, measurement, accumulation, analysis, preparation, interpretation and communication of information both financial and operating used by management to

plan, evaluate and control within the organization and to ensure use of and accountability for its resources".

Therefore, management Accounting relates to the provision of suitable information for decisions making, planning, cost control and performance calculation. Management Accounting breaks data into information, knowledge and perception about a business entity operation. Management Accounting is a system that works to know the reasons of profit or loss and studies the factors which effect efficiency to assist in decision making.

1.4.1 Features of Management Accounting

The important features of Management Accounting are as follows:

i) **More Emphasis on Future:** Management accounting gives more emphasis on the future rather than present. Various tools in management accounting like Standard costing, Cost variance and Budgetary control look forward for the future of the organization.

ii) **Provides only Information but no decision:** The financial accounting and cost accounting information are presented to the management for planning and taking quality decision. Now it depends upon the intelligence level of the management executives to take a sound decision out of the available information.

iii) **Study Cause and Effects Relationship:** Financial accounting does not disclose the various reasons of profit earned or losses suffered. It only prepares the results. While, management accounting does the thorough analysis and find out cause and effect relationship which effect business activities and profitability.

iv) **Modifies, Analyses and Interprets data:** Financial accounting information are analyzed, interpreted and modified accordingly as per the need of the management. In this way, those data and information helps management to take proper control of an organization.

v) **Achievement of Objectives:** Management accounting sets the various targets of business activities to be achieved and continuously monitors whether actual work goes as per the set target. Corrective measures, if any, are taken for the achievement of the various objectives of the organization.

vi) **No Specific Rules:** In financial accounting there are various specific rules

and conventions for recording of business transactions in the books. But in case of management accounting there is no such definite rules and conventions.

1.4.2 Scope of Management Accounting

The scope of management accounting is very wide. The main purpose of management accounting is to provide the accounting information in solving the business problems and taking logical decisions. The scope of management accounting is as follows:

i) **Financial Accounting:** Financial Accounting is connected to the recording of business transactions directly soon afterwards acquiring the expenses. The business transaction may be related to income, expenses, inventory movement, assets, liabilities, cash receipts and payments and so on. Management is incapable to exercise the direction and control out of the information provided by financial accounting system. But the financial accounting information is the basis of future business planning and financial forecasting.

ii) **Cost Accounting:** Cost Accounting is concerned with the determination of several elements of costs for different business operations and activities. These cost data are used in the management accounting system for more analysis, so as to solve business problems and the quality decision.

iii) **Budgeting and Forecasting:** Management Accounting contains budgetary control and estimating techniques also under budgetary control system, the budgets are organized on functional basis and measures the actual performance, find the difference between the actual and standard for taking helpful actions. In this way, budgeting contributes the management for classifying responsibility and confirming co-ordination.

iv) **Cost Control Procedures:** Cost Control Procedures are an essential part of management accounting process. It includes inventory control, cost control, time control, budgetary control, standard costing etc.

v) **Revaluation Accounting:** This type of accounting structure ensures that the capital is maintained in real terms. By keeping this fact in mind, accurate amount of profit is calculated and used for managerial decisions making process.

vi) **Inventory Control:** Inventory Control always keeps a control over the operations of raw materials, processing of work in progress and removal of finished goods for a specific period.

vii) **Understanding:** Management Accounting is involving to the clarification of financial data to management and advising them on decision making.

viii) **Office Services:** It contains maintenance of proper data processing and other office management services.

ix) **Internal Audit:** Internal Audit is directed by the business organizations with assistance of paid employees who have thorough accounting knowledge. All the related records are maintained under the management accounting systems so that the internal audit is directed in an effective manner.

x) **Taxation:** It includes the calculation of corporate income tax in agreement with the tax laws, filling of returns and making tax payments.

1.4.3 Objectives of Management Accounting

The main objectives of Management Accounting are as follows:

i) **To Formulate Planning and Policy:** Planning involves forecasting on the basis of accessible information, setting goals, framing policies, determining be presented courses of actions and conclusive on the program of activities. It enables the preparation of settlements in the light of past result and given valuation for the future.

ii) **Clarification of Financial Documents:** Management Accounting is to present financial information to the management. Financial information must be accessible in such a way that it is easily understood. It presents crisp and brief information with the help of statistical devices like chases, diagrams and graphs etc.

iii) **To Assist in Decision-Making Process:** Management Accounting makes decision-making process more technical with the help of several modern techniques. Information/figure connecting to cost, price, profit and savings for each of the available substitutes are collected and examined accordingly, which will deliver a foundation for taking sound decisions.

iv) **To Deliver Report:** Management Accounting gives the management fully

informed about the latest situation of the concern through reporting. It helps management to take appropriate and fast decisions.

v) **To Enable Direction of Operations:** Management Accounting provides tools for overall control and coordination of business operations. Budgets are vital means of coordination.

vi) **Helps in Reaching Goals:** It helps in changing organizational policies and objectives into reasonable business goals. These goals can be achieved by standard costing, which are integral parts of management accounting.

1.4.4 Advantages of Management Accounting

Some of the advantages of Management Accounting are as follows:

i) **Planning:** The management can make the plan and perform the same for effective operation of business. In this situation, various functional budgets are prepared and accounting information are reorganized department wise, product wise, selection wise and the like for appropriate planning.

ii) **Service to Customer:** Better and upgraded services by management to customers are secured by this system of accounting.

iii) **Organizing:** The opportunity of authority and responsibility of key managers are properly defined and clarified under management accounting system.

iv) **Development of Efficiency:** The Management Accounting system may remove various types of wastage, production, defectives and other work so the workers efficiency may be improved.

v) **Regulating of Business Activities:** Proper planning, organizing, coordination and motivation can bring systematic uniformity in the business activities.

vi) **Reliability:** The tools used in management accounting systems are reliable. This technique typically supplies the data to management accountant and all the data are reliable.

1.4.5 Disadvantages of Management Accounting

The important disadvantages of Management Accounting are as follows:

i) **Lack of Specific Procedure:** Management accounting does not have any specific rules and principles to follow. In case of absence of any guideline, this

branch that is management accounting may provide wrong data.

ii) **Costly Affair:** The installation of management accounting system needs huge expenses and they are required to hire a management accountant. Such high costs cannot be accepted by small business organizations.

iii) **Dependency on other Branches:** Management Accounting is dependent upon financial and cost accounting for several data. The authenticity of the information provided by management accounting entirely depends upon the exactness of records maintained by cost and financial accounting.

iv) **Provides only Data:** Management Accounting is an additional role of management and can only help them in their role by providing the essential data.

v) **Uncertain:** Management accounting links present with future. It facilitates management by providing various data for planning for better future. However, future is uncertain and effective results may not be achieved.

1.5 Strategic Cost Management (SCM)

Strategic Cost Management referred to as the application of cost management tools and techniques so that management can make improvements in the strategic position of a business organization and can control costs also. Apart from it, this system is also involved in integration of cost information with the process of decision making to support the overall strategy of the organization.

In other words, Strategic Cost Management is the cost management system that aims at reducing costs at the same time establishing the position of the business. It is a process of joining the decisions-making structure with the cost information. It measures and accomplishes costs to align the same with the company's business strategy.

1.5.1 Stages of Strategic Cost Management

i) Formulation of Strategies.

ii) Communication of Strategies within the entire organization.

iii) Planning to execute those strategies.

iv) Development and Implementation of controls to monitor the success.

1.5.2 Components of Strategic Cost Management

There are 3 important components of Strategic Cost Management.

i) **Strategic Positioning Analysis:** It controls the company's reasonable position in the industry in terms of performance.

ii) **Cost Driver Analysis:** The Costs are driven by different inter-connected factors. In Strategic Cost Management, cost drivers are categorized into two ways namely strategic cost drivers and executional cost drivers.

iii) **Value Chain Analysis:** This is a process by which a firm becomes more predictable and analytic, all the activities and functions that contribute to the final product. It was propounded by Michael Porter (1985), to show the ways a customer value assembles along the activity chain that result in the final product or service.

1.5.3 Importance of Strategic Cost Management

Importance of Strategic Cost Management are as follows:

i) It is a kind of cost analysis in wider context in which the strategic elements become more explicit and formal increasing the strategic position of the organization.

ii) In search of sustainable competitive advantage, strategic cost management provides a clear understanding of cost structure of the company.

iii) Strategic cost management is the managerial use of cost data and information of the company in the four specific stages of the strategic management i.e., formulation, communication, implementation and control.

iv) Cost data and information is firstly analyzed and then strategically used to develop various measures to gain sustainable competitive advantages.

v) It helps in overall recognizing the cost relation among the activities in the value chain and the process of managing these relations to competitive advantage of the company.

1.5.4 Advantages of SCM

Some of the advantages of SCM are as follows:

i) **Releases Board Responsibility:** The first reason that most organizations emphasize for having a strategic management process is that it releases the responsibility of the board of directors.

ii) **Supports Under Standing and Buy-in:** Allowing the board and staff contributing on the strategic conversation enables them to better understand the direction and the related benefits.

iii) **Enables Measurement of Progress:** A strategic management process,services an organization to set objectives and measures of success. The setting of actions of success requires that the organization first control what is critical to its ongoing success and then forces the establishment to aim and keeps these critical measures in front of the board and senior management for analysis.

iv) **Provides an Organizational Viewpoint:** Addressing effective issues rarely looks at the whole organization and the interrelatedness of its changing components. Strategic Management considers an organizational viewpoint and looks at all the mechanisms and the interrelationship between those components in order to grow a strategy that is optimal for the whole organization and note a single component.

1.5.5 Disadvantages of SCM

Some of the disadvantages of SCM are as follows:

i) There is no doubt that in the not-for-profit sector there are many organizations that cannot have enough money to hire an external advisor to help them growin their strategy. Regardless, it is important to confirm that the application of a strategic management process is reliable with the needs of the organization, and that suitable controls are applied to permit the cost or benefit discussion to be adopted, before the execution of a strategic management process.

ii) Strategic management process is intended to provide an organization with long-term benefits. If you are viewing at the strategic management process to address an instant crisis within your organization, it won't be possible. It always beneficial to address the immediate crisis prior to allotting resources to the strategic management process.

1.5.6 The Differences between Traditional Cost Management and Strategic Cost Management

Traditional Cost Management system is involved in the allocation of costs and overheads to the production and focuses mainly on cost control and cost reduction.

But, Strategic Cost Management is the use of cost management tools so as to improve the strategic position of a business as well as control costs. Few of the major differences are as follows:

Basis	**Traditional Cost Management**	**Strategic Cost Management**
Time Span	It is a short-term approach.	It is a long-term approach.
Focus	It mainly focuses internally.	It keeps its eyes internally and externally.
Cost Driver Concept	It is based on the volume of the product.	In SCM, each value activity has a separate cost driver. So, it is not based on the volume of the product but on related activities of production.
Objective	The main objective is store keeping, attention directing and problem solving.	The main objective of SCM is cost leadership or product differentiation.
Cost Reduction	Here emphasis is given on cost reduction.	Here, cost containment is considered - cost reduction and value improvement at the same time.
Approach	It is risk-averse.	It is risk taking and it has ability to adapt itself with changing environment.

1.6 Differences between Financial Accounting and Management Accounting

Basis	**Financial Accounting**	**Management Accounting**
Meaning	Financial Accounting is an accounting system which focuses on the preparation of	The accounting system that grants relevant information to the managers of an

	financial statement of an organization to present the financial information to the interested parties.	organization to make policies, plans and strategies for running the business effectively is known as Management Accounting.
Compulsory	It is compulsory.	It is not compulsory.
Information	Monetary information only.	Monetary and non-monetary information.
Objectives	To provide financial information to internal and also external users for various purposes	To help the internal management in process of planning and decision making by providing vital information on various matters.
Format	Specified.	Not specified.
Time Frame	Here, financial statements are prepared at the end of the accounting period which is generally one year.	The reports are prepared according to the need and requirements of the organizations.
Users	Internal and internal parties.	Only internal management.
Reports	Summarized reports about the organization's financial position.	Complete and detailed reports regarding various information.
Publishing and Auditing	It is required to be audited by statutory auditors and published.	It is neither published nor audited by statutory auditors.

1.7 Differences between Cost Accounting and Management Accounting

Basis	Cost Accounting	Management Accounting
Definition	Cost Accounting is the recording, classifying and summarizing of cost data of an organization.	Management accounting is the accounting in which the both financial and non-financial information are provided to managers.
Objectives	The main objective of cost accounting is to help the management of the organization in cost control and decision-making process.	The main objective of management accounting is to provide vital information to the management in the process of planning, controlling, performance evaluation and decision making.
Uses	This system of accounting uses quantitative cost data which can be measured only in monetary terms.	Management accounting uses both quantitative and qualitative data. It also uses those data that cannot be measured in monetary terms.
Role	Ascertainment of cost and cost control are the main roles of cost accounting.	The major role of management accounting is efficient and effective performance of a concern.
Accounting Based	The base of cost accounting is the cost related data received from financial accounting	Management Accounting is primarily based on the data as it received from financial accounting and also cost accounting.
Decisions Making	It grants future cost related decisions which is based on the historical cost information.	This grants historical and productive information for future decisions making.

Principles	Here, only cost accounting principles are applied in it.	Principles of both cost accounting and financial accounting are applied in management accounting.
Restriction	Cost Accounting is limited to cost related data.	Management Accounting uses both financial accounting data as well as cost accounting data.

1.8 Differences between Cost Accounting and Financial Accounting

Basis	Cost Accounting	Financial Accounting
Definition	Cost Accounting is an accounting system for the organization to keep track of various costs incurred in the business activities.	Financial Accounting is an accounting system which collects the records of financial information about the business to depict the correct financial position of the company on a particular date.
Information	It records the information relating to material, labour and overhead which are used in the production process.	It records the information which is in monetary terms and of financial character.
Uses	Both historical and predetermined cost is being used for recording.	Only historical cost is used.
Valuation of Cost	At cost.	Cost or net-realizable value, whichever is lower.
Mandatory	Other than manufacturing firms it is mandatory for all.	Yes, it is mandatory for all firms.
Time of Reporting	Details provided for cost	Financial statement is reported

	accounting are being prepared frequently and reported to the management more than once in a year.	at the end of the accounting period, which is normally 1 year.
Profit Analysis	Usually, the profit is analyzed for a specific product, job, batch or process.	Income, expenditure and profits are analyzed together for the whole year for a specific period of the whole organization.
Purpose	Reducing and controlling costs.	Keeping complete record of the financial transactions.

1.9 Roles and Functions of Cost and Management Accounting

Both Cost accounting and Management accounting are used by various users synonymously but one should keep this in mind that Cost accounting and Management accounting carry different meaning. Where, cost accounting is concerned with calculation of cost and cost control activities and management accounting helps management in the taking various kinds of decision for the organization. Cost and management accounting plays a major role on the success of the business organization. Some of the important roles and functions are discussed as follows:

i) **Provides Relevant Information:** Cost and management accounting provides relevant information to the management of the organization in various important decision-making processes.

ii) **Assist Management:** It helps management in planning, measurement, evaluation and controlling of day-to-day business activities.

iii) **Helps in Allocation of Cost:** It also helps in the allocation of cost to products and services for both internal and external users.

iv) **Collection and Accumulation of cost:** It collects and accumulates cost for each element of cost.

v) **Assigning Cost:** It assigns costs to cost objects to determine cost.

vi) **Sets Budgets and Standards:** The department prepares budgets and standards for specific period or activity for the purpose of controlling the cost.

1.10 Summary

From the above discussion, we could understand the concept and applications of cost accounting; management accounting; and strategic management accounting.

1.11 Questions

A. Multiple Choice Questions (MCQ)

1. Which of these is not an objective of Cost Accounting?
   a) Ascertainment of Cost
   b) Determination of Selling Price
   c) Cost Control and Cost Reduction
   d) Assisting Shareholders in decision making
2. A Profit Center is a _____.
   a) Where the manager has the responsibility of generating and maximizing profits
   b) Which is concerned with earning an adequate return investment
   c) Both (a) and (b)
   d) None of these
3. Responsibilities Centre can be categorized into-
   a) Cost Centre Only
   b) Profits Centre Only
   c) Investment Centre Only
   d) Cost Centre, Profit and Investment Centre
4. Elements of cost of a product are—
   a) Material Only
   b) Labor Only
   c) Expenses Only
   d) Material, Labor and Expenses

5. Sunk Cost are—
   a) Relevant for Decision Making
   b) Not relevant for Decision Making
   c) Cost to be incurred in future
   d) Future Costs
6. Which of the following statements measures the financial position of the entity on particular time?
   a) Income Statements
   b) Balance Sheet
   c) Cash flow Statement
   d) Statement of Retained Earning
7. Cost of Production report is a—
   a) Financial Statement
   b) Production Process Report
   c) Order Sheet
   d) None of these
8. The differences between total revenues and total variable costs are known as-
   a) Contribution Margin
   b) Cross Margin
   c) Operation Income
   d) Fixed Costs
9. Opportunity Cost is the best example of-
   a) Standard Cost
   b) Sunk Cost
   c) Relevant Cost
   d) Irrelevant Cost

10. A typical Factory Overhead Cost is—
    a) Audit
    b) Compensation of Plant Manager
    c) Design Distribution
    d) Internal

B. Short Answer Type Questions

1. What is Management Accounting? What do you mean by Cost?
2. What is Costing? State any two objectives of Costing.
3. Discuss the Importance of Management Accounting.
4. Discuss the Scope of Management accounting.
5. Distinguish between Cost Accounting and Management Accounting.
6. What is Cost Accounting? Discuss any two features of Cost Accounting.

C. Broad Answer Type Questions

1. Discuss the features of Strategic Cost Management.
2. Discuss the advantages and disadvantages of Strategic Cost Management.
3. The Differences between Traditional Cost Management and Strategic Cost Management.
4. Distinguish between Cost Accounting and Financial Accounting.
5. Distinguish between Financial Accounting and Management Accounting.
6. What is Strategic Cost Management? State the need for SCM.
7. State the advantages and disadvantages of Cost Accounting.

Answer Key

1(d) 2(a) 3(d) 4(d) 5(b) 6(b) 7(b) 8(a) 9(c) 10(b)

Unit 2 ❑ Tools of Strategic Cost Management

Structure

2.0 Objectives

After studying this unit, we will understand the concept and applications of—

- ❖ activity based costing;
- ❖ activity based management;
- ❖ target costing;
- ❖ life cycle costing;

- quality costing; and
- JIT (Just-in-Time).

2.1 Introduction

Strategic Cost Management (SCM) is such a cost management method that emphasizes at the reducing costs while establishing the position of the business. It is a procedure of joining the decision-making process of the business with the help of cost information in order to strengthen the business strategy of the organization. It measures and manages costs to line up the same with the company's business strategy.

The basic objective of strategic cost management is to help the company to achieve the sustainable competitive advantage through product differentiation and cost leadership. For this purpose, a company may use various SCM tools. Few of these tools, as per the syllabus, are as Activity Based Costing (ABC) System, Activity Based Cost Management, Target Costing, Life Cycle Costing, Quality Costing, Just-In-Time (JIT) etc. Each of the tools has been discussed one by one.

2.2 Activity Based Costing (ABC)

Activity Based Costing or ABC Costing system is a managerial accounting method that allocates the total overhead costs of its activities and then allocates them to its objects. In other words, it is a way to assign indirect, overhead costs to products or departments that make these costs in the production process.

Activity Based Costing or ABC costing system is an accounting technique or methodology which assigns costs to activities rather than products or services. It is a tool that is involved in the identification of cost with each cost driving activity and making it a base for the apportionment of the costs over different cost objectsor jobs or products or customers or service. CIMA, London defines Activity Based Costing as "An approach to the costing and monitoring of activities which involves tracing resource consumption and costing final output. Resources are assigned to activities, and activities to cost objects based on consumption estimates. The latter utilize cost drivers to attach activity costs to outputs."

2.2.1 Features of ABC

The features or characteristics of Activity Based Costing are explained below:

i) The total cost is separated into two types i.e., fixed cost and variable cost, which is necessary to deliver value information to design a suitable cost system in an industrial concern.

ii) The appropriate division is made between the price behavior patterns.

iii) The price conduct patterns are volume connected with diversity, events related and time related.

iv) The appropriate cost driver has to be predictable for tracing the overheads to a product.

v) The cost drivers require the cost conduct pattern.

2.2.2 Objectives of ABC

The important objectives of ABC are as follows: -

i) To rectify wrong cost information.

ii) To allocate the overheads on activity basis.

iii) To help the management in taking quality and timely decision.

iv) To recognize product and customer cost.

v) To understand profitability based on the production or performance process.

vi) To have a designed analysis in respect of complex processes.

vii) To deliver wealth of information to the management in order to help in decision-making.

viii) To remove non-value addition activities due to assortment of products.

2.2.3 Factors effecting the development of Activity Based Costing

The development of Activity Based Costing involves the following factors:

i) Increasing overhead costs due to continuous increase in automated production.

ii) Increasing competition in the market which made it necessary more accurate product costs.

iii) Increase in the product diversity to secure economies of scope and increased market share.

iv) Decrease in the cost of information processing due to continuous improvements and increasing application of information technology.

2.2.4 Need or Suitability of ABC System

ABC system is needed or suitable in an organization for the purpose of correct product costing in the under-mentioned cases—

i) Where production overhead costs are high in case of valuation of various direct costs.

ii) Where product range of the organization is highly varied.

iii) When Overhead resources used by several products are very different in amounts.

iv) When volume or quantity of production is not principal driving force for the consumption of overhead resources.

2.2.5 Differences between ABC Costing and Traditional Costing

ABC Costing system	Traditional Costing system
1. In ABC, overheads are related to activities and those are grouped into activity cost pools.	1. In traditional system, overheads are related to cost centers or departments.
2. Costs are related to activities therefore, they are more realistic.	2. Here costs are related to the cost centers, so they are not realistic of cost behavior.
3. Here cost drivers are determined activity wise.	3. Here time wise (hourly basis) cost drivers are determined in all departments.
4. In ABC, costs are assigned to cost objects. For e.g., customers, products etc.	4. Costs are assigned to cost units. For e.g., to products or jobs etc.
5. For absorbing overhead, activity wise recovery rates are determined and there is no single overhead recovery rate.	5. For absorbing overhead, either multiple overhead recovery rates or single overhead recovery rates may be determined.
6. Necessary activities can be simplified, and unnecessary activities can be removed. So, it helps in cost controlling.	6. Cost centers or departments cannot be removed. Hence, it is not suitable for cost control.

2.2.6 Classification of Activity Based Costing

i) **Unit Level:** This kind of activity must be done for each unit of manufacture. The machine associated activity cost pool indicates the expenditure made at unit-level activity, since eachand every product unit involves machine.

ii) **Batch Level:** These activities must be achieved for each batch of products, rather than every unit. Batch-Level activities contain the set-up, purchasing, material handling, quality declaration, and packing/shipping activity of cost pools.

iii) **Product Supporting Level:** The category comprises activities that are required to support an entire product line but are not completed every time a new unit or batch of goods is produced. Engineering strategy costs as a product supporting level activity cost pool.

iv) **Facility Level or General Operation Level:** Level activities are necessary in order for the entire production process to happen. Examples of those activities involve management salaries, depreciation of plant, plant conservation and insurance, property taxes etc.

This arrangement of activities into unit level, batch level, product level, sustaining level and facility level activities is called a Cost Hierarchy.

2.2.7 Terminologies of Activity Based Costing

i) **Activity:** Activity means an event which incurs cost.

ii) **Cost Object:** It is an item for which cost management is obligatory e.g., product, job or customer etc.

iii) **Cost Pool:** Costs are assembled into pools according to the activities, which determine the cost. In this process all costs are connected with procurement i.e., ordering, inspection, storing etc. would be involved in this cost pool and cost driver which has been identified.

iv) **Cost Driver:** In an ABC system, the provisions which are going to be used for applying costs to services or events are called cost drivers. It is a factor that changes the cost of an activity. Two categories of cost driver are as follows:

- **Resource Cost Driver:** It is a measurement of the quantity of the funds

consumed by an activity. It is used for the allocation of cost of a resource into an activity or cost pool.

- **Activity Cost Driver:** It is a portion of the occurrence and strength of demand placed on activities by cost objects. It has been used to allocate costs to cost objects.

2.2.8 Steps in Implementation of Activity Based Costing

The following steps are involved in implementing ABC to achieve the desired results—

i) Identify the useful areas of organization.

ii) Identify the chief activities of each functional area.

iii) Allocate common indirect prices to each useful area on appropriate basis.

iv) Identify the most appropriate cost driver in each activity under practical areas.

v) Preparing the statement of expenditure on activity wise.

vi) Compare this statement with the value addition activity wise.

2.2.9 Advantages of ABC System

The advantages of ABC system are mentioned below:

i) It is more accurate costing system of products or services.

ii) In ABC, overheads are allocated in a logical way.

iii) By providing accurate information, it facilitates better pricing policy.

iv) ABC costing utilizes unit cost rather than only total cost.

v) It is useful system for the organization having multiple products.

vi) It helps in the identification of non- value-added activities that facilitates cost reduction.

2.2.10 Disadvantages of ABC System

Some limitations of Activity Based Costing are mentioned below:

i) It is more expensive system when compared to the traditional costing system.

ii) It is not helpful for the organization which is small in size.

iii) It is not suitable for the organization having limited number of products.

iv) It is not easy to select the most appropriate cost driver. It may be difficult or complicated.

2.3 Activity Based Management

The terminology Activity Based Management or ABM is used to describe the cost management application of Activity Based Costing (ABC). The use of Activity Based Costing as a costing tool or technique for managing costs at activity level is called Activity Based Management (ABM). It is a discipline which focuses on the effective and efficient management of activities as the way to improve continuously the value which received by the customers. ABM uses various cost information which gathered with the help of ABC.

Activity Based Management is a method of examination and evaluation of a company's business activities done with the help of Activity Based Costing and Value-Chain Analysis. In other words, the ABM technique is used to inspect the cost of an activity in connection to the value added by the activity, with the area of operational or strategic development. It is a system for ascertainment of the profitability of each and every aspect of the business organization so that its strengths can be increased and weakness can be removed to the possible extent.

2.3.1 Areas of Usage of ABM

ABM can be used by companies in the following areas: -

i) **Developing Corporate Strategy:** ABM can help the firms to grow suitable company strategy, long-term plans and take advantage by concentrating on managing activities efficiently. However, ABM has the objective of cutting costs while preserving quality and quantity of output.

ii) **Making Activity Analysis:** ABM targets to complete continuous development by making activity analysis i.e., by organizing each activity as value-added or non-value added. A value-added activity is an activity that improves value to a product or service from the view point of the customer. On the other hand, non-value added is an activity that does not improve value to a product or service from the viewpoint of the customer.

In a manufacturing concern, examples of non-value-added activities are as follows:

a) **Waiting:** Idle time does not improve value to the products, decreasing the time used in non-value-added activities reduces cost of idle time.

b) **Set up:** Time spent making to perform a value-added activity.

c) **Inspiration:** Time spent confirming that a value-added activity was done properly.

d) **Movement:** Time spent for allocation around the factory floor where value-added activities are performed.

iii) **Reducing Customer Response Time:** ABM benefits to reduce customer response time by classifying activities that consume the most properties in value and time. ABM also supports in dropping customer reply time by classifying and removing non-value-added activities. In this way, the customers' response time and cost will decrease.

2.3.2 Importance of Activity Based Management

ABM emphasizes on accountability for activities rather than expenses and highlights the expansion of the system wise performance instead of distinct performance. The practically based administration control assigns costs to organizational units and then held the administrative unit manager responsible for monitoring the assigned costs. Performance is measured by connecting actual results with standards result or budgeted results. The beneficial based management proposals costs to entities that are accountable for supporting costs. The prize system is used to motivate managers to manage the costs by growing the working productivity of their administrative units. In ABM both monetary and non-monetary measures of performance are important.

2.3.3 Objectives of Activity Based Management

ABM has three main objectives. First, classify and improve value-added activities. Then, classify and remove or reduce non-value-added activities. Finally, restructure the company's working procedures so as to recover efficiency, maximize value added activities and cut wasteful expenditure on non-value activities.

i) Identify and enhance value added activities.

ii) Identify and reduce non-value-added activities.

iii) Redesign processes to improve efficiency and profitability.

2.3.4 Benefits of Activity Based Management

Some of the benefits of ABM are as follows:

i) The results or findings of ABM can be served as a basis for forecasting and budgeting. This helps management in getting a better idea for the future business prospects.

ii) ABM helps in making value generating activities more efficient.

iii) The ABM system helps in improving the experience of the customer.

2.3.5 Drawbacks of Activity Based Management

Some of the drawbacks of ABM are as follows:

i) ABM overlooks the intrinsic value of the activities.

ii) ABM can also limit with strategic selections if such decisions are possible to prove costly in the near term, but offer a long-term payoff.

iii) The success of ABM totally depends on the successful implementation of ABC.

2.4 Target Costing

Target Costing, which aims at profit planning, is a device that continuously controls costs and manages profit over a product's life cycle. Target Costing is an organizational method to determine the cost at which a future product with quantified function and quality must be produced, to generate an anticipated level of profitability at its anticipated selling price.

In other words, Target Costing is a cost management technique for computation of overall cost of product over its whole life cycle with the help of the function engineering and research and development. Target Cost is called projected cost of the product. This cost helps a manufacturing unit to remain important and contests in the market in the long run.

2.4.1 Characteristics of Target Costing

The main characteristics of Target Costing are as follows:

i) **Target Cost:** Target Cost is decided by deducting target income from the target price.

ii) **Integral Part of Design:** Target Costing is known as an essential part of the design and introduction of new products.

iii) **Target Price:** It is the projected market price of the product. It is a target price which is determined by using various sales estimating techniques in which reflection is made for design specification of the product and competitive market conditions.

iv) **Cost Reduction Target:** Cost Reduction Target is fixed which involves valuation of current cost of the new product. It is based on the technologies and its various components.

v) **Fair Decision is needed:** A fair degree of decisions is needed where the acceptable cost and the target cost different.

2.4.2 Advantages of Target Costing

The main advantages of Target Costing are as under: -

i) **Positive Impact on Profitability:** Target Costing has positive influence on profitability of the association throughout the life cycle of every product.

ii) **Company Modest Future:** This costing benefits to create the competitive future of any company as the product is planned and manufactured as per-requirements of the product.

iii) **Top to Bottom Commitment:** It supports top to bottom commitment of development and product revolution and is aimed at identifying issues.

iv) **Valuable Addition to Life Cycle:** This Costing can be used as a valuable way to analyze the life Cycle products of the product.

v) **Management Control System:** It uses for management control system to prepare industrial strategies and to classify market opportunities, which may be transformed into real savings to achieve the best value.

vi) **Other advantages:**

a) It helps in promising that products are better matched to their customer's needs.

b) It helps in decreasing of development cycle of the product.

c) It is beneficial for decrease of costs of products substantially.

2.4.3 Disadvantages of Target Costing

Some of the disadvantages of Target Costing are as follows:

i) **Market Strategy may fail:** Target costing depends upon the correct estimation of final selling price of the product. Any mistake in this area may result in entire market strategy to fail.

ii) **Burden on Production:** Estimation of a price very low and fixing accordingly very rigid limit on cost may place the unrealistic burden on the production department.

iii) **Lack of Harmony:** It is very problematic to reach to a harmony on the appropriate design of the product, because the opinion of the design team members may vary.

iv) **Lengthy and Time Consuming:** This system is extensive and time-consuming process. This delay led to serious cost over runs.

v) **Cost Cutting:** A large amount of necessary cost cutting may result in figure printing in several ports of the company. It may take reserves in one part, while there may be cost discount in some other parts.

2.5 Life Cycle Costing

Life Cycle Costing or Product Life Cycle Costing or PLCC is a system that tracks and accumulates the actual costs and revenues which calculates the cost object from its creation to its desertion. It aims in cost determination of a product; project etc. over its estimated life. PLCC includes in tracing the costs and revenues on a product-by-product base over several calendar periods.

Life cycle costing is a process of determining how much money one can spend on an asset over the span of its useful life. It covers the cost of an asset from the date of purchase to the date of get rid of from it.

2.5.1 Characteristics or Features of Life Cycle Costing

The important characteristics or features of Life Cycle Costing are as follows:

i) **Tracing of Cost & Revenue:** Product Life Cycle Costing system includes tracing of the costs and the revenues of a product over a number of calendar periods throughout its life cycle.

ii) **Traces Research, Design & Development costs:** Product Life Cycle Costing advices research, design and development costs and total scale of these costs for each separate and different product and compared with product revenue.

iii) **Challenges & Opportunities in Each Phase:** Each phase of the product life-cycle carriages different challenges and opportunities that may require different strategic actions.

iv) **Report Generation:** It helps in the generation of report for costs and revenues.

v) **Lengthy:** Product Life Cycle may become lengthy by finding new users or by increasing the consumption of the present users.

2.5.2 Purposes of Product Life Cycle Costing

The important purposes of Product life cycle costing are as follows: -

i) **Development of Total Costs:** PLC costing provides assistance in the development of a sense of total costs associated with a product; which will help in identifying as the profits earned during manufacturing phase would cover the costs in development & decommissioning phase.

ii) **Identification of Environmental Cost & action thereon:** It identifies a product's environmental cost consequences and to initiate action for reducing or eliminating such costs.

iii) **Planning & Decommissioning Costs:** It is helpful in identifying the planning and decommissioning costs during the product and process design phase, so that costs in that phase are managed and control.

2.5.3 Stages of Product Life Cycle Costing

Following are the main stages of Product Life Cycle Costing:

i) **Market Research:** It will create what product the customer wants; how much he is ready to pay for it and how much he will pay.

ii) **Specification:** It will give details such as essential life, maximum allowable maintenance costs, manufacturing costs, mandatory delivery date, and projected performance of the product.

iii) **Design:** Proper drawing and process schedules or lists are to be defined.

iv) **Sample Manufacture:** Initially samples are tasted, and then these samples

are being developed into product if sample tasting is successful.

v) **Development:** When a new product is introduced for the first time, it rarely meets the requirements of the customers. So, changes and developments are done in the product to meet the requirement of the customers.

vi) **Tooling:** It means investing huge amount for installing various tools and equipments for production.

vii) **Manufacture:** The manufacture of a product includes the purchase of raw materials and machines. The use of labor and manufacturing expenses will be included in the cost of the product.

viii) **Decommissioning:** When the process of manufacturing a product comes to an end, then the used plant and machinery in the production should be sold or scrapped.

2.5.4 Advantages of Life Cycle Costing

Some of the advantages of Life Cycle Costing are as follows:

i) **Generates Revenue or Decreases Costs:** PLCC results in earlier action in generating the revenues or decreasing the costs than otherwise might be taken into consideration.

ii) **Ensures Better Decision:** It ensures a better decision from a perfect and realistic assessment of costs and revenues at least within a specific life cycle stage.

iii) **Long Term Rewarding:** Product Life Cycle Costing facilitates and promotes long term rewarding.

iv) **Framework for incremental cost:** It provides overall framework for the consideration of total incremental costs over the period of life of the product.

v) **Select the Highest Profitable Product:** Life Cycle Costing will permit the company to select the most profitable product which will be produced. It will help to maximize shareholder capital as well as management performance. It also allows the opportunity to choose from one product over another product.

vi) **Encourage Management to have a Long-Term View:** This method will allow the management to focus on the long-term future of the company, rather than meeting short term targets and getting high bonuses.

2.5.5 Disadvantages of Life Cycle Costing

Some of the disadvantages of Life Cycle Costing are as follows:

i) **Estimate only:** This method relies deeply on the valuation of revenue that receives from market research and past knowledge. If the sale figure is not ascertained properly, then the whole system will not work. The product will have reduced profit or even make loss to the company.

ii) **No Flexibility when Market changes:** The life cycle imagines the market to remain same throughout the life of the product. But everything changes from time to time, and it has its impact on our product life.

iii) **Costly:** Maintaining a life cycle costing may be a bit costly.

iv) **Time Consuming:** It is a time-consuming process.

v) **Unexpected events:** We may observe unexpected events such as labour strikes, material shortage etc. There may be unexpected change in the repair cost due to future difficulties such as increase in occupants.

2.6 Quality Costing

Quality Costing (Cost of Quality or Quality Cost) is distinct as a procedure that allows an organization to determine the extent to which its properties are used for activities that prevent poor quality, that evaluate the quality of the organizations products or services and that result from internal and external failures. Having such information allows an organization to determine the probable savings to be gained by realizing process developments.

In simple words, Quality Costing means the costs which the company incurs to develop or come up with a quality product. This involves the cost to detect, prevent and to address quality issues in a product. The main objective of the quality costing is to ensure that the product meets the expectation of the customers.

2.6.1 Uses of Quality Costing

With the help of Quality Costing, it is possible to:

i) Assess the future resource requirements i.e., cost wise projection of different items.

ii) Assess the comparative costs of potential acquisitionsi.e., investment appraisal.

iii) Decide the sources of supply i.e., financing.

iv) Account for resources used now or in the past i.e., reporting and auditing.

v) Improve system design i.e., manpower and utilities over the life cycle.

vi) Optimize operational and maintenance support.

vii) Assess when assets reach the end of their economic life and whether renewal is required

2.6.2 Types of Quality Costing

There are four categories of Quality Costing:

i) **Prevention Cost:** These costs help a company to prevent or minimize quality issues from occurring. These are the most avoidable problems. At the initial stage results if labour and manufacturing expenses are saved then the product cost can be minimized.

ii) **Appraisal Costs or Inspection Costs:** These costs include inspections to prevent quality issues from occurring. For example, encouraging or allowing the production employees/workers to inspect the parts of raw materials when they arrive. Also, they need to examine the elements when they leave the production floor. Those inspections make sure timely catching of issues, if any.

iii) **Internal Failure Costs:** Internal Failure costs include tangible costs after a company manufactures a defective or inferior product. In this case, the shipment will not be delivered to the customer. We observe more scrap, waste and spoilage costs due to internal failure reason. It includes the cost of direct material, direct labor, manufacturing overhead, disposal of defective products etc.

iv) **External Quality Costs:** The external failure cost includes both tangible and intangible costs of a product which dispatched/sent to a customer. In such a case, the company will have to incur extra customer support like Product recall cost. In addition, the company would also have to bear the cost of a bad reputation and the cost of losing the customers.

2.6.3 Prevention Cost

Prevention costs are those expenditures which are incurred to prevent or avoid quality problems. These costs are related with the operation, design and maintenance of the quality management system of the organization. These costs are planned and expenses have been made before actual operation, and they could include:

i) **Product or Service Requirements:** Creating the specifications for incoming materials, processes, finished products and services.

ii) **Quality Planning:** Creating the plans for quality, reliability, operation, production and inspection etc.

iii) **Quality Assurance:** Creation and maintenance of the quality system.

iv) **Training:** Development, preparation and maintenance of programs.

2.6.4 Appraisal Cost

Appraisal costs mean those costs which are associated with the measurement and monitoring of activities related to quality. These costs are connected with the suppliers' and customers' evaluation of purchased materials, processes, products, and services to ensure that they conform to specifications. They could include:

Verification: Verification is the checking of incoming materials, process setup, and product against agreed specifications etc.

i) **Quality Audits:** It means the confirmation that the quality system is functioning correctly.

ii) **Supplier Rating:** The assessment and approval of suppliers of products and services.

2.6.5 Internal Failure Costs

These are the costs which occur before the product or service is transported to the customer.

Internal Failure Costs are those cost which takes place before the product or service is transported to the customer. These costs arise when the results of certain work fail to reach design quality standards and are detected before they are transferred to the customer. They could include:

i) **Waste:** Performing the unnecessary/useless work or holding of stock as a result of error, poor organization, or communication.

ii) **Scrap:** Scraps are the defective product or material that cannot be repaired, used or sold.

iii) **Failure Analysis:** Activities required establishing the reasons of internal product or service failure.

2.6.6 External Failure Costs

This cost has been incurred after defects are being discovered by customers. These are the costs which occur when products or services fail to achieve designed quality standards, are being noticed after they are being transferred to customer. They could include:

i) **Repairs and Servicing:** Repairs and Servicing of both returned products and those in the field.

ii) **Warranty Claims:** Failed products that are being replaced or serviced and those that are being re-performed under a guarantee.

iii) **Returns:** Handling and investigating the rejected or recalled products, including transportation costs.

2.7 JIT (Just-In-Time)

JIT is an abbreviation used for Just-In-Time. It is a system for the management of inventory at the store with the approach to have a zero or no inventory at the store. According to JIT approach, material should only be purchased when it is actually required for the production. It is mainly based on two principles i.e.,

(i) Produce the goods only when it is required, and

(ii) The goods should be delivered to the customers only when they want. In this system, production process is actually started after the orders have been received from the customers.

In a clearer way, the Just-In-Time inventory system puts emphasis on "the right material, at the right time, at the right place, and in the exact amount" without the safety net of inventory.

This inventory system is a management strategy system that aligns raw material

order from dealers directly with production schedules companies employ. This strategy is deployed to increase the productivity and decrease waste by receiving goods as only they need them for the production process, which reduces inventory costs. The JIT inventory system is different from Just-in Case strategies, where producers hold sufficient inventories to have enough products to grip to grip maximum market demand.

2.7.1 Advantages of JIT

Some of the advantages of JIT inventory system are as follows:

i) **Less Space Needed:** When you have a faster turnaround or movement of stock, you do not require as much warehouse or storage space to store goods. This decreases the amount of storage an organization needs to rent or buy, release up funds for other ports of the business.

ii) **Waste Reduction:** A faster turnaround of stocks avoids goods becoming obsolete or spoiled while remaining in storage house, reducing waste. This saves money by blocking investment in unnecessary stock and reducing the need to replace old stock.

iii) **Smaller Investments:** JIT inventory management system is a suitable option for the small companies that don't have huge funds available to purchase huge amount of stock at a time.

All of these advantages will result in the saving money for the company.

2.7.2 Disadvantages of JIT

Some of the disadvantages of JIT inventory system are as follows:

i) **Lack of Control over Time Frame:** The businesses have to rely on the timeliness of dealers for each order puts you at a risk of delaying your customers, receipt of goods. If you don't meet your customers' potentials, they could take their business elsewhere which would have a huge impact on your business.

ii) **Risk of Running Out of Stock:** By not carrying much stock, the business has the correct procedures in place to accrue stock at right quality and quantity. To do this, you need to have a good relation with your creditors or suppliers.

2.8 Illustrations

Illustration 1: AJ Ltd., a manufacturing company, produces two products i.e., X and Y. The particulars relating to two products are given below:

	Product X	Product Y
Direct material cost per unit in Rs.	10	12
Direct wages per unit in Rs.	10	8
Units produced	200	200
Direct labour per unit in Rs.	12	12
Material moves per product line	10	14

Budgeted material handling cost Rs. 24,000. Determine cost per unit of the products using volume-based allocation method (Direct labour hour rate). Determine cost per unit of the products using ABC method

Solution:

1. Under Traditional Costing method, the amount of factory overhead i.e., Material Handling Cost of Rs. 24,000 is to be absorbed on the basis of Direct Labour hours method.

Total direct labour hours for Product X and Y

= No of Units produced × Direct labour hour p.u.

= (200 × 12 + 200 × 12) = 4800 labour hours.

So, Total Factory Overhead/Total labour Hours = Rs. 24,000/4800 = Rs. 5

Total Cost per unit under Traditional costing method for the products X and Y

Particulars	Product X (in Rs.)	Product Y (in Rs.)
Direct material cost per unit	10	12
Direct wages per unit	10	8
Prime Cost	20	20
Factory Overhead: Material Handling Cost:		
Product X: 12 Labourhrs x Rs. 5	60	—
Product Y: 12 Labourhrs x Rs. 5	—	60
Total Cost	**80**	**80**

2. Under ABC Costing method, the Factory Overhead is to be absorbed on the basis of number of materials moves in product lines.

Here, total no of material moves = 10+14 = 24.

So, factory Overhead per material move = Total Factory Overhead/Total no. of material moves = 24,000/24 = Rs 1000

Thus, Total Factory Overhead absorbed

Product X = (1,000 x 10) = Rs. 10,000

Product Y = (1,000 x 14) = Rs. 14,000

Statement showing Total Cost per unit under ABC Method for the product X and Product Y

Particulars	Product X (in Rs.)	Product Y (in Rs.)
Direct material cost	10	12
Direct wages	10	8
Prime Cost	20	20
Factory Overhead: Material Handling Cost:		
Product X: (10,000/200)	50	—
Product Y: (14,000/200)	—	70
Total Cost	**70**	**90**

Illustration 2: A company manufactures 2 products. Details are as under:

Product	Annual output	Total Machine Hours	Total no. of Purchase order	Total no. of Set ups
A	5,000	20,000	160	20
B	60,000	1,20,000	384	44
Total	65,000	1,40,000	544	64

The annual overhead is as under:

Volume related activity costs Rs. 5,50,000; Set up related costs Rs. 8,20,000; Purchase related costs Rs. 6,18,000.

You are required to calculate the overhead cost per unit of each Product A and Product B based on: 1. Traditional method, and 2. ABC method.

Solution:

Calculation of Overhead cost per unit under Traditional Costing Method

Total Overhead = 5,50,000 + 8,20,000 + 6,18,000 = Rs. 19,88,000

Machine Hour Rate is used for charging overhead A and B

MHR = 19,88,000/1,40,000 = Rs 14.20 per Machine Hour

Statement showing Overhead Costs

Particulars	A	B
Machine Hours (a)	20,000	1,20,000
MHR (b)	Rs. 14.20	Rs. 14.20
Total Overhead (c = a × b)	Rs. 2,84,000	Rs. 17,04,000
Output (d)	5,000	60,000
Overhead Per Unit (c/d)	Rs. 56.80	Rs. 28.40

Calculation of overhead cost per unit under ABC Method

Under ABC method separate Overhead Rate is calculated:

1) MHR = Volume Related Overhead / Machine Hours = 5,50,000/1,40,000 = Rs. 3.93

2) Cost per set up = Set up Related costs / No. of set ups= 8,20,000/64 = Rs. 12,812.50

3) Cost per purchase order = Purchase Related cost/ no. of order= 618,000/544= Rs. 1,136.03

Statement showing overhead cost per unit

Particulars	A	B
Output (a)	5,000	60,000
Volume related activities	Rs. 78,600	Rs. 4,71,600
Set up related cost	Rs. 2,56,250	Rs. 5,63,750
Purchase related costs	Rs. 1,81,765	Rs. 4,36,236
Total Cost (b)	Rs. 5,16,615	Rs. 14,71,586
Overhead per unit (b/a)	Rs. 103.32	Rs. 24.53

1) Volume related activity = 20,000×3.93=Rs. 78,600+(12,000×3.93)=Rs.4,71,600

2) Set up related costs=20×12,812.50=Rs.2,56,250+(44×12,812.50)= Rs. 5,63,750

3) Purchase related cost = A = 160 × 1,136.03= Rs. 1,81,765, B = 384 × 1,136.03 = Rs. 4,36,236

Illustration 3 : The following information is available in respect of 2 products of a company.

	Product P	**Product Q**
Production (Units)	500	500
Labour Hours per unit	2	2
No. of Times material movement	5	10

Material Handling Cost is Rs. 30,000

Determine cost per unit of the products using Traditional method, and ABC method.

Solution:

Apportionment of material handling costs under Traditional Cost Method (Volume based)

Particulars	**Product P**	**Product Q**
Total Labour Hours worked (500 × 2 hrs.)	1,000	1,000
Material Handling Cost (30,000/2,000) per hr.	1,000 × Rs.15	1,000 × Rs.15
(Apportioned to the products)	= Rs.15,000	= Rs.15,000
Material Movement cost per unit	15,000/500=Rs.30	15,000/500=Rs.30

Apportionment of material handling costs under ABC Costing Method

Particulars	**Product P**	**Product Q**
No. of Material Movements	5	10
Rate Per Movement (30,000/15)	Rs. 2,000	Rs.2,000
Material Movement cost	5 × Rs.2,000	10 × Rs.2,000
(Apportioned to the products)	= Rs.10,000	= Rs.20,000
Material Movement cost per unit	10,000/500	20,000/500
	= Rs.20	= Rs.40

Illustration 4: The following information is available in respect of 2 products of XYZ Company Ltd.

	Product A	Product B
Produced Output (in Units)	1,000	500
Machine Hours per unit	3	3
Machine set up hours per product line	20	20

Budgeted Machine set up related cost: Rs. 18,000.

Determine cost per unit of the products using Traditional method and ABC method.

Solution:

Apportionment of Costs under Traditional Cost Method

Particulars	Product A	Product B
Total Machine Hours worked	3,000	1,500
Set up cost per Machine Hours worked (Rs. 18,000/4,500 hours)	Rs.4	Rs.4
Total Set up cost	3,000×4=Rs.12,000	1,500×4=Rs.6,000
Set up cost per unit	Rs.12,000/1,000=Rs.12	Rs.6,000/500=Rs.12

Apportionment of material handling costs under ABC Costing Method

Particulars	Product A	Product B
Machine Set up hours	20	20
Set up cost per Machine Set Up Hour (Rs. 18,000/40 hours)	Rs.450	Rs.450
Machine Set up costs	20×Rs.450 = Rs.9,000	20×Rs.450=9,000
Machine set up cost per unit of product	Rs.9,000/1,000 = Rs.9	Rs.9,000/1,000=Rs.18

In the first case, the number of units produced was same, but the number of material movements of product B was twice of that of the product A. Under Traditional method, material handling cost would be same but ABC Method would recognize the fact that such cost is dependent on number of movements not on volume of production. Therefore, material movement costs per unit under ABC method has been twice that of product A for product B.

Illustration 5: A company manufactures truck and would like to compute target cost.

Estimated Selling Price = Rs. 6,000

Target Profit required = 5% of estimated selling price.

Solution:

Target Cost= Estimated Selling Price - Target Profit.

Target Profit= Rs. 6,000 × 5% = Rs. 300

Target Cost= (Rs. 6,000 – Rs.300) = Rs. 5,700

Illustration 6: A company manufactures van and would like to compute Target Cost Gap.

Estimated Selling Price = Rs. 8,000

Target profit required = 5% of estimated selling price.

Estimated Cost = Rs. 8,000

Solution:

Target Cost = Estimated Selling Price - Target Profit

= Rs. 8,000 - (8,000 × 5%)

= Rs. 7,600

Target Cost Gap = Estimated Cost – Target Cost

= Rs. 8,000 – 7,600

= Rs. 400.

2.9 Summary

From the above discussion we could understand the concept and applications of activity based costing; activity based management; Target costing; life cycle costing; and JIT (Just-in-Time).

2.10 Questions

A. Multiple Choice Questions (MCQ)

1. The budgeted total cost in indirect cost part, is divided by budgeted total quality of the cost allocation base, is calculated by—

   a) Budgeted Direct Cost Rate b) Budgeted Indirect Cost Rate

   c) Expected Indirect Cost Rate d) Direct Budgeted Percentage

2. In an Activity Based Cost system, an activity unit of work or task with differentiated purpose will be classified as—

   a) Different Task b) Purpose Cost

   c) An Activity d) An Allocation Cost

3. The costs of all the activities for individual products or services can be called—

   a) Purpose Level Costs b) Output-Unit Level Costs

   c) Input-Unit Level Costs d) Activity Level Costs

4. In an Activity Based Costing implementation, the products diverse demand is based on—

   a) Batch Size. b) Complexity

   c) Process Steps d) All of these

5. In Activity Based Costing system, the description of activity can be classified as—

   a) Activity List b) Activity Dictionary

   c) Active Purpose d) Both (a) and (b)

6. The target price is subtracted from per unit target operating income to calculate—

   a) Total Current Full Cost b) Total Cost Per Unit

   c) Target Operating Income Per unit d) Target Cost Per Unit

7. An income, which a company aims to earn by selling each unit of market offering is classified as-

   a) Target Operating Income Per Unit b) Target Cost Per Unit

   c) Total Current Full Cost d) Total Cost Per Unit

8. The total cost incurs by customer to use, acquire maintain and dispose service or product is classified as—

   a) Budgeted Life Cycle b) Target Life Cycle

   c) Customer Life Cycle d) None of these

9. An incendivity of demand in relevance to change in price will be called-

   a) Demand Elasticity b) Price Elasticity

   c) Price Inelasticity d) Demand Inelasticity

10. The practice seller to change higher price for same market offering is classified as—

    a) Peak-Load Pricing b) Elastic Pricing

    c) Elastic Demand d) Inelastic Demand

B. Short Answer Type Questions

1. What is Strategic Cost Management? Discuss any two advantages of Strategic Cost Management.
2. State the Features of Strategic Cost Management. State few names of Tools of Strategic Cost Management.
3. State the need for SCM System.
4. Write a short note on: ABC. Discuss any two objectives of ABC system.
5. What is Implementation of Activity Based Costing?
6. What are the advantages of Activity Based Costing?

C. Broad Answer Type Questions

1. What is Target Costing? State any two disadvantages of ABM.
2. Discuss any three advantages of ABC.

3. What is ABM? State the disadvantages of ABC.
4. What is Life Cycle Costing? State the characteristics of Life Cycle Costing.
5. What is JIT? What is Quality Costing? State the advantages of JIT.
6. What are the disadvantages of Activity Based Costing? What are the areas of using Activity Based Management?

Answer Key

1(b) 2(c) 3(b) 4(d) 5(d) 6(d) 7(a) 8(c) 9(d) 10(a)

Unit 3 ❑ Performance Measurement

Structure

3.0 Objectives

After studying this unit you will be able to learn the—

- ❖ concept of performance measurement;
- ❖ techniques of performance management;
- ❖ concept of BSC; and
- ❖ concept of Responsibility accounting.

3.1 Introduction

Performance Measurement is one of the vital techniques of monitoring various activities in an organization. The process of control generally includes setting a performance target, measuring performance, comparing performance with the target, finding out the difference between the actual performance and the target performance, if any, taking suitable actions in response to the variance.

3.2 Performance Measurement

Performance Measurement can be defined in the strict term as "Measurement on a regular basis of the results (outcomes) and productivity of processes, services or programs". However, Performance Measurement in today's economy has become an important strategic, inclusive and high-level process than is connected in this basic definition.

Performance Measurement is the process of analyzing the efficiency of a business organization. It is the basis for the management to perform the controlling activities in the organization. Regular comparison of actual costs, revenues and profits with the set standard costs, revenues and profits helps the management for taking decision for the future course of actions. The main purpose of performance measurement is to establish the strategy of the firm.

3.2.1 Characteristics of Effective Performance Measurement

The Effective Performance Measurement Characteristics are as follows:

Defining and Aligning with Enterprise Strategies: Successful Performance-Measurement systems are constructed on a solid strategic foundation in which three

strategic components are clearly defined: mission, vision and values. Based on conservation of assessment, specific strategies should be accepted to achieve organizational results.

Developing Meaning Performance Measurements: Selected Performance Measurement should be consistent and report not only on end outcomes, but also on transitional outcomes, process measures, such as efficiency, cycle time, and other output and activity data deliver the back-bone of any successful performance measurement system. As such, they should be effective.

Maximizing Data Integrity: Data should be collected, achieved, and examined in a uniform and reliable manner. To ensure data quality, it is recommended that data be authenticated and verified through sampling or independent means.

Enhancing Performance Reporting: Internal Reporting should be available to frontline managers and senior decisions-makers on a real-time basis so as to donate to the decision-making process. Therefore, reports should be completed and this should include measures, analysis, trends and suggestions for developments.

Effectively Driving Decision Making: Performance Measures should deliver appropriate information to adopt budget and make investment decisions.

Improving Evaluation and Analysis: Process Measure and services levels are evaluated in cycles of 1 to 2 years. Outcome and policy measures, on the other hand, are estimated in cycles of 2 to 5 years to validate cause effect relationships.

3.2.2 Purposes of Performance Measurement System

The important purposes of using Performance Measurement system can be stated as under—

Planning, Control and Evaluation: The process of examining measurement in orders to make decisions or estimations and is central to the operation of an effective and effectual planning, control or evaluation system.

Communication: Measurement is mandatory to reduce emotionalism and to raise productive problem solving, increase and monitor progress and to give feedback and support behaviour.

Resource Allocation: Helps an organization to direct scare resources to the most alternative improvement activities. It is a direct stimulus to action.

Measurement and Motivation: Improves performances in entities are achievable and challenging targets.

Long-Term Focus: Suitable performance Measurement can guarantee that managers adopt a long-term perspective.

3.2.3 Advantages of Performance Measurement

In most cases, the benefits or advantages of a Performance Management system will include:

Reliability: The selection of employees for the purpose of promotion, transfer or other action should be more reliable. The right person should be given the right job very often.

Assurance and Retention: More highly inspired employees are likely to be more loyal so that management will have better achievement retaining valuable employees even as the nation's workforce becomes more mobile. In addition, assurance should improve, making the workplace more enjoyable, and output per hour worked should increase, cutting labor costs.

Organizational Impacts: Those who do research on human growth in maturity and accountability should feel that they are precisely judged and rewarded on time. The organization should see daily benefits including financial benefits from having more accountable people throughout.

Motivation: All the employees of the organization (as well as supervisors and managers) should be more highly inspired. Every employee will understand that the organization rewards achievements, and many will be encouraged to improve their performance.

Training Needs: While correct evaluation is most often suggested for its role in making "good employees better", it has a valuable helpful use as well. It is normally assumed that when an employee has completed the normal training, he or she is fully trained.

3.3 Techniques of Performance Measurement

There are so many techniques of Performance Measurement System but as per the syllabus only few of them have been discussed in this unit. Those techniques are Return on Investment, Residual Income, Different Value-Added Concepts like Economic Value Added, Market Value Added, Cash Value Added etc., and Balanced Scorecard, Responsibility Accounting and Reporting. Each of the techniques has been described one by one.

3.3.1 Return on Investment (ROI)

Return on Investment (ROI) establishes the relationship between Profit and Total Investment. It is a performance measure used to estimate the efficiency of investments

or associate the productivity of a number of different investments. This technique is also known as Return on Capital Employed (ROCE). ROI directly measure the amount of return of a particular's investment, relative to the investment's costs. To compute ROI, the profit of an investment is divided by the cost of that investment and the result is expressed in terms of percentage or ratio.

Here, profit may mean Earnings before Interest and Taxes (EBIT) or Earning after Taxes (EAT). In the same way, investment may mean total assets employed or net assets employed i.e., total assets less current liabilities. For measuring the performance of organization as a whole, EBIT and Net Assets is taken into consideration and for measuring the performance of a particular unit or branch, total assets employ in that unit or branch is considered. Following formulas may be used for calculating ROI depending upon the information available.

ROI = (Current Value of Investment)/(Cost of Investment)

ROI = EBIT ÷ Total Assets

ROI = EBIT ÷ Net Assets

ROI = (Revenue-COGS)/COGS

ROI = Investment Gain/Investment Base

Net Assets = Total Assets - Total Current Liabilities

ROI = Profitability × Turnover = (EBIT ÷ Sales) × (Sales ÷ Total assets or Net Assets)

● Advantages of ROI

Some of the benefits or advantages of ROI are as follows:

It helps the stockholders to calculate the gain which can be achieved in future and calculate the investment which can be achieved in the future after making an investment and therefore, he saves on time as well as money.

The Return on Investment also helps in the discovery and measurement of expected returns on various investment opportunities.

It is helpful in the measurement of competition around the market.

The most important benefits of using ROI for investment choice are that it is simple but effective.

Return on Investment can be understood by the layman as well. It is universally accepted by the finance and investment and by the business as well.

The borrowing policy of the enterprise may properly be formulated. Always the rate of interest on loans/ borrowings should be less than the return on investment/ capital employed.

The outsiders like bankers, creditors, financial institutions etc., will be able to find whether the concern is viable for giving credit or extending loans or not

● Disadvantages of ROI

ROI has the following limitations:

Reasonable definition of profit and investment are very tough to find. Profit may be defined in various concepts such as profit before interest and tax (PBIT), profit after interest and tax (PAT), controllable profit, profit after deducting all allocated fixed costs etc.

While associating ROI of different companies, it is essential that the companies use similar accounting policies and methods in respect of valuation of stocks, valuation of fixed assets, treatments of research and development expenditure etc.

3.3.2 Residual Income (RI)

The concept of Residual Income or RI may be traced back to 1890s when economist Alfred Marshal stated, "What remain after devoting interest on his capital at the current rate may be called his earnings of undertaking or management". Residual Income is the difference between Net Profit before Taxes (NBIT) and Capital Charge. Capital charge is frequently taken as the product of Opening Capital Employed and the Risk-adjusted Cost of Capital (which is also known as Required Rate of Return).

In other words, Residual Income (RI) is the amount of operating profit leftover after paying all costs of capital used in the process of earning revenues. It is considered company's net income or net profit that exceeds its required rate of return. Residual Income, in general, issued to evaluate the performance of a capital investment, team, department, or business unit.Thus, the RI may be calculated as follows: -

RI = NIBT (or EBIT) - Required Rate of Return ×Opening Capital Employed

- **Advantages of RI**

Few of the advantages of RI are as follows:

The RI model gives very less or little weight to the terminal value.

RI models use accounting data which are readily available.

It can be used in the valuation of non-dividend paying companies.

RI method can be used when cash flows are not easily predictable.

It can be utilized in valuing the companies without positive expected near term free cash flows.

- **Disadvantages of RI**

Some of the disadvantages of RI are as following: -

The RI model is based on accounting data which is prone to be manipulated.

The accounting data may require adjustment.

This model of performance measurement expects that the clean surplus relation holds good.

The model assumes that the cost of capital is equal to interest expense.

It does not facilitate the comparison between divisions as the RI is driven by the size of divisions and of their investments.

3.3.3 Economic Value Added (EVA)

Economic Value Added or EVA is considered as refined version of Residual Income (RI). It is a financial measurement of the return received by a firm that is in additional of the amount that the company needs to earn to appear shareholders. In other words, it is a measure of an organizations economic profit that receipts into account the opportunity loss of devoted capital and ultimately measures whether organizational values were created or lost. It is based on the residual wealth which is computed after deduction its cost of capital from its operating profit, adjusted for tax on a cash basis. EVA is also considered as economic profit since it tries to capture the true economic profit of the organization. EVA is the difference between the Net Operating Profit after Tax (NOPAT) before interest and the capital charge. EVA may be computed by the following formula:

EVA = NOPAT (Before Interest on Debt) - [WACC × Average Capital Employed]

WACC-Weighted Average Cost of Capital

● Advantages of EVA

Some of the advantages of EVA are mentioned below-

EVA is a tool that gives benefits to focus managers' attention on the influence of their decisions in growing shareholders wealth.

EVA is a good indicator for investors, as on the basis of EVA, they can choose whether a particular firm is worth investing in the project or not.

EVA can be used as a source for evaluation of goodwill and shares.

EVA is a good regulatory device in an organized enterprise. To ascertain the involvement of EVA of each decentralized unit of the company, management can apply EVA technique.

EVA relates with the imbursement schemes (for both operation and managers) and this can be established towards protesting (or rather improving) shareholder's wealth.

● Disadvantages of EVA

The disadvantages of EVA are as follows-

EVA does not take size variances into consideration. A plant or partition which is larger in size will apparently have a higher EVA, in contrast to something that is smaller in size, which could change the actual calculations and give you a wrong result.

EVA can be used for personal advances by the manager, which might not be particularly gainful for the firm.

EVA might overstate the instant need to generate the results. It might put extra importance on short-term gains than long-term ones.

3.3.4 Market Value Added (MVA)

Market Value Added or MVA is a computation which shows the differences between the company's market value and the capital contributed by all the investors,

both shareholders and bond holders. In other words, it is the sum of all principal claims detained against the company plus, the market value of debt and equity. It is contrary to what everyone thinks, MVA is not a performance indicator instead, it is a metric used to measure wealth. It can be calculated as: -

MVA = V - K

Where V is the Market Value of the firm and the including the value of the firm's equity and debt and K is the total amount of Capital Invested in the firm.

● Advantages of Market Value Added

The market value added grips quite advantages for any concern for that matter:

MVA boosts the survival chances of the company.

MVA as a performance indicator can be easily computed if a company's stocks are regularly traded on a stock exchange.

It is one of the significant performance calculating tools for any company with the support of the market value added, the presentation of the management can be simply measured.

● Disadvantages of Market Value Added

Following are the disadvantages of MVA: -

MVA does not consider the opportunity cost of the capital invested.

MVA ignores the consideration of interim cash return to the shareholders.

Using MVA tool is not suggested if the stock of a company is traded in the Over The Counter market (OTC) and the number of trade is low and irregular.

Beware that even if a company is publicly traded on an established stock exchange, the change in stock price can reflect the change in confidence of investors in the economic system as a whole or in the industry rather than in company performance!

3.3.5 Cash Value Added (CVA)

Cash Value Added, also called CVA, is a rather obscure metric development by the research firm Boston Consulting Group, which measures a company's ability to

create cash flow above and outside its cost of capital. In other words, CVA measures the ability of a company to generate cash flow in excess of investors' required return. It looks at how much money a company is generating though its operations. Generally speaking, a high CVA signals a company's capability to produce liquid profits from one financial period to another. CVA can be calculated in the following manner: -

Direct CVA = Gross Cash Flow - Economic Depreciation - Capital Charge

Indirect CVA = (CFROI - Cost of Capital) × Gross Investment

● Advantages of CVA

The Important advantages of CVA are as follows:

It is a way to measure company's real profitability.

It computes the amount which is left over once after the required return to investors is met.

CVA measures the strength of business performance of a company.

The Differences between RI and EVA

Features	RI	EVA
Definition	Residual income calculates the amount of asset utilization based on net operating profit.	EVA computes assets utilization amount which is based on net operating profit after tax.
Effectiveness	Residual Income is more effective when compared to EVA tool.	On comparison, EVA is less effective than RI due to tax adjustment.
Calculation	RI is derived on the basis of "Income Before Taxes".	After Tax Income is taken while calculating EVA.
Use of Capital Employed	Opening capital employed is used to determine Capital Charge under RI.	Average capital employed is taken to find Capital Charge in case of EVA.
Use of WACC	In case of RI, "Required Rate of Return" used for calculating capital charge may be WACC	Only WACC is considered for calculating capital charge in case of EVA.

	or may be somewhat different depending on the adjustment for risk factor.	
Investment	In case of RI, companies use total assets available as the definition of Investment.	In case of EVA, companies use total assets employed less current liabilities as Investment.

3.4 Balance Score Card (BSC)

BSC is an abbreviation used for Balance Score Card. It was developed to communicate the multiple, linked goals which companies must accomplish to stay in the competition on the basis of capabilities and innovation and not just on tangible fixed assets. BSC links a vision to strategic objectives measures, targets and creativities. It makes a balance of financial measures with performance measures and objectives connected to all or any other parts of the organization. It is a performance management technique of business that translates mission and strategy into objectives and measures which are organized into four aspects or perspectives namely:

1. **Financial:** Return on assets, profit margins, cash flows etc.
2. **Customer:** Customers' satisfaction, market share etc.
3. **Internal Business Process:** Quality, on time delivery, capacity utilization, employee retention etc.
4. **Innovation or Learning and Growth:** Development of new products.

The BSC focuses on achievement of a balance among various strategic measures so as to achieve integration of organizational and individual goals in the best interest of the business organization.

Thus, the Balance Score Card is a tool that helps to achieve better communication and a focused approach to implement the objectives and strategy of the firm. Balanced Score Card implies use of multiple measures, both financial and non-financial, for evaluating the performance of a business unit.

● Features of BSC

Some of the basic features are used in Balance Score Card:

i) **Objectives:** This replicates the organizations' objectives such as profitability or market share.

ii) **Targets:** This could be department based or overall, as a company. There will be specific targets that have been set to attain the measures.

iii) **Creativities:** These could be classified as actions that are taken to meet the objectives.

● Need for Balance Score Card

Following are some of the points that describe the need for implementing a Balance Score Card:

i) Increases the focus on the business strategy and its outcomes.

ii) Leads to improvised organizational performance through measurement.

iii) Align the workforce to meet the organizations strategy on a day-to-day basis.

iv) Targeting the way of factors or drivers of future performance.

v) Expands the level of communication on relation to the organization strategy and vision.

vi) Helps to arrange projects according to the timeframe and other priority factors.

● Advantages of Balance Score Card

Some of advantages of Balance Score Card are as follows:

i) **Better Strategic Planning :** The balance scorecard delivers a powerful outline for building a communication plan.

ii) **Improved Strategy Communication and Implementation :** Having a one-page picture of the policy permits companies to simply communicate strategy internally and externally.

iii) **Better Alignment of Projects and Initiatives** : The balance scorecard provides benefits to the organization to map their projects and creativities to the different strategic objectives, which in turn confirms that the projects and

creativities are tightly emphasized on transforming the most important strategic objectives.

iv) **Better Management Information :** The balance scorecard method supports organization design, key presentation indicators for their several strategic objectives. This confirms that companies are determining what actually matters.

v) **Improved performance Reporting :** The balance scorecard can be used to present the director the design of presentation reports. This certifies that the management reporting emphasizes on the most significant strategic issues and assists the companies to monitor the performance of their plan.

● Disadvantages of Balance Score Card

Disadvantages of BSC are specifically stated below:

i) **It Must be Tailored to Organization :** A BSC is expected to provide a framework from which to work from, however, it will still need to be customized to every organization using this system. This takes a huge time. Examples are helpful but cannot be copied due to the unique need of each business.

ii) **Need buy-in from Leadership to be Successful :** For the BSC system to be fully effective, it must be implemented from the bottom all the way to the top of the organization. It means it needs buy-in from leaders to be successful.

iii) **May get Complicated :** The framework itself of BSC takes some time and dedication to understand. There are numerous resources and case studies to understand from and it is simple to get bogged down with the various ways of using this method.

iv) **Require a lot of Data :** Most of the time balanced scorecards need managers and team members to report information, which means logging data. Many of them do not recommend this since they find it boring and also, it can get into the way of doing the required work to accomplish objectives.

3.5 Responsibility Accounting

Responsibility Accounting is a system so as to measure the plans (by budgets) and actions (by actual respects) of each and every responsibility center.

Responsibility Accounting is a method of control where responsibility is assigned for controlling the costs. In case of responsibility accounting system, the persons are held responsible for the control of costs. Proper authority is provided to the persons so that they can keep up their performance. In case the performance is not as per the predetermined or set standards, the persons who are assigned this duty will be personally held responsible for it. In responsibility accounting the stress is given on men rather than on systems.

Responsibility accounting is a system of accounting that recognizes different responsibility centres throughout the organization and depicts the plans and actions of each of these centres by assigning particular revenues and costs to the one having the relevant responsibility. It is also referred to as profitability accounting and activity accounting. Responsibility accounting emphasizes main attention on responsibility centres.

A Responsibility Center is a sub unit or part or section of an organization the manager of which is responsible and liable for a particular set of activities. If the manager's level is higher, greater the responsibility center he/she manages and larger the number of subordinates report to him/her. Mainly there are four types of responsibility centers:

i) **Cost Centre :** The center only donates to exact costs that have incurred. Here manager is responsible for costs only. For example-Housekeeping cost will only be made by housekeeping department as it has incurred the cost.

ii) **Revenue Centre :** The revenue center only loads to the generation of sales. Here the manager is responsible for the revenues only. For example-Sales department of an organization.

iii) **Profit Centre :** It donates to both revenue and expenses, resulting in profit and loss, respectively. Manager has the responsibility for revenues and costs only. For example-Product line is a profit center and the person accountable is the product manager.

iv) **Investment Centre :** The center is accountable for profit and returns on investment. The manager is responsible for investment, costs and revenues.

3.5.1 Features of Responsibility Accounting

Some of the features of Responsibility Accounting are as follows: -

i) **Input and Outputs:** Responsibility Accounting systems can be executed only on the basis of due information of input and output. The financial term of input is called cost, and outputs are consistently called revenues. Hence, cost and revenue information are vital for responsibility accounting.

ii) **Use of Budgeting:** Apart from the data of cost of revenue, strategic and actual financial data is also compulsory. It is only with current budgeting that the accounting plan application can be inter-connected to the concerned levels of management.

iii) **Performance of Reporting:** As responsibility account mainly relates to control, any deviation or trouble in the plan has to be noted and reported at the initial. On the report of such as issue, corrective actions have to be taken, such information is the basis on which responsibility or performance reports are prepared.

3.5.2 Objectives of Responsibility Accounting

Some of the objectives of Responsibility Accounting are as follows:

i) Each responsibility center has been specified with a target, which is communicated to the relevant management level.

ii) Due measures are taken by the top management regarding the target which is communicated to the responsible personnel.

iii) The responsibility for costs does not contain the policy costs and various other appropriate costs.

iv) At the end of the time period, there is an evaluation between the target and the actual performance.

3.5.3 Basic Process in Implementation of Responsibility Accounting

The basic process in implementation of Responsibility Accounting can be stated as follows:

i) Identification of the responsibility centers within the organization.

ii) Setting up the plans in terms of targets, budgets, standards or estimations in respect of the responsibility centers and communicating the concerned level of management.

iii) Requiring controllable and non-controllable activities at various levels of responsibility.

iv) Specifying accounting system for accruing information by areas of responsibility.

v) Making performance reports for providing information to the users.

vi) Determining the results of actual operations for each responsibility center.

vii) Checking the variances i.e., difference between the actual results and the estimated result, if any, and interpretation of such variances.

viii) Taking helpful and corrective action and communicating the managers about the responsibility centers.

The purpose of all these above-mentioned steps is to assign responsibilities to different individuals so that the performance is improved. If, in case, the performance is not up to the mark, responsibility may be assigned for it. Responsibility accounting will definitely act as control device and it will help inthe improvement of the overall performance of the business.

3.5.4 Advantages of Responsibility Accounting

The important advantages of Responsibility Accounting are as follows:

i) Responsibility Accounting creates a healthy mechanism for cost control.

ii) Communicates strategy throughout the company.

iii) It makes a link for the strategic objectives in the long term and annual budgets.

iv) Conducts periodic performance reviews to learn about and improve strategy.

v) Budgeting is put in place which helps in the judgement of actual achievement on the ground.

vi) Reporting assembly and timings are enabled because such items are omitted which is beyond the preview of individual responsibility of the designated personnel.

vii) The awareness among designated personnel is improved which is likely to lead to greater productivity. They will also be held responsible for their actions, and deviation will necessarily call for an explanation.

3.5.5 Disadvantages of Responsibility Accounting

Some of the disadvantages of Responsibility Accounting are as follows:

i) There could be occurrences of individual interest and organizational interest to be at loggerheads. Such battles are likely to create problems for policy implementation.

ii) The tool can only be effective if an outstanding reporting, system is put in place.

iii) Fresh analysis of the predictable methods of all the classification of expenses may be awkward.

3.5.6 Responsibility Reporting

Responsibility Reporting is an accounting and management reporting system focused towards controlling costs of the responsibility centers. It includes in defining and grouping of responsibilities within an organization's construction, determination and assignment of costs to suitable levels of activities. Responsibility report forms a logical framework within which the management estimates the performance of the managers of responsibility centers. It helps taking helpful measures to improve performance towards attaining goal of the organization as a whole.

3.6 Illustrations

Illustration 1: From the following information calculate Residual Income and EVA.

EBIT Rs.1,00,000

Investments Rs. 3,00,000

10% Debentures Rs.50,000

Shareholders Equity Rs.2,00,000

Risk-free rate of return 6%

Market rate of return 10%

Beta factor (β) 1·2

Tax rate 50%

Solution:

RI=NIBT (or EBIT) – (Required Rate of Return × Opening Capital Employed)

= Rs.1,00,000 – (10% of Rs.3,00,000) = Rs.70,000

[In absence of information relating to the required rate of return, it is assumed that 10% is the required rate of return. Alternatively, weighted average cost of capital may also be taken as required rate of return.]

EVA = NOPAT (before interest on debt) – WACC × Average Capital Employed

NOPAT (Net Operating Profit After Tax) = Rs.1,00,000 – (50% of Rs.1,00,000)

= Rs.50,000

Cost of Debt Capital = 10% (1 – tax rate)

= 10% (1 – 0.50) × 100

= 5%

Cost of Equity (Under CAPM) = Risk Free Rate + β (Market Rate – Risk Free Rate)

= 6% + 1.2 (10% – 6%)

= 6% + 4.8%

= 10.8%

Weighted Average Cost of Capital = (10.8% × 2,00,000 + 5% × 50,000) ÷ 3,00,000

= 8.03%

Therefore, EVA = Rs.50,000 – 8.03% of RS.3,00,000

= Rs.25,910

Illustration 2: An investor purchased property B, which is valued at Rs.8,00,000. Two years later, the investor sold the property for Rs.10,00,000. Calculate ROI

Solution :

ROI = (Rs.10,00,000 – Rs.8,00,000) ÷ (Rs.8,00,000)

= 25%

Illustration 3: Motor Van Ltd. had the best year ever, with sales of Rs. 45,00,000 and operating profit of Rs. 9,50,000. The balance sheet at the beginning of the year showed assets used in production with a cost of Rs.2,00,00,000 and accumulated depreciation of Rs.50,00,000. The company did not buy any assets during the year but did have depreciation expense of Rs.10,00,000. Calculate the ROI for the year.

Solution:

Book value at the beginning of the year = Rs.2,00,00,000 – 50,00,000

= Rs.1,50,00,000

Book value at the end of the year = Rs.2,00,00,000 – (50,00,000 + 10,00,000)

= Rs.1,40,00,000

So, the average book value of assets is Rs.1,45,00,000.

$$\text{ROI} = \frac{9,50,000}{1,45,00,\ 000} \times 100 = 6.55\%.$$

Illustration 4 : A firm invested Rs. 4,00,000. Cash in flow for that Rs. 5,00,000.What is the Return on Investment?

Solution :

$$\text{ROI} = \frac{5,00,000 - 4,00,000}{4,00,000} \times 100 = 25\%.$$

Illustration 5 : The operating data for two divisions of XYZ Ltd are given below :

	Division A	Division B
	Rs.	Rs.
Turnover	60,000	75000
Operating asseto	30,000	25000
Net Operating Income	5,100	5625
Long-term debt	5,000	6000

Compute rate of return for each division using ROI

Solution :

$$\text{ROI} = \frac{\text{Net Operating Income}}{\text{Operating assets}} \times 100$$

In case of Division A

$$\text{ROI} = \frac{\text{Rs. 5100}}{\text{Rs. 30,000}} \times 100 = 17\%$$

In Case of Division B

$$\text{ROI} = \frac{\text{Rs. 5625}}{\text{Rs. 25000}} \times 100$$

= 22·5%

Illustration 6 : Calculate Economic Value Added for a Company.

Particulars	**2014 Rs.**	**2015 Rs.**	**2016 Rs.**
Capital Invested (beginning of year)	54, 000	50, 000	55, 000
WACC	8%	8.2%	8.5%
NOPAT	7, 500	7, 000	4, 500

Solution :

Calculation for Economic Value Added (EVA)			
Particulars	**2014 Rs.**	**2015 Rs.**	**2016 Rs.**
Capital Invested (beginning of the year)	54,000	50,000	55,000
WACC	8%	8.2%	8.5%
Finance Charge	**4,320**	**4,100**	**4,675**
NOPAT	7, 500	7, 000	4, 500
Finance Charge	**4,320**	**4,100**	**4,675**
Economic Value Added	3,180	2,900	(–)175

Illustration 7 : Compute for the residual income of an investment center which had operating income of Rs.5,00,000 and operating expenses of Rs.20,00,000. The cost of capital is 10%.

Solution :

Desired Income = Minimum required rate of return × Operating expenses

= 10% × 20,00,000

= Rs.2,00,000 (Desired income)

RI = Operating income – Desired Income

= Rs.5, 00, 000 – 2, 00, 000

= Rs.3,00,000.

Illustration 8 : Evaluate Economic Value Added from the following information-

Total Assets	Rs. 20,00,000
Total Liabilities	Rs. 10,00,000
Current Liabilities	Rs. 4,00,000
Operating Profit (before-tax)	Rs. 2,00,000
Operating Profit (after tax)	Rs. 2,00,000
Weighted average cost of capital	12%

Solution :

EVA = After tax operating income – [WACC × (Total assets – Current liabilities)]

= 2,00,000 – [12% × (20,00,000 – 4,00,000)]

= 2,00,000 – 1,92,000

= Rs. 8,000

Illustration 9 : A company has 20 cars in operation in its transport department. The budget based on 50,000 km of run for a month is Rs. 2,00,000 of which Rs.50,000 is fixed.

During the last month, the total km run by all the 20 cars were 45,000 km and the actual costs incurred were Rs. 1,90,000.

The company could hire a car @ Rs.4.25 per km run.

Evaluate the performance of the transport department on the basis of (a) Cost Center (b) Profit Center.

Solution :

Particulars	Amount Rs.
Total budgeted expenditure	200,000
Less: Fixed Costs	50,000
Variable Costs	1,50,000
Variable Costs per km [1,50,000/50,000]	3.00
Cost Center Basis :	
Allowed Costs: Variable (45,000 × Rs.3)	1,35,000
Fixed	50,000
Total	1,85,000
Actual Costs	1,90,000
Budgeted Variance	**5,000 (A)**
Profit Center Basis :	
Hire Charge (45,000 × Rs.4.25)	1,91,250
Actual Costs	190000
Profit Variance	**1,250(F)**

3.7 Summary

From the above discussion we could understand the concept of performance measurement; techniques of performance measurement; balance score card; and responsibility accounting.

3.8 Questions

A. Multiple Choice Questions (MCQ)

1. The most common and simple definition of time is called—

   a) Wall-Clock Time b) Response Time

   c) Elapsed d) All of these

2. Current Assets are subtracted from current liabilities to calculate—
   a) Opportunity Cost of Capital b) Working Capital
   c) Total Long-Term Assets d) All of these
3. The differences of Current Assets and the working Capital is equal to—
   a) Current Liabilities b) Long-Term Liabilities
   c) Residual Assets Value d) Net Residual Income
4. An Operating Income is divided by the revenues to calculate—
   a) Residual Income b) Return on after-tax Operating Income
   c) Return on Sales d) Return on Investment
5. Balance Scorecard act as a powerful-
   a) Development Frame Work b) Operations Frame Work
   c) Service Frame Work d) Organizing Frame Work
6. Personal Scorecard consists of information of—
   a) 2 Levels b) 3 Levels
   c) 4 Levels d) 5 Levels
7. Balance Scorecard measures with Benchmark for performance in—
   a) Financial Areas b) Nonfinancial Areas
   c) Development Areas d) Structural Areas
8. Import dimensions of communicating and learning includes communicating and educating, setting goals and—
   a) Gaining Consensus b) Lian Stakeholders
   c) Lian Reward to Performance d) Strategic Feedback
9. Which of the following statements are true about Responsibility Accounting?
   a) Responsibility Accounting results in inter-departmental conflicts
   b) In responsibility center more focus in paid on products, processes or jobs
   c) No focus is paid on controlling costs
   d) None of these

10. Contribution Margin Centre is also known as—

a) Expense Centre b) Profit Centre

c) Investment Centre d) All of these

B. Short Answer Type Questions:

1. What is Performance Measurement? State the two advantages of Responsibility Accounting?
2. What is Responsibility Accounting? Discuss any two disadvantages of Responsibility Accounting.
3. State any four benefits of Performance Measurement System.
4. State the Features of Responsibility Accounting.
5. What are the purposes of Performance Measurement System?
6. Discuss the advantages of EVA system.

C. Broad Answer Type Questions :

1. Write a short note on: EVA, RI, ROI.
2. What is MVA? State the benefits of Performance Measurement System.
3. What is Cash Value Added? Distinguish between RI and EVA.
4. Write a short note on-BSC. State the features of Balance Score Card.
5. Discuss different types of Responsibility Centres.
6. What are the disadvantages of EVA system? Discuss the Importance of MVA.

Answer Key

1(d) 2(b) 3(a) 4(c) 5(d) 6(c) 7(b) 8(c) 9(a) 10(b)

Unit 4 ❑ Transfer Pricing

Structure

4.0 Objectives

After studying this unit, you will be able to learn

- ❖ the concept of Transfer Pricing;
- ❖ advantages and disadvantages of Transfer Pricing;
- ❖ need for Transfer Pricing;
- ❖ methods of Transfer Pricing; and
- ❖ the concept of International Transfer Pricing

4.1 Introduction

Generally, a large business organization is divided into various departments or divisions or segments etc., so that organization can be managed efficiently and effectively. A manager is assigned to each and every division with the responsibility to manage that division independently. In such organization, product or output of a division is very often transferred to another division(s), and the price charged by the

transferring division on the receiving division for the output/goods supplied/transferred is known as Transfer Price. Transfer Pricing is the location of the price for goods and services sold among measured (or related) legal objects within an enterprise. Transfer Pricing can be used as a profit distribution method to qualify under multinational corporation act. Profit or loss before tax to countries where it operates its business. Transfer Pricing outcomes in the setting of prices between divisions within an enterprise.

4.2 Transfer Pricing

Transfer Price may be described as the price charged by one sub-unit called transferor on the other sub-unit called transferee of the same business organization for goods supplied and/or services rendered. It is an accounting practice that denotes the price that one division of a company charges to another division for goods and services provided. Transfer Pricing is the price the establishment charges for the goods and services provided by its subsidiary or commonly controlled companies that are portion of the same larger enterprise.

Transfer Pricing can be conducted for tax savings purposes for the corporations; however, tax authorities may conflict their claims with the enterprises in this issue. Transfer Price depicts income or revenue for the transferor or selling sub-units and cost to the transferee or purchasing sub-units. Higher transfer price gives the higher income/profit for the supplying sub-unit and lower income/profit for the receiving sub-unit and vice- versa. However, total profit of the organization as a whole remains same.

● Advantages of Transfer Pricing

Some of the advantages of Transfer Pricing are as follows:

i) **Cost Saving for Departments:** This process results in cost savings for divisions because transfer price is frequently lower than the market price of the product, here for example if the multinational company produce charger as well as mobiles, then mobile division purchase charger from charger division of the company which will result in cost savings for mobile division of the company.

ii) **Transparency:** It makes transactions between various departments transparent because if the transferor department charges as per their wishes and then manipulating the department who is in need of the product, then the price of the final product will increase and this may create enmity between departments which in the long term can cause permanent damage to the company.

● Disadvantage of Transfer Pricing

Transfer of goods and services between divisions is not unusual. Pricing of these transfer poses complex problems because a wrong pricing method may misstate divisional profits and may kill entrepreneurial of divisional managers. But there is no easy answer to transfer pricing problems. The management must recognise it and give adequate thought with a view to forming a transfer pricing policy. Transfer pricing is a top management decision. It cannot be delegated to lower levels. Further such decisions cannot be made also in abstract form. Estimation of costs, cash flow etc. should be made in realistic form.

4.2.1 Need for Transfer Pricing

There are few specific reasons for using a Transfer Pricing Scheme. These reasons are—

i) Make separate profit figures for each division and thereby estimate the performance of each division separately.

ii) Helps to figure out the production, sales and pricing choices of the different divisions. Transfer Prices make managers alert about the value that goods and services have for another department of the firm.

iii) Transfer Pricing permits the company to generate profit (or cost) figures for each division separately.

iv) The transfer price will mark not only the reported profit of each center, but will also mark the provision of an organization property.

4.2.2 Objectives of Transfer Pricing

Some of the objectives of Transfer Pricing are as follows:

i) **Motivates the Manager:** A good transfer pricing system should motivate the managers of the sub-units (division/departments) in taking proper decisions.

ii) **Performance of Sub-Unit:** Transfer pricing should pay close consideration to the profitability of different divisions of the organizations. Since, all the departments belong to the same firm. Therefore, the item goods and services can be considered at any uninformed price.

iii) **Taxation:** Transfer Price will also have a bearing on taxation. A proper transfer pricing will help you improve upon the taxation options.

iv) **Goal Compatibility :** Transfer Pricing should be organized in such a manner that the divisional incomes of each of the divisions are moderately reliable with the goals of the parent company. The attention should be such that the profit margins of the departments increase while at the same time it will help to increase the total profitability of the parent organizations.

v) **Shifting of Profits :** Profit Shifting is intended at reducing the tax liabilities of the company at a specific country. This can be attained by reducing profits affectedly. It is also expected at delegation of the production so that the profits are focused through in the region where the manufacture of the goods is undertaken.

vi) **Some other Objectives of Transfer Pricing :**

a) Transfer Pricing supports you in avoiding the limitations on the import allocation restrictions. This benefits you to import the items without many limitations.

b) Allowing you transfer the funds to locations to help in corporate funding standards.

4.3 Methods of Transfer Pricing

There are several methods of Transfer Pricing based on either cost or market price. The important types of intra-company transfer price are as follows:

(a) Market Price Method, (b) Cost Price Method, (c) Cost-Plus a normal mark-up, (d) Dual Pricing Method, (e) Negotiated Price Method, (f) Incremental Cost Method, (g) Shared Profit relative to the Cost, (h) Standard Price Method. Each of the methods has been discussed below:

(a) **Market Price Method :** In this method, the prices charged for intra-company transfers are ascertained on the basis of market prices and not on the cost basis. There are three ways of calculating the market price. First, the prevailing market price, after making adjustment for discounts and other selling costs, may be taken as transfer price if there is an active market for goods and services transferred between divisions of the same company. The main benefit of this method is that it protects the profitability interest of both the divisions as the buying division is charged what it has to otherwise pay to the outsiders, and the transferring division gets the price which, in any case, it would have

received from outsiders. Further, selling and distribution costs as well as costs of bad debts are reduced and the transferring department gets an assured market, whereas, the buying division is assured of regular and timely deliveries. Second is where active market does not exist or where market price is not available, cost plus a normal profit may be taken as a reasonable market price. But in that case, inefficiencies of one division/sub-unit will be transferred to another division. The last one, the company may invite bids from the market so as to find the market price. The lowest bid may be accepted as the market price for the transfer; however, the problem may arise because of false bidding or no bidding at all.

(b) **Cost Price Method :** According to this method of transfer pricing, goods and services are transferred from one division of the organization to another on the basis of unit cost of production of the transferring division. The cost could either be taken to be the actual cost of production or the standard/ estimated cost of production. The merit of these methods of transfer pricing is that it is very simple and easy to operate and use. But it spoils the profit of the various responsibility centres in the sense that the profit of the transferring centre shall be under-estimated and that of the centre to which transfer is made would be over-estimated. In fact, this method of transfer pricing is not appropriate for-profit centre analysis.

(c) **Cost-Plus a normal mark-up :** To overcome the limitations of the simple cost price method, many companies add to the cost a margin of profit, say 15% of the cost, to find the transfer price. This will allow the supplying units to have some margin. The advantage of this method is again it is simple and convenient, but this method is also an inappropriate method for profit centre analysis as the inefficiencies of one department with their costs are transferred to another department.

(d) **Dual Pricing Method :** This method says that the transferring division is allowed to give credit price, whereas, the buying division is charged at a different price. It enables better analysis of profit centres and avoids conflicts among them on account of transfer prices. However, the total profits of the various segments/divisions may differ from the actual profit of the company as a whole. But it does not create any problem for the company as transfer prices are meant for internal purposes of performance evaluation only.

(e) **Negotiated Price Method :** The intra-company transfer price can also be decided on the basis of negotiations between the buying and the transferring divisions. The price arrived at after negotiation will be the mutually agreed price. Such as, pricing method will be beneficial to both the divisions as well as the company as a whole. However, this method can only be used when both of the buying as well as transferring divisions has alternative choice available with them.

(f) **Incremental Cost Method :** Another method of transfer pricing used by certain companies is the incremental cost method of the transferring division. Incremental cost can be computed in two ways depending upon the situations. In case entire production is transferred to another division within the same company, the increment cost will be the total of variable cost of transferring centre plus any fixed costs which are directly attributable to that centre or division. The incremental cost as computed can suffer from the same defects as in the case of cost price method. The second approach or option may be utilized when goods and services are sold to outside customers as well as transferred within the same company. In that case, the incremental cost may be treated as the opportunity cost in form of loss of revenue which the transferring division would have charged from the outside customers. The second approach is almost same as the market price basis and is more useful for profit-centre analysis.

(g) **Shared Profit relative to the Cost :** As per this method, no price is charged for the intra company transfers. Rather out of the total sales revenue of the company the total cost of various divisions is subtracted to find out the profit for the company as a whole; and then the profit is shared by the various profit centers relative to the cost basis of each centre as below: -

Share of Profit of a particular Profit Centre =

$$\frac{Profit\ of\ the\ Company \times Cost\ of\ particular\ Profit\ Centre}{Total\ Cost}$$

Therefore, in this method profit is distributed according to the cost of each division. The demerit of this method is that inefficiencies are not evaluated, and hence, it is not an appropriate method for profit centre analysis.

(h) **Standard Price Method :** Transfer prices can also be fixed on pre-determined standard price basis. The standard price may be calculated on the basis of cost of production and the prevailing market conditions. Thus, division working at less than the desired efficiency will show lesser profits as compared to the efficient division. However, problems may arise in setting the standard price acceptable to the different divisions.

4.3.1 Principles of Selection of a Transfer Pricing Method

The study of the various transfer pricing methods finds that there is no specific method which can be treated as the best method in all the circumstances. The selection of a particular method willdepend upon the particular circumstances that may differ from one case to another case. However, the following points are the general principles that should be kept in mind while deciding the transfer price:

i) The transfer price should be objectively determinable.

ii) The transfer price should be able to compensate the transferring division and charge the buying division, commensurate with the value of the goods/services exchanged.

iii) It should contribute to congruence between the goal of the divisions and the goal of the organization.

iv) It should provide for profit centre evaluation.

v) It should maximize the efforts towards achievement of organizational goals.

4.4 International Transfer Pricing

Different sub-units or branches of a business organization may be situated in different countries and intermediate products may be transferred from one sub-unit/ branch located in a country to the other sub-unit/branch located in another country. In such cases the concept of international transfer pricing arises.

International Transfer Price is the price charged on transfer of intermediate products across national boundaries. It is the price at which a company undertakes cross border transactions with associated enterprises. There transactions can include tangible and intangible goods, services and financial transactions etc.

For fixing the transfer prices in those cases, additional factors are to be considered

such as differences in the rate of freights, taxes, duties, government policies relating to import and export, dividend repatriation etc. in different countries. The transfer prices are fixed in such a way as to reduce to total burden of taxes, freights and duties, etc. for increasing the profit of the organization as a whole. The organization would try to show the lower income in the sub-unit/branch located in a country where the tax rate is very high by charging a higher transfer price for the goods purchased by these sub-units so as to reduce the tax liability and increase the profit. Again, if there are restrictions on the repatriation of dividend in some countries, the company would try to show lower income in the sub-units located in such countries.

4.5 Illustrations

Illustration 1: Division X, a profit center produces four products P, Q, R and S. Each product is sold in the external or foreign market also. Following information are available in respect of those products for a particular period.

Particulars	P	Q	R	S
Market Price per unit (Rs.)	700	690	560	460
Variable Cost per unit (Rs.)	660	620	360	370
Labour Hours required per unit	3	4	2	3

Product S can be transferred to Division Y but the maximum quantity that might require for transfer is 2,000 units of Product S. The maximum units of sales in the external or foreign market are: P = 3,000 Units, Q = 3,500 Units, R = 2,800 Units and S = 1,800 Units.

Division Y can purchase the same product at a little cheaper price of Rs. 450 per unit instead of taking transfers of Product S from Division X. What would be the transfer price for each unit for 2,000 units of Product S, if the total labour hours available in Division X are : (i) 24,000 hours, and (ii) 32,000 hours?

Solution :

Calculation of Ranking of the Products when availability of time is the key factor

No.	Particulars	P	Q	R	S
1	Market price per unit (Rs.)	700	690	560	460
2	Less: Variable Cost per unit (Rs.)	660	620	360	370
3	Contribution per unit (1-2)	40	70	200	90
4	Labour Hours required p.u.	3	4	2	3
5	Contribution per hour (3÷4)	13.33	17.50	100	30
6	Ranking	4	3	1	2

Situation 1 : When Labour Hours available in Division X is 24,000 hours

Statement Showing Product Mix

Product (Ranking) (1)	Maximum Demand (Units) (2)	Hours per unit (3)	Units Produced (4)	Hours Used (5=3×4)	Balance Hours (6)
R	2,800	2	2,800	5,600	(24,000–5600)=18400
S	1,800	3	1,800	5,400	(18,400–5,400)=13,000
Q	3,500	4	3,250	13,000	(13,000–13,000)=0
P	3,000	3	0	0	0

Statement of Transfer Price for each unit for 2,000 units of Product S

Transfer Price	2,000 units of Product S (Rs.)	Per unit of Product S (Rs.)
Variable Cost (Rs.)	7,40,000	370
Opportunity Cost of the foregone Contribution by not producing 1,500 units of Product Q (1,500 units × Rs.70)	1,05,000	52.50
Transfer price	**8,45,000**	**422.50 (Rs. 8,45,000/2000)**

Note : Time required to meet the demand of 2,000 units of Product S for Division Y is 6,000 hours. This requirement of time i.e., 6,000 hours for providing 2,000 units of Product S for Division Y can be met by sacrificing the production of 1,500 units of Product Q (1,500 units × 4 hours).

Situation 2 : When Labour Hours available in Division X is 32,000 hours

Statement Showing Product Mix

Product (Ranking) (1)	Maximum Demand (Units) (2)	Hours per unit (3)	Units Produced (4)	Hours Used (5=3×4)	Balance Hours
R	2,800	2	2,800	5,600	(32,000–5,600) = 26,400
S	1,800	3	1,800	5,400	(26,400–5,400) = 21,000
Q	3,500	4	3,500	13,000	(21,000–14,000) = 7,000
P	3,000	3	2,333	0	(7,000–7,000) = 0

Statement of Transfer Price for each unit for 2,000 units of Product S

Transfer Price	2000 units of product S (Rs.)	Per unit of Product S (Rs.)
Variable Cost (Rs.)	7,40,000	370
Opportunity Cost of the Contribution foregone by not producing 2,000 units of P (2,000 units × Rs.40)	80,000	40
Transfer price	8,20,000	410 (Rs. 8,20,000/2000)

Note : The Required Time to meet the demand of 2,000 units of Product S for Division Y is 6,000 hours. This requirement of time i.e.,of 6,000 hours for providing 2,000 units of Product S for Division Y can be met by sacrificing the production of 2,000 units of Product P (2,000 units ×3 hours).

Illustration 2 :

A manufacturing company has two divisions X and Y. The output of X, which may be sold in the market at Rs. 300 per unit, is also used as a component by Y for manufacturing a product. Y requires one unit of the component from X for producing every one unit of the final products which is sold in the market at Rs. 500 per unit.

The budgeted production for X and Y are 3000 and 1000 units respectively. The cost data for the budgeted level of production in respect of the two divisions are as follows :

	Division X	Division Y
	Rs.	Rs.
Materials (per unit)	100	?
Wages (per unit)	60	50
Variable Overhead (per unit)	40	30
Fixed Overhead (per unit)	50	40

Show the divisional profits and the profit of the company in case of the following transfer pricing policies :

(i) Market Price based, (ii) 110% of Full Cost, and (iii) Negotiated Price of Rs. 290 per unit.

Solution :

Statement showing the divisional profits and profit of the company

(i) Market Price Based Transfer Price

	Division X		**Division Y**	**Company**
	Rs.		**Rs.**	**Rs.**
Revenue (3000 × 300)	900000	(1000×500)	500000	1400000
Less : Costs				
Variable (3000×200)	600000	Transferred-in costs+other variable costs (300+80)×1000	38000	98000
Fixed Costs (3000×50)	150000	(1000×40)	40000	190000
Profit	**150000**		**80000**	**230000**

(ii) 110% of Full Cost Based Transfer Price

	Division X Rs.		Division Y Rs.	Company Rs.
Revenue (2000 × 300)	600000	(1000×500)	500000	1375000
(1000×275*)	275000			
	875000			
Less : Costs				
Variable (3000×200)	600000	Transferred-on costs + other variable costs (275*+80)×1000	355000	955000
Fixed Costs (3000×50)	150000	(1000 × 40)	40000	190000
Profit	**125000**		**105000**	**230000**

*Full Cost per unit of the component in Division X = Rs. (100 + 60 + 40 + 50) = Rs. 250, 110% of Full Cost = 110% × Rs. 250 = Rs. 275.

(iii) Negotiated Price Based Transfer Price

	Division X Rs.		Division Y Rs.	Company Rs.
Revenue (2000 × 300)	600000	(1000×500)	500000	1390000
(100×290*)	290000			
	890000			
Less : Costs				
Variable (3000 × 200)	600000	Transferred-in-costs + other variable costs (290*+80)×1000		
Fixed Costs (3000 × 50)	150000	(1000 × 40)	40000	190000
Profit	**140000**		**90000**	**230000**

*Negotiated price of the component is Rs. 290 (as given)

**It may be noted that the profit of the company as a whole is the same irrespective of the transfer pricing policy followed. Only divisional profits differ on the basis of the transfer prices being charged—profit of the supplying division i.e., X is more when transfer price is higher [as in (i) above], and profit of the receiving division i.e.... Y is more when transfer price is lower [as in (ii) above].

4.6 Summary

From the above discussion we could understand the concept of Transfer Pricing; advantages and disadvantages of transfer pricing, needs and methods of transfer princing; and the concept of international transfer pricing.

4.7 Questions

A. Multiple Choice Questions (MCQ)

1. The per unit opportunity cost to the selling submit of company, is added into per unit incremental cost is incurred at point of transfer to calculate—
   a) Minimum Operating Cost b) Maximum Operating Cost
   c) Maximum Transfer Price d) Minimum Transfer Price
2. Life Cycle Costing is useful in—
   a) Standard Costing Decisions b) Unit Costing Decisions
   c) Marginal Costing Decisions d) Capital Budgeting Decisions
3. Activity Based Costing focuses on—
   a) Efficient Management b) Effective Cost Center
   c) Performance Management d) Cost Reduction
4. Cost of control account is credited with—
   a) Capital Profits b) Revenue Profits
   c) Both (a) and (b) d) None of these
5. Activity Based Costing is a logical distribution of
   a) Standard Cost b) Direct Cost
   c) Overhead Cost d) Total Cost
6. Trade liabilities incurred on account of—
   a) Purchase of Outstanding Salaries b) Purchase of Debentures
   c) Purchase of Goods d) Purchase of Assets

7. Responsibility Accounting is a part of—

   a) Corporate Reporting System b) Extreme Reporting System

   c) Internal Reporting System d) Global Responsibility System

8. Operating Leverage means—

   a) Operating Profit/Profit Before Tax

   b) Operating Profit/Profit After Tax

   c) Contribution/Operating Profit

   d) None of these

9. Transaction in the form of capital flows does not include—

   a) Global Depository Receipt (GDR)

   b) Capital Goods

   c) Foreign Direct Investment (FDI)

   d) None of these

10. Standard Cost is a—

   a) Fixed Cost b) Actual Cost

   c) Predetermined Cost d) Historical Cost

B. Short Answer Type Questions

1. Write a short note on-Transfer Pricing.
2. Discuss the two things to determine Transfer Price.
3. What is Arm's Length Price? What is Market Based System?
4. Discuss the Commonly Used Transfer Price Method. State any two objectives of Transfer Pricing.
5. Discuss any two purposes of Transfer Pricing.
6. State the advantages and disadvantages of CPU method.
7. Discuss the concept of International Transfer Pricing.

C. Broad Answer Type Questions

1. Discuss the purposes of Transfer Pricing.
2. Write a short note on- Market Based Transfer Pricing, Negotiate Transfer Pricing.
3. What is Cost Based Transfer Pricing? Discuss the advantages and disadvantages of Resale Price Method.
4. Discuss the advantages and disadvantages of Transfer Pricing.
5. Discuss the methods of calculating Transfer Pricing.
6. What is Transfer Pricing? State the advantages of CPU method.

Answer Key

1(d) 2(d) 3(a) 4(a) 5(c) 6(c) 7(c) 8(c) 9(b) 10(c)

Unit 5 ❑ Cost Analysis for Managerial Decision Making

Structure

5.0 Objectives

After studying this unit, you will be able to understand the concept of :

* relevant cost;
* non-relevant cost;
* opportunity cost;
* sunk cost;
* differential cost;
* incremental cost; and

Some other types of Costs which are taken into consideration in managerial decision-making process.

5.1 Introduction

Cost data and analysis of cost data help managers in taking various decisions in the areas like setting of standard cost, capital investment decisions, pricing, profit planning, marketing decisions, cost management decisions etc. One of the duties and responsibilities of the managers is to take accurate decisions on various matters for their organizations.Decision making is a practice whereby managers act in response to opportunities and threats. In this process, managers evaluate alternatives to deal with opportunities and threats and at the end pass decisions about various goals and strategies. We know that managerial decision making depends upon fully on the availability of relevant, reliable and timely information. Cost analysis is referred to as the allocation of costs to provide estimates of what a program's costs and benefits are likely to be, before it gets implemented. Cost analysis is very important for managerial decision-making purposes in various organizations be it profit oriented organizations as well as non-profit organizations. Cost and cost analysis reports are useful in various management decision making areas: product costing and pricing, cost management, special decisions, profit planning, capital investment decisions, standard setting, product/ customer profitability etc.

5.2 Relevant Costing

Relevant costing is a management accounting tool/technique which helps management to take decisions properly when they have to deal with some issues such as whether to buy an element from an external/foreign vendor or manufacture it in house, whether to accept a special order, what price to be charged on a special order, whether to drop or discontinue a product line and how to be utilized the scarce resource. A study of relevant costs and benefits helps management to take wise decisions. Many other group of cost theorists emphasized that the relevant costs are applicable and it is suitable to decisions. If costs direct the management executive towards the decision, costs are relevant. It will be useful, if the costs are not only relevant but also accurate.

5.2.1 Relevant Cost

Relevant Cost is a managerial accounting term that defines necessary costs that are incurred for specific business decisions. Relevant costs are those future costs that differ among various alternatives. When the cost increases, decreases, appears or vanishes and various alternatives are compared, it is said to be a relevant cost. CIMA, London defines Relevant Costs as, "the costs appropriate to a specific management decision". The concept of relevant cost is used to reject unnecessary and useless data that could become obstacle in the decision-making process. As an example-Relevant Cost is used to control whether to sell or keep a business unit. We are aware that the opposite of a relevant cost is sunk cost that has already been agonized regardless of the product of the present decisions.

● Features of Relevant Cost

Following are the specific features of Relevant Costing:

i) Future Costs: Relevant costs are only future costs i.e., those costs which are expected to be incurred in future date. In the context of decision making, only those costs are relevant which are pertiment to the decision at hand. It follows that such costs which would have no bearing on the decision would be irrelevant.

ii) Incremental or Avoidable Costs : Relevant costs are only incremental or additional or avoidable costs. Incremental costs referred to as an increase in cost between two alternatives.

iii) Affect in Future Cash flows: Relevant costs are such costs which may affect future cash flows.

iv) An opportunity Cost: Relevant Cost is a kind of opportunity cost. It is not an incurred cost but it is the loss of past profit because of alternative decision.

● Application areas of Relevant Cost

Relevant costs can be applied in various short term decision making process such as:

i) Limiting factor due to scares resources;

ii) Make or Buy decision of a particular product;

iii) To accept or reject a special order;

iv) To continue or discontinue or shut down decision;

v) Pricing decision.

5.2.2 Non-Relevant Cost

Non-Relevant Costs or Irrelevant Costs are those costs which remain the same and are not affected by the decision whatever alternative is chosen/ selected. Here, it does not mean that irrelevant costs are ignored/ forgotten or that such costs need not be evaluated. It simple terms, irrelevant cost is not one of the factors that will affect the decision quantitatively.

5.3 Some of the Specific Managerial Decision Costs

There are so many costs which are taken into consideration while taking various managerial decisions for the organization such as Opportunity Cost, Sunk Cost, Differential Cost, Incremental and Decremental costs, Avoidable and Unavoidable Costs, Controllable and Uncontrollable costs, Normal and Abnormal costs, Conversion cost, Replacement cost, Marginal cost, Budgeted Costs Standard costs etc. As per the syllabus, Opportunity cost, Sunk cost, Differential cost and Incremental Cost have been discussed below one by one.

5.3.1 Opportunity Costs

Opportunity Costs is the value of what you lose when selecting between two or more options. As a depositor, Opportunity Costs mean that your funds choices will always have instant and future loss or gain.It is the cost of opportunity lost. We know that an opportunity cost is the benefit forgone when one alternative is chosen over another. It is the revenue foregone by selecting another accessible alternative. It is the net cash arrival that could be acknowledged if their sources committed to one action were used in the most desirable another alternative. Rejected alternatives are not recorded because they do not produce transactions.

Opportunity Cost = FO–CO

Where, FO = Return on best foregone option.

CO = Return on chosen option.

- **Features of Opportunity Cost**

Following are the features of Opportunity Cost:

i) Opportunity cost is the benefit forgone which would have been earned by an option not chosen.

ii) The consideration of the opportunity costs can help individuals and business organizations in taking more lucrative decisions.

iii) For appropriate evaluation of opportunity costs, the cost and benefits of each and every option available must be taken into consideration and weighed against the others.

• Importance or Applications of Opportunity Cost

Following are the importance of Opportunity cost:

i) Opportunity costs help a producer to decide whether to produce or not.

ii) It enables a producer what to produce.

iii) It also helps to access the implicit opportunity cost of missing out on gaining a salary income if he works elsewhere.

iv) It is important to fix the relative prices of various goods.

v) Opportunity cost also plays a vital role in the decision-making process of an organization.

• Advantages of Opportunity Costs

Some of the advantages of Opportunities Cost are as follows:

i) Consciousness of Cost Opportunity: A main advantage of opportunity costs is that it helps you to analyze the authenticity that when selecting among options, sometime you give up something in the option which is not selected. If you go to a grocery store looking for meat and cheese, but you only have limited money with you, you have to consider the opportunity costs of the item you decided not to buy.

ii) Relative Price: Another vital benefit of considering your opportunity costs is to allow you to associate relative prices and the benefits of each substitute. Compare the total value of each option and then decide which one offers the best value for your money.

• Disadvantages of Opportunity Costs

Some of the disadvantages of Opportunities Cost are as follows:

i) Lack of Accounting: The main disadvantage of opportunity cost is that it is

not considered for company accounts. Opportunity Costs frequently relates to future events, thus makes it very hard to quantify. This is exclusively true when the opportunity cost is of non-monetary benefit.

ii) **Time:** Calculation and consideration of opportunity costs can consume a huge time. Managers can take additional knowledge in decision by taking into consideration the opportunity costs, but managers sometimes have very limited time to compare many options and make a business decision.

5.3.2 Sunk Costs

Sunk costs are the past payments for which the resources that cannot be changed by any current or future decision. A sunk cost is that cost which already has been incurred. It is a past or committed cost i.e., the cost gone forever. Sunk costs or past costs are costs that have been created by a decision in the past and cannot be changed once they have been incurred and cannot be ignored by any decision that is made in the future.

A Sunk Costs is an irrecoverable cost and is produced by complete desertion of a plant. It is the written down value of the discarded plant less its salvage value. The costs will be treated as historical costs if they are incurred in the past and are not relevant for decision-making purposes and does not affect with the increment or decrease in the volume of output. Therefore, expenditure which has been incurred and is irretrievable in a situation is regarded as a Sunk Cost. Examples of Sunk cost include marketing study, research and development, hiring bonus, training cost etc.

- **Features of Sunk Cost**

Following are the features of Sunk Cost:

i) Simply, the cost which has already been incurred and cannot be recovered is sunk cost.

ii) These costs are treated as irrelevant cost and not considered in future decision-making process.

iii) Sunk costs are opposite to relevant costs, which are future costs that have yet to be incurred.

5.3.3 Differential Costs

Differential Costs are extra costs of manufacturing extra production. These would not be suffered if the firm does not take up the project. These signify a charge in combined costs that result from the extra or subtraction of a batch or block of output. There are, thus, unnecessary, incremental or out of pocket costs. Differential cost means the difference in total costs between any two alternatives available. These costs are equal to the additional variable expenses incurred in respect of the additional output and the increase in fixed costs, if any. This means that the differential cost is only the difference in the amount of the two costs. This cost may be calculated by taking the total cost of production without the additional considered output and comparing it with the total costs in curred if the extra output is undertaken.

- **Features of Differential Costing**

Following are the essential features of Differential Cost:

i) The data used for differential cost analysis are cost, income and investments data taken together in the decision- making problem.

ii) The total cost records are measured for differential costing and not for the cost per unit.

iii) Differential costs are not recorded in the accounting books. These can be ascertained from the analysis of routine accounting records.

iv) The differences are moderate from a common base-point.

- **Practical Application of Differential Costing**

Following are the practical applications of differential costing:

i) Determination of the Optimum Level of Production: The optimum level is that level of manufacture where profit is the maximum. In order to reach at a decision of this type, the differential costs are those costs which are associated with incremental revenues at several levels of output.

ii) Receiving of a Special Order below Existing Price: Sometimes organization has to take a decision on whether to receive or refuse an extra order for the product at a price below the expected sales price. Such as order can be attractive to the business when a business is occupied below production

capacity and the price offered results in incremental revenue which is more than differential costs.

iii) **Introduction of Additional Shift :** When an additional shift is presented, certain costs will be increased, such additional costs should be associated with additional revenue. This should be calculated in such a way that profit can be known for managerial decision.

When incremental revenue from the output of additional shift is more than the incremental cost of introducing the shift, it is profitable to introduce the additional shift.

iv) **Make or Buy Decision :** Many firms have to select between whether to produce a certain product by themselves or buy that product from outside suppliers. Incremental examination delivers solution to this kind of decision-making problem too. The relevant input information is the committed/avoidable costs if the firm has adequate idle capacity to make the components, because the firm would suffer loss in fixed cost if the product is not going to be produced. If, however, there is necessity to increase the capacity of remaining plant or the remaining capacity of the plant is preoccupied for the production of the components, opportunity cost in terms of lost influence will be relevant to the decision analysis.

v) **Plant Shut-Down Decision :** Sometimes, provisional conclusion is necessary by the off-season. There are some periodic factories like sugar mills or woolen garments company which cannot be operated unless there are demand in the market and there are sufficient supply of raw material, for seasonal business both demand and supply of raw material is on a downsize in the off season, it would be better to close the factory for the off season.

$$\text{Shut Down Point} = \frac{\text{(Fixed Escapable costs)}}{\text{(Contribution Per Unit)}}$$

vi) **Further Processing :** Another stage of substitute actions that management faces is the problems of whether it should be additional profitable to sell a product at this point of time, or the product to be processed further to be sold at higher price. For example-a textile mill can either sell yarn or weave it into cloth. Similarly, a dairy may sell milk or process it into cream cheese etc.

again a decision in this regard will be based on a relative study of incremental revenue and extra cost of manufacture.

5.3.4 Incremental Costs

Incremental Cost is simply the extra cost which is related with manufacture of an extra unit of production. It may be useful at the time of determining the price to charge a customer as part of a onetime deal to sell additional units. Incremental cost is calculated by evaluating the additional expenses involved in the production process like raw materials, for one additional unit of production. Understanding incremental costs can assist companies to boost production efficiency and profitability. In another way incremental cost may also be known as marginal cost.

- **Features of Incremental Cost**

The essential features of Incremental cost are follows:

i) It is the amount of money which would cost a company to produce an additional unit of product.

ii) Companies can practice incremental cost investigation to help in determination of the profitability of their business sections or departments.

iii) If incremental cost exceeds incremental revenue, a company may lose money.

- **Advantages of Incremental Cost Analysis**

Following are the advantages of Incremental Cost analysis:

i) Analysing and understanding incremental cost can empower companies to improve production efficiency.

ii) Considering incremental costs can help in decision making process which is related to the production of a product or simply buying it from another supplier.

iii) It also helps in maximisation of production output and increasing profitability.

iv) Knowing the incremental cost helps in the determination of the price of a product.

5.4 Some other types of Costs which may be relevant in decision making process

5.4.1 Imputed Cost or Notional Cost

Imputed costs are those costs that are not actually incurred in some transactions but which are relevant to the decision-making process as they pertain to a particular situation. These are hypothetical or national cost, not involving cash outlay, computed only for the purpose of decision making. For example- interest on internally generated funds, rental value of company owned property and salaries of owners of a single proprietorship or partnership etc.

5.4.2 Out of Pocket Costs

This is the portion of the costs which includes payment to outsiders. Out of pocket costs specify the cash cost associated with an activity. Though, the non-cash costs such as depreciation may not be included in out-of-pocket costs. This cost idea is important for management in deciding whether or not a specific project will at least return the cash expenditures relatedto the project selected by the management.

5.4.3 Fixed, Variable and Semi-variable Costs

Fixed costs are those costs which do not change due to change in production level. For example, rent, taxes, insurance etc.

Variable costs are those cost which change with the change in level of production. For example, raw material cost, labour costs etc.

Semi-Variable or Semi-Fixed costs are those cost of which some portion is fixed and some is variable. For example, telephone charges, electricity charges etc.

5.4.4 Direct Cost and Indirect Cost

Direct Costs are the costs which can be traced easily and allocated to a particular product. Those costs are treated as the cost of the unit produced. For e.g., Cost of raw materials and labour.

Indirect costs are those costs which cannot be assigned or allocated to any specific cost unit i.e., job, product or process, but it can be apportioned on a reasonable basis. These costs are of general nature and are incurred for the business as a whole or for several cost centres at the same time. Such costs are allocated to those cost centres on the basis of benefits received by each. For example, Cost of fuel, wages of supervisor etc.

5.4.5 Shut Down Cost

Shut down costs are those costs which have to be incurred under all situations in the case of stopping or discontinuing manufacture of a product or closing down a department or division. Generally, shut down costs may be treated as fixed costs.

5.5 Summary

After studying this unit, you could understand the concept of relevant cost; non-relevant cost; opportunity cost; sunk cost, differential cost; incremental cost; and some other types of costs which are taken into consideration at the time of managerial decision-making process.

5.6 Questions

A. Multiple Choice Questions (MCQ)

1. The unit of costs that has been occurred in past are also known as—
   a) Unrecorded Costs b) Recorded Costs
   c) Sunk Costs d) Bunked Costs
2. An example of quantitative factor is—
   a) Employee Behavior at Workplace b) Employee Satisfaction
   c) Employees Morale d) Cost of Materials
3. As compared to irrelevant cost, the occurrence of relevant costs must—
   a) Have High Correlation b) Be in Future
   c) Be in Past d) Be Zero Correlated
4. The financial factor measured in numerical terms having some monetary values are considered as—
   a) Qualitative Factors b) Quantitative Factors
   c) Expected Factors d) Recorded Factors
5. The basic data used for differential cost analysis are—
   a) Cost b) Revenue
   c) Investment d) All of these

6. The alternative which shows..... differences between the incremental revenue and the differential cost is the one considered to be the best choice for selection.

   a) Maximum b) Minimum

   c) No d) None of these

7. In certain decision areas like plant closure and change in capacity is more useful.

   a) Differential Costing b) Marginal Costing

   c) Absorption Costing d) None of these

8. In the case of differential costing..... is the main criteria for decision making.

   a) Contribution b) Ratios

   c) Incremental/Decremental Revenue d) None of these

9. Differential Costing are obtained on the basis of—

   a) Absorption Costing b) Marginal Costing

   c) Both (a) and (b) d) None of these

10. If there, is no change in fixed cost at different level of output.

    a) Marginal Costs > Differential Cost

    b) Marginal Costs < Differential Cost

    c) Marginal Cost and differential Cost are same

    d) None of these

B. Short Answer Type Questions:

1. What is Relevant Costing? What is Differential Costing?
2. Write a short note on-Economic Costs.
3. What is Sunk Costs? State any two features of Differential Costing.
4. Write a short note on-Marginal Costing.
5. What are Opportunity Costs? Discuss the two-practical applications of Differential Costing.

6. What is Out of pocket Cost? What is Incremental Cost?

C. Broad Answer Type Questions:

1. Write a short note on-Sunk Cost and Out of Pocket Costs.
2. What is Marginal Costing? State the features of differential Costs.
3. Discuss the Practical Application of Differential Cost.
4. Write a short note on-Make or Buy Decision.
5. What is Plant-Shut Down decision? State the features of Marginal Costing.
6. Write short notes on Accounting Cost and Marginal Cost.

Answer Key

1(c) 2(d) 3(b) 4(b) 5(d) 6(a) 7(a) 8(c) 9(c) 10(c)

Unit 6 ❑ Marginal Costing and Managerial Decisions

Structure

6.0 Objectives

After studying this unit you will be able to understand the concept of—

- ❖ marginal costing;
- ❖ different terms and formulas related to marginal costing;
- ❖ cost-volume profit (CVP) analysis;

- ❖ application of marginal costing is managerial decision;
- ❖ differential cost analysis; and
- ❖ the differences between absorption costing and marginal costing.

6.1 Introduction

Marginal Costing plays a vital role in the decision-making process. The costs that vary with result should only be involved in decision analysis. For many decisions that include comparatively small distinctions from prevailing practical and for comparatively limited periods of time, fixed expenses are not related to the decisions. This is because either fixed expenses generally remain same in the short term or managers generally keep them same in the short term.

Under marginal costing, segregation of variable costs and fixed costs are essential because variable costs are charged to cost units to find out the contribution and then fixed costs are charged against the total contribution to find out of the profit.

6.2 Marginal Costing

Marginal costing is a tool or technique of Cost Accounting that shows the effect on profit, of changes in the volume of output or production. It is the determination of marginal cost and effect on profit due to changes in volume or type of output by differentiating fixed cost and variable cost. There are some costs which change in direct proportion to the volume of production. This type of costs is known as variable costs. Whereas, there are some types of other costs which do not change in relation to the output that type of cost is known as fixed costs. It is necessary to classify the costs into fixed and variable in marginal costing. The term contribution stated in the formal definition is the term given to the alteration between sales and marginal cost.

Marginal Cost, as per the view of accountants, is the cost of product or service which would be avoided if that unit are not produced or provided. Whereas, in point of view of Economists, marginal cost is the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit. CIMA, London defines Marginal Cost as, "the amount at any given volume of output by which aggregate costs are changed, if volume of output is increased or decreased by one unit."

In simple, Marginal cost is the additional cost of producing an additional unit of output. It is nothing but variable cost. It consists of cost of direct materials, direct labour and variable overheads.

6.2.1 Features of Marginal Costing

Some of the features of Marginal Costing are as follows:

i) **Determination of Marginal Cost:** It is a method of costing which is used to determine the marginal cost and to identify the effect of variable cost on the volume of output. All expenses are classified into fixed and variable cost on the basis of changeability of volume. Even semi fixed costs are separated into fixed and variable cost.

ii) **Separation of Cost Elements:** In marginal costing, all costs are classified in fixed and variable. Semi-variable is also segregated into fixed and variable elements.

iii) **Marginal Cost as Product Cost:** Only marginal i.e., variable costs are charged to product produced during the period. Fixed expenses are recovered from contribution

iv) **Fixed Cost as Period cost:** Fixed costs are treated as period costs and are charged to costing profit and loss account of the period in which they are incurred.

v) **Valuation of Inventory:** Valuation of stock of work in progress and finished goods is done on the base of marginal costing.

vi) **Pricing:** In marginal costing, selling prices are based on marginal cost-plus contribution. Profit is calculated by subtracting marginal cost and fixed cost from sales.

vii) **CVP Analysis:** Cost volume profit analysis is one of the essential parts of marginal costing.

6.2.2 Practical Applications/Uses of Marginal Costing

i) **Fixation of Selling Price :** Fixation of selling price of a product is, no doubt, one of the greatest important factors of current management. It is very necessary for several purposes, like, under normal situation what is the rate of interest and during trade depression and accepting extra order etc.

ii) **Modification of Products :** In order to find out a new market or to exploit idle services etc. it may so happen that a new product may be presented in the shop together with the existing product. In this respect it may be stated that the new product may be presented only when the same is accomplished by donating something against fixed price and profit. Fixed price will not be measured here on the pre-censive notion that the same will not increase, i.e., the new merchandise will be produced out of remaining resources.

iii) **Make or Buy Decisions :** Sometimes a firm may have to look at a problem as to whether a portion should be produced or the same should be obtained from the outside open market, i.e., it should make or buy the product

In this case, the following two points should sensibly be considered: -

a) Marginal cost of the product, and

b) Whether surplus capacity is available or nor

iv) **Alternative Method of Production :** It is exciting to note that the systems of marginal costing are normally useful while comparing the substitute methods of productions, viz. whether one machine has to be employed instead of additional machine-work etc.

It should be recalled that the basis of collection would, however, be the relative's involvement available from several procedures when fixed costs are constant. That is, the technique of production which will give the supreme contribution which should be selected. Time factor or limiting factor, if any, should, sensibly be considered.

6.2.3 Advantages of Marginal Costing

The advantages of Marginal Costing are as follows:

i) **Constant in Nature:** Flexible Costs varies from time to time, but in the long run, marginal costs become steady. Marginal costs remain the same, regardless of the volume of manufacture.

ii) **Effective Cost Control:** Marginal Costing helps in cost controlling by dividing the cost into fixed and variable. Fixed cost is omitted from product. As such, management can calculate and use the marginal cost efficiently.

iii) **Treatment of Overheads Simplified:** It decreases the degree of over or under-recovery of expenditures which is related to fixed overheads and this also affects the production cost.

iv) **Uniform and Accurate Valuation:** As the fixed overhead costs are excluded from product cost. The assessment of the work-in-progress and finished goods becomes very practical.

v) **Helpful to Management:** It allows the management to start a new line of production which is beneficial to the company.It is helpful in defining which is money-making whether to buy or manufacture a product. The management can take decision concerning pricing and offering.

vi) **Better Results:** When it is used with standard costing, it gives better results.

vii) **Helps in Budgetary Control:** The classification of costs is very helpful in budgeting and flexible budget is used for calculating several levels of activities.

viii) **Help in Production Planning:** It displays the amount of profit at every level of output with the benefit of cost volume profit relationship.

6.2.4 Disadvantages of Marginal Costing

Some of the disadvantages of Marginal Costing are as follows: -

i) **Difficult to Analyze Overhead:** Division of costs into fixed and variable cost is a difficult task. In marginal costing, semi-variable or semi-fixed expenses are not measured and this is very difficult to calculate semi-variable & semi fixed expenses.

ii) **Unrealized Statement:** Statement of sale price will remain the similar at the different levels of operation. In real life, they may change and thus, give impractical results.

iii) **Difficulty in the Fixation of Price:** Under marginal costing, selling price is fixed on the basis of influence. In case of cost-plus contract it is very problematic to fix the price.

iv) **Complete Information not given:** It does not clarify the reason for rise in production or sales.

v) **Implication Cost:** In capital-intensive businesses, fixed expenses occupy major percentages in the total cost, but marginal costs cover only flexible costs. As such, it misses its implication in those industries which is capital intensive.

vi) **Problem of Variable Overheads:** Marginal Costing disables the problem of over and under absorption of fixed expenditures yet there is the problem in the case of variable expenses.

vii) **Claim for Loss of Stock:** Insurance claim for loss or damage of stock on the base of such estimation will be opposed to business.

viii) **Automation:** Now a-days cumulative mechanization is important to increase in fixed costs. if such cumulative fixed costs are ignored, the costing structure cannot be effective and reliable.

6.3 Different Terms and Formulas related to Marginal Costing

- **Methods of Segregation of Semi-Variable Costs**

a) **Intelligent Estimates:** Intelligent estimates though analysis of part overhead expenses at various levels of activity adjusting for anticipated changes.

b) **High or Low Points/Range Method:** Change in the Expense Level/Change in the Output Level

c) **Equation Method:** Y = MX + C (Where, Y = Total Semi-Variable Cost; C = Fixed Cost included in Y; M = VC per unit; X = output)

d) **Graphical Method:** A Regression line is drawn through the points representing semi-variable overhead relating to different activity levels will cut the ordinate and will represent the fixed costs. The slope of line will indicate the degree of variability.

`e) **Method of Least Square:** $y = mx + c$; $\sum y = m\sum x + n.c$; $\sum xy = m \sum x2 + c. \sum x$.

- **Profit under Marginal Costing**

Profit or Net Margin is the amount arrived at after deducting Fixed Costs from the total Contribution, also known as Gross Margin.

Marginal Cost Equation

S – V = C (S = Sales, V = Variable Costs, C = Contribution)

F + P = C (F = Fixed Costs, P= Profit, C = Contribution

Therefore, S – V = F + P

At the Break-even point (BEP), C = F [because at BEP, Profit = 0 (zero)

- **Profit/Volume Ratio (P/V Ratio)**

P/V Ratio or Profit/Volume Ratio is the ratio that shows relationship between Contribution and Sales at any selected level of activity. P/V Ratio can be used to determine Contribution or Sales at various levels of activities when the other is known.

P/V Ratio = C/S

C = P/V Ratio × S

S = C ÷ P/V Ratio

Sales at BEP = F ÷ P/V Ratio (at BEP, C = F)

- **Margin of Safety (MOS)**

Margin of Safety or MOS is the difference between actual sales and the break-even sales. In other words, MOS is the excess of actual sales over break-even sales. It indicates the strength of a business. A large margin of safety shows higher profitability of a business concern. P/V Ratio may be used to find out the Margin of Safety at any level of activity.

Margin of Safety = Profit ÷ P/V Ratio

6.4 C.V.P Analysis

Cost-Volume Profit or C.V.P Analysis is the study of the relationship among cost, volume of sales and profit. It is the analysis of relationship between variations in cost with variations in volume of production since these are inter-related. It helps the management in profit planning, cost control and decision-making process regarding:

i) Required Sales to earn a desired amount of profit.

ii) Sales to be made to break-even.

iii) To make or buy a product or component.

iv) Selection of most profitable product mix.

v) Exploration of foreign market at a lower rate etc.

- **Objectives of Cost-Volume Profit Analysis**

i) It assists in short-term profit planning

ii) Flexible budgets can easily set up

iii) 'Performance evaluation' is made possible

iv) Pricing decisions can be taken correctly and proper price polities may be formulated.

v) It helps us in controlling cost for short term decision purpose.

- **Limitations of Cost-Volume Profit Analysis**

i) The classification of all costs into fixed and variable categories and the stability of this classification is hardly possible.

ii) The closing stock of unsold goods are simply ignored

iii) The static behaviour patterns of revenues and costs are unrealistic (not obtained in the practical field). These behaviours are curvilinear inreal world.

iv) In case of multiple products this analysis becomes much more complex than in case of a single product and as more and more products are added, the analysis becomes less valid.

v) Volume is taken as the only factor affecting revenue and costs. This is on oversimplification because there are numerons other factors which are simply ignored. Such as product technology, efficiency, productivity, inflation etc. also affect costs and revenues.

6.4.1 Break-Even Analysis

Break-Even Point is the volume of sale at which the total sales become equal to the total cost, there is neither profit nor loss at this level i.e., Sales-Variable cost =Fixed cost. Break-Even Analysis is a technique/method of C.V.P Analysis. It is used in two senses. In narrower sense, it refers to no profit no loss point i.e. B.E.P. while in broader sense, it refers to the study of relationship of cost, volume and profit atdifferent levels of activity.

The assumptions of marginal costing are applicable also in B.E. Analysis. Break-even point can be presented in terms of units or sales value. It can be computed by:a) Algebraic method or b) Graphic method.

a) Algebraic method of Computing BEP:

$$\text{BEP in (Rs.)} = \boxed{\frac{\textbf{Fixed cost}}{\textbf{P/V Ratio}}} \quad \text{or} \quad \boxed{\frac{\textbf{Fixed Cost} \times \textbf{Sales}}{\textbf{Sales} - \textbf{Variable Cost}}}$$

$$\text{BEP in units} = \boxed{\frac{\textbf{Fixed Cost}}{\textbf{Contribution per unit}}} \quad \text{or} \quad \boxed{\frac{\textbf{F}}{\textbf{S - V}}}$$

Where, F = Total fixed cost; S = Selling price p.u.; V = Variable cost p.u.

b) **Graphic method of Break-Even Analysis or Break-Even Chart (BEC):** The BEP can be calculated with the help of a graph which is known as Break-Even Chart (BEC). BEC is the graphical representation of marginal costing.It shows the break-even point and the relationship among cost, volume and profit. The break-even point will be the point when the total cost line and sales line intersect the graph. At this point the firm enjoys no profit no loss.

Steps in Construction of Break-Even Chart:

i) Draw 'X' axis to present sales in units or percentage capacity. Draw 'Y' axis to present costs and revenue in rupees.

ii) Draw fixed cost line parallel to the 'X', -axis. Fixed cost remains fixed or unchanged at all levels of output.

iii) Variable cost line is to be plotted over the fixed cost line at different levels; it becomes the total cost line, when connected.

iv) Sales to be plotted from zero level, splits the graph diagonally as the levels of activity improves. A line which joins these plotted points indicates sales line.

v) The point where sales line cuts the total cost line is the BEP.

vi) A perpendicular may be drawn from the BEP to the x-axis to find the break-even units. In the same way, a perpendicular to the 'Y' axis will present the break-even sales in rupees.

vii) The area below the BEP is loss area and above it is profit area.

6.5 Application of Marginal Costing in Managerial Decision

The main role of a management accountant is to assist the management in various decisions making process by providing relevant and accurate information on time. Marginal Costing plays an important role in the information to serve day to day needs of the management that facilities decision making. Some of the important areas are as follows:

i) **Introduction of New Product:** A new product may be introduced in the market if it has the positive contribution so that such contribution may help in the recovery of existing fixed costs and make addition to the profit. However, for the introduction of new product, if some extra fixed costs are needed to be incurred, such cost must be deducted from its contribution for deciding whether the new product should be introduced.

ii) **Fixation of Selling Prices:** Under normal circumstances, the prices should be fixed at total cost plus a desired margin of profit. Under special situation, products or services will have to be sold at a price below the total cost or at marginal cost or even below the marginal cost. Marginal costing technique

helps the management in fixation of the selling price at different market situations.A product may generally be sold at a price lower than the marginal cost in special cases such as:

1. When a new product, for the first time, is launched in the market.
2. When new markets are explored in foreign countries.
3. To popularize a product.
4. To eliminate a weaker competitor from the market.
5. To disposeoff perishable products and surplus stock.
6. To stay away from retrenchment of labour and keep the plant in the running condition.
7. When the sale of one product will increase the sale of a joint product.

iii) **Selection of Profitable Product or Sales Mix:** When a firm produces more than one product, the most profitable product mix has to be selected. Marginal costing tool provides assistance to select the most profitable sales mix i.e., the mix which gives maximum contribution.

iv) **Key factor or limiting factor:** A key factor is one that limits the volume of production and profitability of a concern. For example, shortage of material, labour, capital, plant capacity or market. Any one of these factors may act as a limiting factor. When limiting factor is in function, contribution per unit of limiting factor should be the criteria to measure the profitability of a product line.

v) **Alternative Method of Production:** Sometimes the management has to choose from among available alternative methods of production, e.g., machine work or hand work, or machine A or B etc. In such circumstances, marginal costing tools can be applied and the method which gives the highest contribution can be selected keeping in view the limiting factor.

vi) **Make or Buy decision:** Marginal costing helps to determine whether a product or a component should be produced in the factory or bought from outside. While taking decision to 'make or buy', the variable cost of producing it should be compared with the price at which it is accessible outside. It is suggested to manufacture it if the marginal cost is less than its purchase price. Similarly, it will be better to buy it if the purchase price is less than the variable cost of manufacturing it.

vii) **Level of Activity Planning:** Marginal costing technique helps the management to plan the optimum level of activity- the level of activity, which gives the highest contribution, will be the optimum level.

viii) **Closing Down or Suspending Activities:** Sometimes the management may be forced to shut-down the unit because of low demand for the product. There are some fixed costs, which cannot be avoided even if the business is shut down or closed down. Such costs are known as shutdown cost. If operating losses are greater than the shut down costs, the firm should discontinue or shut down its operation. The Point where the operating losses are equal to shut down costs, the point is said to be as shut down point.

ix) **Profit Planning:** Marginal costing helps in planning the future operations with the help of contribution to maximize profit or maintain a desired level of profit. Changes in sales price, variable cost and product mix influence the profitability of a firm or organization.

x) **Accepting Special orders, Bulk orders, Export orders and Exploring New Markets:** Bulk orders, additional orders, export orders from foreign or new markets, may be accepted at a price below the normal market price so as to use the idle capacity of the firm. Such orders are received generally asking for a price lower than the market price and thus, a decision is to be taken to accept or reject the order. The order may be accepted at any price higher than the marginal cost since the fixed costs have to be incurred even otherwise. Any contribution as a result of the additional sales would mean an additional profit. But one must take care to see that accepting an order at price lower than the market price does not influence the normal selling price adversely.

6.6 Differential Cost Analysis

Differential Cost Analysis is a method where primarily differential costs are measured relevant. Differential Cost is the variance in total costs between two suitable alternative courses of action.

The substitute actions may arise due to change in sales volume, price, product mix, or such activities as make or buy or continue or stop production etc.

The differential cost analysis is a beneficial tool/technique for the organization to know the outcomes of any projected changes in the level or nature of activity. Under this technique, the differential costs are determined for each suggestion and compared with the predictable changes in revenue related each proposal.

6.7 Differences between Absorption Costing and Marginal Costing

The differences between absorption costing and marginal costing are described below.

Points	Absorption Costing	Marginal Costing
Definition	Under this system every unit of production absorbs or is charged with a proportionate share of every item of total cost.	Under this system only variable cost i.e., marginal cost is included in the cost of production.
Decision Making	Decision making is based on profit.	Decision making is based on contribution.
Stock Valuation	Stock is valued at total cost i.e., fixed as well as variable cost.	Stock is valued at variable cost only.
Treatment of Fixed Cost	Fixed cost is the part of the cost of product. It is included in total cost by means of overhead recovery rates.	Being a periodic cost fixed cost is not included in cost is charged to profit for the periodic.
Emphasis	Emphasis is on net profit.	Emphasis is on the profitability i.e. profit earning rate by means of P/V ratio.
Carry over of Fixed Cost	Since fixed cost is included in the cost, a portion of fixed cost is carried over to next period in the form of stock.	All the fixed cost pertaining to a period is charged fully to the profit of that period, so no question of carry over to next period.
Periodic	This is a long-term technique of price determination.	This is a short-term technique of price determination.

6.8 Illustrations

Illustration 1: The following data relate to X Ltd.

Particulars	Year 1	Year 2
Sales (Rs.)	5,00,000	6,00,000
Profit and Loss (Rs.)	(20,000)	20,000

Calculate -

P/V Ratio and Break-even point.

Profit or loss when sales amount to Rs.4,50,000.

Solution:

P/V ratio = Change in Profit/ Change in Sales = 40,000/1,00,000 = 40%.

Contribution at the sales level of Rs. 6,00,000 = Rs. 6,00,000 × 40% = Rs. 2, 40, 000.

C = F + P or F= C - P = Rs. (2,40,000 - 20,000) = Rs. 2,20,000.

Break-even Sales = F ÷ P/V ratio = 2,20,000 ÷ 40% = Rs.5,50,000.

When Sales is Rs. 4,50,000, Contribution= Rs. 4,50,000 × 40% = Rs. 1,80,000.

Fixed Costs = Rs. 2,20,000.

Profit = C - F = Rs. (1,80,000–2,20,000) = Rs. 40,000.

i.e., Loss of Rs. 40,000.

Illustration 2: From the following particulars, find out the P/V ratio.

Selling price per unit Rs.40

Variable cost per unit Rs.30

Fixed expenses Rs.50,000

Solution:

Contribution per unit = Selling price - Variable cost

= Rs.(40 - 30)

= Rs.10

$$\text{P/V ratio} = \frac{Contribution}{Sales} \times 100$$

$$= \frac{10}{40} \times 100 = 25\%$$

Illustration 3: For a manufacturing concern, when volume of production is 6,000 units, average cost is Rs.8 per unit and when volume of production is 8,000 units, average cost is Rs.7 per unit. If the break-even point is reached at 10,000 units of production and sales, find out P/V ratio.

Solution:

Particulars	Case 1	Case 2
i) Output	6,000 units	8,000 units
ii) Cost per unit	Rs.8	Rs.7
iii) Total cost of production	Rs.48,000	Rs.56,000

$$\text{Variable cost per unit} = \frac{\text{Change in cost}}{\text{Change in output}} = \frac{56,000 - 48,000}{8,000\ units - 6,000\ units} = \text{Rs.4 per unit.}$$

Now, total fixed cost on the basis of output level of 8,000 units.

Total fixed cost = Total cost – Total variable cost

= Rs.56,000 – (8,000 units × Rs.4)

= Rs.56,000 – 32,000 = Rs.24,000

Sales = Total Contribution + Variable costs

= Rs.24,000 + (10,000 units × 4) = Rs.64,000

[At B.E.P, fixed cost = contribution]

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$= \frac{24,000}{64,000} \times 100 = 37.5\%$$

Illustration 4: The following particulars are available in respect of a product

Total sales — Rs.4,00,000

Total Variable cost — Rs.2,00,000

Total Fixed cost — Rs. 90,000

Production and sales 40,000 units

Compute the Break-even point.

Solution:

Break-even point (in sales value)

$$= \frac{\text{Total Fixed Cost}}{\text{Total Sales} - \text{Total Variable Cost}} \times \text{Total Sales}$$

$$= \frac{90,000}{4,00,000 - 2,00,000} \times 4,00,000$$

= Rs. 1,80,000

Now, selling price per unit = $\frac{\text{Total Sales}}{\text{Total Units}} = \frac{4,00,000}{40,000}$ = Rs.10

So, Break-even point (in units) = $\frac{\text{Break even point (in Rs.)}}{\text{Selling Price per unit}}$

$$= \frac{1,80,000}{10} = 18,000 \text{ units.}$$

Illustration 5: XYZ Ltd. made sales, during a certain period, for Rs.2,00,000. The net profit for the same period was Rs.20,000 and the fixed overheads were Rs.30,000. Find out—

i) P/V ratio.

ii) Break Even point sales.

iii) Number of units to be sold to earn a profit to Rs.30,000, and

iv) Net profit from the sales of Rs.3,00,000.

Solution:

i) Computation of P/V ratio—

$$\text{P/V ratio} = \frac{\text{Total contribution}}{\text{Present Sales}} \times 100 = \frac{50,000}{2,00,000} \times 100 = 25\%$$

ii) **Computation of B.E.P sales**

$$\text{B.E.P (in Rs.)} = \frac{\text{Total fixed overhead}}{\text{P/V Ratio}} = \frac{30,\ 000}{25\%} = 1{,}20{,}000$$

iii) No. of units sold to earn a profit of Rs.30,000

$$\text{Required sales} = \frac{\text{Required contribution}}{\text{P/V Ratio}} = \frac{\text{Fixed Overhead + Required Profit}}{\text{P/V Ratio}}$$

$$= \frac{30{,}000+30,000}{25\%} = \text{Rs.}2{,}40{,}000$$

iv) Computation of Net profit from the sales of Rs.3, 00, 000

$$\text{Sales (in Rs.)} = \frac{\text{Fixed Overhead + Required Profit}}{\text{P/V Ratio}}$$

$$\text{Or, Rs.}3{,}00{,}000 = \frac{30,000+\text{Required profit}}{25\%}$$

Or, Rs.3,00,000 × 25% = 30,000 + Required profit

Or, Rs.75,000 = 30,000 + Required profit

Or, Required profit = Rs.(75,000–30,000)

= Rs.45,000

Illustration 6: The sales and profits during two years were as given below-

Year	Sales (Rs.)	Profit (Rs.)
2019	1,00,000	20,000
2020	1,20,000	30,000

You are required to compute P/V ratio and Break-Even point.

Solution:

Computation of P/V ratio

Particulars	2019 (Rs.)	2020 (Rs.)	Absolute Change
Sales	1,00,000	1,20,000	20, 000
Profit	20,000	30,000	10, 000

$$\text{P/V ratio} = \frac{\text{Change in profit}}{\text{Change in Sales}} \times 100 = \frac{10,000}{20,000} \times 100 = 50\%$$

Computation of Break-Even point-

Fixed cost = Contribution - Profit = (50% of 1,00,000) - Rs.20,000

= Rs.50,000 - Rs.20,000

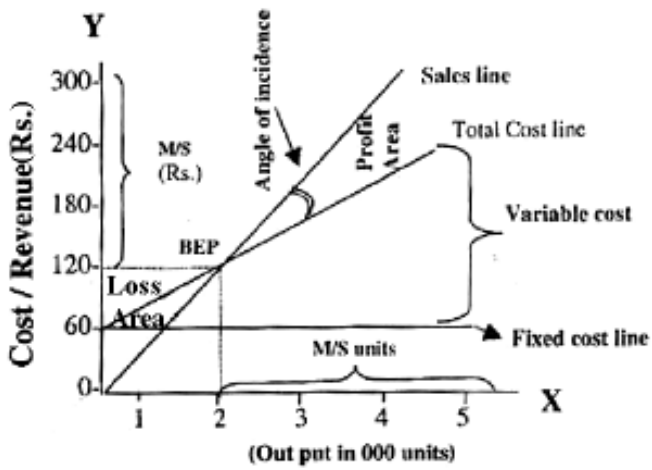
= Rs.30,000

$$\text{B.E.P (in Rs)} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}} = \frac{30,000}{50\%} = \text{Rs.60, 000}$$

Illustration 7: Draw a break-even chart.

Sales: 5000 units @ Rs. 60 p.u., variable cost Rs. 30 p.u., fixed cost Rs. 60,000.

Solution : **Break Even Chart**



Break-even chart shows the BEP at 2000 units on the 'X' axis and Rs. 1,20,000 on the 'Y' axis.

Margin of safety in units 3,000, M/S in Rs. 1,80,000. Variable cost, sales revenue, fixed cost, and total cost at each level of activity are shown below:

Output units	Variable cost per unit (Rs.)	Total Variable cost (Rs.)	Fixed cost Rs.	Total cost Rs.	Selling price unit (Rs.)	Total sales (Rs.)
0	-	-	60,000	60,000	-	-
1,000	30	30,000	60,000	90,000	60	60,000
2,000	30	60,000	60,000	1,20,000	60	1,20,000
3,000	30	90,000	60,000	1,50,000	60	1,80,000
4,000	30	1,20,000	60,000	1,80,000	60	2,40,000
5,000	30	1,50,000	60,000	2,10,000	60	3,00,000

Note: It is better to follow same scaling for X-axis and Y-axis. For e.g.: 'X' axis: 1cm=1,000 units; 'Y' axis: 1 cm = sales revenue of 1,000 units, i.e., Rs 60,000. It can be seen from the table that at a production of 2000 units the total cost is Rs. 1,20,000. At this level, the sales revenue is also Rs. 1,20,000. i.e., Sales = Total Cost. This is the BEP.

Illustration 8: Rahul Ltd. finds that while the cost of making a component No. X5 in its own workshop is Rs. 8 each; the same is available in the market at Rs. 6.50. Give your suggestions whether to make or buy this component. Give also your views in case the supplier reduces the price from 6.50 to 5.50. The cost data are:

	Rs.
Materials	3.00
Direct Labour	2.00
Other Variable exp.	1.00
Depreciation and other fixed exp.	2.00
	8.00

Solution: To take a decision, the variable cost can be compared with the purchase price; (Fixed cost is not considered as it will be incurred in any case)

Materials	3.00
Direct Labour	2.00
Other variable exp.	1.00
	Rs.6.00

Decision:

1. The marginal cost per unit when produced in the factory: Rs. 6.00, purchase price from the market Rs. 6.50. As the marginal cost is less than the purchase price, it should be produced in the factory.
2. If the supplier reduces the price from 6.50 to Rs. 5.50. It is better to buy the component as there is a saving of 50 paise per unit.

Illustration 9: The cost records of Alfa Ltd. shows the following:

	Product X	Product Y
Direct Material	25.00	30.00
Direct Wages	15.00	15.00
Selling price	75.00	125.00

Variable overheads: 100% of direct wages, fixed overheads Rs. 10,000 per annum.

Prepare a contribution statement and recommend which of the following sales mix should be adopted.

1. 450 units of X and 300 units of Y
2. 900 units of X only
3. 600 units of Y only
4. 600 units of X and 200 unit of Y

Solution:

Contribution Statement

	Product X		Product Y	
Selling price (Rs.)		75.00		125.00
Less: - Marginal Cost				
Direct material	25.00		30.00	
Direct wages	15.00		15.00	
Variable O/H	15.00	55.00	15.00	60.00
Contribution per unit (Rs.)		20.00		65.00

1.	450 units of X and 300 units of Y:		Rs.
	Contribution for 450 units of X	450×Rs.20	9,000.00
	Contribution for 300 units of Y	300×Rs.65	19,500.00
			28,500.00
	Less: Fixed Expenses		10,000.00
	Profit		18,500.00
2.	900 units of X only:		Rs.
	Contribution for 900 units of X	900×Rs.20	18,000.00
	Less: Fixed expenses		10,000.00
	Profit		8,000.00
3.	600 units of Y only:		Rs.
	Contribution from 600 units of Y	600×Rs.65	39,000.00
	Less: Fixed expenses		10,000.00
	Profit		29,000.00

4. 600 units of X and 200 units of Y:		Rs.
Contribution from 600 units of X	600×Rs.20	12,000.00
Contribution from 200 units of Y	200×Rs.65	13,000.00
		25,000.00
Less: Fixed expenses		10,000.00
Profit		15,000.00

The sales of 600 units of Y give maximum profit and hence recommended.

Illustration 10: Product 'A' can be manufactured either by Machine X or by Machine Y. Machine X can produce 50 units of 'A' per hour and Machine Y, 100 units per hour. Total machine hours available are 2000 hours per annum. Taking into account following cost data, determine the profitable method of manufacture:

	Machine X (Rs) p.u.	**Machine Y (Rs) p.u.**
Direct material	8	10
Direct wages	12	12
Variable overheads	4	4
Fixed overheads	5	5
	29	31
Selling Price	30	30

Solution:

Profitability Statement

Particulars	Machine X (Rs) p.u.	Machine Y (Rs) p.u.
Selling Price	30	30
Less: Direct Material	08	10
Direct wages	12	12
Variable overhead	04 24	04 26
Contribution per unit	Rs. 06	Rs. 04
Output per hour	50 units	100 units
Contribution per hour (a)	Rs. 300	Rs. 400
Total Machine Hrs per annum (b)	2000	2000
Total Contribution (a×b)	Rs. 6,00,000	Rs. 8,00,000

Since Machine Y has more contribution, so Machine Y is more profitable

Illustration11: A firm is producing only 1000 units of a product operating at 50% capacity due to business recession. Its cost structure is known to be as follows:

Direct Material	Rs. 20 per unit
Direct Labor	Rs. 15 per unit
Variable Overhead	Rs. 10 per unit
Total Fixed overhead per annum	Rs. 20,000
Current Selling price	Rs. 60 per unit

A customer approaches the firm for supplying 500 units of the product at Rs. 50 per unit. Should the firm accept the order?

Solution:

Calculation of Contribution

Particulars	Amount (Rs.)
Direct Material	Rs. 20 per unit
Direct Labour	Rs. 15 per unit
Variable Overhead	Rs. 10 per unit
Marginal Cost (MC)	Rs. 45
Selling Price (for the new customer) (SP)	Rs.50
Contribution (SP–MC)	**Rs.5**

The order should be accepted as an additional contribution of Rs. 5 per unit could be received from the order. This would help recovering fixed costs and thereby reducing losses.

The position before and after acceptance of the order may be shown as follows:

Particulars	Before Acceptance	After Acceptance
Sales	1,000 × Rs.60 = 60,000	[(1,000×Rs.60)+(5,00×Rs.50)] = 85,000
Marginal Costs	1,000 × Rs.45 = 45,000	1,500 × Rs.45 = 67,500
Contribution	**= 15,000**	**= 17,500**
Fixed Overheads	= 20,000	= 20,000
Loss	**= (5,000)**	**= (2,500)**

The firm should accept the order as it would lead to reduction of loss of Rs. 2, 500.

Illustration 12: A firm manufactures three products - P, Q and R. The following data are related to the preceding year.

	P (Rs.)	Q (Rs.)	R (Rs.)
Sales	3,00,000	2,00,000	1,00,000
Marginal Costs	1,50,000	1,40,000	60,000
Fixed Costs (10% Avoidable)	1,00,000	80,000	25,000
Profit/ Loss	50,000	(20,000)	15,000

The firm wants to discontinue the Product Q as it incurs losses.

Offer your suggestions as to whether Product Q should be discontinued.

Solution:

Calculation of Contribution

Particulars		**Product Q (Rs.)**
Sales		2,00,000
Less: Marginal Costs	1,40,000	
Avoidable Fixed Costs (10% of 80,000)	8,000	1,48,000
Contribution		52,000

Since the product Q is contributing Rs. 52,000, it should be continued. If it is discontinued, the total profit of the firm will be reduced by Rs. 52,000.

Position before and after discontinuance may be shown as follows:

Particulars	**Existing (before discontinuance) (P+Q+R) (Amount in Rs.)**		**After discontinuance of Q (P+R) (Amount in Rs.)**	
Sales		6,00,000		4,00,000
Less: Marginal Costs	3,50,000		2,10,000	
Avoidable Fixed Costs	20,500	3,70,500	12,500	2,22,500
Contribution		2,29,500		1,77,500
Less: General Fixed Costs		1,84,500		1,84,500
Profit/Loss		45,000		(7000)

If the Product Q is discontinued, the firm will incur a Loss of Rs. 7,000 as a whole. On the contrary, it will earn a profit of Rs. 45,000 if Product Q is continued. So, it is prudent to continue Product Q.

6.9 Summary

After studying this unit, you could understand the concept of marginal costing; different terms and formulas related to marginal costing; Cost-Volume Profit (CVP)

analysis; application of marginal costing in managerial decision; differential cost analysis; and the differences between absorption costing and marginal costing.

6.10 Questions

A. Multiple Choice Questions (MCQ)

1. If total cost of 100 units is Rs. 5, 000 and those of 101 units is Rs. 5030 then increase of Rs.30 in total costs is—
   a) Marginal Cost
   b) Prime Cost
   c) All Variable Overheads
   d) None of these
2. Marginal Cost is computed as—
   a) Prime cost + All Variable Overheads
   b) Direct Material + Direct Labor + direct Expenses + All variable overheads
   c) Total Costs - All Fixed Overheads
   d) All of these
3. Marginal Costing is also known as—
   a) Direct Costing
   b) Variable Costing
   c) Both (a) and (b)
   d) None of these
4. Which of the following statement(s) is/are true?
   a) Marginal Costing is not an independent system of costing
   b) In marginal costing all elements of costs are divided into fixed and variable components
   c) In marginal costing fixed costs are treated as product cost
   d) Both (a) and (b)
5. While computation of profit in Marginal Costing.
   a) Total marginal cost in deducted from total sales revenues
   b) Total marginal costs are added to total sales revenues
   c) Fixed costs are added to contribution
   d) None of these

6. _____ is not suitable where selecting price is determined on the basis of cost-plus method.

   a) Absorption Costing b) Marginal Costing

   c) Both (a) and (b) d) None of these

7. Under absorption costing, marginal decisions are based on—

   a) Profit b) Contribution

   c) Profit Volume Ratio d) None of these

8. Given production is 1,00,000 units, fixed costs are Rs. 2,00,000 selling price is Rs. 10 per unit and variable cost is Rs. 6 per unit. Determine profit using technique of Marginal Costing.

   a) Rs. 2,00,000 b) Rs. 8,00,000

   c) Rs. 6,00,000 d) None of these

9. Absorption costing is also known as—

   a) Historical costing b) Total Costing

   c) Both (a) and (b) d) None of these

10. The problems associated with Marginal Costing are-

   a) Difficulties in divisions of costs b) Problem of valuation of stocks

   c) Ignores time elements d) All of these

B. Short Answer Type Questions:

1. What is Marginal Costing? What are its features?
2. How the concept of Marginal Costing is practically applied?
3. What are the limitations of Marginal costing?
4. What is the Cost-Volume Relationship?
5. Explain Margin of Safety.
6. What is Break-even point? Write a short note on-Differential Costing.

C. Broad Answer Type Questions:

1. State the need for Marginal Costing.
2. What is Marginal Cost? State the advantages of Marginal Costing.
3. State the features and disadvantages of Marginal Costing. What is P/V ratio?
4. What is Make or Buy decision? What is Fixation of Selling Price? Write short notes on-Profit Planning, Contribution.
5. What is CVP analysis? Write down its objectives and limitations.

Answer Key

1(a) 2(a) 3(c) 4(d) 5(a) 6(b) 7(a) 8(a) 9(c) 10(d)

Unit 7 ❑ Management Control System-I

Structure

7.0 Objectives

After studying this unit, you will be able to understand the concept of—

- budgeting and budgetary control;
- different terms associated with budgetary control system;
- different types of budtgets;
- differences between flexible budget and fixed budget;
- cash budget;
- zero base budgeting (ZBB);
- performance budgeting (PB); and
- programme budgeting (PPBS).

7.1 Introduction

Management Control System (MCS) is a system which gathers and uses various data to estimate the presentation of dissimilar administrative resources like human, physical, economic and also the association as a while in light of the association policies purchased. It impacts the performance of organizational resources to implement organizational policies. Management Control System may be formal or informal. It is a process by which, the formal and informal constructions are put in a place by a commercial process that associate the goals and strategy of the body against the actual outcomes. MCS examines the roles of a business and how well the business as a whole is performing and meeting objectives. This judgment is then established and used to derive managerial decisions.

"Anthony and Dearden" (1981) provided the following definitions of Management Control System—

"Management Control is the procedure by which managers promise that properties are obtained and used efficiently in the achievement of organizations goals". Later this definition has been changed and refined by Anthony and Govindarajan (1994). The revised and refined definition is as follows:

"Management Control is the process by which managers influence other

members of the organizations to implement the organizations strategies".

They have further stated-Management Control involves a variety of activities. These include—

i) Planning what organization should do.

ii) Communicating information.

iii) Evaluating information.

iv) Influencing people to change behaviour.

7.2 Budget

A Budget refers to a form of quantitative presentation of plans, policies, objectives and goals which is laid down in advance by the top-level management for the organization as a whole and for each sub-unit thereof. A budget is a plan that covers all the phases of operations for a definite period in the future. It is a method for expressing the goals and strategies of an organization into operational terms. CIMA, London defines a budget as, "A financial or quantitative statement, prepared and approved prior to a defined period of time of the policy to be pursued during that period for the purpose of attaining a given objective. It may include Income, Expenditure and Employment of Capital." A budget of different types may be prepared for various purposes depending upon situation.

• Characteristics of Budget

Following are the essential characteristics of Budget:

i) **Written for Definite Period:** A budget is prepared in written form for a definite period. It is prepared in advance and it is based on future plans.

ii) **Detail Plan in Monetary Terms:** It is a detailed plan for all economic activities of the organization. It is prepared in monetary form.

iii) **Co-operation needed:** Co-operation from all departments is sought to be provided for the preparation of budget.

iv) **Achievement of goals:** Budget is used for the achievement of various kinds of business goals.

v) **Regular Update:** Budget should be monitored periodically. A budget should be updated regularly with the various dynamic factors.

vi) **Uses of Budget:** It is useful in planning, controlling and coordinating different activities of an organization

vii) **Various Types:** Various types of budgets are prepared as per the needs of business-like fixed budget, flexible budget, cash budget, sales budget and many more.

7.3 Budgeting and Budgetary Control

Budgeting referred to as the entire process of designing, implementing and operating budgets. In other words, it is the complete process involved in the preparation of a budget.

Budgetary Control is the procedure by which budgets are prepared for the future period and are associated with the actual presentation for discovery of external changes, if any. The judgement of budgeted figures with actual figures will help the management to find out variations or deviations and adopt helpful measures without any delay. In terms of CIMA, London Budgetary Control is, "The establishment of budgets relating the responsibilities of executives to the requirements of policy and the continuous comparison of actual with budgeted results either to secure by individual action, the objective of that policy or to provide a basis for its revision."

7.3.1 Steps involved in Budgetary Control

Budgetary Control helps in the planning, co-ordinating and controlling the activities through various steps. Those steps are as follows:

i) Establishment of Budgets

ii) Measurement of Actual Results

iii) Comparison of Actual Results with the Budgeted Results

iv) Ascertainment of the Deviations/Variances i.e., differences between the actual and budgeted figures

v) Analysis of the Variances to reveal the root causes and Reporting to the management.

7.3.2 Characteristics of Budgetary Control

Following are the characteristics of Budgetary Control:

i) **Determination of Goals:** Budgetary Control benefits in determining the goals to be reached over the given period and the policies that are to be executed for the fulfillment of these objectives.

ii) **Attainment of Goals:** It determines the range of activities which are to be carried out for the accomplishment of objectives.

iii) **Laying Out of Plan:** It supports in expressing a plan or drafts out the operation, regarding every stage of activity, both physically and monetarily, for the entire period.

iv) **Making Comparison:** It creates a system for associating the actual presentation with the budgeted ones, by each individual unit or department and determines the causes for inconsistencies.

v) **Revision:** Budgetary Control makes sure that the essential helpful steps will be taken at the right time when there are deviations from the budgeted targets and if that cannot be executed then the plan is revised considering all the factors.

7.3.3 Objectives of Budgetary Control

The main objectives of Budgetary Control are given below:

i) **Planning:** Budgeting certifies effective planning by setting up of business.

ii) **Coordination:** Budgets are helpful in management of business activities.

iii) **Efficiency and Economy:**An effective budgetary control system ensures good results in cost control and cost reduction.

iv) **Increase in Profitability:** Costs are controlled with the help of budgets and targeted profits are being attained.

v) **Control:**Controlling function is made to be effective as the control is unified while budgets are ready and applied.

vi) **Deviations:** Ascertainments of deviations are important to fix accountability and correct the deviations from standard as far as possible.

7.3.4 Advantages of Budgetary Control

Budgetary Control has become a vital tool of an association to control costs and maximize the profits. Some of the important advantages of Budgetary Control are as follows:

i) **Maximization of Profits:** Budgetary control goals at growing the over-all profits of the organization. This is realized through forecasting, coordination and control of several happenings in a programmed manner.

ii) **Evaluation of Decision-making Performance:** Goals are set for each department. Actual presentation is compared with standards and deviations from standard are described to top management for action against negative deviations. Thus, the performance of the section heads and other managers is continuously monitored.

iii) **Economy in Operations:**Expenditures are made in a cautious way and financial properties are put to optimum use. Then, thesebenefits are extended to the industry and then to the national economy.

iv) **Disclosure of Ineffectiveness:**Judgment of actual performance with planned performance reveals weak spots so that courtesy is focused on them to expand the performance.

v) **Shutting Down of Unprofitable Products and Activities:** Budgetary control discloses inefficiencies in products, procedures and departments. This is helpful in closing down of loss-making divisions so that the company can increase the overall profitability.

7.3.5 Disadvantages of Budgetary Control

The important disadvantages of Budgetary Control are:

i) **Based on Estimates:** Budgets may or may not be fully true as they are based on estimates. Thus, the adequacy or otherwise of budgetary control system depends upon the adequacy or accuracy with which estimates are madeto a very large extent.

ii) **Expensive Tool:** Implementation of Budgetary Control System is quite expensive. No budgetary programme can be fruitful unless sufficient arrangements are made for supervision and administration.

iii) **Time Factor:** Budgets cannot be executed automatically in very short time. Accuracy in budgeting comes through experience. Management should not be expecting too much during the development period.

iv) **Forecast of Uncertain Future:** Budgeting is a procedure of forecasting and valuation. Forecasting based on inaccurate forecast and evaluations may not be correct and effective.

v) **Changes of Conditions:** Budgets are being prepared on the basis of certain predominant situations. If the situations change budgets are also to be revised. Constant changes and manipulation in budgets may irritate the employees and the attraction in budgeting and application may be lost.

vi) **Conflict among Different Departments:** Budgetary Control sets benchmarks for dissimilar sections separately. This will make the departmental heads to be selfish to get maximum funds and they will think in terms of attaining their own set targets, thereby raising conflict different departments.

7.4 Different Terms associated with Budgetary Control System

Budget Period:

Budget Period refers to the period for which a budget is prepared and presented. There is no specific rule for the determination of budget period; it depends upon the nature, type and purpose of the business for which the budget is prepared. The period may be of short or long. Generally, short period budgets are prepared for less than or equal to one year. While, long-period budgets may be prepared for more than one year.

Budget Manual:

Budget Manual sets out policies and procedures involved in the implementing the budgetary control system. It acts as a guide in the preparation of budget and implementation of the budgetary control system. CIMA, London, defines as, "It is a document which sets out the responsibilities of the persons engaged in, the routine of and the forms and records required for budgetary control".

Advantages of Budget Manual: Advantages of Budget Manual are as follows:

i) An overall well-coordinated plan, provided by budgetary control system shows what role each manager is expected to play in maximizing the profits.

ii) If a problem arises in the working system of a budgetary control system, that can be settled through the budget manual.

iii) New employees get acquainted with the procedure involved in the operation of the system by referring to manual.

Budget Centre:

Budget Centre is a section of an organization for which separate budgets can be prepared and control exercise can be established. Therefore, if department wise budgets are prepared then each department is treated as budget centre.

Budget Committee:

The Budget Committee is a group of representatives of various functions in an organization. As all functions are inter-related with each other and as any change in one's target will have its effect on that of the other, it is essential to discuss the targets. Therefore, a programme is finally decided and this is mutually agreed.

Functions of Budget Committee: Following are the functions of Budget Committee:

i) To obtain and examine the proposals of budget in relation to the various functional budgets,

ii) To assist the managers in preparation of budgets,

iii) To decide the detailed policy to be followed,

iv) To finalize the master budget and recommend it to the Chief Executive etc.

Principal Budget Factor:

It is a factor which will limit the activities of an undertaking at a particular time or over a period and which is taken into consideration in preparing budget. In other words, Principal budget factor is the factor which may be limited in supply and this fact must be considered while preparing the budget. It is also known as 'Key Factor' or 'Limiting Factor' or 'Governing Factor'. For example, scarce raw material, shortage in skilled labour, limited machine capacity etc. For preparation of budget, principal

budget factor is the starting point, i.e., budget(s) concerning the principal budget factor(s) to be prepared at first and all other budgets thereafter.

7.5 Different Types of Budgets

Budgets may be classified on the basis of various bases such as:

- On the basis of Capacity: (i) Fixed Budget, and (ii) Flexible Budget
- On the basis of Coverage: (i) Master Budget, and (ii) Functional Budget
- On the basis of Unit: (i) Financial Budget, and (ii) Non-financial Budget
- On the basis of Period: (i) Long term Budget, (ii) Short term Budget, and (iii) Current Budget
- On the basis of extent of participation : (i) Authoritative Budget, and (ii) Participative Budget.

7.5.1 On the basis of Capacity

(i) Fixed Budget, and (ii) Flexible Budget

i) **Fixed Budget:** Fixed Budget is a budget prepared on the basis of standard or fixed level of activity. It does not change with the change in the level of activities or level of output. As per CIMA, London, "A fixed budget is a budget designed to remain unchanged irrespective of the level of activity actually attained". Thus, a budget which is prepared on the basis of fixed level of activity is called as fixed budget. Fixed budget is prepared assuming that there will be no any change in the level of activity. This type of budget is mostly suitable and more useful for a short period of time when level of activity or production is not supposed to change.

ii) **Flexible Budget:** It is a budget prepared in a manner so that it can give the budgeted cost for any level of activity or production. It identifying the difference between fixed, semi-fixed and variable cost is designed to change in relation to the activity attained. It is designed in such a way that it can show budgeted or estimated cost at any level of activity attained. A Flexible Budget computes different expenditures levels for variable costs, dependent upon changes in actual revenue. CIMA, London defines Flexible Budget as, "A budget which by recognizing different cost behaviour patterns, is designed to change as volume of output changes."

7.5.2 On the basis of Coverage

(i) Master Budget, and (ii) Functional Budget

i) **Master Budget:** Master Budget is a summary of functional budgets which shows the overall budget plan and profit or loss during the period. This Budget associates all functional budgets into one harmonies unit which is finally permitted, adopted and employed. It is a rapid plan of overall projected operations developed by management for the company. This budgeting comprises the details of sales budget, production budget, cash budget etc. This is also called Budgeted Profit and Loss Account.

ii) **Functional Budget:** Functional Budget is that budget which is related with different functions of an organization like purchase, sales, production, administration, R & D etc., Different functional budgets that are usually prepared are as follows: Sales Budget, Purchase Budget, Production Budget, Direct Material Purchase Budget, Direct Material Usage Budget, Direct Labour Budget, Factory Overheads Budget, Administration Cost Budget, Selling and Distribution Budget, Research and Development Budget, Cash Budget, Capital Expenditure Budget etc.

7.5.3 On the basic of Unit

i) **Financial Budget :** Such as, Capital Expenditure Budget, Raw Materials Purchase Budget, Wages Budget, Sales Budget etc.

ii) **Non-financial Budget :** For example, Plant Utilisation Budget, Production Budget, Man-power Budget (in hours), etc.

7.5.4 On the basis of period

i) **Long-term Budget :** This budget covers long period. For example budget for 5 years, budget for 10 years etc.

ii) **Short-term Budget :** This budget is meant for very short period. For example budget for a week, budget for a month, budget for a day etc.

iii) **Current Budget :** This budget is for a specific year i.e. for the ensuring year. It is also known as fiscal period budget.

7.5.5 On the basis of extent of participation

i) **Authoritative Budget :** Under this, there is minimum participation from subordinates and those who are entrusted with the task of formulating budgets normally do so after little consultation with the line executives who are responsible for achieving the specified goals.

ii) **Participative Budget :** This budget is the result of a tarm effort. Participative budget processes should be preferred to authoritative ones because participation by line managers and subordinates is more likely to have a favourable motivational impact.

7.6 Differences between Flexible Budget and Fixed Budget

Points	Fixed Budget	Flexible Budget
Definition	Fixed Budget is a budget prepared on the basis of standard or fixed level of activity.	It is a budget prepared in a manner so that it can give the budgeted cost for any level of activity.
Re organization	Once the period starts, fixed budget cannot be changed as per the actual production.	It may be quickly re-organized as per the level of activity or production.
Condition	Fixed Budget is based on the assumption that conditions will not change.	Flexible Budget may change according to change in conditions in level of activity.
Cost Classification	It is suitable for fixed costs only on classification is done in fixed budget.	Classification of costs is done as per the nature of their variability.
Comparison	If there is change in production level, then it is not possible to do accurate comparison.	Comparison of actual figures with revised standard figures is done according to change in the activity level of a firm.
Cost Control	Due to its limitations, it is not used as cost control level.	It is used as an effective level to control costs.

7.7 Cash Budget

Cash Budget is a budget of cash receipts and cash payments of the company during the budget period which forecasts the cash position for a period. It signifies the cash necessities of the business during the budget period. This budget is very important as it helps in efficient cash management. It ensures that enough cash is available when essential. Cash Budget is usually conducted to find out whether a firm has enough amounts of cash to uphold regular operation.

• Functions of Cash Budget:

The main functions of the Cash Budget are as under:

i) **Forecasting of Cash Requirement:** This budget is beneficial in the cash supplies for a particular period. This is suitable in forecasting cash requirement at a most money-making time.

ii) **Cash Position:** This budget is an indicator of problematic or surplus of cash at a precise time for which management can plan for investment of surplus cash.

iii) **Controlling Cash Expenditure:** Once the divisions of budgets are arranged, it becomes tough to change; each department tries to work properties quantified.

iv) **Expansion Schemes:** Developments is the core of any project. Surplus resources of cash budget help as a method for directing and funding the development program.

v) **Sound Divided Policy:** The cash budget is very suitable for sound divided policy. It is always connected to the liquid situation of the company.

• Objectives of Cash Budget:

Some important Objectives of the Cash Budget are as follows:

i) To project firm's cash position in future period.

ii) To forecast cash surplus or deficit for the confirming months.

iii) To help in choice of proper source of funding cash necessities of the firm.

iv) To certification proper consumption of idle cash.

v) To preserve satisfactory balance amongst cash and working capital, sales investments and loans.

- **Merits of Cash Budget:**

The following are the merits of Cash Budgets are as follows:

i) It is helpful in annoying several bases of cash receipts and its utilization.

ii) It delivers data about future credible receipts any payments.

iii) It delivers knowledge of additional cash supplies and how the same could be arranged.

iv) It is beneficial in dangers when cash balances are shorted how the gap can be covered.

v) The excess balances can be capitalized and profitability will be increased.

7.8 Zero Base Budgeting (ZBB)

Zero Base Budgeting or ZBB is a method of budgeting where all activities are re-evaluated each time when a budget is formulated. CIMA, London defines ZBB as, "a method of budgeting whereby all activities are re-evaluated each time a budget is set. Discrete levels of each activity are valued and a combination chosen to match funds available."

As the name suggests, it evaluates a programme or function or responsibility from scratch. Therefore, the manager proposing this activity has to prove that the activity is essential and the various amounts asked for are really reasonable taking into consideration the volume of activity. Zero base budgeting is based on the principle that each rupee of expenditure requires justification. It is prepared without any reference to any base (past budgets and actual figures). ZBB originated in USA. In 1964, the US Department of Agriculture used ZBB approach to prepare their budget. Later, Peter A Pyhrr, a Staff Control Manager at Texas Instruments Corporation, developed the technique and implemented it for the first time during 1969-70 in Texas in the private sector and popularised its wider use.

- **Steps involved in Zero Base Budgeting:**

i) Identification of a task to be accomplished.

ii) Finding out the ways and means of accomplishing the task.

iii) Evaluation of these solutions and also evaluation of alternatives of sources of funds.

iv) Setting the budgeted numbers and priorities.

- **Advantages of Zero-Base Budgeting:**

i) ZBB provides proper information for decision making.

ii) It focuses on future and not on past.

iii) It identifies unwanted activities and avoids wasteful expenditure.

- **Disadvantages of Zero-Base Budgeting:**

i) It involves huge paperwork.

ii) Proper training of managers is required for successful operation of ZBB.

iii) It is very time consuming.

iv) Cost of preparing and implementing ZBB is very high.

7.9 Performance Budgeting (PB)

The idea of Performance Budgeting was first innovated in 1949 and formally recognized in 1956 when the USA Government passed a law for this. Performance Budgeting involves assessment or evaluation of the performance of a business in the context of both specific as well as overall objectives of the organization. This requires entire clarity about both the short-term as well as long-term organizational objectives.

The responsibility of the different levels of management should be pre-determined in terms of results expected from them and the authority vested in them. In other words, performance budgeting requires fixing of the responsibility of each executive in the organization and the continuous evaluation of his performance. Therefore, it is considered to be synonymous with responsibility accounting.

- **The Basic Features of Performance Budgeting:**

i) Budget is prepared for each managerial level. The concerned manager is made responsible and held accountable for his performance at his level over the specific period of time.

ii) The jurisdiction of the authority and responsibility for different costs controllable by the executive concerned is fixed up. In other words, each individual person is held answerable for only those costs which are controllable by him.

iii) The concerned executive is vested with the requisite authority required for the responsibility entrusted to him.

• Objectives and Importance of Performance Budgeting:

i) Performance budgeting is mainly used in Government and public sector undertakings. It shows government activities and expenditure thereon for the budget period.

ii) The objective of performance budgeting is to provide a closer linkage between planning and action.

iii) It is a technique or tool of presenting budgets for costs and revenue in terms of functions.

iv) Performance budgeting lays immediate stress on achieving the specific goals.

v) In case of performance budgeting, it is required to prepare a Periodic Performance Report which compares budget and actual data and shows any existing variance.

vi) Performance budgeting reports are to be submitted at regular intervals to higher authorities of the organization showing the physical performance achieved, the expenditure incurred and variances.

• Process/Steps involved in Performance Budgeting:

i) Formulation of the objectives.

ii) Identification of the various programs that will accomplish these objectives.

iii) Evaluating and selecting the programs on the basis of cost benefit analysis.

iv) Development of the performance criteria for various programs.

v) Preparation of the financial plans.

vi) Assessment of the performance of each program.

• Advantages of Performance Budgeting:

i) PB clearly describes the purpose and objectives for which funds are required.

ii) It makes improvements in the performance of units in a continuous way.

iii) It helps in decision making process regarding all ocation of funds.

iv) Performance Budgeting acts as a tool to review the performance of the units.

- **Disadvantages of Performance Budgeting:**

  i) Performance Budgeting focuses mainly on quantitative evaluation rather than qualitative evaluation.

  ii) It is difficult to quantify social benefits.

  iii) It is difficult for long term process.

7.10 Programme Budgeting

Programme Budgeting, contrary to conventional budgeting, is the budgeting system that describes and provides the detailed costs of every activity or program that is to be carried out with a given budget. For instance, the expected results of a proposed programme are discussed fully along with required necessary resources, equipment, raw materials and staff costs. This system was developed by U.S.A. president Lyndon Johnson in U.S. department of defense in 1961. The sum total of all activities or programs constitutes the Program Budget. Therefore, when looking at a Program Budget, one can easily find out what precisely will be carried out, at what cost and with what expected results in considerable detail. In Britain, it is known as Output Budgeting. It is also known as Planning, Programming Budgeting System (PPBS) that has been introduced into non-commercial concerns to make them able to take more informed decisions about resource allocation. It is a system for analyzing expenditure with reference to particular objectives. It emphasizes on formulation of different budgets for different programmes.

- **Advantages of Program Budgeting:**

  i) It helps organizations to compare different events and projects to prioritize.

  ii) As with any budgeting, PPBS improves productivity and services efficiency.

  iii) It assists in forecasting and planning for the organization.

- **Disadvantages of Program Budgeting:**

  i) It is inevitable to spend overlapping expenses on similar projects simultaneously for large organizations.

  ii) Identification of project-specific costs and revenue may require substantial skills and time.

  iii) PPBS may increase the total budget to operate under the strict programming budget methodology.

7.11 Illustrations

Illustration 1: Prepare a Flexible Budget for production at 80% and 100% activity on the basis of the following information:

Production at 50% capacity i.e., 10,000 units.

Raw Materials Rs.100 per unit, Labour Rs. 50 per unit, Expenses Rs. 20 per unit, Factory Expenses Rs. 1,00,000 (60% fixed), Administration Expenses Rs. 60,000 (50% variable).

Solution:

Flexible Budget for Production

At 80% and 100% Activity

Particulars	**50% Capacity (10,000 units)**		**80% Capacity (16, 000 units)**		**100% Capacity (20, 000 units)**	
	Per unit Rs.	**Amount Rs.**	**Per unit Rs.**	**Amount Rs.**	**Per unit Rs.**	**Amount Rs.**
Raw Materials	100	10,00,000	100	16,00,000	100	20,00,000
Direct Labor	50	5,00,000	50	8,00,000	50	10,00,000
Expenses	20	2,00,000	20	3,20,000	20	4,00,000
Prime Cost	170	17,00,000	170.00	27,20,000	170	34,00,000
Add: Factory Expenses						
Fixed	6.00	60,000	3.75	60,000	3.00	60,000
Variable	4.00	40,000	4.00	64,000	4.00	80,000
(40,000/10,000 = Rs.4)						
Factory Cost	180.00	18,00,000	177.75	28,44,000	177.00	35,40,000
Add: Administration Exp.						
Fixed	3.00	30,000	1.875	30,000	1.50	30,000
Variable	3.00	30,000	3.000	48,000	3.00	60,000
Total Cost	186.00	18,60,000	182.625	29,22,000	181.5	36,30,000

Illustration 2: From the following information available from a company, prepare Cash Budget (monthly) for April, May and June 2020.

Months (2020)	Sales Rs.	Purchase Rs.	Wages Rs.	Expenses Rs.
Jan. (Actuals)	45,000	25,000	15,000	2,500
Feb. (Actuals)	40,000	25,000	12,000	2,000
March. (Actuals)	40,000	22,500	11,000	3,000
April. (Budget)	42,500	24,000	12,500	3,500
May. (Budget)	37,500	21,000	10,000	3,000
June. (Budget)	39,000	22,000	11,500	2,500

i) 10% of the purchases and 20% of the sales are for cash.
ii) Credit allowed to debtors ½ month and credit received from creditors 1 month.
iii) Wages are paid weekly.
iv) Opening cash balance is Rs. 7,500.

Solution

Cash Budget
For Apr, May and June 2020

Particulars	April Rs.	May Rs.	June Rs.
Receipts			
-Cash in hand	7,500	10,725	12,900
-Cash sales	8,500	7,500	7,800
-Collection from debtors	33,000	32,000	30,600
Total Receipt (A)	**49,000**	**50,225**	**51,300**
Payments			
-Cash purchase (10%)	2,400	2,100	2,200
-Payment to creditors for the last month.	20,250	21,600	18,900
-Wages ¼ for last month and $^{3}/_{4}$th of current month.	12,125	10,625	11,125
-Expenses (paid for the current month)	3,500	3,000	2,500
Total Payment (B)	**38,275**	**37,325**	**34,725**
Closing Cash in hand (A-B)	**10,725**	**12,900**	**16,575**

Illustration 3: From the following information, prepare a cash budget for the month of January to April.

Expected Sales		Expected Purchase	
Month	**Amount Rs.**	**Month**	**Amount Rs.**
Jan.	60, 000	Jan.	48, 000
Feb.	40, 000	Feb.	80, 000
Mar.	45, 000	Mar.	81, 000
Apr.	40, 000	Apr.	90, 000

Wages to be paid to workers Rs.5,000 each month. Balance at the bank on 1st Jan. Rs. 8,000. It has been decided by the management that:

i) In case of deficit fund within the limit of Rs.10,000 arrangements can be made with bank.

ii) In case of deficit fund exceeding Rs.10,000 but within the limit of Rs.42, 000 issue of debentures is to be preferred.

iii) In case of deficit fund exceeding Rs.42,000, issue of shares is preferred (considering the fact that it is within the limit of authorized capital).

Solution:

Cash Budget for the month of January to April

Particulars	**Jan. (Rs.)**	**Feb. (Rs.)**	**Mar. (Rs.)**	**Apr. (Rs.)**
Opening balance	8,000	15,000	-	-
Sales	60,000	40,000	45,000	40,000
Issue of debentures	-	30,000	41,000	-
Issue of shares	-	-	-	55,000
Total (A)	**68,000**	**85,000**	**86,000**	**95,000**
Less: Payments	-	-	-	-
Purchases	48,000	80,000	81,000	90,000
Wages	5,000	5,000	5,000	5,000
Total (B)	**53,000**	**85,000**	**86,000**	**95,000**
Closing Cash (A-B)	**15,000**	-	-	-

Illustration 4: From the following information prepare a Cash budget of a Company for April, May and June 2020.

Month	Sales (Rs.)	Purchase (Rs.)	Wages (Rs.)	Exp. (Rs.)
Jan. (actual)	80, 000	45, 000	20, 000	5, 000
Feb. (actual)	80, 000	40, 000	18, 000	6, 000
Mar. (actual)	75, 000	42, 000	22, 000	6, 000
Apr. (budget)	90, 000	50, 000	24, 000	6, 000
May (budget)	85, 000	45, 000	20, 000	6, 000
June (budget)	80, 000	35, 000	18, 000	5, 000

Further informed that:

i) 10% of purchase and 20% of sale are for cash
ii) The average collection period of the Co. is ½ month and credit purchase is paid off regularly after one month.
iii) Wages are paid half monthly and the rent of Rs.500 excluded in expenses is paid monthly.
iv) Cash and bank balance on Apr.1 were Rs.15, 000 and the company wants to keep it on end of every month below this figure, the excess cash being put in fixed deposits.

Solution:

In the books of a Company
Cash Budget for 2020

Particulars	Apr. (Rs.)	May. (Rs.)	Jun. (Rs.)
Cash and Bank balance	15, 000	11, 700	12,700
Add: Cash Receipts			
Cash sales (20%)	18, 000	17, 000	16,000
Cash collections from Drs.	66, 000	70, 000	66,000
Total (A)	**99, 000**	**98, 700**	**94,700**
Less: Cash Outflow			
Cash flow (10%)	5, 000	4, 500	3, 500
Payment to Creditors	37, 800	45, 000	40, 500
Wages	23, 000	22, 000	19, 000
Rent	500	500	500
Expenses	6, 000	6, 000	6, 000
Fixed Deposits	15, 000	8, 000	13, 000
Total (B)	**87,300**	**86,000**	**82,500**
Closing Cash balance (A - B)	11, 700	12, 700	12, 200

Illustration 5 : A company manufactures two products X and Y. An estimate of number of units expected to be sold in the first seven months of 2020 is given below :

Month	Product X (units)	Product Y (units)
January	500	1,400
February	600	1,400
March	800	1,200
April	1,000	1,000
May	1,200	800
June	1,200	800
July	1,000	900

It is anticipated that

i) there will be no work-in-progress at the end of any month.

ii) finished units equal to half the anticipated sales for the next month will be in stock at the end of each month (including December, 2019).

The budget production and production costs for the year ending 31st December 2020 are as follows :

	Product X	Product Y
Production (Units)	10,000	11,000
Direct materials per unit (Rs.)	10	18
Direct wages per unit (Rs.)	6	6
Other manufacturing charges apportionable to each type of product (Rs.)	30,000	44,000

You are required to prepare :

(a) a production budget showing the number of units to be manufactured each month, and

(b) a summarised production cost budget for the 6 month period—January to June 2020.

Solution :

Production Budget (in units)

for the 6 months ending 30th June 2020

Product X	**Janu**	**Feb.**	**March**	**April**	**May**	**June**
Sales	500	600	800	1,000	1,200	1,200
Add : Closing Stock	300	400	500	600	600	500
	800	1,000	1,300	1,000	1,800	1,700
Less : Closing Stock	250	300	400	500	600	600
Production (in units)	**550**	**700**	**900**	**1,100**	**1,200**	**1,100**
Product Y						
Sales	1,400	1,400	1,200	1,000	800	800
Add : Closing Stock	700	600	500	400	400	450
	2,100	2,000	1,700	1,400	1,200	1,250
Less : Opening Stock	700	700	600	500	400	400
Production (in Units)	**1,400**	**1,300**	**1,100**	**900**	**800**	**850**

Production Cost Budget

for the 6 months ending 30th June 2020

Product	**X** - 5,550 Units Y - 6,350 ,,	**Product X**			**Product Y**		
		Cost per Unit	**Total**		**Cost per Unit**	**Total**	
		Rs.	**Rs.**		**Rs.**	**Rs.**	
Direct materials		10	55,500		18	1,14,300	
Direct Wages		6	33,300		6	38,100	
Manufacturing overhead	$\left[\frac{30,000}{10,000}\right]$	3	16,650	$\left[\frac{44,000}{11,000}\right]$	4	25,400	
		19	1,05,450		28	1,77,800	

Illustration 6: Form the following forecast of income and expenditure, prepare a Cash Budget for three months ending 30th November. The bank balance on 1st September was Rs. 10,000.

Month	Sales Rs.	Purchases Rs.	Wages Rs.	Factory Expenses Rs.	Office Expenses Rs.
July	80,000	40,000	5,600	3,900	10,000
August	76,500	42,000	5,800	4,100	12,000
Sept.	78,000	38,500	5,800	4,200	14,000
Oct.	90,000	37,500	5,900	5,100	16,000
Nov.	95,000	43,000	5,900	6,000	13,000

A sales commission @ 4% on sales and due in the month following the month in which sales due are collected, is payable in addition to office expenses. Fixed assets worth Rs. 65,000 will be purchased in September to be paid in the following month Rs. 20,000 in respect of Debenture interest will be paid in October. The period of credit allowed to customers is two months and one wages are paid on an average fortnightly on 1st and 16th of each month in respect of dues for periods ending on that date preceding such days. Expenses are paid in the month in which they are due.

Solution:

Cash Budget
for three months ending 30th November

	September Rs.	October Rs.	November Rs.
Opening Balance	10,000	24,000	(–) 53,150
Receipts			
Collection from debtors	80,000	76,500	78,000
Total (A)	**90,000**	**1,00,500**	**24,850**
Payments			
Trade Creditors	42,000	38,500	37,500
Wages	5,800	5,850	5,900

Factory Expenses	4,200	5,100	6,000
Selling Commission	—	3,200	3,060
Office Expenses	14,000	16,000	13,000
Debenture interest	—	20,000	—
Capital Expenditure	—	65,000	—
Total (B)	**66,000**	**1,53,650**	**65,450**
Closing Cash balance (A – B)	24,000	(–) 53,150	(–) 40,610

Note : Sales Commission is payable in the month following the month of collection. Debtors are granted 2 months credit. Hence time lag in payment of commission is 3 months e.g. sales commission accrued in the July will be paid in October and so on.

7.12 Summary

After stydying this unit, you could understand the concept of budgeting and budgetary control; different terms associated with budgetary control system; different types of budgets; differences between flexible budget and fixed budget; Cash Budget; Zero Base Budgeting (ZBB) Performance Budgeting (PB); Programme Budgeting.

7.13 Questions

A. Multiple Choice Questions (MCQ)

1. Plant utilization budget and manufacturing overhead budgets are type of—
   a) Production budget b) Sales Budget
   c) Cost Budget d) None of these
2. R and D budget and Capital expenditure budgets are expenses of—
   a) Short-Term Budget b) Current Budget
   c) Long-Term Budget d) None of these
3. Capacity Ratio an Efficiency Ratio = Activity Ratio
   a) True b) False
   c) Either true or false d) None of these

4. The scare factors are also known as—

   a) Key Factor b) Abnormal Factor

   c) Linking Factor d) None of these

5. A budgetary process which demands each manager to justify his entire budget in detail from beginning is-

   a) Functional Budget b) Master Budget

   c) Zero Based Budget d) None of these

6. ____provides an estimate of the capital amount that may require for buying fixed assets needed for meeting production requirements.

   a) Production Budget b) Cash Budget

   c) Capital Expenditure Budget d) None of these

7. ____is stated as a budget which is made to change as per the levels of activity attained.

   a) Fixed Budget b) Flexible Budget

   c) Both (a) and (b) d) None of these

8. ____ is prepared for singles level of activity and single set of business conditions.

   a) Flexible Budget b) Fixed Budget

   c) Both (a) and (b) d) None of these

9. Which of the following statements are true for forecast and Budget?

   a) Forecast and Budget are one and same thing

   b) Budget is prepared after the forecast

   c) Forecast and Budget both can be expressed in financial firm

   d) All of these

10. The process of budgeting includes—

    a) Preparation of Budget b) Budget Co-Ordination

    c) Budget Control d) All of these

B. Short Answer Type Questions:

1. What is Budgetary Control? What are its Characteristics?
2. State the limitations of Management Control system.
3. What is Flexible Budget? State any three advantages of it.
4. What is Management Control System?
5. What is Cash Budget?
6. What is principal Budget Factor?

C. Broad Answer Type Questions:

1. Write a short note on— Functional Budget, Master Budget, Cash Budget.
2. Distinguish between Fixed and Flexible budget.
3. Define Cash Budget. State the disadvantages of Cash Budget.
4. State any three benefits of Flexible Budget. What things are considered before preparing a Purchase Budget?
5. Define Performance Budgeting. Discuss its Objectives and importance.
6. What is Programme Budgeting? State the advantages and disadvantages of Programme Budgeting.

Answer Key

1(c) 2(c) 3(a) 4(a) 5(c) 6(b) 7(b) 8(b) 9(b) 10(d)

Unit 8 ❑ Management Control System-II

Structure

8.0 Objectives

After studying this unit you will be able to understand the concept of—

- standard costing;
- variance analysis;
- cost control
- cost reduction;
- benchmarking;
- value chain analysis; and
- value engineering.

8.1 Introduction

The main objective of the Managerial accounting is to serve management in taking various decisions for day-to-day business operations. They mainly focus on minimizing the costs and maximizing the profits of the organization. Generally, managers, for controlling costs, have to take vital decisions regarding prices to be paid or quantity to be consumed. They try to pay the lowest possible prices and consume minimum quantity of the resources that are consistent with the quality of output. Standard Costing and Variance Analysis techniques help to a large extent in cost controlling.

8.2 Standard Costing

Standard Costing is one of the principal methods of cost control by which an organization calculates the difference between variance reporting of an instrument to deliver feedback to directors on differentiation of variances from targeted results.

According to CIMA, London, Standard Costing is, "Control technique that reports variances by comparing actual costs to pre-set standards so facilitating action through management by exception". In simple words, it is a method of cost and management accounting that begins with setting of standard and ends after reporting the variances to the management for taking various corrective measures so that performance of the organization can be improved.

Standard: A Standard is a pre determined computable price, cost or quantity set in different situations against which real or actual performance can be compared, typically for an element of work or process or activity. Standards are generally set keeping in mind about certain provisions and it is generally expressed on a per unit basis.

Ideal Standard: Ideal Standard presents the level of performance that can be attained when prices of material and labour are most favourable.

Practical or Normal Standard: Practical or Normal Standard is the standard that may be achieved under normal operating condition

Standard Cost: Standard Cost is a pre-determined computation of how much expenses or cost should be made under specific working situations. It is made up from standard quantity and evaluations of prices and/or usage rates predictable to apply during the period in which the standard cost is proposed to be used. CIMA, London, defines it as, "the planned unit cost of the product, component or service produced in a period. The standard cost may be determined on a number of bases. The main use of the standard costs is in performance measurement, control, stock valuation and in establishment of selling prices."

Objectives of Standard Costing :

Following are the main objectives of Standard Costing: -

i) To control costs by setting up different standards and analysis of variances.

ii) To provide a basis for evaluation of the performance and efficiency.

iii) To enable the practice of 'management by exception' in the organization.

iv) To predict the future cost for decision making

v) To provide the basis for stock valuation and Work-In-Progress valuation, budget preparation, profit planning and for decision making.

Process involved in Standard Costing :

Following steps are involved in the process of Standard Costing: -

i) Setting up the Standard to be achieved.

ii) Ascertainment of actual cost from books of accounts.

iii) Comparing the actual costs with the standard costs.

iv) Finding the variances between standard cost and actual cost.

v) Investigation of the reasons for the variances.

vi) Disposition of the variances.

Advantages of Standard Costing :

Some of the advantages of Standard Costing are as follows:

i) **Managerial Planning:** Planning is a procedure of using all properties and resources in such a way that maximizes commercial profits. Management must plan for effective and financial actions for standard prices to be effective. Standard costs are more suitable than authentic costs for budget preparation.

ii) **Coordination:** The formation of standards encompasses all purposes—manufacturing, marketing, engineering, investigation and accounting towards the accomplishment of a common goal. Setting values includes defining the targets in such a way that they can work towards the achievement of the goal.

iii) **Cost Control:** Cost regulator and cost reduction are perhaps the most important aims of any costing system, and standard costing gives due acknowledgement to this reality. Cost control keeps the necessary quality at the lowest possible cost under remaining condition.

iv) **Formulating Price and Production Policies:** Standard costs as associated to actual prices can be used for determining selling prices. When standard unit prices are available, predictable costs and sales prices can be calculated on the foundation of standard costs. Standard costs are pre-arranged cost which supports management in the decision procedure by providing standard unit cost for different levels of activity.

v) **Standards as Incentives to Employees:** If standards are accountable, they act as encouragements to employees to expand their performances and to

preserve the quality of the product. Each employee reaches his job with advance knowledge of the standard set for the particular job, he identifies with the fact that if his work is less than the standard, he is accountablefor the variance.

Disadvantages of Standard Costing

Some of the disadvantages of Standard Costing are as follows: -

i) **Changing Standard is Difficult:** Standards are constantly changing as situations of the business are similarly changing. So, standards are to be studied in order to make them comparable with authentic results. But modification of standards makes things very difficult, mainly in accounting adjustments.

ii) **Co-operation may not present always:** To make system of standard costing positive, co-operation of all concerned is essential which may not be there always in the organization due to inter-dependency ofcompetition.

iii) **Not suitable for Non-standardized Goods:** The method of standard costing may not be very effective in the businesses which transacts with non-standardized goods and the jobs which change consequently to customers' necessities. In such cases, standards are to be normally revised so as to reduce them similarly with actual results.

iv) **Fixation of Standards may be Costly:** Fixation of the standards requires high order of skills and competency. Thus, it may become very costly that all concerns cannot operate such system.

8.2.1 Essential Conditions for Effective Standard Costing

The following are the required essential conditions for Effective Standard Costing:

i) The standard should be fixed in such a way that managers and workers should depend on them.

ii) Standard costing should be reliable with the practical process of production of the enterprise.

iii) Management should have appropriate interest in standard costing.

iv) The procedure of costs of standards should be done very cautiously, so that the foundations of variances could be located easily.

v) The recording procedure of standard costs should be easy and clear.

vi) Standard Costing is more appropriate and useful in industries.

8.2.2 Differences between Standard Costing and Budgetary Control

Points	Standard Costing	Budgetary Control
Meaning	Standard Costing is the costing tool in which analysis of performance and activity is done by making a comparison between actual cost and standard cost.	Budgetary Control is the system in which budgets are prepared and continuous comparison is done between the actual and budgeted figure to achieve the desired result.
Range	It is limited to cost details.	It includes cost and financial data.
Application	Standard costing techniques are applied mainly in manufacturing of a product or providing service.	Budgetary Costing techniques are used in any area of operation like production, marketing, R&D etc., or business as whole.
Process	In Standard Costing, actual figures are compared with standard, variances are found out and such variances are analyzed into their causes.	In Budgetary Control, deviations are found out comparing actual figures with the budgeted figures but techniques of analyzing the variances are not available.
Analysis of variance	Here both adverse as well as favourable variances are analyzed.	Here attention is mainly paid towards the unfavourable deviations.
Expression	Standards are expressed both in monetary and quantitative terms in Standard Costing.	Budgets are primarily expressed in terms of money

8.3 Variance Analysis

Variance is the difference between the standard figure and actual figure of cost, sales and profit. Variance may be Favourable (F) or Adverse (A). If actual cost is less than the standard, or actual income is more than the standard, it is said to be the Favourable Variance. On the other hand, if actual cost is more than the standard, or

if actual revenue is less than the standard, it leads to the Adverse Variance.

In standard costing, Variance Analysis means the analysis of the differences or variances between the standard and actual figures into their originating causes. As per official terminology of CIMA, London variance analysis is, "The evaluation of performance by means of variances, whose timely reporting should maximise the opportunity for managerial action."This may help in the identification of the reasons for the variations so that the management may take necessary remedial measures to prevent adverse variances from occurring in future. The primary purpose of variance analysis is to exercise cost regulator and cost reduction.

Advantages of Variances Analysis :

The following are the merits of variances analysis—

i) **Indicate Departure:** First advantage of variance analysis is suggestion of departure from the normal or expected. This departure gets organization attention for enquiry. Management is receiving the applicable fact for this departure, particularly for opposing departure or variance.

ii) **Controlling Expenditure:** Second advantage of variance is its part in monitoring expenditure. Management receipts suitable regulatory action in case of opposing variance result.

iii) **Adjust Budgets Estimates:** Third advantage of variance is future change of budget estimations. When there are no suitable explanations for variance other than incorrect budget estimate, budgeted evaluation for future is adjusted or modified.

iv) **Evaluate Performance:** Variance examines to estimate performance of separate and particularly the controlling manager. Satisfactory variance specifies good performance of a division or manager. While opposing variance is sign of poor performance.

v) **Roles and Responsibility:** Variance evaluates is setting of a system of roles and accountability within the party. Due to the setting of roles and accountability, competence and panels within organization advances.

vi) **Responsibility:** Variance set a structure of responsibility within organization. Everyone is responsible for opposing variances results.

Types of Variances

On the basis of elements cost variances may be of various kinds such as-

a) Material Cost Variance

b) Labour Cost Variance

c) Overhead Variance

8.3.1 Different types of Variances

1. Material Cost Variance or Material Total Variance (MCV): Material Cost Variance or MCV is the difference between the standard cost of material and actual cost of material used.

MCV = (Standard Quantity x Standard Price) - (Actual Quantity x Actual Price)

= (SQ x SP) - (AQ x AP)

Material Cost Variance can further be divided into Material Price and Material Quantity Variances.

i) **Material Price Variance (MPV):** MPV is the difference between standard cost of materials used and actual cost of materials. It measures the difference in the cost of material due to change in price of materials for actual quantity used.

MPV = (Standard Price × Actual Quantity) - (Actual Price × Actual Quantity)

= (SP × AQ) - (AP × AQ) or AQ (SP – AP)

ii) **Material Quantity or Usage Variance (MUV):** MUV is the difference between standard cost of materials allowed for actual output and standard cost of materials used. So, it measures the difference in cost of materials due to change in quantity used at standard price.

MUV = (Standard Price × Standard Quantity) – (Standard Price × Actual Quantity)

= (SP × SQ) – (SP × AQ) or SP (SQ – AQ)

iii) **Material Mix Variance:** When different materials are used and the use of such materials can be specified in a standard proportion, Material Mix Variance can be calculated and may be regarded as a part of Usage Variance. It is the

difference between standard price of total quantity in standard proportion and standard price of actual quantity of materials used.

iv) **Material Yield Variance (MYV):** MYV is the difference between standard quantity of raw materials required at standard price for actual production and the actual quantity of raw materials used at standard price.

2. **Direct Labour Cost Variance (LCV):** It is the difference between standard labour cost and actual labour cost incurred for actual production.

LCV = (Standard Labour Hours for Actual Production × Standard Rate per Hour) – (Actual Labour Hours worked × Actual Rate per Hour)

i) **Direct Labour Rate Variance (LRV):** It is the difference between the standard hourly rate and actual hourly rate for the total actual hours worked.

LRV = Actual Labour Hours worked × (Standard Rate per Hour – Actual Rate per Hour)

= AH (SR – AR)

ii) **Direct Labour Efficiency Variance (LEV):** It is the difference between the standard hours for actual output and actual hours worked valued at standard rate.

LEV = Standard Labour Hour Rate × (Standard Labour Hours for Actual output – Actual Hours worked)

= SR (SH – AH)

Efficiency Variance may be divided into - Labour Mix Variance, Labour Yield Variance and Labour Idle Time Variance

iii) **Labour Mix/Gang Variance:** It is the difference between standard cost of standard mix and actual cost of actual mix for each of the grades of labour force.

LMV = Standard Rate per hour × (Standard Mix × Total hours worked – Actual hours worked)

iv) **Labour Yield Variance (LYV):** It is the difference in standard output specified and the actual output achieved, valued at standard cost.

LYV = Standard Cost of output per unit × (Actual Output – Standard Output for Actual Hours)

v) **Labour Idle Time Variance:** It shows the standard cost of abnormal idle time. It is always unfavourable or adverse variance. Labour Idle Time Variance is calculated as :

Abnormal Idle Time (Hours) × Standard Rate per Hour

3. Variable and Fixed Overhead Variance

" **Variable Overhead Variance:** This is the difference between the standard variable overhead for actual hours and actual variable overhead incurred. Thus, it represents the over or under absorption of variable overhead.

Standard Variable Overhead = Actual Production × Standard Rate

i) **Variable Overhead Expenditure Variance:** It shows the difference between standard rate and actual rate of variable overhead for the actual production.

Variable Overhead Expenditure Variance = AP (SP - AR)

ii) **Variable Overhead Efficiency Variance:** It shows the difference between the standard production and actual production, valued at standard rate of variable overhead.

■ **Fixed Overhead Variance:** It is the difference between the standard fixed overhead and actual fixed overhead. Where, Standard Fixed Overhead = Actual Production x Standard Recovery Rate

i) **Fixed Overhead Expenditure Variance:** Difference between budgeted fixed overhead and actual fixed overhead. Where, Budgeted Fixed Overhead= Budgeted production x standard recovery rate.

ii) **Fixed Overhead Volume Variance:** Difference between standard fixed overhead and budgeted fixed overhead.

Standard Recovery Rate × (Actual Production – Budgeted Production)

Volume Variance can again be divided into Efficiency Variance and Capacity Variance.

iii) **Fixed Overhead Efficiency Variance:** Difference between actual production and standard production, valued at standard recovery rate.

Standard Recovery Rate × (Actual production – Standard production)

iv) **Fixed Overhead Capacity Variance:** It is the difference between standard production and budgeted production valued at standard rate.

Standard Recovery Rate × (Standard Production – Budgeted Production)

Capacity Variance can further be sub-divided into Revised Capacity Variance and Calendar variance.

v) **Revised Fixed Overhead Capacity Variance:** Difference between standard production and revised budgeted production for actual number of working days valued at standard rate.

Standard Recovery Rate × (Standard Production – Revised Budgeted Production)

Where, Revised Budgeted Production = Budgeted Production (Per day) × Actual no. of days

vi) **Fixed Overhead Calendar Variance:** This variance occurs due to change in the actual number of working days from the planned number of working days due to intervening holidays, different number of days in different months.

Calendar Variance = (Budgeted Fixed Overhead/Standard number of days in the budgeted period) × (Standard number of working days – Actual number of working days)

Or Standard Recovery Rate × (Revised Budgeted Production – Budgeted Production)

4. Sales Variance: It is divided into two ways i.e., On the basis of Profit, and On the basis of Sales Value

■ **Sales Variances on the basis of Profit**

i) **Total Sales Margin Variance:** It shows the difference between the actual profit and the budgeted profit.

(Actual Quantity of Sales × Actual Profit per unit) – (Budgeted Quantity of Sales × Budgeted Profit per unit)

ii) **Sales Price Variance:** It finds the difference between the actual profit and standard profit.

Actual Quantity of Sales × (Actual profit per unit – Standard profit per unit)

iii) **Sales Volume Variance:** It is the difference between the standard profit and budgeted profit.

Standard/Budgeted Profit per unit (Actual Quantity of Sales – Budgeted Quantity of Sales)

Sales Volume Variance may be sub-divided into Sales Mix Variance and Sales Quantity Variance.

iv) **Sales Mix Variance:** This is the variance arises due to variation of actual mix and budgeted mix when more than one product is sold.

Standard Profit per unit × (Actual Mix – Standard Mix)

Or, Standard Profit – Revised Standard Profit

v) **Sales Quantity Variance:** It is the difference between revised standard profit and budgeted profit.

Standard Profit per unit × (Standard Mix – Budgeted Mix)

■ **Sales Variance On the basis of Sales Value:** Sales variances based on Sales value are similar just like Sales Variances based on Profit. Those are as follows:

i) **Sales Value Variance:** (AQ × AP) – (BQ × BP)

ii) **Sales Price Variance:** AQ (AP – BP)

iii) **Sales Volume Variance:** BP (AQ – BQ)

iv) **Sales Mix Variance:** BP (AQ – RBQ)

v) **Sales Quantity Variance:** BP (RBQ – BQ)

Where, AQ = Actual quantity of Sales; BQ = Budgeted quantity of Sales; RBQ = Revised Budgeted Quantity of Sales; AP = Actual selling price per unit; BP = Budgeted/Standard selling price per unit.

■ **Profit Variance:** Due to change in the selling price and sales quantity, actual profit may differ from budgeted profit. Thus, it may be analyzed into Profit Price Variance and Profit Volume Variance. Profit Variances are shown below: -

i) **Profit Variance:** It is the difference between actual profit and budgeted profit.

ii) **Profit Price Variance:** It is the difference between actual profit and standard profit.

iii) **Profit Volume Variance:** It is the difference between standard profit and budgeted profit.

iv) **Profit Mix Variance:** It is the difference between standard profit and revised standard profit.

v) **Profit Quantity Variance:** It is the difference between revised standard profit and budgeted profit.

Standard Profit = Actual Quantity × Standard rate of Profit

Revised Standard Profit = Revised Standard Sales × Standard Rate of Profit

Revised Standard Sales = Actual Sales × Standard Proportion

8.4 Cost Control

Cost Control is the practice of identification and reduction of business expenses so that profits can be increased and it starts with the budgeting process. It is a tool of management executives to target the working of the industrial concern and it is an important factor in maintaining and growing profitability. CIMA, London defines Cost Control as, "the regulation by executive action of the cost of operating an undertaking particularly where such action is guided by cost accounting". Thus, cost control aims at reduction of inefficiencies and wastages and setting up predetermined costs and in achieving them.Some of the Cost Control Techniques are Material control, Labour control, Overhead control, Budgetary control, Standard costing, Control of capital expenditure, Productivity ratio etc.

Characteristics of Cost Control

The characteristics of Cost Control are as follows:

i) **Delegation of Authority:** If persons are charged with responsibility without authority, the cost control will be ineffective. Therefore, adequate delegation of authority is essential for proper cost control

ii) **Relevance of Controllable Costs:** Only few costs are controllable at different levels of management. The management evaluates the performances of an employee with the help of costs incurred that are controllable.

iii) **Cost Reporting:** Cost report provides a basis for effective cost control. Thus, if the cost reports are not prepared and not submitted on within given time, the cost control cannot be practiced.

iv) **Policies and General Objectives:** All the employees of the organization are communicated the policies and general objectives. If, so cost control is very easy.

v) **Measurement of Performance:** A performance is to be measured with the help of reasonable criteria. Standard costing can be used as reasonable criterion. The person whose performance is being measured must participate in the setting up of the standards.

Steps involved in Cost Control

The following are the necessary steps which have been adopted to exercise Cost Control:

i) **Planning:** Planning may be done is the form of budget, standards and estimation. The past actions have been measured for appropriate planning. The planning is stated both in physical as well as financial terms. The standards are used as measures.

ii) **Communication:** The planning and policy should be connected to the employees. If so, they can accept the duty and do the work correctly. Communication has two directions. They are upward directions and downward directions.

iii) **Motivation:** To give motivation the performance is evaluated, cost is also ascertained and reported to the top-level management concerning the results of performance. Such statement may act as inspiring force and lead to well performance in the days to come.

iv) **Appraisal and Reporting:** Another important step involved in the actual performance is compared with the pre-determined plan and variances or deviations from the plan which are analyzed as to their causes. The variances are then reported to the appropriate level of management.

v) **Decisions Making:** The top-level management may examine the report in various directions and may take required action. Finally, if required the existing standard or budget may also be revised accordingly.

Advantages of Cost Control :

The important advantages of Cost Control are as follows: -

i) **Provides a Yardstick for Measuring Performance:** Cost control plays a

huge character in carrying consideration to those areas of commercial that are not performing well. It also benefits in defining whether a commercial undertaking is working efficiency or inefficiently.

ii) **Allows Evaluation:** Cost control places down some real standards. These standards permit measurement and estimation of actual performance with the probable ones.

iii) **Decreases Debt:** When cost regulator is done correctly, it's the most valued outcome is a decrease in debts. This is possible because when the price is severely controlled, resources work to their extreme probable and there is a reduction of financial loss due to expenditure of resources.

iv) **Reduces the Replacement and Repair Costs:** When cost control performs start bearing results, the commercial owner can devote the money on buying new equipment.

v) **Allows Allocation of Money to Other Avenues:** With more cash to spend, cost regulator permits a company to capitalize the money in dissimilar avenues like publicity and marketing.

vi) **Provides a Competitive Advantage:** A company to live in the market requirements to be ahead of its participants. To stay ahead in the opposition, efficient business processes are a must for any business. Thus, cost control procedures help company in playing this role.

8.5 Cost Reduction

Cost reduction refers to the achievement of real and permanent reduction in unit cost of products produced. It is a strategic position method to reduce expenditure. It is a helpful function by constant process of analysis of costs, function etc. It, therefore, continuously tries to achieve reasonable savings in cost of production, distribution, selling and administration.

8.5.1 Tools and Techniques of Cost Reduction

Several techniques and tools are used for reaching cost reduction. Some of these are as follows:

i) Simplification and variety reduction.

ii) Overheads Control.

iii) Automation.

iv) Market Research.

v) Value Analysis.

vi) Operations research.

8.5.2 Characteristics of Cost Reduction

The characteristics of Cost Reduction are as follows:

i) **It should be Real:** The reduction in cost is actual one in the development of manufacture or service rendered. Real cost reduction comes through better productivity.

ii) **Reduction in Unit Costs:** The object of cost reduction is to bring down the cost per unit of a product or service. Unit cost may decrease if the prices of input factors also decrease.

iii) **Reduction in cost to be Permanent:** Reduction in unit cost should not only be real but permanent also. There is no significance of a temporary reduction in the unit cost of production.

iv) **Use Value to be Unaffected:** Any article, produced with the available limited resources has not only exchange value but it has also use value. Cost reduction should not be at the expense of its quality.

8.5.3 Areas of Cost Reduction

Cost Reduction can be applied in the following areas:

i) **Product Design:** Cost reduction starts with the improvement in the design of the product. Product design is the first step in the production of the product and the impact of cost reduction effected at this stage is felt throughout the entire manufacturing life of the product.

ii) **Factory Organization and Production Methods:** All efforts should be constantly made to decrease the cost by the adopting new methods of organization and new product methods.

iii) **Factory Layout:** A cost reduction program should make a proper study of the factory layout so that one can determine if there isany scope of cost reduction by eliminating the wastage of time, unnecessary efforts and

unnecessary expenses and losses due to useless movement and travel of work-in-progress.

iv) **Administration:** There is wide scope of cost reduction in this area because cost reduction is a top management problem. Office should be recognized if there is a scope of improvement in the efficiency and effectiveness of persons engaged in the office.

v) **Marketing:** The various marketing activities which can be brought under the umbrella of cost reduction program include market research, advertisement, packing, warehouse, distribution, after sales service etc.

vi) **Finance:** With the increasing difficulty in procuring finance, management should eliminate useless and unnecessary investment. For that reason, it should carefully scrutinize the amount of working capital and fixed capital required and the financial conveniences of reducing them.

8.5.4 Advantages of Cost Reduction

i) Cost reduction will deliver additional money for labour happiness schemes and thus development management relationship.

ii) Cost Reduction will support in making goods obtainable to the consumers at low-price rates. This will make more demand for the goods, economics of large-scale manufacture, more employment overdevelopment and all-round improvement in the standard of living.

iii) Cost Reduction will be helpful in conference competition efficiently.

iv) Higher profit will deliver more income to the government by way of taxation.

v) Cost Reduction puts importance on a constant search for improvement which will improve the image of the firm in long-term benefits.

vi) It delivers a foundation for more dividends to the shareholders, more bonus to the staff and more preservation of profit for development of the business which will generate more employment and overall business forecasts.

8.5.5 Differences between Cost Control and Cost Reduction

Points	Cost Control	Cost Reduction
Definition	Cost Control is a technique used for maintaining the costs as per the set standards.	Cost Reduction is a technique used to economize the unit cost without lowering the quality of the product.
Aim	Cost control focuses on achieving the pre-determined costs.	Cost reduction aims at reduction of costs.
Process	The procedure of cost control is to lay down a target, determine actual performance from the target and take corrective measures.	Cost reduction is not concerned with maintenance of performance as per the predetermined standards.
Retention of Quality	There is no guarantee to retain the quality of the product or service.	Cost reduction guarantees to maintain the quality of the product or service.
Type of Function	The object of the cost control is to make sure that actual cost does not exceed the pre-determined cost, so it is preventive function.	Cost reduction is a corrective function because it challenges the pre-determined cost and want to improve the performance by reducing cost or increasing the production

8.6 Benchmarking

Benchmarking refers to the process of identification of "best practice" in relation to product and the steps by which those products are created and delivered. The purpose of benchmarking is to understand and evaluate thecurrent position of a business or organisation in connection with the "best practice" and to identify various areas and means of performance improvement. It is a process where we measure success of our company against competitors to discover how we can discover our

performance.Bench marking delivers essential awareness to help you realize how your organization relates with similar organizations; even if they are in a dissimilar business have a dissimilar group of customers.

Benchmarking can also benefit association identify areas, systems or processes for development.

There are two types of Benchmarking—

i) Internal Benchmarking.

ii) External Benchmarking.

Internal Benchmarking: Internal benchmarking referred to as the measurement and evaluation of key processes between teams, group and individuals are made within the organization.

External Benchmarking: External Benchmarking refers to the measurement and evaluation of key processes is made with the customers.

8.6.1 Process or Steps involved in Benchmarking

Benchmarking involves looking outside a particular business, organisation, industry, region or country to examine how others achieve their performance levels and to understand the processes they use in their organization. In this way, benchmarking helps to explain the processes behind outstanding performance.

Application of benchmarking involves four key steps. Those are as follows: -

i) Understanding the existing business processes in detail

ii) Analysis of the business processes of others

iii) Comparison of own business performance with that of others analysed

iv) Implementation of the steps necessary to close the performance gap

8.7 Value Chain Analysis

The term value chain means the various business activities and processes involved in creating a product or performing a service. Value Chain Analysis refers to a way of assessment of each of the activities in a company's value chain to understand where opportunities for improvement lie. Conducting a value chain analysis properly helps you to consider how each step adds or subtracts value from your final product or

service. Thus, it can help you in realizing some forms of competitive advantage, such as cost reduction, product differentiation etc. Value Chain Analysis is used as an instrument for classifying activities, within and around the firm and connecting these activities to a valuation of competitive strength.

8.7.1 Steps of Conducting Value Chain Analysis

Following steps are involved in conducting a value chain analysis:

i) **Identification of Value Chain Activities:** While conducting a value chain analysis it is the first step to understand all the primary and secondary activities. If your company is involved in selling multiple kinds of products or services, it is important to perform this process for each one.

ii) **Determination of the Cost and Value of Activities:** Once the primary and secondary activities have been recognized, the next step is to ascertain the value that each activity adds to the process, along with the costs involved. It is very important to understand the costs associated with each step in the process. It depends upon your situation that you may find that reducing expenses is a simple way to improve the vale that each transaction provides.

iii) **Identification of the Opportunities for Competitive Advantage:** Once you have compiled or arranged your value chain and understand the cost and value related with each step, you can analyse it through the lens of whatever competitive benefit you are trying to accomplish.

8.7.2 Importance of Value Chain Management

Some of importance of Value Chain Analysis are;

i) **Cuts Delivery Times:** One advantages of value chain study is that the business can achieve it to decrease the amount of time it takes to transport its products to wholesalers or retailers. This will benefit in development great relationship as the re-seller will be welllocated to organize buying and selling.

ii) **Increases Bottom Line and Profit:** A key significance of value chain management is that it improves the profit boundaries for the company. This is because with effective logistics and delivery goods reach the final operator when they need them.

8.7.3 Advantages of Value Chain Analysis

Some of the advantages of value chain analysis are as follows:

i) Value chain is a very flexible strategic technique for looking at your business, your competitors and the related places in the value system of industry.

ii) The value chain analysis can be used to diagnose and build a competitive advantage on both cost as well as differentiation.

iii) Value chain analysis helps you to understand the organizational problems involved with the promise of making customer value commitments and promises because it focuses attention on the activities needed to deliver the value proposition.

iv) By comparing your business model with your competitors using the value chain can help in a much deeper understanding of your strengths and weaknesses to be included in your SWOT analysis.

8.7.4 Disadvantages of Value Chain Analysis

Some of the disadvantages of value chain analysis are as follows:

i) It is very strength of flexibility mean that the value chain analysis is to be adapted to a specific business situation and that can be disadvantage since it is not "plug and play" to get the best from the value chain.

ii) Many people are familiar with the value chain but few are experts in its use.

iii) Business information systems are often not structured in a way to make it easy to get information for value chain analysis.

8.8 Value Engineering

Value Engineering referred to as the pre-arranged and systematic approach to provide necessary function in a project at the lowest possible cost. Value Engineering helps the replacements of materials and systems with less expensive alterations, without losing functionally. It is attentive solely on the functions of several mechanisms and materials, rather than their physical characteristics. Value Engineering is very often also called Value Analysis.

8.8.1 Effectiveness of Value Engineering

i) Value engineering is cost avoidance instead of cost reduction.

ii) It is a planned study of functions and cost.

iii) It is hot a crash cost reduction method.

iv) It is a joint effort of several departments.

v) It is not a sacrifice of quality.

8.8.2 Qualitative Advantages of Value Engineering

i) Better understanding among divisions and individuals and so better co-operation.

ii) Continuous updating of data base management.

iii) Propensity to think functions relatively than parts i.e. the hardware.

iv) Enhanced capability and awareness to manage with changes in demand and quality.

v) It leads to job satisfactions as there is professional independence to face technical challenges.

vi) It gives chances to individuals to prove their skill, cleverness and creativity.

8.9 Illustrations

Illustration 1: The standard cost cards shows the following details relating to material needed to produce 1 kg. of Ground Nut Oil :

Quantity of Groundnut required 6 kg, price of Groundnut Rs. 5/kg. actual production data: Production during the month 1000 kg, Quantity of materials used 7000 kg. price of Ground Nut Rs.6/kg.

Calculate the Materials Variance, Material Price Variance, Material Usage Variance.

Solution:

Standard Quantity (SQ) = 1, 000 kg of production × 6 kg = 6, 000 kg.

Standard Price (SP) = Rs.5/kg.

Actual Quantity = 7, 000 kg.

Actual Price (AP) = Rs. 6/kg.

a) Materials Cost Variance = SC – AC

= (SQ × SP) – (AQ × AP)

= (6,000 × 5) – (7,000 × 6)

= 30,000 – 42,000

= Rs. 12000 (A)

b) Materials Price Variance = (SP – AP) × AQ

= (5 – 6) × 7,000

= (–1) × 7,000

= Rs. 7000 (A)

c) Materials Usage Variance = (SQ – AQ) × SP

= (6,000 – 7,000) × 5

= (-1,000) × 3

= Rs. 3000 (A)

Illustration 2: From the following particulars, compute Materials Cost Variance, Materials Price Variance, and Materials Usage Variance.

Quantity of Material Purchased = 6,000 units.

Value of Material Purchased = Rs.18,000.

Standard Quantity of Materials Required per ton of output = 60 units.

Standard Rate of Materials = Rs.5 per unit, Opening Stock of Materials = Nil, Closing Stock of Materials = 1, 000 units. Output during the period = 160 tons.

Solution:

Actual Quantity of Material purchased = 6,000 units.

Value of Material Purchased = Rs.18, 000.

Actual Price per unit = Rs.18,000/6,000 units = Rs.3

Standard Price per unit= Rs.5.

Standard Quantity = 160 tons × 60 units = 9,600 units.

Actual Quantity = Opening Stock + Purchase – Closing Stock = Nil + 6,000 – 1,000 = 5,000 units.

a) Materials Cost Variance = (SC – AC)

= (SQ × SP) – (AQ × AP)

= (9,600 × 5) – (5,000 × 3)

= (48,000 – 15,000)

= Rs.33,000 (F)

b) Materials Price Variance = (SP – AP) × AQ

= (5 – 3) × 5,000

= 2 × 5,000

= Rs. 10,000 (F)

c) Materials Usage Variance = (SQ – AQ) × SP

= (9,600 – 5,000) × 5

= 4,600 × 5

= Rs.23,000 (F).

Illustration 3: Using the following information, calculate labour cost variance, labour rate variance, labour efficiency variance and labour idle time variance :

Standard hours :	5000
Standard Wage rate	Rs. 4 per hour
Actual hours :	6000
Actual Wage rate :	Rs. 3,50 per hour
Time lost due to machinary breakdown :	300 hours

Solution:

i) Labours Cost variance (LCV)

= (SH for Actual Production × SR) – (AH × AR)

= (5000 × Rs. 4) – (6000 × Rs. 3·50)

= (Rs. 20,000 – Rs. 21,000)

= Rs. 1000 (Adverse)

ii) Labour Rate Variance (LRV)

= AH (SR – AR)

= 6000 (Rs. 4 – Rs. 3·50)

= Rs. 3000 (F)

iii) Labour Efficiency Variance (LEV)

= SR (SH for Actual Production – AH)

= Rs. 4 (5000 – 5700)

= Rs. 2800 (A)

iv) Idle Time Variance (ITV)

= (Abnormal Idle Time × SR)

= (300 × Rs. 4)

= Rs. 1200 (A)

Verification :

LCV = LRV + LEV + ITV

Rs. 1000 (Adverse) = Rs. 3000 (Favourable) + Rs. 2800 (Adverse) + Rs. 1200 (Adverse)

Illustration 4: The information are available from cost records of a manufacturing organization. Calculate the overhead variances.

Number of budgeted working days	25
Budgeted man-hours per day	6000
Budgeted output per man-hour (units)	2
Budgeted fixed overhead (Rs.)	150000
Actual number of working days	27
Actual man-hours per day	6300
Actual output per man-hour (units)	1·8
Actual fixed overhead incurred (Rs.)	156000

Solution:

Budget Production = Budgeted days × Budgeted man-hours per day × Budgeted Production per man-hour = 25 × 6000 × 2 = 300000 units

Standard Rate per unit = Budgeted overhead ÷ Budgeted Production = Rs. (150000 ÷ 300000) = Rs. 0.50

AP = 6300 × 27 × 1·8

BP = 6000 × 25 × 2

SP = 6300 × 27 × 2

(i) Fixed Overhead Variance : Standard Fixed Overhead – Actual Fixed Overhead

= Actual Production × standard rate – Actual overhead

= Rs. (6300 × 27 × 1.8) × 0.50 – 156000) = Rs. 2910 (A)

(ii) Fixed Overhead Expenditure Variance : Budgeted Overhead – Actual Overhead

= Rs. (150000 – 156000) = Rs. 6000 (A)

(iii) Fixed Overhead Volume Variance : Standard Fixed Overhead – Budgeted Overhead

= Rs. (6300 × 27 × 1.8) × 0.50 – 150000) = Rs. 3090 (F)

(iv) Fixed Overhead Efficiency Variance : SR (SP – AP)

= Re 0.50 [(6300 × 27 × 2) – (6300 × 27 × 1.8)]

= Rs. 17010 (A)

(v) Fixed Overhead Capacity Variance : SR (BP – SP)

= Re 0.50 [(6000 × 25 × 2) – (6300 × 27 × 2)] = Rs. 20100 (F)

(vi) Revised Fixed Overhead Capacity Variance : SR (RBP – SP)

= 0.50 [(27 × 6000 × 2) – (27 × 6300 × 2)] = Rs. 8100 (F)

(vii) Fixed Overhead Calendar Variance :

(Budgeted Fixed Overhead/Standard number of days in the budget period) ×

(Standard number of working days – Actual number of working days)

= Rs. (150000 ÷ 25) × (25 – 27) = Rs. 12000 (F)

or, SR (BP – RBP) = 0.50 [(25 × 6000 × 2) – (27 × 6000 × 2)] = Rs. 12000 (F)

Check : Total Fixed Overhead Variance

= Expenditure Variance + Volume Variance

= 6000 (A) + 3090 (F) = 2910 (A)

Volume Variance = Efficiency Variance + Capacity Variance

= 17010 (A) + 20100 (F) = 3090 (F)

Capacity Variance = Revised Capacity Variance + Calendar Variance

= 8100 (F) + 12000 (F) = 20100 (F)

Illustration 5: Compute the Materials usage Variance from the following information.

Standard Material Cost per unit material issued-

Material A = 2 pieces @ Rs.20 = Rs. 40 (Material A used Rs. 2030 pieces)

Material B = 3 pieces @ Rs.10 = Rs. 30 (Material B used Rs. 2970 pieces)

Total = Rs. 70

Units completed = 1, 000 units.

Solution :

Materials Usage Variance = (Actual Quantity – Standard Quantity)×Standard Price.

Material A = (2,030 – 2,000) × Rs.20 = Rs. 600 (unfavorable)

Material B = (2,970 – 3,000) × Rs.10 = Rs. 300 (favorable)

Total = Rs.300 (favourable).

Illustration 6: From the following particulars, compute the Yield Variance.

Standard input = 100kg.; Standard Yield = 90kg.; Standard Cost per unit of output = Rs.200.

Actual input = 200kg. Actual Yield = 182kg,

Solution :

Standard yield for the Actual Input = $\frac{90 \text{ kg}}{100 \text{ kg}} \times 200 \text{ kg} = 180 \text{ kg.}$

Yield Variance = (Actual yield – Standard yield for the actual input) × Standard cost per unit (per kg).

= (182 – 180) × Rs.200

= Rs.400 (favourable)

The above yield variance can be computed by using another formula also e.g.

Yield Variance = (Actual Loss – Standard Loss on Actual input) × Standard Cost per unit.

= (18kg – 20kg) × 200

= Rs. 400 (favourable)

Illustration 7: A product is made from two raw materials, materials A and materials B. One unit of finished product requires 10 kg of materials.

The following is standard mix:

Material A 20% = 2 kg. @ Rs.20 per kg. = Rs.40

Material B 80% = 8 kg. @ Rs.10 per kg. = Rs.80

Total materials 100% = 10 kg. @ Rs.12 per kg. = Rs.120

During a period one unit of product was produced at the following costs-

Material A = 8 kg. @ Rs.20 = Rs.160

Material B = 4 kg. @ Rs.12.5 = Rs.50

Total materials = 12 kg. @ Rs.17.5 = Rs.210

Compute the materials Mix Variance.

Solution:

Materials Mix Variance = (Actual Proportion - Revised Standard Proportion of actual input) × Standard Price

Revised Standard Proportion = Standard Proportion of particular mix/ Total Standard Quantity × Actual Input

Revised Standard Proportion:

Materials A = 2/10 × 12 = 2.40 kg.

Materials B = 8/10 × 12 = 9.60 kg.

Materials Mix Variance:

Material A = (8 kg. - 2.40 kg) × 20

= 5.60 × 20 = Rs.112.0 (unfavorable)

Material B = (4 kg. - 9.60 kg) × 10.00

= Rs.56 (favorable)

Total mix variance = Rs.56 (unfavorable)

Illustration 8: Calculate Sales Variances from the following information :

Product	**Budget**			**Actual**		
	Sales (Units)	Selling Price per unit (Rs.)	Total Sales Rs.	Sales (Units)	Selling Price per unit	Total Sales Rs.
P	5000	10	50,000	5400	11	59400
Q	3000	12	36,000	2400	12	28,800
R	4000	8	32,000	4800	7	33,600
	12000		1,18,000	12600		1,21,800

Solution :

Standard Sales : Actual Quantity of Sales X Standard/Budgeted Selling Price per unit.

Revised Standard/Budgeted Sales (RBS) : Standard Sales in Budgeted Proportion (RBQ × BP)

Product	Actual Sales (Units)	Budgeted price for Unit (Rs.)	Standard Sales Rs.	Revised Budgeted Quantity (Units)	Revised Budgeted Sales (Rs.)
P	5400	10	54,000	$12600\times\frac{5}{12}=5250$	52500
Q	2400	12	28800	$12600\times\frac{3}{12}=3150$	37800
R	4800	8	38400	$12600\times\frac{4}{12}=4200$	33600
			1,21,200		1,23,900

(i) Sales Value Variance : (AQ × AP) – (BQ × BP)

Rs. (121800 – 1,18,000)

= Rs. 3800 (Favourable)

(ii) Sales Price Variance : AQ (AP – BP) = Actual Sales—Standard Sales

= Rs. (121800 – 1,21,200)

= Rs. 600 (Favourable)

(iii) Sales Volume Variance :

BP (AQ – BQ)

= Standard Sales – Budgeted Sales

= Rs. (121200 – 1,18,000)

= Rs. 3200 (Favourable)

(iv) Sales Mix Variance :

BP (AQ – RBQ)

= Standard Sales – Revised Standard Sales

= Rs. (1,21,200 – 1,23,900)

= Rs. 2700 (Adverse)

(v) Sales Quantity Variance :

BP (RBQ – BQ)

= Revised Standard Sales – Budgeted Sales

= Rs. (123900 – 1,18,000)

= Rs. 5900 (Favourable)

8.10 Summary

After studying this unit, you could understand the concept of Standard Costing; Variance Analysis; Cost Control; Cost Reduction; Benchmarking; Value Chain Analysis; Value Engineering.

8.11 Questions

A. Multiple Choice Questions (MCQ)

1. In case only actual data and standard data are given without any indication of output—
   a) Standard quality has to be calculated
   b) Standard quality has not been calculated
   c) Inadequate information
   d) None of these
2. Which of the following standards cannot be used for cost control?
   a) Basic Standard b) Normal Standard
   c) Both (a) and (b) d) None of these
3. If labour time is based on the maximum efficiency the unit cost will be—
   a) Higher b) Lower c) Equal d) None of these
4. The labour engaged in the making of a product is known as-
   a) Direct Labor b) Indirect Labor
   c) Temporary Labor d) None of these
5. — is responsible for setting up of materials price standards.
   a) Production Department b) Engineering Department
   c) Purchase Department d) None of these
6. The difference between actual cost and standard cost is known as-
   a) Profit b) Cost
   c) Standard Cost d) Variance

7. Standard Costing involved-
   a) Preparation and use of Standard Costs
   b) Comparison of Standard with actual
   c) Analysis of Variance
   d) All of the above
8. Basic Standard is established for-
   a) Long Period b) Short Period
   c) Current Period d) In define Period
9. Standard Costing is a technique of-
   a) Staffing b) Motivating
   c) Cost Control d) Planning Business Activities
10. Standard Costing is a yard stick for—
    a) Measuring Efficiency
    b) Controlling Prices
    c) Reducing Losses of Business
    d) Planning Business Activities

B. Short Answer Type Questions:

1. What is Standard? State any three features of Standard Costing.
2. Explain the essential condition for effective Standard Costing.
3. Explain any three advantages of Standard Costing.
4. What is Variance? State any two advantages of Variance.
5. Write a short note on— (a) Standard Costing, (b) Material Variance.
6. What is Cost reduction?

C. Broad Answer Type Questions:

1. State any three advantages and disadvantages of Standard Costing.
2. What is Standard Costing? What do you mean by Labour Cost Variance? State the advantages of Cost Control.
3. Explain the steps involved in Cost control.
4. What is Cost Reduction? Discuss the advantages of Cost reduction? What is Benchmarking?
5. What is Value Chain Analysis? Explain the classification of Value Chain Analysis.
6. State the features and advantages of Standard costing.

Answer Key

1(b) 2(c) 3(c) 4(a) 5(c) 6(d) 7(d) 8(d) 9(c) 10(a)

Further Readings

- Atkinson, Kaplan, Matsumara, Yong & Kumar, Management Accounting, Pearson Education, New Delhi.
- Bhabatosh Banerjee, Cost Accounting, Prentice Hall of India, New Delhi.
- Bhabatosh Banerjee, Financial Policy and Management Accounting Prentice Hall of India: New Delhi.
- Colin Drury, Management and Cost Accounting, Thomson Learning
- Horngren, Datar, Foster, Cost Accounting—A Managerial Emphasis, PHI and Pearson Education. New Delhi.

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