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ACCOUNTING FOR MANAGERS

(Common to all MBA Programs)

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Accounting For Managers

Objectives

- To acquaint the students with the fundamentals principles of financial, cost and management accounting
- To enable the students to prepare, analyse and interpret financial statements and
- To enable the students to take decisions using management accounting tools.

Unit-I

Book-Keeping and Accounting – Financial Accounting – Concepts and Conventions – Double Entry System – Preparation of Journal, Ledger and Trial Balance – Preparation of Final Accounts – Trading, Profit and Loss Account and Balance Sheet With Adjustment Entries, Simple Problems Only - Capital and Revenue Expenditure and Receipts.

Unit-II

Depreciation – Causes – Methods of Calculating Depreciation – Straight Line Method, Diminishing Balance Method and Annuity Method - Ratio Analysis – Uses and Limitations – Classification of Ratios – Liquidity, Profitability, Financial and Turnover Ratios – Simple Problems Only.

Unit-III

Funds Flow Analysis – Funds From Operation, Sources and Uses of Funds, Preparation of Schedule of Changes In Working Capital and Funds Flow Statements – Uses And Limitations - Cash Flow Analysis – Cash From Operation – Preparation of Cash Flow Statement – Uses and Limitations – Distinction Between Funds Flow and Cash Flow – Only Simple Problems

Unit-IV

Marginal Costing - Marginal Cost and Marginal Costing - Importance - Break-Even Analysis - Cost Volume Profit Relationship – Application of Marginal Costing Techniques, Fixing Selling Price, Make or Buy, Accepting a Foreign Order, Deciding Sales Mix.

Unit-V

Cost Accounting - Elements of Cost - Types of Costs - Preparation of Cost Sheet – Standard Costing – Variance Analysis – Material Variances – Labour Variances – Simple Problems Related to Material And Labour Variances Only.

[note: distribution of questions between problems and theory of this paper must be 60:40 i.e., problem questions: 60 % & theory questions: 40 %]

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UNIT – I: Basics of Accounting

Lesson – 1.1 Accounting – An Introduction

1.1.1 Introduction

Accounting is aptly called the language of business. This designation is applied to accounting because it is the method of communicating business information. The basic function of any language is to serve as a means of communication. Accounting duly serves this function. The task of learning accounting is essentially the same as the task of learning a new language. But the acceleration of change in business organization has contributed to increase the complexities in this language. Like other languages, it is undergoing continuous change in an attempt to discover better means of communications. To enable the accounting language to convey the same meaning to all stakeholders, it should be made standard. To make it a standard language certain accounting principles, concepts and standards have been developed over a period of time. This lesson dwells upon the different dimensions of accounting, accounting concepts, accounting principles and the accounting standards.

1.1.2 Learning Objectives

After reading this lesson, the reader should be able to:

- Know the Evolution of Accounting
- Understand the Definition of Accounting
- Comprehend the Scope and Function of Accounting
- Ascertain the Users of Accounting Information
- Know the Specialized Accounting Fields
- Understand the Accounting Concepts and Conventions
- Realize the Need for Accounting Standards

1.1.3 Contents

1. Evolution of accounting
2. Book keeping and accounting
3. Definition of accounting
4. Scope and functions of accounting
5. Groups interested in accounting information
6. The profession of accounting
7. Specialized accounting fields
8. Nature and meaning of accounting principles
9. Accounting concepts
10. Accounting conventions
11. Summary
12. Key words
13. Self assessment questions

1.1.3.1 Evolution Of Accounting

Accounting is as old as money itself. It has evolved, as have medicine, law and most other fields of human activity in response to the social and economic needs of society. People in all civilizations have maintained various types of records of business activities. The oldest known are clay tablet records of the payment of wages in babylonia around 600 b.c. accounting was practiced in india twenty-four centuries ago as is clear from kautilya's book 'arthshastra' which clearly indicates the existence and need of proper accounting and audit.

For the most part, early accounting dealt only with limited aspects of the financial operations of private or governmental enterprises. Complete accounting system for an enterprise which came to be called as "double entry system" was developed in italy in the 15th century. The first known description of the system was published there in 1494 by a franciscan monk by the name luca Pacioli.

The expanded business operations initiated by the industrial revolution required increasingly large amounts of money which in turn resulted in the development of the corporation form of organizations. As corporations became larger, an increasing number of individuals and institutions looked to accountants to provide economic information about

these enterprises. For e.g. Prospective investors and creditors sought information about a corporation's financial status. Government agencies required financial information for purposes of taxation and regulation. Thus accounting began to expand its function of meeting the needs of relatively few owners to a public role of meeting the needs of a variety of interested parties.

1.1.3.2 Book Keeping And Accounting

Book-keeping is that branch of knowledge which tells us how to keep a record of business transactions. It is considered as an art of recording systematically the various types of transactions that occur in a business concern in the books of accounts. According to spicer and pegler, "book-keeping is the art of recording all money transactions, so that the financial position of an undertaking and its relationship to both its proprietors and to outside persons can be readily ascertained". Accounting is a term which refers to a systematic study of the principles and methods of keeping accounts. Accountancy and book-keeping are related terms; the former relates to the theoretical study and the latter refers to the practical work.

1.1.3.3 Definition Of Accounting

Before attempting to define accounting, it may be made clear that there is no unanimity among accountants as to its precise definition. Anyhow let us examine three popular definitions on the subject:

Accounting has been defined by the american accounting association committee as:

"the process of identifying, measuring and communicating economic information to permit informed judgments and decisions by users of the information". This may be considered as a good definition because of its focus on accounting as an aid to decision making.

The american institute of certified and public accountants committee on terminology defined accounting as:

"accounting is the art of recording, classifying and summarizing, in a significant manner and in terms of money, transactions and events"

which are, in part at least, of a financial character and interpreting the results thereof". of all definitions available, this is the most acceptable one because it encompasses all the functions which the modern accounting system performs.

Another popular definition on accounting was given by american accounting principles board in 1970, which defined it as:

"accounting is a service society. Its function is to provide quantitative information, primarily financial in nature, about economic entities that is useful in making economic decision, in making reasoned choices among alternative courses of action".

This is a very relevant definition in a present context of business units facing the situation of selecting the best among the various alternatives available. The special feature of this definition is that it has designated accounting as a service activity.

1.1.3.4 Scope And Functions Of Accounting

Individuals engaged in such areas of business as finance, production, marketing, personnel and general management need not be expert accountants but their effectiveness is no doubt increased if they have a good understanding of accounting principles. Everyone engaged in business activity, from the bottom level employee to the chief executive and owner, comes into contact with accounting. The higher the level of authority and responsibility, the greater is the need for an understanding of accounting concepts and terminology.

A study conducted in united states revealed that the most common background of chief executive officers in united states corporations was finance and accounting. Interviews with several corporate executives drew the following comments:

"..... my training in accounting and auditing practice has been extremely valuable to me throughout". "a knowledge of accounting carried with it understanding of the establishment and maintenance of sound financial controls- is an area which is absolutely essential to a chief executive officer".

Though accounting is generally associated with business, it is not only business people who make use of accounting but also many

individuals in non-business areas that make use of accounting data and need to understand accounting principles and terminology. For e.g. An engineer responsible for selecting the most desirable solution to a technical manufacturing problem may consider cost accounting data to be the decisive factor. Lawyers want accounting data in tax cases and damages from breach of contract. Governmental agencies rely on an accounting data in evaluating the efficiency of government operations and for approving the feasibility of proposed taxation and spending programs. Accounting thus plays an important role in modern society and broadly speaking all citizens are affected by accounting in some way or the other.

Accounting which is so important to all, discharges the following vital functions:

Keeping Systematic Records

This is the fundamental function of accounting. The transactions of the business are properly recorded, classified and summarized into final financial statements – income statement and the balance sheet.

Protecting The Business Properties

The second function of accounting is to protect the properties of the business by maintaining proper record of various assets and thus enabling the management to exercise proper control over them.

Communicating The Results

As accounting has been designated as the language of business, its third function is to communicate financial information in respect of net profits, assets, liabilities, etc., to the interested parties.

Meeting Legal Requirements

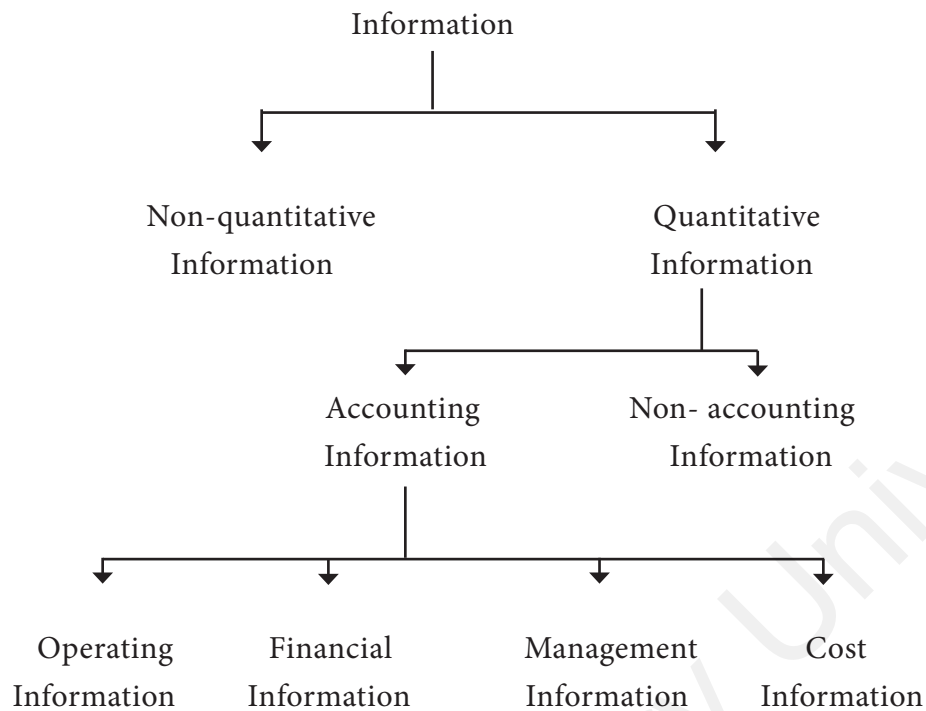
The fourth and last function of accounting is to devise such a system as will meet the legal requirements. The provisions of various laws such as the companies act, income tax act, etc., require the submission of various statements like income tax returns, annual accounts and so on. Accounting system aims at fulfilling this requirement of law.

It may be noted that the functions stated above are those of financial accounting alone. The other branches of accounting, about which we are going to see later in this lesson, have their special functions with the common objective of assisting the management in its task of planning, control and coordination of business activities. Of all the branches of accounting, management accounting is the most important from the management point of view.

As accounting is the language of business, the primary aim of accounting, like any other language, is to serve as a means of communication. Most of the world's work is done through organizations – groups of people who work together to accomplish one or more objectives. In doing its work, an organization uses resources – men, material, money and machine and various services. To work effectively, the people in an organization need information about these sources and the results achieved through using them. People outside the organization need similar information to make judgments about the organization. Accounting is the system that provides such information.

Any system has three features, viz., input, processes and output. Accounting as a social science can be viewed as an information system, since it has all the three features i.e., inputs (raw data), processes (men and equipment) and outputs (reports and information). Accounting information is composed principally of financial data about business transactions. The mere records of transactions are of little use in making “informed judgments and decisions”. The recorded data must be sorted and summarized before significant analysis can be prepared. Some of the reports to the enterprise manager and to others who need economic information may be made frequently; other reports are issued only at longer intervals. The usefulness of reports is often enhanced by various types of percentage and trend analyses. The **“basic raw materials”** of accounting are composed of business transactions data. Its “primary end products” are composed of various summaries, analyses and reports. The information needs of a business enterprise can be outlined and illustrated with the help of the following chart:

Chart Showing Types Of Information



The chart clearly presents the different types of information that might be useful to all sorts of individuals interested in the business enterprise. As seen from the chart, accounting supplies the quantitative information. The special feature of accounting as a kind of a quantitative information and as distinguished from other types of quantitative information is that it usually is expressed in monetary terms.

In this connection it is worthwhile to recall the definitions of accounting as given by the american institute of certified and public accountants and by the american accounting principles board.

The types of accounting information may be classified into four categories: (1) operating information, (2) financial accounting information (3) management accounting information and (4) cost accounting information.

Operating Information

By operating information, we mean the information which is required to conduct the day-to-day activities. Examples of operating information are: amount of wages paid and payable to employees, information about the stock of finished goods available for sale and each one's cost and selling price, information about amounts owed to and owing by the business enterprise, information about stock of raw materials, spare parts and accessories and so on. By far, the largest quantity of accounting information provides the raw data (input) for financial accounting, management accounting and cost accounting.

Financial Accounting

Financial accounting information is intended both for owners and managers and also for the use of individuals and agencies external to the business. This accounting is concerned with the recording of transactions for a business enterprise and the periodic preparation of various reports from such records. The records may be for general purpose or for a special purpose. A detailed account of the function of financial accounting has been given earlier in this lesson.

Management Accounting

Management accounting employs both historical and estimated data in assisting management in daily operations and in planning for future operations. It deals with specific problems that confront enterprise managers at various organizational levels. The management accountant is frequently concerned with identifying alternative courses of action and then helping to select the best one. For e.g. The accountant may help the finance manager in preparing plans for future financing or may help the sales manager in determining the selling price to be fixed on a new product by providing suitable data. Generally management accounting information is used in three important management functions: (1) control (2) co-ordination and (3) planning. Marginal costing is an important technique of management accounting which provides multi dimensional information that facilitates decision making.

Cost Accounting

The industrial revolution in England posed a challenge to the development of accounting as a tool of industrial management. This necessitated the development of costing techniques as guides to management action. Cost accounting emphasizes the determination and the control of costs. It is concerned primarily with the cost of manufacturing processes. In addition, one of the principal functions of cost accounting is to assemble and interpret cost data, both actual and prospective, for the use of management in controlling current operations and in planning for the future.

All of the activities described above are related to accounting and in all of them the focus is on providing accounting information to enable decisions to be made. More about cost accounting can be gained in unit v.

1.1.3.5 Groups Interested In Accounting Information

There are several groups of people who are interested in the accounting information relating to the business enterprise. Following are some of them:

Shareholders

Shareholders as owners are interested in knowing the profitability of the business transactions and the distribution of capital in the form of assets and liabilities. In fact, accounting developed several centuries ago to supply information to those who had invested their funds in business enterprise.

Management

With the advent of joint stock company form of organization the gap between ownership and management widened. In most cases the shareholders act merely as lenders of capital and the management of the company passes into the hands of professional managers. The accounting disclosures greatly help them in knowing about what has happened and what should be done to improve the profitability and financial position of the enterprise.

Potential Investors

An individual who is planning to make an investment in a business would like to know about its profitability and financial position. An analysis of the financial statements would help him in this respect.

Creditors

As creditors have extended credit to the company, they are much worried about the repaying capacity of the company. For this purpose they require its financial statements, an analysis of which will tell about the solvency position of the company.

Government

Any popular government has to keep a watch on big businesses regarding the manner in which they build business empires without regard to the interests of the community. Restricting monopolies is something that is common even in capitalist countries. For this, it is necessary that proper accounts are made available to the government. Also, accounting data are required for collection of sale-tax, income-tax, excise duty etc.

Employees

Like creditors, employees are interested in the financial statements in view of various profit sharing and bonus schemes. Their interest may further increase when they hold shares of the companies in which they are employed.

Researchers

Researchers are interested in interpreting the financial statements of the concern for a given objective.

Citizens

Any citizen may be interested in the accounting records of business enterprises including public utilities and government companies as a voter and tax payer.

1.1.3.6 The Profession Of Accounting

Accountancy can very well be viewed as a profession with stature comparable to that of law or medicine or engineering. The rapid development of accounting theory and techniques especially after the late thirties of 20th century has been accompanied by an expansion of the career opportunities in accounting and an increasing number of professionally trained accountants. Among the factors contributing to this growth has been the increase in number, size and complexity of business enterprises, the imposition of new and increasingly complex taxes and other governmental restrictions on business operations.

Coming to the nature of accounting function, it is no doubt a service function. The chief of accounting department holds a staff position which is quite in contra - distinction to the roles played by production or marketing executives who hold line authority. The role of the accountant is advisory in character. Although accounting is a staff function performed by professionals within an organization, the ultimate responsibility for the generation of accounting information, whether financial or managerial, rests with management. That is why one of the top officers of many businesses is the financial controller. The controller is the person responsible for satisfying other managers' demands for management accounting information and for complying with the regulatory demands of financial reporting. With these ends in view, the controller employs accounting professionals in both management and financial accounting. These accounting professionals employed in a particular business firm are said to be engaged in private accounting. Besides these, there are also accountants who render accounting services on a fee basis through staff accountants employed by them. These accountants are said to be engaged in public accounting.

1.1.3.7 Specialised Accounting Fields

As in many other areas of human activity, a number of specialized fields in accounting also have evolved besides financial accounting. Management accounting and cost accounting are the result of rapid technological advances and accelerated economic growth. The most important among them are explained below:

Tax Accounting

Tax accounting covers the preparation of tax returns and the consideration of the tax implications of proposed business transactions or alternative courses of action. Accountants specializing in this branch of accounting are familiar with the tax laws affecting their employer or clients and are up to date on administrative regulations and court decisions on tax cases.

International Accounting

This accounting is concerned with the special problems associated with the international trade of multinational business organizations. Accountants specializing in this area must be familiar with the influences that custom, law and taxation of various countries bring to bear on international operations and accounting principles.

Social Responsibility Accounting

This branch is the newest field of accounting and is the most difficult to describe concisely. It owes its birth to increasing social awareness which has been particularly noticeable over the last three decades or so. Social responsibility accounting is so called because it not only measures the economic effects of business decisions but also their social effects, which have previously been considered to be immeasurable. Social responsibilities of business can no longer remain as a passive chapter in the text books of commerce but are increasingly coming under greater scrutiny. Social workers and people's welfare organizations are drawing the attention of all concerned towards the social effects of business decisions. The management is being held responsible not only for the efficient conduct of business as reflected by increased profitability but also for what it contributes to social well-being and progress.

Inflation Accounting

Inflation has now become a world-wide phenomenon. The consequences of inflation are dire in case of developing and underdeveloped countries. At this juncture when financial statements or reports are based on historical costs, they would fail to reflect the effect of changes in

purchasing power or the financial position and profitability of the firm. Thus, the utility of the accounting records, not taking care of price level changes is seriously lost. This imposes a demand on the accountants for adjusting financial accounting for inflation to know the real financial position and profitability of a concern. Thus emerged a future branch of accounting called inflation accounting or accounting for price level changes. It is a system of accounting which regularly records all items in financial statements at their current values.

Human Resources Accounting

Human resources accounting is yet another new field of accounting which seeks to report and emphasize the importance of human resources in a company's earning process and total assets. It is based on the general agreement that the only real long lasting asset which an organization possesses is the quality and caliber of the people working in it. This system of accounting is concerned with, ***“the process of identifying and measuring data about human resources and communicating this information to interested parties”***.

1.1.3.8 Nature And Meaning Of Accounting Principles

What is an accounting principle or concept or convention or standard? Do they mean the same thing? Or does each one has its own meaning? These are all questions for which there is no definite answer because there is ample confusion and controversy as to the meaning and nature of accounting principles. We do not want to enter into this controversial discussion because the reader may fall a prey to the controversies and confusions and lose the spirit of the subject.

The rules and conventions of accounting are commonly referred to as principles. The american institute of certified public accountants has defined the accounting principle as, ***“a general law or rule adopted or professed as a guide to action; a settled ground or basis of conduct or practice”***. It may be noted that the definition describes the accounting principle as a general law or rule that is to be used as a guide to action. The canadian institute of chartered accountants has defined accounting principles as, ***“the body of doctrines commonly associated with the theory and procedure of accounting, serving as explanation of current practices***

and as a guide for the selection of conventions or procedures where alternatives exist". This definition also makes it clear that accounting principles serve as a guide to action.

The peculiar nature of accounting principles is that they are manmade. Unlike the principles of physics, chemistry etc. They were not deducted from basic axiom. Instead they have evolved. This has been clearly brought out by the Canadian Institute of Chartered Accountants in the second part of their definition on accounting principles: *"rules governing the foundation of accounting actions and the principles derived from them have arisen from common experiences, historical precedent, statements by individuals and professional bodies and regulation of governmental agencies"*. Since the accounting principles are man made they cannot be static and are bound to change in response to the changing needs of the society. It may be stated that accounting principles are changing but the change in them is permanent.

Accounting principles are judged on their general acceptability to the makers and users of financial statements and reports. They present a generally accepted and uniform view of the accounting profession in relation to good accounting practice and procedures. Hence the name generally accepted accounting principles.

Accounting principles, rules of conduct and action are described by various terms such as concepts, conventions, doctrines, tenets, assumptions, axioms, postulates, etc. But for our purpose we shall use all these terms synonymously except for a little difference between the two terms – concepts and conventions. The term "concept" is used to connote accounting postulates i.e. Necessary assumptions or conditions upon which accounting is based. The term convention is used to signify customs or traditions as a guide to the preparation of accounting statements.

1.1.3.9 Accounting Concepts

The important accounting concepts are discussed hereunder:

Business Entity Concept

It is generally accepted that the moment a business enterprise is

started it attains a separate entity as distinct from the persons who own it. In recording the transactions of a business, the important question is:

How do these transactions affect the business enterprise? The question as to how these transactions affect the proprietors is quite irrelevant. This concept is extremely useful in keeping business affairs strictly free from the effect of private affairs of the proprietors. In the absence of this concept the private affairs and business affairs are mingled together in such a way that the true profit or loss of the business enterprise cannot be ascertained nor its financial position. To quote an example, if a proprietor has taken ₹ 5000/- from the business for paying house tax for his residence, the amount should be deducted from the capital contributed by him. Instead if it is added to the other business expenses then the profit will be reduced by ₹ 5000/- and also his capital more by the same amount. This affects the results of the business and also its financial position. Not only this, since the profit is lowered, the consequential tax payment also will be less which is against the provisions of the income-tax act.

Going Concern Concept

This concept assumes that the business enterprise will continue to operate for a fairly long period in the future. The significance of this concept is that the accountant while valuing the assets of the enterprise does not take into account their current resale values as there is no immediate expectation of selling it. Moreover, depreciation on fixed assets is charged on the basis of their expected life rather than on their market values. When there is conclusive evidence that the business enterprise has a limited life, the accounting procedures should be appropriate to the expected terminal date of the enterprise. In such cases, the financial statements could clearly disclose the limited life of the enterprise and should be prepared from the 'quitting concern' point of view rather than from a 'going concern' point of view.

Money Measurement Concept

Accounting records only those transactions which can be expressed in monetary terms. This feature is well emphasized in the two definitions on accounting as given by the American Institute of Certified Public Accountants and the American Accounting Principles Board. The

importance of this concept is that money provides a common denomination by means of which heterogeneous facts about a business enterprise can be expressed and measured in a much better way. For e.g. When it is stated that a business owns ₹ 1,00,000 cash, 500 tons of raw material, 10 machinery items, 3000 square meters of land and building etc., these amounts cannot be added together to produce a meaningful total of what the business owns. However, by expressing these items in monetary terms such as ₹ 1,00,000 cash, ₹ 5,00,000 worth raw materials, ₹ 10,00,000 worth machinery items and ₹ 30,00,000 worth land and building – such an addition is possible.

A serious limitation of this concept is that accounting does not take into account pertinent non-monetary items which may significantly affect the enterprise. For instance, accounting does not give information about the poor health of the chairman, serious misunderstanding between the production and sales manager etc., which have serious bearing on the prospects of the enterprise. Another limitation of this concept is that money is expressed in terms of its value at the time a transaction is recorded in the accounts. Subsequent changes in the purchasing power of money are not taken into account.

Cost Concept

This concept is yet another fundamental concept of accounting which is closely related to the going-concern concept. As per this concept: (i) an asset is ordinarily entered in the accounting records at the price paid to acquire it i.e., at its cost and (ii) this cost is the basis for all subsequent accounting for the asset.

The implication of this concept is that the purchase of an asset is recorded in the books at the price actually paid for it irrespective of its market value. For e.g. If a business buys a building for ₹ 3,00,000, the asset would be recorded in the books as ₹ 3,00,000 even if its market value at that time happens to be ₹ 4,00,000. However, this concept does not mean that the asset will always be shown at cost. This cost becomes the basis for all future accounting of the asset. It means that the asset may systematically be reduced in its value by changing depreciation. The significant advantage of this concept is that it brings in objectivity in the preparations and presentation of financial statements. But like the money measurement concept, this concept also does not take into account subsequent changes

in the purchasing power of money due to inflationary pressures. This is the reason for the growing importance of inflation accounting.

Dual Aspect Concept (Double Entry System)

This concept is the core of accounting. According to this concept every business transaction has a dual aspect. This concept is explained in detail below:

The properties owned by a business enterprise are referred to as assets and the rights or claims to the various parties against the assets are referred to as equities. The relationship between the two may be expressed in the form of an equation as follows:

$$\textbf{Equities = Assets}$$

Equities may be subdivided into two principal types: the rights of creditors and the rights of owners. The rights of creditors represent debts of the business and are called liabilities. The rights of the owners are called capital.

Expansion of the equation to give recognition to the two types of equities results in the following which is known as the accounting equation:

$$\textbf{Liabilities + Capital = Assets}$$

It is customary to place 'liabilities' before 'capital' because creditors have priority in the repayment of their claims as compared to that of owners. Sometimes greater emphasis is given to the residual claim of the owners by transferring liabilities to the other side of the equation as:

$$\textbf{Capital = Assets - Liabilities}$$

All business transactions, however simple or complex they are, result in a change in the three basic elements of the equation. This is well explained with the help of the following series of examples:

(i) Mr. Prasad commenced business with a capital of ₹ 3,000: the result of this transaction is that the business, being a separate entity, gets

cash-asset of ₹ 30,000 and has to pay to Mr. Prasad ₹ 30,000, his capital. This transaction can be expressed in the form of the equation as follows:

Capital	=	Assets
Prasad		Cash
30,000		30,000

(ii) Purchased furniture for ₹ 5,000: the effect of this transaction is that cash is reduced by ₹ 5,000 and a new asset viz. Furniture worth ₹ 5,000 comes in, thereby, rendering no change in the total assets of the business. The equation after this transaction will be:

Capital	=	Assets
Prasad	Cash + Furniture	
30,000	5,000 + 5,000	

(iii) Borrowed ₹ 20,000 from Mr. Gopal: as a result of this transaction both the sides of the equation increase by ₹ 20,000; cash balance is increased and a liability to Mr. Gopal is created. The equation will appear as follows:

Liabilities + Capital	=	Assets
Creditors + Prasad		Cash + Furniture
20,000 30,000		45,000 5,000

(iv) Purchased goods for cash ₹ 30,000: this transaction does not affect the liabilities side total nor the asset side total. Only the composition of the total assets changes i.e. Cash is reduced by ₹ 30,000 and a new asset viz. Stock worth ₹ 30,000 comes in. The equation after this transaction will be as follows:

Liabilities + Capital	=	Asset
Creditors	Prasad	Cash + Stock + Furniture
20,000	30,000	5,000 30,000 5,000

(v) Goods worth ₹ 10,000 are sold on credit to Ganesh for ₹ 12,000. The result is that stock is reduced by ₹ 10,000 a new asset namely debtor (Mr. Ganesh) for ₹ 12,000 comes into picture and the capital of Mr. Prasad increases by ₹ 2,000 as the profit on the sale of goods belongs to the owner. Now the accounting equation will look as under:

Liabilities + Capital	=	Asset
Creditors	Prasad	Cash + Debtors + Stock + Furniture
20,000	32,000	15,000 12,000 20,000 5,000

(vi) Paid electricity charges ₹ 300: this transaction reduces both the cash balance and mr. Prasad's capital by ₹ 300. This is so because the expenditure reduces the business profit which in turn reduces the equity.

The equation after this will be:

Liabilities + Capital = Assets					
Creditors	+ Prasad	Cash	+ Debtors	+ Stock	+ Furniture
20,000	31,700	14,700	12,000	20,000	5,000

Thus it may be seen that whatever is the nature of transaction, the accounting equation always tallies and should tally. The system of recording transactions based on this concept is called double entry system.

Accounting Period Concept

In accordance with the going concern concept it is usually assumed that the life of a business is indefinitely long. But owners and other interested parties cannot wait until the business has been wound up for obtaining information about its results and financial position. For e.g. If for ten years no accounts have been prepared and if the business has been consistently incurring losses, there may not be any capital at all at the end of the tenth year which will be known only at that time. This would result in the compulsory winding up of the business. But, if at frequent intervals information are made available as to how things are going, then corrective measures may be suggested and remedial action may be taken. That is why, pacioli wrote as early as in 1494: 'frequent accounting makes for only friendship'. This need leads to the accounting period concept.

According to this concept accounting measures activities for a specified interval of time called the accounting period. For the purpose of reporting to various interested parties one year is the usual accounting period. Though pacioli wrote that books should be closed each year especially in a partnership, it applies to all types of business organizations.

Periodic Matching Of Costs And Revenues

This concept is based on the accounting period concept. It is widely accepted that desire of making profit is the most important motivation to keep the proprietors engaged in business activities. Hence a major share of attention of the accountant is being devoted towards evolving appropriate techniques of measuring profits. One such technique is periodic matching of costs and revenues.

In order to ascertain the profits made by the business during a period, the accountant should match the revenues of the period with the costs of that period. By 'matching' we mean appropriate association of related revenues and expenses pertaining to a particular accounting period. To put it in other words, profits made by a business in a particular accounting period can be ascertained only when the revenues earned during that period are compared with the expenses incurred for earning that revenue. The question as to when the payment was actually received or made is irrelevant. For e.g. In a business enterprise which adopts calendar year as accounting year, if rent for december 1989 was paid in january 1990, the rent so paid should be taken as the expenditure of the year 1989, revenues of that year should be matched with the costs incurred for earning that revenue including the rent for december 1989, though paid in january 1990. It is on account of this concept that adjustments are made for outstanding expenses, accrued incomes, prepaid expenses etc. While preparing financial statements at the end of the accounting period.

The system of accounting which follows this concept is called as mercantile system. In contrast to this there is another system of accounting called as cash system of accounting where entries are made only when cash is received or paid, no entry being made when a payment or receipt is merely due.

Realization Concept

Realization refers to inflows of cash or claims to cash like bills receivables, debtors etc. Arising from the sale of assets or rendering of services. According to realization concept, revenues are usually recognized in the period in which goods were sold to customers or in which services were rendered. Sale is considered to be made at the point when the property in goods passes to the buyer and he becomes legally liable to pay. To illustrate this point, let us consider the case of a, a manufacturer who produces goods on receipt of orders. When an order is received from b, a starts the process of production and delivers the goods to b when the production is complete. B makes payment on receipt of goods. In this example, the sale will be presumed to have been made not at the time when goods are delivered to b. A second aspect of the realization concept is that the amount recognized as revenue is the amount that is reasonably certain to be realized. However, lot of reasoning has to be applied to ascertain

as to how certain 'reasonably certain' is ... yet, one thing is clear, that is, the amount of revenue to be recorded may be less than the sales value of the goods sold and services rendered. For e.g. When goods are sold at a discount, revenue is recorded not at the list price but at the amount at which sale is made. Similarly, it is on account of this aspect of the concept that when sales are made on credit, though entry is made for the full amount of sales, the estimated amount of bad debts is treated as an expense and the effect on net income is the same as if the revenue were reported as the amount of sales minus the estimated amount of bad debts.

1.1.3.10 Accounting Conventions

Convention Of Conservatism

It is a world of uncertainty. So it is always better to pursue the policy of playing safe. This is the principle behind the convention of conservatism. According to this convention the accountant must be very careful while recognizing increases in an enterprise's profits rather than recognizing decreases in profits. For this the accountants have to follow the rule, anticipate no profit, provide for all possible losses, while recording business transactions. It is on account of this convention that the inventory is valued at cost or market price whichever is less, i.e. When the market price of the inventories has fallen below its cost price it is shown at market price i.e. The possible loss is provided and when it is above the cost price it is shown at cost price i.e. The anticipated profit is not recorded. It is for the same reason that provision for bad and doubtful debts, provision for fluctuation in investments, etc., are created. This concept affects principally the current assets.

Convention Of Full Disclosure

The emergence of joint stock company form of business organization resulted in the divorce between ownership and management. This necessitated the full disclosure of accounting information about the enterprise to the owners and various other interested parties. Thus the convention of full disclosure became important. By this convention it is implied that accounts must be honestly prepared and all material information must be adequately disclosed therein. But it does not mean that all information that someone desires are to be disclosed in

the financial statements. It only implies that there should be adequate disclosure of information which is of considerable value to owners, investors, creditors, government, etc. In sachar committee report (1978), it has been emphasized that openness in company affairs is the best way to secure responsible behaviour. It is in accordance with this convention that companies act, banking companies regulation act, insurance act etc., have prescribed proforma of financial statements to enable the concerned companies to disclose sufficient information. The practice of appending notes relating to various facts on items which do not find place in financial statements is also in pursuance to this convention. The following are some examples

- (a) Contingent liabilities appearing as a note
- (b) Market value of investments appearing as a note
- (c) Schedule of advances in case of banking companies

Convention Of Consistency

According to this concept it is essential that accounting procedures, practices and method should remain unchanged from one accounting period to another. This enables comparison of performance in one accounting period with that in the past. For e.g. If material issues are priced on the basis of fifo method the same basis should be followed year after year. Similarly, if depreciation is charged on fixed assets according to diminishing balance method it should be done in subsequent year also. But consistency never implies inflexibility as not to permit the introduction of improved techniques of accounting. However if introduction of a new technique results in inflating or deflating the figures of profit as compared to the previous methods, the fact should be well disclosed in the financial statement.

Convention Of Materiality

The implication of this convention is that accountant should attach importance to material details and ignore insignificant ones. In the absence of this distinction, accounting will unnecessarily be overburdened with minute details. The question as to what is a material detail and what is not is left to the discretion of the individual accountant. Further, an item should be regarded as material if there is reason to believe that knowledge of it would influence the decision of informed investor. Some

examples of material financial information are: fall in the value of stock, loss of markets due to competition, change in the demand pattern due to change in government regulations, etc. Examples of insignificant financial information are: rounding of income to nearest ten for tax purposes etc. Sometimes if it is felt that an immaterial item must be disclosed, the same may be shown as footnote or in parenthesis according to its relative importance.

1.1.3.11 Summary

Accounting is rightly called the language of business. It is as old as money itself. It is concerned with the collecting, recording, evaluating and communicating the results of business transactions. Initially meant to meet the needs of a relatively few owners, it gradually expanded its functions to a public role of meeting the needs of a variety of interested parties. Broadly speaking all citizens are affected by accounting in some way. Accounting as an information system possesses with accountants engaged in private and public accounting. As in many other areas of human activity a number of specialized fields in accounting also have evolved as a result of rapid changes in business and social needs.

Accounting information should be made standard to convey the same meaning to all interested parties. To make it standard, certain accounting principles, concepts, conventions and standards have been developed over a period of time. These accounting principles, by whatever name they are called, serve as a general law or rule that is to be used as a guide to action. Without accounting principles, accounting information becomes incomparable, inconsistent and unreliable. An accounting principle to become generally accepted should satisfy the criteria of relevance, objectivity and feasibility. The fasb (financial accounting standards board) is currently the dominant body in the development of accounting principles. The iasc is another professional body which is engaged in the development of the accounting standards. The icai is an associate member of the iasc and the asb started by the icai is formulating accounting standards in our country. Both the iasc and icai consider going concern, accrual and consistency as fundamental accounting assumptions.

1.1.3.12 Key Words

- **Accounting:** language of business.
- **Financial Accounting:** concerned with the recording of transactions for a business enterprise and the periodic preparation of various reports from such records
- **Management Accounting:** accounting for internal management needs.
- **Cost Accounting:** accounting for determination and control of costs.
- **Accounting Principle:** the body of doctrines commonly associated with the theory and procedure of accounting.
- **Accounting Concept:** accounting postulates i.e. Necessary assumptions or conditions upon which accounting is based.
- **Accounting Conventions:** convention signifies the customs or traditions which serve as a guide to the preparation of accounting statements.
- **Accounting Standard:** standards to be observed in the presentation of financial statements.

1.1.3.13 Self Assessment Questions

1. Why is accounting called the language of business?
2. What are the functions of accounting?
3. Accounting as a social science can be viewed as an information system. examine.
4. Is accounting a staff function or line function? Explain the reasons.
5. Give an account of the various branches of accounting.
6. 'accounting is a service function'. Discuss the statement in the context of a modern manufacturing business.
7. Distinguish between financial accounting and management accounting.
8. What are accounting concepts and conventions? Is there any difference between them?
9. What is the significance of dual aspect concept?
10. Write a short note on accounting standards.
11. What is the position in india regarding the formulation and enforcement of accounting standards?

Lesson – 1.2 The Accounting Process

1.2.1 Introduction

During the accounting period the accountant records transactions as and when they occur. At the end of each accounting period the accountant summarizes the information recorded and prepares the trial balance to ensure that the double entry system has been maintained. This is often followed by certain adjusting entries which are to be made to account the changes that have taken place since the transactions were recorded. When the recording aspect has been made as complete and upto-date as possible the accountant prepares financial statements reflecting the financial position and the results of business operations. Thus the accounting process consists of three major parts:

- i). The recording of business transactions during that period;
- ii). The summarizing of information at the end of the period and
- iii). The reporting and interpreting of the summary information.

The success of the accounting process can be judged from the responsiveness of financial reports to the needs of the users of accounting information. This lesson takes the readers into the accounting process.

1.2.2 Learning Objectives

After reading this lesson the reader should be able to

- Understand the Rules of Debit and Credit
- Pass Journal Entries
- Prepare Ledger Accounts
- Prepare a Trial Balance
- Make Adjustment and Closing Entries
- Get Introduced to Tally Package

1.2.3 Contents

- 1.2.3.1 The account
- 1.2.3.2 Debit and credit
- 1.2.3.3 The ledger
- 1.2.3.4 Journal
- 1.2.3.5 The trial balance
- 1.2.3.6 Closing entries
- 1.2.3.7 Adjustment entries
- 1.2.3.8 Preparation of financial statements
- 1.2.3.9 Introduction to tally package
- 1.2.3.10 Summary
- 1.2.3.11 Key words
- 1.2.3.12 Self assessment questions

1.2.3.1 The Account

The transactions that take place in a business enterprise during a specific period may effect increases and decreases in assets, liabilities, capital, revenue and expense items. To make up to-date information available when needed and to be able to prepare timely periodic financial statements, it is necessary to maintain a separate record for each item. For e.g. It is necessary to have a separate record devoted exclusively to record increases and decreases in cash, another one to record increases and decreases in supplies, a third one on machinery, etc. The type of record that is traditionally used for this purpose is called an account. Thus an account is a statement wherein information relating to an item or a group of similar items are accumulated. The simplest form of an account has three parts:

- i). A title which gives the name of the item recorded in the account
- ii). A space for recording increases in the amount of the item, and
- iii). A space for recording decreases in the amount of the item. This form of an account is known as a 't' account because of its similarity to the letter 't' as illustrated below:

Title	
Left side (debit side)	Right side (credit side)

1.2.3.2 Debit And Credit

The left-hand side of any account is called the debit side and the right-hand side is called the credit side. Amounts entered on the left hand side of an account, regardless of the title of the account are called debits and the amounts entered on the right hand side of an account are called credits. To debit (dr) an account means to make an entry on the left-hand side of an account and to credit (cr) an account means to make an entry on the right-hand side. The words debit and credit have no other meaning in accounting, though in common parlance; debit has a negative connotation, while credit has a positive connotation.

Double entry system of recording business transactions is universally followed. In this system for each transaction the debit amount must equal the credit amount. If not, the recording of transactions is incorrect. The equality of debits and credits is maintained in accounting simply by specifying that the left side of asset accounts is to be used for recording increases and the right side to be used for recording decreases; the right side of a liability and capital accounts is to be used to record increases and the left side to be used for recording decreases. The account balances when they are totaled, will then conform to the two equations:

1. Assets = Liabilities + Owners' equity
2. Debits = Credits

From the above arrangement we can state that the rules of Debits and Credits are as follows:

	Debit Signifies		Credit Signifies
1.	Increase in asset accounts	1.	Decrease in asset accounts
2.	Decrease in liability accounts	2.	Increase in liability accounts
3.	Decrease in owners' equity accounts	3.	Increase in owners' equity accounts

From the rule that credit signifies increase in owners' equity and debit signifies decrease in it, the rules of revenue accounts and expense accounts can be derived. While explaining the dual aspect of the concept in the preceding lesson, we have seen that revenues increase the owners' equity as they belong to the owners. Since owners' equity accounts increase

on the credit side, revenue must be credits. So, if the revenue accounts are to be increased they must be credited and if they are to be decreased they must be debited. Similarly we have seen that expenses decrease the owners' equity. As owners' equity account decreases on the debit side expenses must be debits. Hence to increase the expense accounts, they must be debited and to decrease it, they must be credited. From the above we can arrive at the rules for revenues and expenses as follows:

Debit Signifies	Credit Signifies
Increase in expenses	Increase in revenues
Decrease in revenues	Decrease in expenses

1.2.3.3 The Ledger

A ledger is a set of accounts. It contains all the accounts of a specific business enterprise. It may be kept in any of the following two forms:

- (i) Bound Ledger and
- (ii) Loose Leaf Ledger

A bound ledger is kept in the form of book which contains all the accounts. These days it is common to keep the ledger in the form of loose-leaf cards. This helps in posting transactions particularly when mechanized system of accounting is used.

1.2.3.4 Journal

When a business transaction takes place, the first record of it is done in a book called journal. The journal records all the transactions of a business in the order in which they occur. The journal may therefore be defined as a chronological record of accounting transactions. It shows names of accounts that are to be debited or credited, the amounts of the debits and credits and any other additional but useful information about the transaction. A journal does not replace but precedes the ledger. A proforma of a journal is given in illustration 1.

Illustration 1

Journal

Date	Particulars	L.F.	Debit	Credit
2005	Cash a/c Dr.	3	30,000	
August 3	To sales a/c	9		30,000

In illustration 1 the debit entry is listed first and the debit amount appears in the left-hand amount column; the account to be credited appears below the debit entry and the credit amount appears in the right hand amount column. The data in the journal entry are transferred to the appropriate accounts in the ledger by a process known as posting. Any entry in any account can be made only on the basis of a journal entry. The column l.f. which stands for ledger folio gives the page number of accounts in the ledger wherein posting for the journal entry has been made. After all the journal entries are posted in the respective ledger accounts, each ledger account is balanced by subtracting the smaller total from the bigger total. The resultant figure may be either debit or credit balance and vice-versa.

Thus the transactions are recorded first of all in the journal and then they are posted to the ledger. Hence the journal is called the book of original or prime entry and the ledger is the book of second entry. While the journal records transactions in a chronological order, the ledger records transactions in an analytical order.

1.2.3.5 The Trial Balance

The trial balance is simply a list of the account names and their balance as of a given moment of time with debit balances in one column and credit balances in another column. It is prepared to ensure that the mechanics of the recording and posting of the transaction have been carried out accurately. If the recording and posting have been accurate then the debit total and credit total in the trial balance must tally thereby evidencing that an equality of debits and credits has been maintained. In this connection it is but proper to caution that mere agreement of the debt and credit total in the trial balance is not conclusive proof of correct recording and posting. There are many errors which may not affect the agreement of trial balance like total omission of a transaction, posting the right amount on the right side but of a wrong account etc.

The points which we have discussed so far can very well be explained with the help of the following simple illustration.

Illustration 2

January 1 - started business with ₹ 3,000

January 2 - bought goods worth ₹ 2,000

January 9 - received order for half of the goods from 'g'

January 12 - delivered the goods, g invoiced ₹ 1,300

January 15 - received order for remaining half of the total goods purchased

January 21 - delivered goods and received cash ₹ 1,200

January 30 - g makes payment

January 31 - paid salaries ₹ 210

- received interest ₹ 50

Let us now analyze the transactions one by one.

January 1 – Started Business With ₹ 3,000

The two accounts involved are cash and owners' equity. Cash, an asset increases and hence it has to be debited. Owners' equity, a liability also increases and hence it has to be credited.

January 2 – Bought Goods Worth ₹ 2,000

The two accounts affected by this transaction are cash and goods (purchases). Cash balance decreases and hence it is credited and goods on hand, an asset, increases and hence it is to be debited.

January 9 – Received Order For Half Of The Goods From 'G'

No entry is required as realization of revenue will take place only when goods are delivered (realization concept).

January 12 – Delivered The Goods, 'G' Invoiced ₹ 1,300

This transaction affects two accounts – goods (sales) a/c and receivables a/c. Since it is a credit transaction, receivables increase (asset) and hence it is to be debited. Sales decreases goods on hand and hence goods (sales) a/c is to be credited. Since the term 'goods' is used to

mean purchase of goods and sale of goods, to avoid confusion, purchase of goods is simply shown as purchases a/c and sale of goods as sales a/c.

January 15 – Received Order For Remaining Half Of Goods

No entry.

January 21 – Delivered Goods And Received Cash ₹1,200

This transaction affects cash a/c. Since cash is realized, the cash balance will increase and hence cash account is to be debited. Since the stock of goods becomes nil due to sale, sales a/c is to be credited (as asset in the form of goods on hand has reduced due to sales).

January 30 - 'G' Makes Payment

Both the accounts affected by this transaction are asset accounts – cash and receivables. Cash balance increases and hence it is to be debited. Receivables balance decreases and hence it is to be credited.

January 31 – Paid Salaries ₹ 210

Because of payment of salaries cash balance decreases and hence cash account is to be credited. Salary is an expense and since expense has the effect of reducing owners' equity and as owners' equity account decreases on the debit side, expenses account is to be debited.

January 31 – Received Interest ₹50

The receipt of interest increases cash balance and hence cash a/c is to be debited. Interest being revenue which has the effect of increasing the owners' equity, it has to be credited as owners' equity account increases on the credit side.

When journal entries for the above transactions are passed, they would be as follows:

Journal

Date	Particulars	L.F.	Debit	Credit
Jan. 1	Cash a/c Dr. To Capital a/c (Being business started)		3,000	3,000
Jan. 2	Purchases a/c Dr. To Cash (Being goods purchased)		2,000	2,000
Jan. 12	Receivables a/c Dr. To Sales a/c (Being goods sold on credit)		1,300	1,300
Jan. 21	Cash a/c Dr. To Sales a/c (Being goods sold for cash)		1,200	1,200
Jan. 30	Cash a/c Dr. To Receivables a/c (Being cash received for sale of goods)		1,300	1,300
Jan. 31	Salaries a/c Dr. To Cash a/c (Being salaries paid)		210	210
Jan. 31	Cash a/c Dr. To Interest a/c (Being interest received)		50	50

Now the above journal entries are posted into respective ledger accounts which in turn are balanced.

Cash Account

Debit	₹	Credit	₹
To Capital a/c	3,000	By Purchases a/c	2,000
To Sales a/c	1,200	By Salaries a/c	210
To Receivables a/c	1,300	By Balance c/d	3,340
To Interest a/c	50		
	5,550		5,550

Capital Account

Debit	₹	Credit	₹
To Balance c/d	3,000	By Cash a/c	3,000
	3,000		3,000

Purchases Account

Debit	₹	Credit	₹
To Cash a/c	2,000	By Balance c/d	2,000
	2,000		2,000

Receivables Account

Debit	₹	Credit	₹
To Balance c/d	1,300	By Cash a/c	1,300
	1,300		1,300

Sales Account

Debit	₹	Credit	₹
To Balance c/d	2,500	By Receivables a/c	1,300
		By Cash a/c	1,200
	2,500		2,500

Salaries Account

Debit	₹	Credit	₹
To Cash a/c	210	By Balance c/d	210
	210		210

Interest Account

Debit	₹	Credit	₹
To Balance c/d	50	By Cash a/c	50
	50		50

Now a trial balance can be prepared and when prepared it would appear as follows:

Trial Balance

Debit	₹	Credit	₹
Cash	3,340	Capital	3,000
Purchases	2,000	Sales	2,500
Salaries	210	Interest	50
	5,550		5,550

1.2.3.6 Closing Entries

Periodically, usually at the end of the accounting period, all revenue and expense account balances are transferred to an account called income summary or profit and loss account and are then said to be closed. (a detailed discussion on profit and loss account can be had in a subsequent lesson). The balance in the profit and loss account, which is the net income or net loss for the period, is then transferred to the capital account and thus the profit and loss account is also closed. In the case of corporation the net income or

net loss is transferred to retained earnings account which is a part of owners' equity. The entries which are passed for transferring these accounts are called as closing entries. Because of this periodic closing of revenue and expense accounts, they are called as temporary or nominal accounts. On the other hand, the assets, liabilities and owners' equity accounts, the balances of which are shown on the balance sheet and are carried forward from year to year are called as permanent or real accounts.

The principle of framing a closing entry is very simple. If an account is having a debit balance, then it is credited and the profit and loss account is debited. Similarly if a particular account is having a credit balance, it is closed by debiting it and crediting the profit and loss account. In our example sales account and interest account are revenues, and purchases account and salaries account are expenses. Purchases account is an expense because the entire goods have been sold out in the accounting period itself and hence they become cost of goods sold out. This aspect would become more clear when the reader proceeds to the lessons on profit and loss account. The closing entries would appear as follows:

Journal

	Particulars	L.F.	Debit	Credit
1	Profit And Loss a/c Dr. To Salaries a/c To Purchases a/c		2,210	210 2,000
2	Sales a/c Dr. To Profit And Loss a/c		2,500	2,500
3	Interest a/c Dr. To Profit And Loss a/c		50	50

Now profit and loss a/c, retained earnings a/c and balance sheet can be prepared which would appear as follows:

Profit And Loss Account

Debit	₹	Credit	₹
Purchases a/c	2,000	Sales	2,500
Salaries a/c	210	Interest	50
Retained Earnings a/c	340		
	2,550		5,550

Retained Earnings Account

Debit	₹	Credit	₹
Balance	340	Profit and Loss a/c	340
	340		340

Balance Sheet

Liabilities	₹	Assets	₹
Capital	3,000	Cash	3,340
Retained Earnings	340		
	3,340		3,340

1.2.3.7 Adjustment Entries

Because of the adopting of accrual accounting, after the preparation of trial balance, adjustments relating to the accounting period have to be made in order to make the financial statements complete. These adjustments are needed for transactions which have not been recorded but which affect the financial position and operating results of the business. They may be divided into four kinds: two in relation to revenues and the other two in relation to expenses. The two in relation to revenues are:

(i) Unrecorded Revenues

Income earned for the period but not received in cash. For e.g. Interest for the last quarter of the accounting period is yet to be received though fallen due. The adjustment entry to be passed is:

Accrued interest a/c	(Dr)
Interest a/c	(Cr)

(ii) Revenues Received In Advance

i.e. Income relating to the next period received in the current accounting period: e.g. Rent received in advance. The adjustment entry is:

Rent a/c	(Dr)
Rent received in advance a/c	(Cr)

The two relating to expenses are:

(i) Unrecorded Expenses

i.e. Expenses were incurred during the period but no record of them as yet has been made: e.g. ₹500 wages earned by an employee during the period remaining to be paid. The adjustment entry would be:

Wages a/c	(Dr)
Accrued wages a/c	(Cr)

(ii) Prepaid Expenses

i.e., Expenses relating to the subsequent period paid in advance in the current accounting period. An example which is frequently cited for this is insurance paid in advance. The adjustment entry would be:

Prepaid insurance a/c	(Dr)
Insurance a/c	(Cr)

In the above four cases unrecorded revenues and prepaid expenses are assets and hence debited (as debit may signify increase in assets) and revenues received in advance and unrecorded expenses are liabilities and hence credited (as credit may signify increase in liabilities). Besides the above mentioned four adjustments, some more are to be done before preparing the financial statements. They are:

1. Inventory at the end
2. Provision of depreciation
3. Provision for bad debts
4. Provision for discount on receivables and payables
5. Interest on capital and drawings

1.2.3.8 Preparation Of Financial Statements

Now everything is set ready for the preparation of financial statements for the accounting period and as of the last day of the accounting period. Generally agreed accounting principles (gaap) require that three such reports be prepared:

- (i) A balance sheet
- (ii) A profit and loss account (or) income statement
- (iii) A fund flow statement

A detailed discussion on these three financial statements follows in the succeeding lessons.

1.2.3.9 Introduction To Tally Package

Today an increasingly large number of companies have adopted mechanized accounting. The main reasons for this development are that:

- (i) The size of firms have become very large resulting in manifold increase in accounting data to be collected and processed.
- (ii) The requirements of modern management which want detailed analysis in many ways, of the accounting and statistical information for the efficient discharge of their duties.
- (iii) Collection of statistics not only for the firm's own use but also for submission to various official authorities.

In this context, the use of computers in accounting is worth mentioning. Late 80's and early 90's was an era of financial accounting software. Many software developers offered separate financial and inventory software to take care of the needs of the concerns but users wanted a single software that will take care of production and inventory management i.e. They wanted a single software where, if an invoice is entered, that will update accounts as well as inventory information. Here tally comes in handy.

Tally is one of the acclaimed accounting software with large user base in india and abroad, which is continuously growing. There is good potential for tally professionals even in small towns. Tally which is a vast software covers a lot of areas for various types of industries and is loaded with options. So, every organization needs a hardcore tally professional to exploit its full capabilities and functionality to implement tally. Tally which is a financial and inventory management system is developed in india using tally development language. Tally has been created by pentronics (p) limited, bangalore.

Features Of Tally

1. Accounts without any account codes.
2. Maintains complete range of books of accounts, final accounts like balance sheets, profit and loss statements, cash and fund flows, trial balance and others

3. Provides option to post stock value from inventory directly to balance sheet and profit and loss a/c as per the valuation method specified by user. This greatly simplifies the procedure and one gets the final accounts which is in tune with the stock statements of the inventory system.
4. Provides multiple reports in diverse formats.
5. Various options for interest calculation.
6. Allows accounts of multiple companies simultaneously.
7. Multiple currencies in the same transactions and viewing all reports in one or more currency.
8. Unlimited budgets and periods, user definable security levels for access control and audit capabilities to track malafide changes.
9. Allows import and export of data from or to other systems.
10. Online help.
11. Backup and restore of data.
12. Facilitates printing of cheques etc.

1.2.3.10 Summary

The following steps are involved in the accounting process:

1. The first and the most important part of the accounting process is the analysis of the transactions to decide which account is to be debited and which account is to be credited.
2. Next comes journalising the transactions i.e. Recording the transactions in the journal.
3. The journal entries are posted into respective accounts in the ledger and the ledger accounts are balanced.
4. At the end of the accounting period, a trial balance is prepared to ensure quality of debits and credits.
5. Adjustment and closing entries are made to enable the preparation of financial statements.
6. As a last step financial statements are prepared.

These six steps taken sequentially complete the accounting process during an accounting period and are repeated in each subsequent period.

1.2.3.11 Key Words

Account: a statement wherein information relating to all items are accumulated.

Debit: signifies increase in asset accounts, decrease in liability accounts and decrease in owners' equity accounts.

Credit: signifies decrease in asset accounts, increase in liability accounts and increase in owners' equity accounts.

Ledger: a set of accounts of a specific business enterprise.

Journal: a book of prime entry.

Trial Balance: a list of balances of accounts to ensure arithmetical accuracy.

Closing Entries: entries passed to transfer the revenue accounts to profit and loss a/c.

Adjustment Entries: entries passed for transactions which are not recorded but which affect the financial position and operating results of the business.

1.2.3.12 Self Assessment Questions

1. Explain the following:
 - (a) a journal
 - (b) an account
 - (c) a ledger
2. Bring out the relationship between a journal and a ledger.
3. Explain the significance of trial balance.
4. Why are adjustment entries necessary?
5. Narrate the rules of debit and credit.
6. Distinguish nominal accounts from real accounts.
7. Explain the mechanism of balancing an account.
8. How and why closing entries are made?
9. The following transactions relate to a business concern for the month of december 2005. Journalise them, post into ledger accounts, balance and prepare the trial balance.

March 1 - started business with a capital of ₹ 9,000
March 2 - purchased furniture for ₹ 300
March 3 - purchased goods for ₹ 6,000
March 11 - received order for half-of the goods from 'c'
March 15 - delivered goods, 'c' invoiced ₹ 4,000
March 17 - received order for the remaining half of the goods
March 21 - delivered goods, cash received ₹ 3,800
March 31 - paid wages of ₹ 300

1.2.3.13 Books For Further Reading

1. M.A.Arulanandam & K.S.Raman: *Advanced Accounts*, Himalaya Publishing House.
2. R.L.Gupta And M.Radhaswamy: *Advanced Accounts*, Vol.I, Sultan Chand, New Delhi.
3. M.C.Shukla And T.S.Grewal: *Advanced Accounts*, S.Chand & Co. New Delhi.

Lesson 1.3 - Preparation Of Final Accounts

1.3.1 Introduction

The primary objective of any business concern is to earn income. Ascertainment of the periodic income of a business enterprise is perhaps the important objective of the accounting process. This objective is achieved by the preparation of profit and loss account or the income statement. Profit and loss account is generally considered to be of greatest interest and importance to end users of accounting information. The profit and loss account enables all concerned to find out whether the business operations have been profitable or not during a particular period. Usually the profit and loss account is accompanied by the balance sheet as on the last date of the accounting period for which the profit and loss account is prepared. A balance sheet shows the financial position of a business enterprise as of a specified moment of time. It contains a list of the assets, the liabilities and the capital of a business entity as of a specified date, usually at the close of the last day of a month or a year. While the profit and loss account is categorized as a flow report (for a particular period), the balance sheet is categorized as a status report (as on a particular date).

1.3.2 Learning Objectives

After reading this lesson the reader should be able to:

- Understand The Basic Ideas Of Income And Expense
- Prepare A Profit And Loss Account/Income Statement In The Proper Format
- Understand The Basic Ideas About A Balance Sheet
- Classify The Different Assets And Liabilities
- Prepare A Balance Sheet In The Proper Format

1.3.3 Contents

- 1.3.3.1 Basic ideas about income and expense
- 1.3.3.2 Form and presentation of profit and loss account /
Income statement
- 1.3.3.3 Explanation of items on the income statement
- 1.3.3.4 Statement of retained earnings
- 1.3.3.5 Balance sheet
- 1.3.3.6 Form and presentation of balance sheet
- 1.3.3.7 Listing of items in the balance sheet
- 1.3.3.8 Classification of items in the balance sheet
- 1.3.3.9 Summary
- 1.3.3.10 Key words
- 1.3.3.11 Self assessment questions
- 1.3.3.12 Key to self assessment questions
- 1.3.3.13 Case analysis
- 1.3.3.14 Book for further reading

1.3.3.1 Basic Ideas About Income And Expense

Profit and loss account consists of two elements: one element is the inflows that result from the sale of goods and services to customers which are called as revenues. The other element reports the outflows that were made in order to generate those revenues; these are called as expenses. Income is the amount by which revenues exceed expenses. The term 'net income' is used to indicate the excess of all the revenues over all the expenses. The basic equation is:

$$\text{Revenue} - \text{Expenses} = \text{Net Income}$$

This is in accordance with the matching concept.

Income And Owner's Equity

The net income of an accounting period increases owner's equity because it belongs to the owner. To quote an example, goods costing ₹ 20,000 are sold on credit for ₹ 28,000. The result is that stock is reduced by ₹ 20,000 and a new asset namely debtor for ₹ 28,000 is created and the total assets increase by the difference of ₹ 8,000. Because of the dual

aspect concept, we know that the equity side of the balance sheet would also increase by ₹ 8,000 and the increase would be in owner's equity. This is because the profit on sale of goods belongs to the owner. It is clear from the above example that income increases the owner's equity.

Income Vs. Receipts:

Income of a period increases the owner's equity but it need not result in increase in cash balance. Loss of a period decreases owner's equity but it need not result in decrease in cash balance. Similarly, increase in cash balance need not result in increased income and owner's equity and decrease in cash balance need not denote loss and decrease in owner's equity. All these are due to the fact that income is not the same as cash receipt. The following examples make clear the above point:

- I) when goods costing ₹ 20,000 are sold on credit for ₹ 28,000 it results in an income of ₹ 8,000 but the cash balance does not increase.
- Ii) when goods costing ₹ 18,000 are sold on credit for ₹15,000 there is a loss of ₹ 3,000 but there is no corresponding decrease in cash.
- Iii) when a loan of ₹ 5,000 is borrowed the cash balance increases but there is no impact on income.
- Iv) when a loan of ₹ 8,000 is repaid it decreases only the cash balance and not the income.

Expenses

An expense is an item of cost applicable to an accounting period. It represents economic resources consumed during the current period. When expenditure is incurred the cost involved is either an asset or an expense. If the benefits of the expenditure relate to further periods, it is an asset. If not, it is an expense of the current period. Over the entire life of an enterprise, most expenditure becomes expenses. But according to accounting period concept, accounts are prepared for each accounting period. Hence, we get the following four types of transactions relating to expenditure and expenses:

Expenditures That Are Also Expenses

This is the simplest and most common type of transaction to account for. If an item is acquired during the year, it is expenditure. If the item is consumed in the same year, then the expenditure becomes expense.

e.g. Raw materials purchased are converted into saleable goods and are sold in the same year.

Assets That Become Expenses

When expenditures incurred result in benefits for the future period they become assets. When such assets are used in subsequent years they become expenses of the year in which they are used. For e.g. Inventory of finished goods are assets at the end of a particular accounting year. When they are sold in the next accounting year they become expenses.

Expenditures That Are Not Expenses

As already pointed, out when the benefits of the expenditure relate to future periods they become assets and not expenses. This applies not only to fixed assets but also to inventories which remain unsold at the end of the accounting year. For e.g. The expenditure incurred on inventory remaining unsold is asset until it is sold out.

Expenses Not Yet Paid

Some expenses would have been incurred in the accounting year but payment for the same would not have been made within the accounting year. These are called accrued expenses and are shown as liabilities at the year end.

1.3.3.2 Form And Presentation Of Profit And Loss Account / Income Statement

In practice there is considerable variety in the format and degree of detail used in income statements. The profit and loss account is usually prepared in “t” shape. The following (illustration-a) is the summarized profit and loss account of ali akbar ltd.

Illustration – A**Ali Akbar Ltd****Profit And Loss Account For The Year Ended 31st March 2012**

(₹ In '000)

Particulars	₹	Particulars	₹
Cost of Goods Sold	78,680	Sales(Less Discount)	89,740
Expenses (Schedule 17)	33,804	Other Income (Schedule 13)	39,947
Interest (Schedule 18)	2,902		
Director's Fees	11		
Depreciation	20,94		
Provision for Taxation	6,565		
	5,625		
Net Profit			
	1,29,687		1,29,687

In the “t” shaped profit and loss account, expenses are shown on the left hand side i.e., the debit side and revenues are shown on the right hand side i.e., the credit side. Net profit or loss is the balancing figure.

The profit and loss account can also be presented in the form of a statement when it is called as income statement. There are two widely used forms of income statement: single step form and multiple-step form. The single-step form of income statement derives its name from the fact that the total of all expenses is deducted from the total of all revenues.

Illustration – a can be presented in the single-step form as given in illustration – b.

Illustration – B

Ali Akbar Ltd

Income Statement For The Year Ended 31st March 2012

(₹ In '000)

Revenues	₹	₹
Sales (Less Discount)	89,740	
Other Income (Schedule 13)	39,947	
		1,29,687
Less Expenses		
Cost of Goods Sold	78,680	
Expenses (Schedule 17)	33,804	
Interest (Schedule 18)	2,902	
Director's Fees	11	
Depreciation	20,94	
Provision for Taxation	6,565	
		1,24,062
		5,625

The single-step form has the advantage of simplicity but it is inadequate for analytical purpose.

The multi-step form income statement is so called because of its numerous sections, sub-sections and intermediate balances. Illustration – c is a typical proforma of multiple-step income statement.

Illustration – C

Proforma Of A Multiple-Step Income Statement

Gross Sales		Xxx
Less: Sales Returns		<u>Xxx</u>
Net Sales		Xxx
Less: Cost Of Goods Sold		
Raw Materials Cost		
Opening Stock of Raw Material	Xxx	
Add Purchase of Raw Material	Xxx	
Freight	Xxx	
Raw Materials Available	Xxx	
Less Closing Stock of Raw Material	Xxx	
Raw Materials Consumed	Xxx	
Direct Labour Cost	Xxx	
Manufacturing Expenses	Xxx	
Total Production Cost	Xxx	
Add Opening Work-In-Progress	Xxx	
Total	Xxx	
Less Closing Work-In-Progress	Xxx	

Cost of Goods Manufactured	Xxx	
Add Opening Finished Goods	Xxx	
Cost of Goods Available for Sale	Xxx	
Less Closing Finished Goods	Xxx	
Cost of Goods Sold	Xxx	
Gross Profit	Xxx	
Less Operating Expenses	Xxx	
Administrative Expenses	Xxx	Xxx
Selling and Distribution Expenses		Xxx
Operating Profit		
Add Non-Operating Income		
(Such as Dividend Received	Xxx	Xxx
Profit on Sale of Assets Etc.)		
Less Non-Operating Expenses	Xxx	
(Such as discount on issue of shares	Xxx	Xxx
Written off, loss on sale of assets, etc.)	Xxx	
Profit (or) earnings before interest & tax (EBIT)	Xxx	Xxx
Less interest	Xxx	
Profit (or) earnings before tax (ebt)	Xxx	Xxx
Less provision for income-tax	Xxx	
Net profit (or) earnings after tax (eat)	Xxx	Xxx
Earnings per share of common stock		

The multiple-step form of illustration 'C' would be as given under illustration 'D'.

Illustration – D

Ali Akbar Ltd

Income Statement For The Year Ended 31st March 2012

(₹ In `000)

Net Sales		8,740
Less: Cost Of Goods Sold		78,686
Gross Profit		1 1,054
Less Operating Expenses		
Expenses (schedule 17)	33,804	
Director's fee	11	
Depreciation	2,094	35,909
Operating loss		(-) 24,855
Add Non-Operating Income		
Other income (schedule 13)		39,947
Profit (or) earnings before interest & tax(EBIT)		15,092
Less interest (schedule 18)		2,902
Profit (or) earnings before tax (EBT)		12,190
Less provision for income-tax		6,565
Net profit (or) earnings after tax (EAT)		5,625

The advantage of multiple-step form of income statement over single step form and the “T” shaped profit and loss account is that there are a number of significant sub totals on the road to net income which lend themselves for significant analysis.

Income statements prepared for use by the managers of an enterprise usually contain more detailed information than that shown in the above illustrations.

1.3.3.3 Explanation Of Items On The Income Statement

The heading of the income statement must show:

- i) The business enterprise to which it relates (Ali Akbar Ltd.)
- ii) The name of the statement (Income Statement)
- iii) The time period covered (Year ended 31st March of the relevant year)

The income statement is generally followed by various schedules that give detailed account of the items, listed on them. Information about these schedules are given against each item in the financial statements.

One important objective in reporting revenue on an income statement is to disclose the major source of revenue and to separate it from miscellaneous sources. For most companies the major source of revenue is the sale of goods and services.

Sales Revenue

An income statement often reports several separate items in the sales revenue section, the net of which is the net sales figure. Gross sales is the total invoice price of the goods sold or services rendered during the period. It should not include sales taxes or excise duties that may be charged to the customers. Such taxes are not revenues but rather represent collections that the business makes on behalf of the government and are liabilities to the government until paid. Similarly, postage, freight or other items billed to the customers at cost are not revenues. These items do not appear in the sales figure but instead are an offset to the costs the company incurs for them. Sales returns and allowances represent the sales values of goods that were returned by customers or allowance made to customers because the goods were defective. The amount can be subtracted from the

sales figure directly without showing it as a separate item on the income statement. But it is always better to show them separately.

Sometimes called as cash discounts, sales discounts are the amount of discounts allowed to customers for prompt payment. For e.g. If a business offers a 3% discount to customers who pay within 7 days from the date of the invoice and it sells ₹30,000 of goods to a customer who takes advantage of this discount, the business receives only ₹29,100 in cash and records the balance ₹900 as sales discount. There is another kind of discount called as trade discount which is given by the wholesaler or manufacturer to the retailers to enable them to sell at catalogue price and make a profit: e.g. List less 30 percent. Trade discount does not appear in the accounting records at all.

Miscellaneous Or Secondary Sources Of Revenues

These are revenues earned from activities not associated with the sale of the enterprise's goods and services. Interest or dividends earned on marketable securities, royalties, rents and gains on disposal of assets are examples of this type of revenues. For e.g. In the case of ali akbar ltd., its operating loss has been converted into net profit only because of other income, other than sales revenue. Schedule 13 gives details of other income earned by ali akbar ltd.

Schedule 13 – Other Income

	(₹'000)
Income from trade investments	825
Interest on bank deposits & others	1,042
Profit on sale of investments	456
Profit on sale of inventories	813
Miscellaneous income	2,394
Factory charges recovered	9,081
Bottle deposits forfeited	25,336
	39,947

Cost Of Goods Sold

when income is increased by the sale value of goods or services sold, it is also decreased by the cost of these goods or services. The cost of goods or services sold is called the cost of sales. In manufacturing

firms and retailing business it is often called the cost of goods sold. The complexity of calculation of cost of goods sold varies depending upon the nature of the business. In the case of a trading concern which deals in commodities it is very simple to calculate the most of goods sold and it is done as follows:

	Opening stock	xxx
Add:	purchase	xxx
	Freight	xxx
	Goods available for sale	xxx
Less:	Closing stock	xxx
	Cost of goods sold	xxx

The calculation becomes a complicated process in the case of manufacturing concern, especially when a number of products are manufactured because it involves the calculation of the work in progress and valuation of inventory. The cost of goods sold in the case of ali akbar ltd., would have been calculated as given in illustration 'e'.

Illustration E

Cost Of Goods Sold

	(₹`000)
Opening stock	4,436
Raw materials consumed	22,151
Packing materials consumed	48,536
Excise duty	7,805
	82,928
Less: closing stock	4,242
Cost of Goods Sold	78,686

Gross Profit

The excess of sales revenue over cost of goods sold is gross margin or gross profit. In the case of multiple-step income statement it is shown as a separate item. Significant managerial decisions can be taken by calculating the percentage of gross profit on sale. This percentage indicates the average mark up obtained on products sold. The percentage varies widely among industries, but healthy companies in the same industry tend to have similar gross profit percentages.

Operating Expenses

Expenses which are incurred for running the business and which are not directly related to the company's production or trading are collectively called as operating expenses. Usually operating expenses include administration expenses, finance expenses, depreciation and selling and distribution expenses. Administration expenses generally include personnel expenses also. However sometimes personnel expenses may be shown separately under the heading establishment expenses.

Until recently most companies included expenses on research and development as part of general and administrative expenses. But now-a-days the financial accounting standards board (FASB) requires that this amount should be shown separately. This is so because the expenditure on research and development could provide an important clue as to how cautious the company is in keeping its products and services up to date. Operating Profit: operating profit is obtained when operating expenses are deducted from gross profit.

Non-Operating Expenses

These are expenses which are not related to the activities of the business e.g. Loss on sale of asset, discount on shares written off etc. These expenses are deducted from the income obtained after adding other incomes to the operating profit. Other incomes or miscellaneous receipts have already been explained. The resultant profit is called as profit (or) earning before interest and tax (EBIT).

Interest Expenses

Interest expense arises when part of the expenses are met from borrowed funds. The fasb requires separate disclosure of interest expense. This item of expense is deducted from income or earnings before interest and tax. The resultant figure is profit (or) earnings before tax (EBT).

Income Tax: the provision for tax is estimated based on the quantum of profit before tax. As per the corporate tax laws, the amount of tax payable is determined not on the basis of reported net profit but the net profit arrived at has to be recomputed and adjusted for determining the tax liability. That is why the liability is always shown as a provision.

Net Profit

This is the amount of profit finally available to the enterprise for Appropriation. Net profits is reported not only in total but also per share of stock. This per share amount is obtained by dividing the total amount of net profit by the number of shares outstanding. The net profit is usually referred to as profit or earnings after tax. This profit could either be distributed as dividends to shareholders or retained in the business. Just like gross profit percentage, net profit percentage on sales can also be calculated which will be of great use for managerial analysis.

1.3.3.4 Statement Of Retained Earnings

The term retained earnings means the accumulated excess of earnings over losses and dividends. The statement of retained earnings is generally included with almost any set of financial statements although it is not considered to be one of the major financial statements. A typical statement of retained earnings starts with the opening balance of retained earnings, the net income for the period as an addition, the dividends as a deduction, and ends with the closing balance of retained earnings. The statement may be prepared and shown on a separate sheet or included at the bottom of the income statement. The balance shown by the income statement is transferred to the balance sheet through the statement of retained earnings after making necessary appropriations. This statement thus links the income statement to the retained earning item on the balance sheet. This statement can be prepared in 'T' shape also when it is called as profit and loss appropriation account. Illustration 'f' gives the statement of retained earning of ali akbar ltd.

Illustration – F Ali Akbar Ltd.

For The Year Ended 31st March 2012

(₹' 000)		
Retained earnings at the beginning of the year		700
Add: Net income		5,625
		6,325
Less: Dividends	5,600	
General reserve	625	6,225
Retained earnings at the end of the year		100

1.3.3.5 Balance Sheet

The balance sheet is basically a historical report showing the cumulative effect of past transactions. It is often described as a detailed expression of the following fundamental accounting equation:

$$\text{Assets} = \text{Liabilities} + \text{Owners' Equity (Capital)}$$

Assets are costs which represent expected future economic benefits to the business enterprise. However, the rights to assets have been acquired by the Enterprise as a result of past transactions.

Liabilities also result from past transactions. They represent obligations which require settlement in the future either by conveying assets or by performing services. Implicit in these concepts of the nature of assets and liabilities is the meaning of owners' equity as the residual interest in the assets of the enterprise.

1.3.3.6 Form And Presentation Of A Balance Sheet

Two objectives are dominant in presenting information in a balance sheet. One is clarity and readability; the other is disclosure of significant facts within the framework of the basic assumptions of accounting. Balance sheet classification, terminology and the general form of presentation should be studied with these objectives in mind. It is proposed to explain the various aspects of the balance sheet with the help of the following typical summarized balance sheet of an imaginary Partnership firm:

Conventions Of Preparing The Balance Sheet

There are two conventions of preparing the balance sheet, the American and the English. According to the American convention, assets are shown on the left hand side and the liabilities and the owners' equity on the right hand side. Under the English convention just the opposite is followed i.e. Assets are shown on the right hand side and the liabilities and owners' equity are shown on the left hand side. In the illustration 'a', the American convention has been followed.

Forms Of Presenting The Balance Sheet

There are two forms of presenting the balance sheet – account form and report form. When the assets are listed on the left hand side and liabilities and owners' equity on the right hand side, we get the account form of balance sheet. It is so called because it is similar to an account. An alternative practice is the report form of balance sheet where the assets are listed at the top of the page and the liabilities and owners' equity are listed beneath them. In illustration 'a' we have followed the account form of balance sheet. Now-a-days joint stock companies present balance sheet in the form of a statement in the annual reports. To illustrate, the balance sheet of ali akbar ltd. Pondicherry as on 31-3-2012 is given below:

Notes On The Accounts

From the above balance sheet it would have been found that previous years figures are also given. As per the companies act, 1956 it is mandatory for the companies to give figures for the previous year also. Further one would have noticed the "schedule" column in the above balance sheet. The schedules attached to the balance sheet give details of the respective items. For e.g. Schedule 3 gives details of the secured loan as given below:

Schedule 3 - Secured Loans		
	₹ '000	
	2004-05	2003-04
From Banker		
Term Loans (Secured by charge on certain plant & machinery)	17,002,	28,00
Cash Credit-account (Secured by hypothecation of raw materials, stock-in -progress, finished good, stocks and other current assets)	2,28,15	2,39,62
	2,45,15	2,67,62

1.3.3.7 Listing Of Items On The Balance Sheet

Assets in balance sheet are generally listed in two ways – i) in the order of liquidity or according to time i.e. In the order of the degree of ease with which they can be converted into cash or ii) in the order of permanence or according to purpose i.e., in the order of the desire to keep them in use. Some assets cannot be easily classified. For e.g. Investments can be easily sold but the desire may be to keep them. Investments may therefore be both liquid and semi-permanent that is why they are shown

as a separate item in the balance sheet. Liabilities can also be grouped in two ways; either in the order of urgency of payment or in the reverse order. The various assets and liabilities grouped in the two orders will appear as follows:

Order Of Liquidity

Liabilities	Assets
Bank Overdraft	Cash
Bills Payable	Bank
Creditors	Marketable securities
Outstanding Expenses	Debtors
Income Received In Advance	Inventory
Provision For Income-Tax	Bills receivable
Mortgage Loan	Prepaid expenses
Debentures	Investments
Owners' Equity	Furniture and fixtures
	Plant and machinery
	Land and buildings
	Patents
	Trade marks
	Goodwill
	Preliminary expenses

Order Of Permanence

Liabilities	Assets
Owners' Equity	Goodwill
Debentures	Trade Marks
Mortgage Loan	Patents
Provision For Income-Tax	Land And Buildings
Income Received In Advance	Plant And Machinery
Outstanding Expenses	Furniture And Fixtures
Creditors	Investments
Bills Payable	Prepaid Expenses
	Inventory
	Debtors
	Marketable Securities
	Bank
	Cash
	Bills Receivables

Whatever is the order, it is always better to follow the same order for both assets and liabilities. In the illustration 'a' the order of liquidity has been followed.

1.3.3.8 Classification Of Items In The Balance Sheet

Although each individual asset or liability can be listed separately on the balance sheet, it is more practicable and more informative to summarize and group related items into categories called as account classifications. The classifications or group headings will vary considerably depending on the size of the business, the form of ownership, the nature of its operations and the users of the financial statements. For e.g. While listing assets, the order of liquidity is generally used by sole traders, partnership firms and banks, whereas joint stock companies by law follow the order of permanence. As a generalization which is subject to many exceptions, the following classification of balance sheet items is suggested as representative:

Assets

- Current assets
- Investments
- Fixed assets
- Intangible assets
- Other assets

Liabilities

- Current liabilities
- Long term liabilities

Owners' Equity

- Capital
- Retained earnings

Classification Of Assets

Consumed Current Assets

Current assets are those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business enterprise or within one year, whichever is longer. By

operating cycle we mean the average period of time between the purchase of goods or raw materials and the realisation of cash from the sale of goods or the sale of products produced with the help of raw materials. Current assets generally consist of cash, marketable securities, bills receivables, debtors, inventory and prepaid expenses.

Cash

Cash consists of funds that are readily available for disbursement. It includes cash kept in the cash chest of the enterprise as also cash deposited on call or current accounts with banks.

Marketable Securities

These consist of investments that are both readily marketable and are expected to be converted into cash within a year. These investments are made with a view to earn some return on cash that otherwise would be temporarily idle.

Accounts Receivable

Accounts receivable consist of amounts owed to the enterprise by its consumers. This represents amounts usually arising out of normal commercial transactions. These amounts are listed in the balance sheet at the amount due less a provision for portion that may not be collected. This provision is called as provision for doubtful debts. Amounts due to the enterprise by someone other than a consumer would appear under the heading 'other receivables' rather than 'accounts receivables'. If the amounts due are evidenced by written promises to pay, they are listed as bills receivables. Accounts receivables are expected to be realised in cash.

Inventory

Inventory consists of i) goods that are held in stock for sale in the ordinary course of business, ii) work-in-progress that are to be currently consumed in the production of goods or services to be available for sale. Inventory is expected to be sold either for cash or on credit to customers to be converted into cash. It may be noted in this connection that inventory relates to goods that will be sold in the ordinary course of business. A van

offered for sale by a van dealer is inventory. A van used by the dealer to make service calls is not inventory but an item of equipment which is a fixed asset.

Prepaid Expenses

These items represent expenses which are usually paid in advance such as rent, taxes, subscriptions and insurance. For e.g. If rent for three months for the building is paid in advance then the business acquires a right to occupy the building for three months. This right to occupy is an asset. Since this right will expire within a fairly short period of time it is a current asset.

Long Term Investments

The distinction between a marketable security shown under current asset and as an investment is entirely based on time factor. Those investments like investments in shares, debentures, bonds etc. That will be retained for more than one year or one operating cycle will appear under this classification.

Fixed Assets

Tangible assets used in the business that are of a permanent or relatively fixed nature are called plant assets or fixed assets. Fixed assets include furniture, equipment, machinery, building and land. Although there is no standard criterion as to the minimum length of life necessary for classification as fixed assets, they must be capable of repeated use and are ordinarily expected to last more than a year. However the asset need not actually be used continuously or even frequently. Items of spare equipments held for use in the event of breakdown of regular equipment or for use only during peak periods of activity are also included in fixed assets.

With the passage of time, all fixed assets with the exception of land lose their capacity to render services. Accordingly the cost of such assets should be transferred to the related expense amounts in a systematic manner during their expected useful life. This periodic cost expiration is called depreciation. While showing the fixed assets in the balance sheet the accumulated depreciation as on the date of balance sheet, is deducted from the respective assets.

Intangible Assets

While tangible assets are concrete items which have physical existence such as buildings, machinery etc., intangible assets are those which have no physical existence. They cannot be touched and felt. They derive their value from the right conferred upon their owner by possession. Examples are: goodwill, patents, copyrights and trademarks.

Fictitious Assets

These items are not assets. Yet they appear in the asset side simply because of a debit balance in a particular account not yet written off – e.g. Debit balance in current account of partners, profit and loss account, etc.

Classification Of Liabilities

Current Liabilities

When the liabilities of a business enterprise are due within an accounting period or the operating cycle of the business, they are classified as current liabilities. Most of the current liabilities are incurred in the acquisition of materials or services forming part of the current assets. These liabilities are expected to be satisfied either by the use of current assets or by the creation of other current liabilities. The one year time interval or current operating cycle criterion applies to classifying current liabilities also. Current liabilities generally consists of bills payable, creditors, outstanding expenses, income received in advance, provision for income-tax etc.

Accounts Payable

These amounts represent the claims of suppliers related to goods supplied or services rendered by them to the business enterprise for which they have not yet been paid. Usually these claims are unsecured and are not evidenced by any formal written acceptance or promise to pay. When the enterprise gives a written promise to pay money to a creditor for the purchase of goods or services used in the business or the money borrowed, then the written promise is called as bills payable or notes payable. Amounts due to financial institutions which are suppliers of funds, rather than of

goods or services are termed as short-term loans or by some other name that describes the nature of the debt instrument, rather than accounts payable.

Outstanding Expenses

These are expenses or obligations incurred in the previous accounting period but the payment for which will be made in the next accounting period. A typical example is wages or rent for the last month of the accounting period remaining unpaid. It is usually paid in the first month of the next accounting period and hence it is an outstanding expense.

Income Received In Advance

These amounts relate to the next accounting period but received in the previous accounting period. This item of liability is frequently found in the balance sheet of enterprises dealing in the publication of newspapers and magazines.

Provision For Taxes

This is the amount owed by the business enterprise to the government for taxes. It is shown separately from other current liabilities both because of the size and because the amount owed may not be known exactly as on the date of balance sheet. The only thing known is the existence of liability and not the amount.

Long Term Liabilities

All liabilities which do not become due for payment in one year and which do not require current assets for their payment are classified as long-term liabilities or fixed liabilities. Long term liabilities may be classified as secured loans or unsecured loans. When the long-term loans are obtained against the security of fixed assets owned by the enterprise, they are called as secured or mortgaged loans. When any asset is not attached to these loans they are called as unsecured loans. Usually long-term liabilities include debentures and bonds, borrowings from financial institutions and banks, public debts, etc. Interest accrued on a particular secured long term loan, should be shown under the appropriate sub-heading.

Contingent Liabilities

Contingent liabilities are those liabilities which may or may not result in liability. They become liabilities only on the happening of a certain event. Until then both the amount and the liability are uncertain. If the event happens there is a liability; otherwise there is no liability at all. A very good example for contingent liability is a legal suit pending against the business enterprise for compensation. If the case is decided against the enterprise the liability arises and in the case of favourable decision there is no liability at all. Contingent liabilities are not taken into account for the purpose of totaling of balance sheet.

Capital Or Owners' Equity

As mentioned earlier, owners' equity is the residual interest in the assets of the enterprise. Therefore the owners' equity section of the balance sheet shows the amount the owners have invested in the entity. However, the terminology 'owners' equity, varies with different forms of organisations depending upon whether the enterprise is a joint stock company or sole proprietorship / partnership concern.

Sole Proprietorship / Partnership Concern

The ownership equity in a sole Proprietorship or partnership is usually reported in the balance sheet as a single amount for each owner rather than distinction between the owners initial investment and the accumulated earnings retained in the business. For e.g. In a sole-proprietor's balance sheet for the year 2011, the capital account of the owner may appear as follows:

	₹
Owner's capital as on 1-1-2011	2,50,000
Add: 2011-Profit	30,000
	2,80,000
Less: 2011 – drawings	15,000
Owner's capital as on 31-12-2011	2,65,000

Joint Stock Companies

In the case of joint stock companies, according to the legal requirements, owners' equity is divided into two main categories. The first category called share capital or contributed capital is the amount the owners have invested directly in the business. The second category of owners' equity is called retained earnings.

Share capital is the capital stock pre-determined by the company by the time of registration. It may consist of ordinary share capital or preference share capital or both. The capital stock is divided into units called as shares and that is why the capital is called as share capital. The entire predetermined share capital called as authorised capital need not be raised at a time. That portion of authorised capital which has been issued for subscription as on a date is referred to as issued capital.

Retained earnings is the difference between the total earning to date and the amount of dividends paid out to the shareholders to date. That is, the difference represents that part of the total earnings that have been retained for use in the business. It may be noted that the amount of retained earnings on a given date is the accumulated amount that has been retained in the business from the beginning of the company's existence up to that date. The owners' equity increases through retained earnings and decreases when retained earnings are paid out in the form of dividends.

1.3.3.9 Summary

The profit and loss account or income statement summarizes the revenues and expenses of a business enterprise for an accounting period. The information on the income statement is regarded by many to be more important than information on the balance sheet because the income statement reports the results of operations and enables to analyze the reasons for the enterprises' profitability or loss thereof. A close relationship exists between income statement and balance sheet; the statement of retained earnings which is a concomitant of income statement explains the change in retained earnings between the balance sheets prepared at the beginning and the end of the period.

Balance sheet is one of the most important financial statements which shows the financial position of a business enterprise as on a particular date. It lists as on a particular date, usually at the close of the accounting period, the assets, liabilities and capital of the enterprise. An analysis of balance sheet together with profit and loss account will give vital information about the financial position and operations of the enterprise. The analysis becomes all the more useful and effective when a series of balance sheets and profit and loss accounts are studied.

1.3.3.10 Key Words

Income: Revenues – expenses.

Expense: Item of cost applicable to an accounting period.

Cost Of Goods Sold: Opening stock + purchase + freight – closing stock.

Gross Profit: Excess of sales revenue over cost of goods sold.

Operating Expenses: Expenses incurred for running the business.

Operating Profit: Gross profit – operating expenses.

Non Operating Expenses: Expenses which are not related to the activities of the business.

Net Profit: Amount of profit finally available to the enterprise for appropriation.

Retained Earnings

The term retained earnings means the accumulated excess of earnings over losses and dividends.

Status Report: Financial position on a particular date.

Flow Report : Financial position for a particular period.

Assets: costs which represent expected future economic benefits to the business enterprise.

Liabilities

Represent obligations which require settlement in the future.

Current Assets

Assets which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business enterprise or within one year, whichever is longer.

Operating Cycle

The average period of time between the purchase of goods or raw materials and the realization of cash from the sale of goods.

Fixed Assets: tangible assets used in the business that are of a permanent or relatively fixed nature.

Intangible Assets

Those assets which have no physical existence.

Fictitious Assets

They are not assets but appear in the asset side simply because of a debit balance in a particular account not yet written off.

Current Liabilities

Liabilities due within an accounting period or the operating cycle of the business.

Long Term Liabilities

Liabilities that become due for payment after one year.

Contingent Liabilities

Items which become a liability only on the happening of a certain event.

Capital Or Owner's Equity

This is the residual interest in the assets of the Enterprise.

1.3.3.11 Self Assessment Questions

1. What is an expenditure? When does it become an expense?
2. What is income? How is it different from receipt?
3. Explain the following:

- (a) Gross profit
- (b) Operating profit
- (c) Earnings before interest and tax
- (d) Earnings after tax

4. What is meant by statement of retained earnings?
5. The following are the balances taken from the books of meena ltd. On 31st december 2011:

Stock on 1-1-2011	15,000	Salaries	800
Debtors	5,000	Bank account	3,400
Wages	8,000	Rent	2,000
Creditors	6,000	Bad debts reserve	175
Sales	40,000	Discount allowed	250
P&I a/c	3,000	Bad debts	150
Returns inward	500	General expenses	1,300
Purchases	6,000	Insurance	300
Plant	18,000	Dividend (interim)	575
Discounts earned	200	Capital	12,000
Cash in hand	600		

Closing stock was valued at ₹ 9,000. ₹ 500 still due to labourers. Insurance unexpired ₹ 50. Provide for a bad debts reserve of 5% and a reserve for discount at 1%. Prepare trading and profit and loss account as at 31st december 2011.

6. From the following figures relating to a leading software producing company, prepare the income statement for the year ended 30th june 2012.

1	Sales	20,17,69,212
2	Dividend received	1,06,755
3	Costs of goods sold	5,86,88,675
4	Interest received	18,76,661
5	Manufacturing expenses	5,38,56,719
6	Selling expenses	81,81,822
7	Administration expenses	2,99,32,794
8	Managerial remuneration	1,78,200
9	Excise duty	48,94,360
10	Bad debts	16,48,157
11	Overseas project expenses	58,35,260
12	Interest paid	5,69,16,495
13	Depreciation	2,33,40,163
14	Auditor's remuneration	71,488
15	Increase in stocks	9,16,30,652
16	Other income	94,13,004
17	Balance of profit brought forward from previous year proposed dividend	3,51,87,048
18	Transfer to general reserve	4,64,19,410
19		30,62,608

Also Prepare the Statement of Retained Earnings.

7. Explain the following:

- (a) assets
- (b) liabilities
- (c) fictitious assets
- (d) income received in advance
- (e) investments

8. What are the two forms of presenting a balance sheet?

9. Explain owner's equity. How is it to be presented in the balance sheet?

10. From the following trail balance extracted from the books of the general traders limited as on 31st december 2005, you are required to prepare trading and profit and loss account and balance sheet:

	₹	₹
Share capital 20,000 shares of ₹10 each		
Stock on 1st january 2005	36,000	2,00,000
Sales		
Salaries	5,250	58,000
Purchases	44,000	
Sundry debtors	23,000	
Wages	3,000	
Calls in arrears	21,500	
Sundry creditors		
Postage and telegrams	470	7,200
Advertisement	960	
Preliminary expenses	7,500	
Printing and stationery	640	
Land and buildings	65,000	
General expenses	2,200	
Furniture	1,200	
Repairs	650	
Bad debts	910	
Rent received		
Machinery	30,000	2,700
Cash with bank	24,100	
Cash in hand	1,520	
	2,67,900	2,67,900

The stock on 31st december 2011 was ₹ 49,000. Write off ₹ 2,500 out of preliminary expenses. Depreciate machinery by 10 percent and furniture by 6 percent.

11. The books of aranarasu show the following balances as on 31st december 2011. You are required to prepare a trading and profit and loss account and balance sheet.

	₹	₹
Stock on 1st january 2011	67,000	
Sales		5,24,600
Bills payable		1,500
Purchases	4,88,000	
Salaries and wages	9,800	
Rent	1,100	
Travelling expenses	2,600	
Sundry creditors		57,000
Postage and telegrams	620	
General charges	2,250	
Printing and stationery	350	
Capital account		75,000
Interest and commission	2,200	
Lighting charges	175	
Repairs	35	
Sundry receipts		175
Furniture	3,000	
Bills receivable	4,000	
Bad debts	475	
Sundry debtors	85,000	
Aranarasu's current account		17,000
Cash with bank	6,500	
Cash in hand	2,170	
	6,75,275	6,75,275

Depreciate furniture by 6 percent. Outstanding salaries and rent were ₹ 1,100 and ₹ 100 respectively. Stock at 31st december 2011 was valued at ₹ 70,350.

12. From the following balances relating to software india ltd. Prepare the Balance sheet as at 31st december 2011.

	₹
(a) Equity capital	36,42,58,510
(b) Reserves and surplus	23,58,26,861
(c) Debentures	1,03,36,000
(d) Secured loans	21,27,57,441
(e) Fixed assets	37,07,93,048
(f) Investments	5,94,80,459
(g) Inventories	20,78,28,095
(h) Sundry debtors	10,21,66,468
(i) Cash and bank balances	1,49,87,264
(j) Other current assets	57,75,568
(k) Loans and advances	12,49,59,370
(l) Current liabilities	4,71,71,358
(m) Provisions	4,64,19,410
(n) Miscellaneous expenditure	3,07,79,308

The balance sheet may be prepared in account form and report form.

1.3.3.12 Key To Self Assessment Questions (For Problems Only)

Q.no.5: gross profit: ₹ 19,000; net profit: ₹ 14,327; profit carried to Balance sheet: ₹ 17,252.

Q.no.6: net profit: ₹ 6,12,52,151; retained earnings balance: ₹ 4,69,57,182.

Q.no.10: gross profit: ₹ 24,000; net profit: ₹10,048; balance sheet Total: ₹ 1,95,748.

Q.no.11: gross profit: ₹ 39,950; net profit: ₹ 19,140; balance sheet Total: ₹ 1,70,840.

1.3.3.13 Case Analysis

To give a practical insight to the students about the various aspects of profit and loss account and of a balance sheet we give the financial statements as on 31st march 2012 of tt limited a yarn manufacturing company:

TT Limited

Balance Sheet As At 31st March, 2012

I. Sources Of Funds				
1. Share Capital		107490250.00		107490250.00
Reserve & Surplus		202213218.39		190240718.95
2. Loan Funds				
Secured Loans		447855991.83		423528431.00
Unsecured Loans		69532615.80		56901290.19
3. Deferred Tax				
Liability		42276806.36		43673781.36
		<u>869368882.38</u>		<u>821834471.50</u>
II. Application of Funds				
1. Fixed Assets				
Gross Block	734104404.86		700390441.72	
Less: Depreciation	<u>217233181.41</u>		<u>184869109.73</u>	
Net Block	516871223.45		515521331.99	
	<u>4305600.00</u>	521176823.45	<u>0.00</u>	515521331.99
2. Investments				
		1591141.57		1591642.57
3. I.Current Assets,				
Loans & Advances	510807958.00		457861043.73	
II Less: Current Liabilities &				
Provisions	<u>164207040.63</u>		<u>153139546.79</u>	
		<u>346600917.37</u>		<u>304721496.94</u>
Net Current Assets (I-II)		869368882.38		821834471.50

Profit & Loss Account For The Year Ended 31st March, 2012

Particulars	Current year		Previous year	
	₹		₹	
INCOME				
Sales	1656633139.30		1470167645.65	
Less: Excise Duty	9164920.45		59656449.44	
	-----		-----	
Net Sales	1649235545.85		1410511196.21	
Other Income	3194055.78		9178442.33	
In Stock	23509662.45		22572632.64	
	-----		-----	
	1 6 7593924.08		1442262271.18	
	-----		-----	
EXPENDITURE				
Material	1262208246.11		1107760578.66	
Manufacturing,	308899137.99		254353516.32	
Personnel, Admin. &	47902372.00		30855197.88	
Selling Expenses etc.				
Financial expenses	34107486.97		33127938.23	
Depre. on Fixed Assets				
Less: Transferred from Revaluation Reserve	2906557.05	31200929.92	3657679.05	29470259.18
	-----	-----	-----	-----
		1650210686.02		1422439552.04
		-----		-----
PROFIT				
Profit Before Tax		25728578.06		19822719.14
Less: Provision for Taxation for The Year Deferred Tax	2000000.00		400000.00	
	- 396975.00	603025.00	4750084.00	5150084.00
	-----	0.00	-----	2154911.83
Add: Taxation Adjustment of previous years(net)		25125553.06		16827546.97
Profit After Taxation		33458012.39		28831460.48
Add: Balance B/F From Previous Year		-----		-----
		58583565.45		45659007.45
		-----		-----
APPROPRIATION				
Dividend		8599220.00		8599220.00
Dividend		1123810.56		1101775.06
Distribution Tax		10000000.00		2500000.00
Trf.to general reserve				
Balance carried forward		38860534.88		33458012.19
		-----		-----
		58583565.45		45659007.45
		-----		-----
Earning per share (equity shares, par value ₹10 each)Basic & Diluted		2.34		1.57

1.3.3.14 Books For Further Reading

1. M.A.Arulanandam And K.S.Raman: **Advanced Accounts**, Himalaya Publishing House.
2. R.L.Gupta And M.Radhaswamy: **Advanced Accounts**, Vol.I, Sultan Chand & Sons, New Delhi.
3. S.P.Jain And K.L.Narang: **Advanced Accounts**, Kalyani Publishers.
4. M.C.Shukla And T.S.Grewal: **Advanced Accounts**, S.Chand & Co. New Delhi.
5. Tulsian: **Financial Accounting**, Pearson Education.

Revenue Recognition

Lesson 1.4: Capital And Revenue Expenditure And Receipts

1.4.1 Introduction

In the previous lessons pertaining to the preparation of profit and loss account, the reader would have had an exposure to the concepts relating to expenses, expenditure and incomes. The term expenditure is a broad term and it is classified into capital expenditure, revenue expenditure and deferred revenue expenditure. All incomes are not receipts and all receipts are not incomes. For example, under accrual or mercantile system of accounting even income earned but not received is treated as income. Similarly all receipts are not recognised as incomes. This lesson deals with the classification of capital and revenue expenditure and receipts.

1.4.2 Learning Objectives

After reading this lesson the reader should be able to:

- Understand Capital Expenditure
- Distinguish Capital Expenditure From Revenue Expenditure
- Identify Capital Receipts And Revenue Receipts

1.4.3 Contents

- 1.4.3.1 Capital Expenditure
- 1.4.3.2 Revenue Expenditure
- 1.4.3.3 Distinction Between Capital and Revenue Expenditure
- 1.4.3.4 Deferred Revenue Expenditure
- 1.4.3.5 Capital and Revenue Profits, Receipts and Losses
- 1.4.3.6 Illustrations
- 1.4.3.7 Summary
- 1.4.3.8 Key Words
- 1.4.3.9 Self Assessment Questions
- 1.4.3.10 Key to Self Assessment Questions
- 1.4.3.11 Case Analysis
- 1.4.3.12 Books for Further Reading

1.4..3.1 Capital Expenditure

Capital expenditure is that expenditure, the benefit of which is not fully consumed in one period but spread over periods i.e. The benefits are expected to accrue for a long time. Any expenditure which gives the following outcomes is a capital expenditure:

- (i) Increases the capacity of an existing asset.
- (ii) Increases the life of an existing asset.
- (iii) Increases the earning capacity of the concern.
- (iv) Results in the acquisition of a new asset.
- (v) Decreases the cost of production.

Following are the examples of capital expenditure:

- (i) Expenditure resulting in the acquisition of fixed assets e.g. Land, building, machines, etc.
- (ii) Expenditure resulting in extension or improvement of fixed assets e.g. Amount spent on increasing the seating accommodation in the picture hall.
- (iii) Expenditure in connection with installation of a fixed asset.
- (iv) Expenditure incurred for acquiring the right to carry on a business e.g. Patents, copyright, etc.
- (v) Major repairs and replacements of parts resulting in increased efficiency of a fixed asset.

An expenditure cannot be said to be a capital expenditure only because:

- (i) The amount is large.
- (ii) The amount is paid in lump sum.
- (iii) The amount is paid out of that fund which has been received out of the sale of fixed asset.
- (iv) The receiver of the amount is going to treat it for the purchase of fixed asset.

1.4.3.2 Revenue Expenditure

An expenditure which is consumed during the current period and which affects the income of the current period is called revenue

expenditure. Also an expenditure which merely seeks to maintain the business of high assets in good working conditions is revenue expenditure.

Following are the examples of revenue expenditure:

- (i) Expenses of administration, expenses incurred in manufacturing and selling products.
- (ii) Replacements for maintaining the existing permanent assets.
- (iii) Costs of goods purchased for resale.
- (iv) Depreciation on fixed assets, interest on loans for business, etc.

1.4.3.3 Distinction Between Capital And Revenue Expenditure

The proper distinction between capital and revenue as regard to expenditure, payments, profits, receipts and losses is one of the fundamental principles of correct accounting. It is very essential that in all cases this distinction should be rigidly observed and amounts rightly allocated between capital and revenue. Failure or neglect to discriminate between the two will falsify the whole of the results of accounting. However, the distinction is not always easy. In actual practice there is a good deal of difference of opinion as to whether a particular item is capital or revenue expenditure. However, the rules mentioned above may serve as a guide for making distinction between capital and revenue expenditure.

1.4.3.4 Deferred Revenue Expenditure

A heavy expenditure of revenue nature incurred for getting benefit over a number of years is classified as deferred revenue expenditure. In some cases the benefit of revenue expenditure may be available for a period of two or three or even more years. Such expenditure is to be written off over a period of two or three years and not wholly in the year in which it is incurred. For example a new firm may advertise very heavily in the beginning to capture a position in the market. The benefit of this advertisement campaign will last quite a few years. It will be better to write off the expenditure in three or four years and not only in the first year. Some other examples of deferred revenue expenditure are preliminary expenses, brokerage on issue of shares and debentures, exceptional repairs, discount on issue of shares or debentures, expenses incurred in removing the business to more convenient premises and so on.

1.4.3.5 Capital And Revenue Profits, Receipts And Losses

Capital and revenue profits

Capital profit is a profit made on the sale of a fixed asset or a profit earned on getting capital for the business. For example, if the original cost of a fixed asset is ₹ 50,00,000 and if it is sold for ₹ 60,00,000 then ₹ 10,00,000 is capital profit. Similarly if the shares having an original cost of ₹ 4,000 are sold for ₹ 5,000, the profit of ₹ 1,000 thus made is capital profit. Capital profits should not be transferred to the profit and loss account but should be transferred to capital reserve which would appear as a liability in the balance sheet. Revenue profit, on the other hand, is a profit by trading, e.g. Profit on sale of goods, income from investments, discount received, commission earned, rent received, interest earned etc. Such profits are taken to profit and loss account.

Capital And Revenue Receipts

The distinction between capital receipts and revenue receipts is also important. Money obtained from the sale of fixed assets of investments, issue of shares, debentures, money obtained by way of loans are examples of capital receipts. On the other hand, revenue receipts are cash from sales, commission received, interest on investments, transfer fees, etc. Capital receipts are shown in the balance sheet and revenue receipts in the profit and loss account.

Capital And Revenue Losses

Capital losses are those losses which occur at selling fixed assets or raising share capital. For e.g., if investments having an original cost of ₹ 20,000 are sold for ₹ 16,000, there will be a capital loss of ₹ 4,000. Similarly when the shares of the face value of ₹ 100 are issued for ₹ 90, the amount of discount i.e. ₹ 10 per share will be a capital loss. Capital losses should not be debited to profit and loss account but may be shown on the asset side of balance sheet. As and when capital profits arise, losses are met against them. Revenue losses are those losses which arise during the normal course of business i.e. In trading operations such as losses on the sale of goods. Such losses are debited to profit and loss account.

1.4.3.6 Illustrations

Illustration 1

State which of the following expenditures are capital in nature and which are revenue in nature:

- Freight and cartage on the new machine ₹150; erection charges ₹200.
- A sum of ₹10,000 on painting the new factory.
- Fixtures of the book value of ₹1,500 was sold off at ₹600 and new fixtures of the value of ₹1,000 were acquired, cartage on purchase ₹50.
- ₹1,000 spent on repairs before using a second hand car purchased recently.

Solution

- Capital expenditure to be debited to machinery account.
- Painting charges of new or old factory are maintenance charges and be charged to revenue. However, if felt proper, painting charges of new factory may be treated as deferred revenue expenditure. However, some say painting of new factory is capital expenditure.
- Loss of ₹900 on the sale of fixtures be treated as revenue expense but the cost of new fixture ₹1,000 together with cartage ₹50 be debited to fixture account as these are capital expenditure.
- ₹1,000 being expense to bring the asset in usable condition is a capital expenditure.

Illustration 2

- The sum of ₹ 30,000 has been spent on a machine as follows:
- ₹ 20,000 for additions to increase the output; ₹ 12,000 for repairs necessitated by negligence and ₹ 8,000 for replacement of worn-out parts.
- The sum of ₹ 17,200 was spent on dismantling, removing and reinstalling in order to remove their works to more suitable premises. Classify these expenses into capital and revenue.

Solution

- ₹ 20,000 spent on additions is to be capitalized but ₹ 12,000 and ₹ 8,000 spent on repairs and replacement of worn-out parts respectively are to be charged to revenue.
- ₹ 17,200 spent for removing to a more suitable premises is to be charged to revenue as it does not increase efficiency and income. It, may, however be treated as deferred revenue at the most.

1.4.3.7 Summary

Final accounts are prepared from the balances appearing in the trial balance. All accounts appearing in the trial balance are taken to either trading and profit and loss account or balance sheet. All revenue expenditures and receipts are taken to trading and profit and loss account and all capital expenditures and receipts are taken to balance sheet. It is therefore necessary to realise the importance of distinction between capital and revenue items.

1.4.3.8 Key Words

Capital Expenditure:

It is that expenditure, the benefit of which is expected to accrue for a number of years.

Revenue Expenditure

It is that expenditure, the benefit of which is consumed during the current year.

Capital Receipt

Moneys obtained from sale of fixed assets, issue of capital, borrowing of loans, etc.

Revenue Receipt: cash from sales, commission received, etc. Are examples of revenue receipts.

1.4.3.9 Self Assessment Questions

State which of the following items should be charged to capital and which to revenue:

- (i) ₹ 6,000 paid for removal of stock to new site.
- (ii) ₹ 2,000 paid for the erection of a new machine.
- (iii) ₹ 2,500 paid on the repairing of new factory.
- (iv) A car engine's rings and pistons were changed at a cost of ₹ 15,000; this resulted in improvement of petrol consumption to 12 km per litre; earlier it had fallen from 15 km to 8 km.

1.4.3.10 Key To Self Assessment Questions

- (i) Deferred revenue expenditure.
- (ii) Capital expenditure.
- (iii) Capital expenditure.
- (iv) Revenue expenditure.

1.4.3.11 Case Analysis

Raja ram ltd., for which you are the accounts manager, has removed the works factory to a more suitable site. During the removal process the following stream of expenditure were incurred:

- i. A sum of ₹ 47,500 was spent on dismantling, removing and reinstalling plant, machinery and fixtures.
- ii. The removal of stock from old works to new works cost ₹ 5,000.
- iii. Plant and machinery which stood in books at ₹ 7,50,000 included a machine at a book value of ₹ 15,000. This being obsolete was sold off for ₹ 5,000 and was replaced by a new machine which costs ₹ 24,000.
- iv. The fixtures and furniture appeared in the books at ₹ 75,000. Of these, some portion of the book value of ₹ 15,000 was discarded and sold off for ₹ 16,000 and new furniture of the value of ₹ 12,000 was acquired.
- v. A sum of ₹ 11,000 was spent on painting the new factory.

Your accounts clerk has come to you seeking your help to classify the above expenditure as to capital expenditure and revenue expenditure. Advise him.

Solution

- i. ₹ 47,500 will have to be treated as revenue expenditure. It may be treated as deferred revenue expenditure item and spread over a term of say four to five years
- ii. The cost of removal of stock from the old works to the new works does not either add to the value of the profit earning capacity of the asset and as such it should be treated as an item of revenue expenditure.
- iii. ₹10,000, the difference between the book value of the machine sold and the amount realized on sale, will have to be charged off to revenue as depreciation. ₹ 24,000, the cost of new machine, will have to be capitalized.
- iv. ₹ 1,000, the difference between the book value of the fixtures and fittings discarded and the amount realized from there will be treated as capital profit and therefore be credited to capital revenue account. ₹12,000, the cost of new furniture, will be capitalized.
- v. A sum of ₹11,000 spent on painting a new factory is capital expenditure and will be added to the cost of factory building as it is all to the new factory.

1.4.3.12 Books For Further Reading

1. R.L.Gupta And M.Radhaswamy: **Advanced Accounts**, Sultan Chand & Sons, New Delhi.
2. S.P.Jain And K.L.Narang: **Advanced Accountancy**, Kalyani Publishers, New Delhi.
3. M.C.Shukla And T.S.Grewal: **Advanced Accounts**, S.Chand & Co., New Delhi.
4. Tulsian: **Financial Accounting**, Pearson Education (P) Ltd., Delhi.
5. Warren Reeve Fess: **Financial Accounting**, Thomson, South Westem.

Unit-II

Lesson 2.1: Depreciation

2.1.1 Introduction

With the passage of time, all fixed assets lose their capacity to render services, the exceptions being land and antiques. Accordingly, a fraction of the cost of the asset is chargeable as an expense in each of the accounting periods in which the asset renders services. The accounting process for this gradual conversion of capitalised cost of fixed assets into expense is called depreciation. This lesson explains the different aspects of depreciation.

2.1.2 Learning Objectives

After reading this lesson, the reader should be able to:

- Understand the Meaning of Depreciation.
- Know the Causes of Depreciation.
- Appreciate the Need for Depreciation Accounting.
- Evaluate the Methods of Depreciation.

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2.1.3.1 Meaning Of Depreciation

In common parlance depreciation means a fall in the quality or value of an asset. But in accounting terminology, the concept of depreciation refers to the process of allocating the initial or restated input valuation of fixed assets to the several periods expected to benefit from their acquisitions and use. Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation and not of valuation.

The international accounting standards committee (iasc) (now international accounting standards board) defines depreciation as follows: depreciation is the allocation of the depreciable amount of an asset over the estimated useful life. The useful life is in turn defined as the period over which a depreciable asset is expected to be used by the enterprise. The depreciable amount of a depreciable asset is its historical cost in the financial statements, less the estimated residual value. Residual value or salvage value is the expected recovery or sales value of the asset at the end of its useful life.

2.1.3.2 Causes Of Depreciation

Among other factors, the two main factors that contribute to the decline in the usefulness of fixed assets are deterioration and obsolescence. Deterioration is the physical process wearing out whereas obsolescence refers to loss of usefulness due to the development of improved equipment or processes, changes in style or other causes not related to the physical conditions of the asset. The other causes of depreciation are:

1. Efflux of time – mere passage of time will cause a fall in the value of an asset even if it is not used.
2. Accidents – an asset may reduce in value because of meeting with an accident.
3. Fall in market price – a sudden fall in the market price of the asset reduces its value even if it remains brand new.

2.1.3.3 Need For Depreciation Accounting

The need for depreciation accounting arises on three grounds:

(i) To calculate proper profit: according to matching concept of accounting, profit of any year can be calculated only when all costs of earning revenues have been properly charged against them. Asset is an important tool in earning revenues. The fall in the book value of assets reflects the cost of earning revenues from the use of assets in the current year and hence like other costs like wages, salary, etc., it must also be provided for proper matching of revenues with expenses.

(ii) To show true financial position: the second ground for providing depreciation is that it should result in carrying forward only that part of asset which represents the unexpired cost of expected future service. If the depreciation is not provided then the asset will appear in the balance sheet at the overstated value.

(iii) To make provision for replacement of assets: if no changes were made for depreciation, profits of the concern would be more to that extent. By making an annual charge for depreciation, a concern would be accumulating resources enough to enable it to replace an asset when necessary. Replacement, thus, does not disturb the financial position of the concern.

2.1.3.4 Methods Of Depreciation

The amount of depreciation of a fixed asset is determined taking into account the following three factors: its original cost, its recoverable cost at the time it is retired from service and the length of its life. Out of these three factors the only factor which is accurately known is the original cost of the asset. The other two factors cannot be accurately determined until the asset is retired. They must be estimated at the time the asset is placed in service. The excess of cost over the estimated residual value is the amount that is to be recorded as depreciation expense during the assets' life-time. There are no hard and fast rules for estimating either the period of usefulness of an asset or its residual value at the end of such period. Hence these two factors, which are inter-related are affected to a considerable extent by management policies.

Let the reader consider the following example: a machine is purchased for ₹1,00,000 with an estimated life of five years and estimated residual value of ₹10,000. The objective of depreciation accounting is to charge this net cost of ₹90,000 (original cost – residual value) as an expense over the 5 year period. How much should be charged as an expense each year? To give an answer to this question a 100 number of methods of depreciation are available. In this lesson three such methods viz.

1. Straight line method,
2. Diminishing balance method and
3. Annuity method are discussed.

2.1.3.5 Straight Line Method Of Depreciation

This method which is also known as ‘fixed installment system’, provides for equal amount of depreciation every year. Under this method, the cost of acquisition plus the installation charges, minus the scrap value, is spread over the estimated life of the asset to arrive at the annual charge. In other words, this method writes off a fixed percentage, say 20%, of the original cost of the asset every year in such a way that the asset is reduced to nil or scrap value at the end of its life.

Evaluation

The chief merit of this method is that it is easy to calculate depreciation, and hence, it is simple. Depreciation charge is constant from year to year, regardless of the extent of use of the asset. This method can be employed in the case of assets like furniture and fixtures, short leases, etc., which involve little capital outlay, or which have no residual value. This method is criticized on the ground that the depreciation charge remaining the same every year, cost of repairs and maintenance would be increasing as the asset becomes older. With the efficiency of the asset declining, it is unfair to charge the same amount of depreciation every year.

2.1.3.6 Diminishing Balance Method

This method which is also known as the, 'reducing installment system', or 'written down value method', applies depreciation as a fixed percentage to the balance of the net cost of the asset not yet allocated at the end of the previous accounting period. The percentage of depreciation is so fixed that, theoretically, the balance of the unallocated cost at the end of the estimated useful life of the asset should be equal to the estimated residual value.

Evaluation

Unlike the fixed installment system, depreciation under this method is not fixed, but gradually decreasing. As such, in the initial periods, the amount will be much higher, but negligible in the later period of the asset. Thus, this method tends to offset the amount of depreciation on the one hand and repairs and maintenance on the other. This method is also simple, although the calculation of depreciation is a bit complicated. Further, as and when additions are made to the asset, fresh calculations do not become necessary. This method is best suited to assets such as plant and machinery which have a long life.

Entries Required

The entry to be made on writing off depreciation under any method is:

Depreciation a/c Dr
To asset a/c

The depreciation account goes to the debit of the profit and loss account. The entry for this is:

Profit and loss a/c ... Dr
To depreciation a/c

The asset appears at its reduced value in the balance sheet.

Illustration 1

On 1-1-2003, machinery was purchased for ₹ 3,00,000. Depreciation at the rate of 10% has to be written off. Write up the machinery account for three years under:

1. Straight line method (SLM) and
2. Written down value method (WDV)

Solution

Machinery Account

Date	Particulars	SLM	WDV	Date	Particulars	SLM	WDV
1.1.2003	To Bank A/C	3,00,000	3,00,000	31.12.2003	By depreciation	30,000	30,000
				31.12.2003	By balance c/d	2,70,000	2,70,000
		-----	-----				
		3,00,000	3,00,000			3,00,000	3,00,000
		-----	-----				
1.1.2004	To Balance B/D	2,70,000	2,70,000	31.12.2004	By depreciation	30,000	27,000
				31.12.2004	By balance c/d	2,40,000	2,43,000
		-----	-----				
		2,70,000	2,70,000			2,70,000	2,70,000
		-----	-----				
1.1.2005	To Balance B/D	2,40,000	2,43,000	31.12.2005	By depreciation	30,000	24,300
				31.12.2005	By balance c/d	2,10,000	2,18,700
		-----	-----				
		2,40,000	2,43,000			2,40,000	2,43,000
		-----	-----				
1.1.2006	To Balance B/D	2,10,000	2,18,700				

From the above illustration it can be seen that under SLM method each year depreciation is calculated at 10% on original cost of asset i.e. On ₹3,00,000, while under WDV method each year depreciation is calculated at 10% on the written down value i.e. For e.g. In the 2nd year depreciation is calculated at 10% on ₹2,70,000 and so on.

Illustration 2

On 1-1-2002, machinery was purchased for ₹30,000. Depreciation at the rate of 10% on original cost was written off during the first two years. For the next two years 15% was written off the diminishing balance of the amount. The machinery was sold for ₹15,000. Write up the machinery account for four years and close the same.

Machinery Account

Date	Particulars	SLM	Date	Particulars	SLM
1-1-2002	To Bank a/c	30,000	31-12-2002	By Depreciation	3,000
			31-12-2002	By Balance C/D	27,000
		-----			-----
		30,000			30,000
		-----			-----
1-1-2003	To Balance b/d	27,000	31-12-2003	By Depreciation	3,000
			31-12-2003	By Balance C/D	24,000
		-----			-----
		27,000			27,000
		-----			-----
1-1-2004	To Balance b/d	24,000	31-12-2004	By Depreciation	3,600
			31-12-2004	(15% On 24,000)	
				By Balance C/D	2,0,400
		-----			-----
		2,40,000			24,000
		-----			-----
1-1-2005	To Balance b/d	20,400	31.12.2005	By Depreciation	3,060
				(15% On 20,400)	
			31.12.2005	By Bank (Sale)	15,000
			31.12.2005	By Profit & Loss A/C (Loss On Sale)	2,340
		-----			-----
		20,400			20,400

Illustration 3

A company, whose accounting year is the calendar year, purchased a machinery on 1-1-2003 for ₹40,000. It purchased further machinery on 1-10-2003 for ₹20,000 and on 1st July 2005 for ₹10,000. On 1-7-2006, one-fourth of the machinery installed on 1-1-2003 became obsolete and was sold for ₹6,800. Show the machinery account for all the 3 years under fixed installment system. Depreciation is to be provided at 10%p.a.

Machinery Account

Date	Particulars	₹	Date	Particulars	₹
2003			2003		
Jan 1	To Bank-Purchase	40,000	Dec 31	By Depreciation	
Oct 10	To Bank-Purchase	20,000		-On ₹40000 For 1 Year	4,000
				-On ₹20000 For 3 Month	500
			Dec 31	By Balance c/d	55,500
		-----			-----
		60,000			60,000
		-----			-----
2004			2004		
Jan 1	To Balance b/d	55,500	Dec 31	By Depreciation	
July 1	To Bank-Purchase	10,000		-On ₹40000 For 1 Year	4,000
				-On ₹20000 For 1 Year	2,000
				-On ₹10000 For 6 Month	500
		-----	Dec 31	By Balance c/d	59,000
		65,500			-----
		-----			65,500

2005			2005		
Jan 1	To Balance B/D	59,000	July 1	By Depreciation	500
			July 1	On Machine Sold	6,800
			July 1	By Bank-Sale	700
				By P&L A/C (Loss On Sale)	
			Dec 31	By Depreciation-	
				On ₹30000 For 1 Year	3,000
				-On ₹20000 For 1 Year	2,000
				-On ₹10000 For 1 Year	1,000
				By Balance c/d	45,000
		-----			-----
		59,000			59,000

Working Notes – Loss On Sale Of Machinery

Original cost of machinery on 1-1-2003:	= 10,000
Less depreciation for 2003 at 10% 1,000 (4000 x ¼)	= 1,000

Book value on 1-1-2004	9,000
Less depreciation for 2004 at 10% on 10,000	1,000

Book value on 1-1-2005	8,000
Less depreciation upto 1-7-2005 at 10% on 10000	500

Book value on date of sale	7,500
Less sale proceeds	6,800

Loss on sale	700

2.1.3.7 Annuity Method Of Depreciation

Under the first two methods of depreciation the interest aspect has been ignored. Under this method, the amount spent on the acquisition of an asset is regarded as investment which is assumed to earn interest at a certain rate. Every year the asset is debited with the amount of interest and credited with the amount of depreciation. This interest is calculated on the debit balance of the asset account at the beginning of the year. The amount to be written off as depreciation is calculated from the annuity table an extract of which is given below:

Years	3%	3.5%	4%	4.5%	5%
3	0.353530	0.359634	0.360349	0.363773	0.367209
4	0.269027	0.272251	0.275490	0.278744	0.282012
5	0.218355	0.221481	0.224627	0.227792	0.230975

The amount to be written off as depreciation is ascertained from the annuity table and the same depends upon the rate of interest and the period over which the asset is to be written off. The rate of interest and the amount of depreciation would be adjusted in such a way that at the end of its working life, the value of the asset would be reduced to nil or its scrap value.

Evaluation

This method has the merit of treating purchase of an asset as an investment within the business, and the same is supposed to earn interest. However, calculations become difficult when additions are made to the asset. The method is suitable only for long leases and other assets to which additions are not usually made and as such in case of machinery, this method is not found suitable.

Illustration 4

A lease is purchased for a term of 4 years by payment of ₹1,00,000. It is proposed to depreciate the lease by annuity method charging 4% interest. If annuity of ₹1 for 4 years at 4% is 0.275490, show the lease account for the full period.

$$\begin{aligned}\text{Amount of annual depreciation} &= ₹1,00,000 \times ₹0.275490 \\ &= ₹27,549\end{aligned}$$

Lease Account

Date	Particulars	₹	Date	Particulars	₹
1st Year	To Bank	100000.00	1st Year	By Depreciation	27549.00
	To Interest at 4%	4000.00		By Balance c/d	76451.00
		-----			-----
		104000.00			104000.00
		-----			-----
2nd Year	To Balance b/d	76451.00	2nd Year	By Depreciation	27549.00
	To Interest at 4%	3058.04		By Balance c/d	51960.04
		-----			-----
		79509.04			79509.04
		-----			-----
3rd Year	To Balance b/d	51960.04	3rd Year	By Depreciation	27549.00
	To Interest at 4%	2078.40		By Balance c/d	26489.44
		-----			-----
		54038.44			54038.44
		-----			-----
4th Year	To Balance b/d	26489.44	4th Year	By Depreciation	27549.00
	To Interest at 4%	1059.56			-----
	(Adjusted)	-----			27549.00
		27549.00			-----
		-----			-----

2.1.3.8 Summary

Though depreciation to a common man means a fall in the value of an asset, actually it is not a process of valuation. It is a process of cost allocation. Through depreciation accounting the cost of a tangible asset less salvage value, if any, is distributed over the estimated useful life of the asset. Depreciation is to be accounted to know the true profit earned by the concern, to exhibit a true and fair view of the state of assets of the concern and to provide funds for replacement of the asset when it is worn out. Among the number of methods of depreciation available three methods, viz. Straight line method, diminishing balance method and annuity method are discussed.

2.1.3.9 Key Words

Depreciable Asset:

It is that asset on which depreciation is written off.

Depreciation:

It is the allocation of the depreciable amount of an asset over estimated useful life.

Useful Life:

It is the period over which a depreciable asset is expected to be used by the enterprise.

Depreciable Amount:

The depreciable amount of a depreciable asset is its historical cost less estimated residual value.

Residual Value:

It is the expected recovery or sales value of an asset at the end of its useful life.

2.1.3.10 Self Assessment Questions

Question 1

A manufacturing concern, whose books are closed on 31st march, purchased machinery for ₹1,50,000 on 1st april 2002. Additional machinery was acquired for ₹40,000 on 30th september 2003 and for ₹25,000 on 1st april 2005. Certain machinery which was purchased for ₹40,000 on 30th september 2003 was sold for ₹34,000 on 30th september 2005. Give the machinery account for the year ending 31st march 2006 taking into account depreciation at 10% p.a. On the written down value.

Question 2

A seven years lease has been purchased for a sum of ₹60,000 and it is proposed to depreciate it under the annuity method charging 4% interest. Reference to the annuity table indicates that the required result will be brought about by charging annually ₹9996.55 to depreciation account. Show how the lease account will appear in each of the seven years.

Question 3

Examine the need for providing depreciation.

2.1.3.11 Key To Self Assessment Questions

Question 1: Machinery Account

2011		₹	2011		₹
April 1	To Balance b/d	1,43,550	Sep 30	By Depreciation	1,710
Sep 30	To Bank	25,000		By Bank	34,000
	To P&L a/c	1,510	2006	By Depreciation	13,435
	(Profit on sale)		Mar 31	By Balance c/d	1,20,915
		-----			-----
		1,70,060			1,70,060
		-----			-----

Question 2

Interest for seven years:

1st year :	₹2,400.00
2nd year:	₹2,096.14
3rd year:	₹1,780.12
4th year:	₹1,451.46
5th year:	₹1,109.66
6th year:	₹ 754.19
7th year:	₹ 384.28

2.1.3.12 Case Analysis

Pondicherry roadways ltd. Which depreciates its machinery at 10% p.a. On written down value desires to change the basis to straight line method, the rate remaining the same. The decision is taken on 31st december 2005 to be effective from 1st january 2003.

On 1st january 2005, the balance in the machinery account is ₹29,16,000. On 1st july 2005, a part of machinery purchased on 1st january 2003 for ₹2,40,000 was sold for ₹1,35,000. On the same day a new machine is purchased for ₹4,50,000 and installed at a cost of ₹24,000.

Analyze the above case and answer the following questions:

- i. What was the loss incurred on the machine sold?
- ii. What was the book value of unsold machinery on 1-1-2003.
- iii. What would be the additional depreciation due to change in method?
- iv. What should be the depreciation to be charged for 2005?

Answers

- i. ₹49,680
- ii. ₹33,60,000
- iii. ₹33,600
- iv. ₹3,59,700

2.1.3.13 Books For Further Reading

1. **R.L.Gupta And M.Radhaswamy:** ADVANCED ACCOUNTS, *Sultan Chand & Sons, New Delhi.*
2. **S.P.Jain And K.L.Narang:** ADVANCED ACCOUNTANCY, *Kalyani Publishers, New Delhi.*
3. **M.C.Shukla And T.S.Grewal:** Advanced Accounts, *S.Chand & Co., New Delhi.*
4. **Tulsian:** Financial Accounting, *Pearson Education (P) Ltd., Delhi.*
5. **Warren Reeve Fess:** Financial Accounting, *Thomson, South Westam.*

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UNIT-II

Lesson 2.2: Ratio Analysis

2.2..1 Introduction

Financial statements by themselves do not give the required information both for internal management and for outsiders. They are passive statements showing the results of the business i.e. Profit or loss and the financial position of the business. They will not disclose any reasons for dismal performance of the business if it is so. What is wrong with the business, where it went wrong, why it went wrong, etc. Are some of the questions for which no answers will be available in the financial statements. Similarly, no information will be available in the financial statements about the financial strengths and weaknesses of the concern. Hence, to get meaningful information from the financial statements which would facilitate vital decisions to be taken, financial statements must be analysed and interpreted. Through the analysis and interpretation of financial statements full diagnosis of the profitability and financial soundness of the business is made possible. The term 'analysis of financial statements' means methodical classification of the data given in the financial statements. The term 'interpretation of financial statements' means explaining the meaning and significance of the data so classified. A number of tools are available for the purpose of analysing and interpreting the financial statements. This lesson discusses in brief tools like common size statement, trend analysis, etc., and gives a detailed discussion on ratio analysis.

2.2.2 Learning Objectives

- After Reading This Lesson The Reader Should Be Able To:
- Understand The Nature And Types Of Financial Analysis
- Know The Various Tools Of Financial Analysis
- Understand The Meaning Of Ratio Analysis
- Appreciate The Significance Of Ratio Analysis
- Understand The Calculation Of Various Kinds Of Ratios

- Calculate The Different Ratios From The Given Financial Statements
- Interpret The Calculated Ratios

2.2.3 Contents

- 2.2.3.1 Nature of Financial Analysis
- 2.2.3.2 Types of Financial Analysis
- 2.2.3.3 Tools of Financial Analysis
- 2.2.3.4 Meaning and Nature of Ratio Analysis
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2.2.3.1 Nature Of Financial Analysis

The focus of financial analysis is on the key figures contained in the financial statements and the significant relationship that exists between them. “analyzing financial statements is a process of evaluating the relationship between the component parts of the financial statements to obtain a better understanding of a firm’s position and performance”. The type of relationship to be investigated depends upon the objective and purpose of evaluation. The purpose of evaluation of financial statements differs among various groups: creditors, shareholders, potential investors, management and so on. For example, short-term creditors are primarily interested in judging the firm’s ability to pay its currently-maturing obligations. The relevant information for them is the composition of

the short-term (current) liabilities. The debenture-holders or financial institutions granting long-term loans would be concerned with examining the capital structures, past and projected earnings and changes in the financial position. The shareholders as well as potential investors would naturally be interested in the earnings per share and dividends per share as these factors are likely to have a significant bearing on the market price of shares. The management of the firms, in contrast, analyses the financial statements for self-evaluation and decision making.

The first task of the financial analyst is to select the information relevant to the decision under consideration from the total information contained in the financial statements. The second step involved in financial analysis is to arrange the information in such a way as to highlight significant relationships. The final step is the interpretation and drawing of inferences and conclusions. In brief, financial analysis is the process of selection, relation and evaluation.

2.1.3.2 Types Of Financial Analysis

Financial analysis may be classified on the basis of parties who are undertaking the analysis and on the basis of methodology of analysis. On the basis of the parties who are doing the analysis, financial analysis is classified into external analysis and internal analysis.

External Analysis

When the parties external to the business like creditors, investors, etc. do the analysis, the analysis is known as external analysis. This analysis is done by them to know the credit-worthiness of the concern, its financial viability, its profitability, etc.

Internal Analysis

This analysis is done by persons who have control over the books of accounts and other information of the concern. Normally this analysis is done by management people to enable them to get relevant information to take vital business decision.

On the basis of methodology adopted for analysis, financial analysis may be either horizontal analysis or vertical analysis.

Horizontal Analysis

When financial statements of a number of years are analysed, then the analysis is known as horizontal analysis. In this type of analysis, figures of the current year are compared with the standard or base year. This type of analysis will give an insight into the concern's performance over a period of years. This analysis is otherwise called as dynamic analysis as it extends over a number of years.

Vertical Analysis

This type of analysis establishes a quantitative relationship of the various items in the financial statements on a particular date. For e.g. The ratios of various expenditure items in terms of sales for a particular year can be calculated. The other name for this analysis is 'static analysis' as it relies upon one year figures only.

2.1.3.3 Tools Of Financial Analysis

The following are the important tools of financial analysis which can be appropriately used by the financial analysts:

1. Common-size financial statements
2. Comparative financial statements
3. Trend percentages
4. Ratio analysis
5. Funds flow analysis
6. Cash flow analysis

Common-Size Financial Statements

In this type of statements, figures in the original financial statements are converted into percentages in relation to a common base. The common base may be sales in the case of income statements (profit and loss account) and total of assets or liabilities in the case of balance sheet. For e.g. In the case of common-size income statement, sales of the traditional financial statement are taken as 100 and every other item in the income statement is converted into percentages with reference to sales. Similarly, in the case of common-size balance sheet, the total of asset/liability side will be taken as 100 and each individual asset/liability is converted into relevant percentages.

Comparative Financial Statements

This type of financial statements are ideal for carrying out horizontal analysis. Comparative financial statements are so designed to give them perspective to the review and analysis of the various elements of profitability and financial position displayed in such statements. In these statements, figures for two or more periods are compared to find out the changes both in absolute figures and in percentages that have taken place in the latest year as compared to the previous year(s). Comparative financial statements can be prepared both for income statement and balance sheet.

Trend Percentages

Analysis of one year figures or analysis of even two years figures will not reveal the real trend of profitability or financial stability or otherwise of any concern. To get an idea about how consistent is the performance of a concern, figures of a number of years must be analysed and compared. Here comes the role of trend percentages and the analysis which is done with the help of these percentages is called as trend analysis.

Trend analysis

Is a useful tool for the management since it reduces the large amount of absolute data into a simple and easily readable form. The trend analysis is studied by various methods. The most popular forms of trend analysis are year to year trend change percentage and index-number trend series. The year to year trend change percentage would be meaningful and manageable where the trend for a few years, say a five year or six year period is to be analysed.

Generally trend percentage are calculated only for some important items which can be logically related with each other. For e.g. Trend ratio for sales, though shows a clear-cut increasing tendency, becomes meaningful in the real sense when it is compared with cost of goods sold which might have increased at a lower level.

Ratio Analysis

Of all the tools of financial analysis available with a financial analyst the most important and the most widely used tool is ratio analysis. Simply stated ratio analysis is an analysis of financial statements done with the help of ratios. A ratio expresses the relationship that exists between two numbers and in financial statement analysis a ratio shows the relationship between two interrelated accounting figures. Both the accounting figures may be taken from the balance sheet and the resulting ratio is called a balance sheet ratio. But if both the figures are taken from profit and loss account then the resulting ratio is called as profit and loss account ratio. Composite ratio is that ratio which is calculated by taking one figure from profit and loss account and the other figure from balance sheet. A detailed discussion on ratio analysis is made available in the pages to come.

Funds Flow Analysis

The purpose of this analysis is to go beyond and behind the information contained in the financial statements. Income statement tells the quantum of profit earned or loss suffered for a particular accounting year. Balance sheet gives the assets and liabilities position as on a particular date. But in an accounting year a number of financial transactions take place which have a bearing on the performance of the concern but which are not revealed by the financial statements. For e.g. A concern collects finance through various sources and uses them for various purposes. But these details could not be known from the traditional financial statements. Funds flow analysis gives an opening in this respect. All the more, funds flow analysis reveals the changes in working capital position. If there is an increase in working capital what resulted in the increase and if there is a decrease in working capital what caused the decrease, etc. Will be made available through funds flow analysis.

Cash Flow Analysis

While funds flow analysis studies the reasons for the changes in working capital by analysing the sources and application of funds, cash flow analysis pays attention to the changes in cash position that has taken place between two accounting periods. These reasons are not available in the traditional financial statements. Changes in the cash position can

be analysed with the help of a statement known as cash flow statement. A cash flow statement summarises the change in cash position of the concern. Transactions which increase the cash position of the concern are labelled as 'inflows' of cash and those which decrease the cash position as 'outflows' of cash.

2.2.3.4 Meaning And Nature of Ratio Analysis

Ratio expresses numerical relationship between two numbers. In the words of Kennedy and Mcmullen, "the relationship of one item to another expressed in simple mathematical form is known as a ratio". Thus, the ratio is a measuring device to judge the growth, development and present condition of a concern. It plays an important role in measuring the comparative significance of the income and position statement. Accounting ratios are expressed in the form of time, proportion, percentage, or per one rupee. Ratio analysis is not only a technique to point out relationship between two figures but also points out the devices to measure the fundamental strengths or weaknesses of a concern. As James C. Van Horne observes: "to evaluate the financial condition and performance of a firm, the financial analyst needs certain yardsticks. One of the yardsticks frequently used is a ratio. The main purpose of ratio analysis is to measure past performance and project future trends. It is also used for inter-firm and intra-firm comparison as a measure of comparative productivity. The significance of the various components of financial statements can be judged only by ratio analysis. The financial analyst x-rays the financial conditions of a concern by the use of various ratios and if the conditions are not found to be favourable, suitable steps can be taken to overcome the limitations. The main objectives of ratio analysis are:

- To simplify the comparative picture of financial statements.
- To assist the management in decision making.
- To gauge the profitability, solvency and efficiency of an enterprise, and
- To ascertain the rate and direction of change and future potentiality.

2.2.3.5 Classification of Ratios

Financial ratios may be categorised in various ways. Van horne has divided financial ratios into four categories, viz., liquidity, debt, profitability and coverage ratios. The first two types of ratios are computed from the balance sheet. The last two are computed from the income statement and sometimes, from both the statements. For the purpose of analysis, the present lesson gives a detailed description of ratios, the formula used for their computation and their significance.

The ratios have been categorised under the following headings:-

- (i) Ratios for analysis of capital structure or leverage.
- (ii) Ratios for fixed assets analysis.
- (iii) Ratios for analysis of turnover.
- (iv) Ratios for analysis of liquidity position.
- (v) Ratios for analysis of profitability.
- (vi) Ratios for analysis of operational efficiency.

2.2.3.6 Capital Structure or Leverage Ratios

Financial strength indicates the soundness of the financial resources of an organisation to perform its operations in the long run. The parties associated with the organisation are interested in knowing the financial strength of the organisation. Financial strength is directly associated with the operational ability of the organisation and its efficient management of resources. The financial strength analysis can be made with the help of the following ratios:

- (1) Debt-equity ratio
- (2) Capital gearing ratio
- (3) Financial leverage
- (4) Proprietary ratio and
- (5) Interest coverage.

Debt-Equity Ratio

The debt-equity ratio is determined to ascertain the soundness of the long-term financial policies of the company. This ratio indicates the proportion between the shareholders' funds (i.e. Tangible net worth) and the total borrowed funds. Ideal ratio is 1. In other words, the investor may take debt equity ratio as quite satisfactory if shareholders' funds are equal to borrowed funds. However, creditors would prefer a low debt-equity ratio as they are much concerned about the security of their investment. This ratio can be calculated by dividing the total debt by shareholders' equity. For the purpose of calculation of this ratio, the term shareholders' equity includes share capital, reserves and surplus and borrowed funds which includes both long-term funds and short-term funds.

$$\text{Debt-equity ratio} = \frac{\text{Debt}}{\text{Equity}}$$

A high ratio indicates that the claims of creditors are higher as compared to owners' funds and a low debt-equity ratio may result in a higher claim of equity.

Capital Gearing Ratio

This ratio establishes the relationship between the fixed interest-bearing securities and equity shares of a company. It is calculated as follows:

$$\text{Capital gearing ratio} = \frac{\text{Fixed interest-bearing securities}}{\text{Equity shareholders' funds}}$$

Fixed-interest bearing securities carry with them the fixed rate of dividend or interest and include preference share capital and debentures. A firm is said to be highly geared if the lion's share of the total capital is in the form of fixed interest-bearing securities or this ratio is more than one. If this ratio is less than one, it is said to be low geared. If it is exactly one, it is evenly geared. This ratio must be carefully planned as it affects the firm's capacity to maintain a uniform dividend policy during difficult trading periods that may occur. Too much capital should not be raised by way of debentures, because debentures do not share in business losses.

Financial Leverage Ratio

Financial leverage results from the presence of fixed financial charges in the firm's income stream. These fixed charges do not vary with the earnings before interest and tax (EBIT) or operating profits. They have to be paid regardless of the amount of earnings before interest and taxes available to pay them. After paying them, the operating profits (EBIT) belong to the ordinary shareholders. Financial leverage is concerned with the effects of changes in earnings before interest and taxes on the earnings available to equity holders. It is defined as the *ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the firm's earning per share*. Financial leverage and trading on equity are synonymous terms. The EBIT is calculated by adding back the interest (interest on loan capital + interest on long term loans + interest on other loans) and taxes to the amount of net profit. Financial leverage ratio is calculated by dividing EBIT by EBT (earnings before tax). Neither a very high leverage nor a very low leverage represents a sound picture. $(EBIT \div EBT)$.

Proprietary Ratio

This ratio establishes the relationship between the proprietors' funds and the total tangible assets. The general financial strength of a firm can be understood from this ratio. The ratio is of particular importance to the creditors who can find out the proportion of shareholders' funds in the capital assets employed in the business. A high ratio shows that a concern is less dependent on outside funds for capital. A high ratio suggests sound financial strength of a firm due to greater margin of owners' funds against outside sources of finance and a greater margin of safety for the creditors. A low ratio indicates a small amount of owners' funds to finance total assets and more dependence on outside funds for working capital. In the form of formula this ratio can be expressed as:-

$$\text{Proprietary Ratio} = \frac{\text{Net Worth}}{\text{Total Assets}}$$

Interest Coverage

This ratio measures the debt servicing capacity of a firm in so far as fixed interest on long-term loan is concerned. It is determined by dividing the operating profits or earnings before interest and taxes (EBIT) by the fixed interest charges on loans. Thus,

$$\text{Interest Coverage} = \frac{\text{EBIT}}{\text{Interest}}$$

It should be noted that this ratio uses the concept of net profits before taxes because interest is tax-deductible so that tax is calculated after paying interest on long-term loans. This ratio, as the name suggests, shows how many times the interest charges are covered by the EBIT out of which they will be paid. In other words, it indicates the extent to which a fall in EBIT is tolerable in the sense that the ability of the firm to service its debts would not be adversely affected. From the point of view of creditors, the larger the coverage, the greater the ability of the firm to handle fixed-charge liabilities and the more assured the payment of interest to the creditors. However, too high a ratio may imply unused debt capacity. In contrast, a low ratio is danger signal that the firm is using excessive debt and does not have the ability to offer assured payment of interest to the creditors.

2.2.3.7 Fixed Assets Analysis

The successful operation of a business generally requires some assets of fixed character. These assets are used primarily in producing goods and in operating the business. With the help of these, raw materials are converted into finished products. Fixed assets are not meant for sale and are kept as a rule permanently in the business in order to carry on day-to-day operations.

Analysis of fixed assets is very important from investors' point of view because investors are more concerned with long term assets. Fixed assets are properties of non-current nature which are acquired to provide facilities to carry on business. They include land, building, equipment, furniture, etc. They are generally shown in balance sheet by aggregating

them into groups of gross block as reduced by the accumulated amount of depreciation till date. Investment in fixed assets is of a permanent nature and therefore should be financed by owners' funds (permanent sources of funds). The owners' funds should be sufficient to provide for fixed assets. Fixed assets are generally financed by owners' equity and long-term borrowings. The long-term borrowings are in the form of long-term loans and of almost permanent nature. Under such a situation it becomes more or less irrelevant to relate the fixed assets with only the owners' equity. Therefore, the analysis of the source of financing of fixed assets has been done with the help of the following ratios:-

- (a) Fixed Assets To Net Worth
- (b) Fixed Assets To Long-Term Funds

Fixed Assets To Net Worth: in the words of Anil B.Roy Choudhary, "this ratio indicates the relationship between net worth (i.e. Shareholders' funds) and investments in net fixed assets (i.e. Gross block minus depreciation)".

The higher the ratio the lesser would be the protection to creditors. If the ratio is less than 1, it indicates that the net worth exceeds fixed assets. It will further indicate that the working capital is partly financed by shareholders' funds. If the ratio exceeds 1, it would mean that part of the fixed assets has been provided by creditors. The formula for derivation of this ratio is:-

$$\text{Fixed Assets To Net Worth Ratio} = \frac{\text{Net Fixed Assets}}{\text{Net Worth}}$$

Fixed Assets To Long-Term Funds

This ratio establishes the relationship Between the fixed assets and long-term funds and it is obtained by the formula:

$$\text{Fixed Asset Ratio} = \frac{\text{Fixed Assets}}{\text{Long-Term Funds}}$$

The ratio should be less than one. If it is less than one, it shows that a part of the working capital has been financed through long-term funds. This is desirable because a part of working capital termed as “core working capital” is more or less of a fixed nature. The ideal ratio is 0.67.

If this ratio is more than one, it indicates that a part of current liability is invested in long-term assets. This is a dangerous position. Fixed assets include “net fixed assets” i.e. Original cost less depreciation to date and trade investments including shares in subsidiaries. Long-term funds include share capital, reserves and long-term borrowings.

2.2.3.8 Analysis Of Turnover (Or) Analysis Of Efficiency

Turnover ratios also referred to as activity ratios are concerned with measuring the efficiency in asset management. Sometimes, these ratios are also called as efficiency ratios or asset utilisation ratios. The efficiency with which the assets are used would be reflected in the speed and rapidity with which assets are converted into sales. The greater the rate of turnover or conversion, the more efficient the utilisation/management, other things being equal. For this reason such ratios are also designated as turnover ratios. Turnover is the primary mode for measuring the extent of efficient employment of assets by relating the assets to sales. An activity ratio may, therefore, be defined as a test of the relationship between sales (more appropriately with cost of sales) and the various assets of a firm. Depending upon the various types of assets, there are various types of activity ratios. Some of the more widely used turnover ratios are:-

- Fixed Assets Turnover Ratio
- Current Assets Turnover Ratio
- Working Assets Turnover Ratio
- Inventory (Or Stock) Turnover Ratio
- Debtors Turnover Ratio
- Creditors Turnover Ratio

Fixed Assets Turnover Ratio

The fixed assets turnover ratio measures the efficiency with which the firm is utilising its investment in fixed assets, such as land, building, plant and machinery, furniture, etc. It also indicates the adequacy of sales

in relation to investment in fixed assets. The fixed assets turnover ratio is sales divided by the net fixed assets (i.e., the depreciated value of fixed assets).

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

The turnover of fixed assets can provide a good indicator for judging the efficiency with which fixed assets are utilised in the firm. A high fixed assets turnover ratio indicates efficient utilisation of fixed assets in generating operating revenue. A low ratio signifies idle capacity, inefficient utilisation and management of fixed assets.

Current Assets Turnover Ratio

The current assets turnover ratio ascertains the efficiency with which current assets are used in a business. Professor guthmann observes that “current assets turnover is to give an overall impression of how rapidly the total investment in current assets is being turned”. This ratio is strongly associated with efficient utilisation of costs, receivables and inventory. A higher value of this ratio indicates greater circulation of current assets while a low ratio indicates a stagnation of the flow of current assets. The formula for the computation of current assets turnover ratio is:

$$\text{Current Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Current Assets}}$$

Working Capital Turnover Ratio: this ratio shows the number of times working capital is turned-over in a stated period. Working capital turnover ratio reflects the extent to which a business is operating on a small amount of working capital in relation to sales. The ratio is calculated by the following formula:-

$$\text{Working Capital Turnover Ratio} = \frac{\text{Sales}}{\text{Net Working Capital}}$$

The higher the ratio, the lower is the investment in working capital and greater are the profits. However, a very high turnover of working capital is a sign of over trading and may put the firm into financial difficulties. On the other hand, a low working capital turnover ratio indicates that working capital is not efficiently utilised.

Inventory Turnover Ratio

The inventory turnover ratio, also known as stock turnover ratio normally establishes the relationship between cost of goods sold and average inventory. This ratio indicates whether investment in inventory is within proper limit or not. In the words of S.C.Kuchal, “this relationship expresses the frequency with which average level of inventory investment is turned over through operations”. The formula for the computation of this ratio may be expressed thus:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost Of Goods Sold}}{\text{Average Inventory}}$$

In general, a high inventory turnover ratio is better than a low ratio. A high ratio implies good inventory management. A very high ratio indicates under-investment in, or very low level of inventory which results in the firm being out of stock and incurring high stock-out cost. A very low inventory turnover ratio is dangerous. It signifies excessive inventory or over-investment in inventory. A very low ratio may be the results of inferior quality goods, over-valuation of closing inventory, stock of unsaleable/obsolete goods.

Debtors Turnover Ratio And Collection Period

One of the major activity ratios is the receivables or debtors turnover ratio. Allied and closely related to this is the average collection period. It shows how quickly receivables or debtors are converted into cash. In other words, the debtors turnover ratio is a test of the liquidity of the debtors of a firm. The liquidity of a firm's receivables can be examined in two ways: (i) debtors/receivables turnover and (ii) average collection period. The debtors turnover shows the relationship between credit sales and debtors of a firm. Thus,

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$$

Net credit sales consists of gross credit sales minus returns if any, from the customers. Average debtors is the simple average of debtors at the beginning and at the end of the year.

The second type of ratio measuring the liquidity of a firm's debtors is the average collection period. This ratio is, in fact, interrelated with and dependent upon, the receivables turnover ratio. It is calculated by dividing the days in a year by the debtors turnover. Thus,

$$\text{Average Collection Period} = \frac{\text{Days In Year}}{\text{Debtors Turnover}}$$

This ratio indicates the speed with which debtors/accounts receivables are being collected. The higher the turnover ratio and shorter the average collection period, the better the trade credit management and better the liquidity of debtors. On the other hand, low turnover ratio and long collection period reflects that payments by debtors are delayed. In general, short collection period (high turnover ratio) is preferable.

Creditors' Turnover Ratio And Debt Payment Period

Creditors' turnover ratio indicates the speed with which the payments for credit purchases are made to the creditors. This ratio can be computed as follows:-

$$\text{Creditors' Turnover Ratio} = \frac{\text{Average Accounts Payable}}{\text{Net Credit Purchases}}$$

The term accounts payable include trade creditors and bills payable. A high ratio indicates that creditors are not paid in time while a low ratio gives an idea that the business is not taking full advantage of credit period allowed by the creditors.

Sometimes, it is also required to calculate the average payment period or average age of payables or debt period enjoyed to indicate the speed with which payments for credit purchases are made to creditors. It is calculated as:

$$\text{Average Age Of Payables} = \frac{\text{Days In A Year}}{\text{Creditors' Turnover Ratio}}$$

Both the creditors' turnover ratio and the debt payment period enjoyed ratio indicate about the promptness or otherwise in making

payment for credit purchases. A higher creditors' turnover ratio or lower credit period enjoyed ratio signifies that the creditors are being paid promptly.

2.2.3.9 Analysis Of Liquidity Position

The liquidity ratios measure the ability of a firm to meet its short-term obligations and reflect the short-term financial strength/solvency of a firm. The term liquidity is described as convertibility of assets ultimately into cash in the course of normal business operations and the maintenance of a regular cash flow. A sound liquid position is of primary concern to management from the point of view of meeting current liabilities as and when they mature as well as for assuring continuity of operations. Liquidity position of a firm depends upon the amount invested in current assets and the nature of current assets. The under mentioned ratios are used to measure the liquidity position:-

- › Current ratio
- › Liquid (or) quick ratio
- › Cash to current assets ratio
- › Cash to working capital ratio

Current Ratio

The most widely used measure of liquid position of an enterprise is the current ratio, i.e., the ratio of the firm's current assets to current liabilities. It is calculated by dividing current assets by current liabilities:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

The current assets of a firm represent those assets which can be in the ordinary course of business, converted into cash within a short period of time, normally not exceeding one year and include cash and bank balance, marketable securities, inventory of raw materials, semi-finished (work-in-progress) and finished goods, debtors net of provision for bad and doubtful debts, bills receivable and pre-paid expenses. The current liabilities defined as liabilities which are short-term maturing

obligations to be met, as originally contemplated, within a year, consist of trade creditors, bills payable, bank credit, provision for taxation, dividends payable and outstanding expenses. N.L.Hingorani and others observe: ***“current ratio is a tool for measuring the short-term stability or ability of the company to carry on its day-to-day work and meet the short-term commitments earlier”***. Generally 2:1 is considered ideal for a concern i.e., current assets should be twice of the current liabilities. If the current assets are two times of the current liabilities, there will be no adverse effect on business operations when the payment of current liabilities is made. If the ratio is less than 2, difficulty may be experienced in the payment of current liabilities and day-to-day operations of the business may suffer. If the ratio is higher than 2, it is very comfortable for the creditors but, for the concern, it indicates idle funds and lack of enthusiasm for work.

Liquid (Or) Quick Ratio

Liquid (or) Quick ratio is a measurement of a firm's ability to convert its current assets quickly into cash in order to meet its current liabilities. It is a measure of judging the immediate ability of the firm to pay-off its current obligations. It is calculated by dividing the quick assets by current liabilities:

$$\text{Liquid Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

The term quick assets refers to current assets which can be converted into cash immediately or at a short notice without diminution of value. Thus quick assets consists of cash, marketable securities and accounts receivable. Inventories are excluded from quick assets because they are slower to convert into cash and generally exhibit more uncertainty as to the conversion price.

This ratio provides a more stringent test of solvency. 1:1 ratio is considered ideal ratio for a firm because it is wise to keep the liquid assets atleast equal to the current liabilities at all times.

Cash To Current Assets Ratio

Efficient management of the inflow and outflow of cash plays a crucial role in the overall performance of a business. Cash is the most liquid form of assets which safeguards the security interest of a business. Cash including bank balances plays a vital role in the total net working capital. The ratio of cash to working capital signifies the proportion of cash to the total net working capital and can be calculated by dividing the cash including bank balance by the working capital. Thus,

$$\text{Cash To Working Capital Ratio} = \frac{\text{Cash}}{\text{Working Capital}}$$

Cash is not an end in itself, it is a means to achieve the end. Therefore, only a required amount of cash is necessary to meet day-to-day operations. A higher proportion of cash may lead to shrinkage of profits due to idleness of resources of a firm.

2.2.3.10 Analysis Of Profitability

Profitability is a measure of efficiency and control. It indicates the efficiency or effectiveness with which the operations of the business are carried on. Poor operational performance may result in poor sales and therefore low profits. Low profitability may be due to lack of control over expenses resulting in low profits. Profitability ratios are employed by management in order to assess how efficiently they carry on business operations. Profitability is the main base for liquidity as well as solvency. Creditors, banks and financial institutions are interested in profitability ratios since they indicate liquidity or capacity of the business to meet interest obligations and regular and improved profits enhance the long term solvency position of the business. Owners are interested in profitability for they indicate the growth and also the rate of return on their investments. The importance of measuring profitability has been stressed by Hingorani, Ramanathan And Grewal in these words: “**a measure of profitability is the overall measure of efficiency**”.

An appraisal of the financial position of any enterprise is incomplete unless its overall profitability is measured in relation to the sales, assets, capital employed, net worth and earnings per share.

The following ratios are used to measure the profitability position from various angles:

- Gross Profit Ratio
- Net Profit Ratio
- Return on Capital Employed
- Operating Ratio
- Operating Profit Ratio
- Return on Owners' Equity
- Earnings Per Share
- Dividend Pay Out Ratio

Gross Profit Ratio

The gross profit ratio or gross profit margin ratio expresses the relationship of gross profit on sales / net sales. B.r.rao opines that ***“gross profit margin ratio indicates the gross margin of profits on the net sales and from this margin only, all expenses are met and finally net income emerges”***. The basic components for the computation of this ratio are gross profits and net sales. 'net sales' means total sales minus sales returns and 'gross profit' means the difference between net sales and cost of goods sold. The formula used to compute gross profit ratio is:

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

Gross profit ratio indicates to what extent the selling prices of goods per unit may be reduced without incurring losses on operations. A low gross profit ratio will suggest decline in business which may be due to insufficient sales, higher cost of production with the existing or reduced selling price or the all-round inefficient management. A high gross profit ratio is a sign of good and effective management.

Net Profit Ratio

Net profit is a good indicator of the efficiency of a firm. Net profit ratio or net profit margin ratio is determined by relating net income after taxes to net sales. Net profit here is the balance of profit and loss account which is arrived at after considering all non-operating incomes such as

interest on investments, dividends received, etc. And non-operating expenses like loss on sale of investments, provisions for contingent liabilities, etc. This ratio indicates net margin earned on a sale of ₹100. The formula for calculating the ratio is:

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

This ratio is widely used as a measure of overall profitability and is very useful for proprietors. A higher ratio indicates better position.

Return On Capital Employed

The prime objective of making investments in any business is to obtain satisfactory return on capital invested. Hence, the return on capital employed is used as a measure of success of a business in realising this objective. Otherwise known as return on investments, this is the overall profitability ratio. It indicates the percentage of return on capital employed in the business and it can be used to show the efficiency of the business as a whole. The formula for calculating the ratio is:

$$\text{Return On Capital Employed} = \frac{\text{Operating Profit}}{\text{Capital Employed}} \times 100$$

The term “capital employed” means [share capital + reserves and surplus + long term loans] minus [non-business assets + fictitious assets] and the term “operating profit” means profit before interest and tax. The term ‘interest’ means interest on long-term borrowings. Non-trading income should be excluded for the above purpose. A higher ratio indicates that the funds are invested profitably.

Operating Ratio

This ratio establishes the relationship between total operating expenses and sales. Total operating expenses includes cost of goods sold plus other operating expenses. A higher ratio indicates that operating expenses are high and the profit margin is less and therefore lower the ratio, better is the position. The operating ratio is an index of the efficiency of

the conduct of business operations. An ideal norm for this ratio is between 75% to 85% in a manufacturing concern. The formula for calculating the operating ratio is thus:

$$\text{Operating Ratio} = \frac{\text{Cost of Goods Sold} + \text{Operating Expenses}}{\text{Sales}} \times 100$$

Operating Profit Ratio: this ratio indicates net-margin earned on a sale of ₹100. It is calculated as follows:

$$\text{Operating Profit Ratio} = \frac{\text{Net Operating Profit}}{\text{Sales}} \times 100$$

The operating profit ratio helps in determining the efficiency with which affairs of the business are being managed. An increase in the ratio over the previous period indicates improvement in the operational efficiency of the business provided the gross profit ratio is constant. Operating profit is estimated without considering non-operating income such as profit on sale of fixed assets, interest on investments and non-operating expenses such as loss on sale of fixed assets. This is thus, an effective tool to measure the profitability of a business concern.

Return On Owners' Equity (Or) Shareholders' Fund (Or) The Net Worth

The ratio of return on owners' equity is a valuable measure for judging the profitability of an organisation. This ratio helps the shareholders of a firm to know the return on investment in terms of profits. Shareholders are always interested in knowing as to what return they earned on their invested capital since they bear all the risk, participate in management and are entitled to all the profits remaining after all outside claims including preference dividend are met in full. This ratio is computed as a percentage by using the formula:

$$\text{Return On Owners' Equity} = \frac{\text{Net Profit After Interest and Tax}}{\text{Owners' Equity (Net Worth)}} \times 100$$

This is the single most important ratio to judge whether the firm has earned a satisfactory return for its equity-shareholders or not. A higher ratio indicates the better utilisation of owners' fund and higher productivity. A low ratio may indicate that the business is not very successful because of inefficient and ineffective management and over investment in assets.

Earnings Per Share (EPS)

The profitability of a firm from the point of view of the ordinary shareholders is analysed through the ratio 'EPS'. It measures the profit available to the equity shareholders on a per share basis, i.e. The amount that they can get on every share held. It is calculated by dividing the profits available to the shareholders by the number of the outstanding shares. The profits available to the ordinary shareholders are represented by net profit after taxes and preference dividend.

$$\text{Earnings Per Share} = \frac{\text{Net Profit After Tax} - \text{Preference Dividend}}{\text{Number Of Equity Shares}}$$

This ratio is an important index because it indicates whether the wealth of each shareholder on a per-share basis has changed over the period. The performance and prospects of the firm are affected by eps. If eps increases, there is a possibility that the company may pay more dividend or issue bonus shares. In short, the market price of the share of a firm will be affected by all these factors.

Dividend Pay Out Ratio

This ratio measures the relationship between the earnings belonging to the ordinary shareholders and the dividend paid to them. In other words, the dividend pay out ratio shows what percentage share of the net profits after taxes and preference dividend is paid out as dividend to the equity shareholders. It can be calculated by dividing the total dividend paid to the owners by the earnings available to them. The formula for computing this ratio is:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend Per Equity Share}}{\text{Earnings Per Share}}$$

This ratio is very important from shareholder's point of view as it tells him that if a firm has used whole, or substantially the whole of its earnings for paying dividend and retained nothing for future growth and expansion purposes, then there will be very dim chances of capital appreciation in the price of shares of such firms. In other words, an investor who is more interested in capital appreciation must look for a firm having low payout ratio.

2.2.3.11 Analysis Of Operational Efficiency

The operational efficiency of an organisation is its ability to utilise the available resources to the maximum extent. Success or failure of a business in the economic sense is judged in relation to expectations, returns on invested capital and objectives of the business concern. There are many techniques available for evaluating financial as well as operational performance of a firm. The two important techniques adopted in this study are:

1. Turnover to capital employed or return on investment (ROI)
2. Financial operations ratio

Turnover To Capital Employed

This is the ratio of operating revenue to capital employed. This is one of the important ratios to find out the efficiency with which the firms are utilising their capital. It signifies the number of times the total capital employed was turned into sales volumes. The term capital employed includes total assets minus current liabilities. The ratio for calculating turnover to capital employed (in percentage) is:

$$\text{Turnover To Capital Employed} = \frac{\text{Operating Revenue}}{\text{Capital Employed}} \times 100$$

The higher the ratio, the better is the position.

Financial Operations Ratio

The efficiency of the financial management of a firm is calculated through financial operations ratio. This ratio is a calculating device of the cost and the return of financial charges. This ratio signifies a relationship between net profit after tax and operating profit. The formula for the computation of this ratio is:

$$\text{Financial Operations Ratio} = \frac{\text{Net Profit After Tax}}{\text{Operating Profit}} \times 100$$

Here, the term “operating profit” means sales minus operating expenses. A higher ratio indicates the better financial performance of the firm.

2.2.3.12 Ratios From Shareholders’ Point Of View

1. Preference dividend cover

This ratio expresses net profit after tax as so many times of preference dividend payable. This is calculated as:

$$\frac{\text{Net Profit After Tax}}{\text{Preference Dividend}}$$

2. Equity Dividend Cover

This ratio gives information about net profit available to equity shareholders. This ratio expresses profit as number of times of equity dividend payable. This ratio is calculated using the following formula:

$$\frac{\text{Net Profit After Tax} - \text{Preference Dividend}}{\text{Equity Dividend}}$$

3. Dividend Yield On Equity Shares Or Yield Ratio

This ratio interprets dividend as a percentage of market price per share. It is calculated as:

$$\frac{\text{Dividend Per Share}}{\text{Market Price Per Share}} \times 100$$

4. Price Earning Ratio

This ratio tells how many times of earnings per share is the market price of the share of a company. The formula to calculate this ratio is:

$$\frac{\text{Market Price Per Share}}{\text{Earnings Per Share}}$$

2.2.3.13 Illustrations

Illustration 4

The following are the financial statements of yesye limited for the year 2005.

Balance Sheet As At 31-12-2005

	₹		₹
Equity Share Capital	1,00,000	Fixed Assets	1,50,000
General Reserve	90,000	Stock	42,500
Profit & Loss Balance	7,500	Debtors	19,000
Sundry Creditors	35,000	Cash	61,000
6% Debentures	30,000	Proposed Dividends	10,000
	-----		-----
	2,72,500		2,72,500
	-----		-----

Trading And Profit And Loss Account

For The Year Ended 31-12-2005

	₹		₹
To Cost of Goods Sold	1,80,000	By Sales	3,00,000
To Gross Profit c/d	1,20,000		
	-----		-----
	3,00,000		3,00,000
	-----		-----
To Expenses	1,00,000	By Gross Profit b/d	1,20,000
To Net Profit	20,000		
	-----		-----
	1,20,000		1,20,000
	-----		-----

You are required to compute the following:

- 1) Current Ratio
- 2) Acid Test Ratio
- 3) Gross Profit Ratio
- 4) Debtors' Turnover Ratio
- 5) Fixed Assets to Net Tangible Worth
- 6) Turnover to Fixed Assets

Solution

$$\begin{aligned}
 \text{1) Current Ratio} &= \frac{\text{Current Assets}}{\text{Current Liabilities}} \\
 &= \frac{1,22,500}{45,000} = 2.7:1.
 \end{aligned}$$

$$\begin{aligned}
 \text{2) Acid Test Ratio} &= \frac{\text{Quick Assets}}{\text{Quick Liabilities}}
 \end{aligned}$$

$$= \frac{80,000}{45,000} = 1.8:1.$$

$$\begin{aligned}
 \text{3) Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Sales}} \times 100
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{1,20,000}{3,00,000} \times 100 = 40\% \\
 4) \text{ Debtors' Turnover Ratio} &= \frac{\text{Net Sales}}{\text{Average Debtors}} \\
 &= \frac{3,00,000}{19,000} = 15.78 \text{ Times.} \\
 \text{Collection Period} &= \frac{\text{No. Of Days In The Year}}{\text{Debtors' Turnover}} \\
 &= \frac{365}{15.78} = 23 \text{ Days} \\
 5) \text{ Fixed Asset to Net Tangible Worth} &= \frac{\text{Fixed Assets}}{\text{Proprietor's Fund}} \times 100 \\
 &= \frac{1,50,000}{1,97,500} \times 100 = 76\% \\
 6) \text{ Turnover To Fixed Assets} &= \frac{\text{Net Sales}}{\text{Fixed Assets}} \\
 &= \frac{3,00,000}{1,50,000} = 2 \text{ Times}
 \end{aligned}$$

Illustration 5

From the following details prepare a statement of proprietary fund with as many details as possible.

- 1) Stock Velocity 6
- 2) Capital Turnover Ratio 2
- 3) Fixed Assets Turnover Ratio 4
- 4) Gross Profit Turnover Ratio 20%
- 5) Debtors' Velocity 2 Months
- 6) creditors' velocity 73 days

Gross profit was ₹60,000. Reserves and surplus amount to 20,000. Closing stock was ₹5,000 in excess of opening stock.

Solution

1. Calculation Of Sales

$$\begin{aligned}\text{Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Sales}} \times 100 = 20\% \\ &= \frac{\text{₹60,000}}{\text{Sales}} = \frac{20}{100} \\ &= \frac{1}{5}\end{aligned}$$

Sales: ₹ 3,00,000

2. Calculation Of Sundry Debtors

$$\text{Debtors' Velocity} = \frac{\text{Debtors}}{\text{Sales}} \times 12 \text{ Months}$$

Let Debtors Be X

$$2 = \frac{X}{3,00,000} \times 12$$

$$\frac{X}{3,00,000} = \frac{1}{6}$$

$$X = ₹50,000$$

Debtors: ₹50,000

It is assumed that all sales are credit sales.

3. Calculation Of Stock

$$\text{Stock Turnover Ratio} = \frac{\text{Cost Of Goods Sold}}{\text{Average Stock}} = 6$$

$$\begin{aligned}\text{Cost Of Goods Sold} &= \text{Sales} - \text{Gross Profit} \\ &= ₹3,00,000 - ₹60,000 \\ &= ₹2,40,000\end{aligned}$$

$$\frac{₹2,40,000}{\text{Average Stock}} = 6$$

$$\text{Average Stock} = \frac{₹2,40,000}{6} = ₹40,000$$

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

Let Opening Stock Be ₹X.

Then Closing Stock Will Be X + 5,000

$$\frac{X + X + 5,000}{2} = 40,000$$

$$\frac{2X + 5,000}{2} = 40,000$$

Cross Multiplying

$$\begin{aligned}2X + 5,000 &= 80,000 \\ 2X &= 80,000 - 5,000 \\ &= 75,000 \\ X &= 37,500\end{aligned}$$

4. Calculation Of Creditors

$$\text{Creditors' Velocity Days} = \frac{\text{Total Creditors}}{\text{Credit Purchases}} \times 365$$

$$\begin{aligned}\text{Purchase} &= 73 \text{ Days} \\ &= \text{cost of goods} + \text{closing stock} - \text{opening stock} \\ &= ₹2,40,000 + 42,500 - 37,500 \\ &= ₹2,45,000\end{aligned}$$

Let The Creditors Be X

$$\frac{X}{2,45,000} \times 365 = 73$$

$$365 X = 2,45,000 \times 73$$

$$X = \frac{2,45,000 \times 73}{365}$$

$$\text{Creditors} = ₹49,000$$

5. Calculation Of Fixed Assets

$$\text{Fixed assets turnover ratio} = \frac{\text{Costs of Goods Sold}}{\text{Fixed Assets}} = 4$$

Let Fixed Assets Be X

$$\frac{2,40,000}{X} = 4$$

$$X = 60,000$$

$$\text{Fixed Assets} = ₹60,000$$

6. Shareholders' Fund

$$\text{Capital Turnover Ratio} = \frac{\text{Cost Of Goods Sold}}{\text{Proprietary Fund}} = 2$$

$$\frac{2,40,000}{\text{Proprietary Fund}} = 2$$

$$\text{Proprietary Fund} = ₹1,20,000$$

Shareholders' fund includes share capital, profit & reserve.

$$\begin{aligned}\text{Share Capital} &= \text{Shareholders' Fund} - (\text{Profit} + \text{Reserve}) \\ &= ₹1,20,000 - ₹80,000 \\ &= ₹40,000\end{aligned}$$

7. Calculation Of Bank Balance

$$\begin{aligned}\text{Shareholders' Fund} + \text{Current Liabilities} &= \text{Fixed Assets} + \text{Current Assets} \\ ₹1,20,000 + 49,000 &= ₹60,000 + \text{Current Assets} \\ \text{Current Assets} &= ₹1,09,000 \\ \text{Current Assets} &= \text{Stock} + \text{Debtors} + \text{Bank} \\ \text{Bank Balance} &= \text{Current Assets} - (\text{Stock} + \text{Debtors}) \\ &= ₹1,09,000 - (42,500 + 50,000) \\ &= ₹1,09,000 - 92,500 \\ &= ₹16,500\end{aligned}$$

Balance Sheet As On ...

Liabilities	₹	Assets	₹
Share Capital	40,000	Fixed Assets	60,000
Reserves & Surplus	20,000	Current Assets	42,500
Profit	60,000	Stock	50,000
Current Liabilities	49,000	Debtors	16,500
	-----	Bank	1,09,000
	1,69,000		-----
	-----		1,69,000

Illustration 6

The Following Data Is Furnished:

- A) Working Capital ₹45,000
- B) Current Ratio 2.5
- C) Liquidity Ratio 1.5
- D) Proprietary Ratio – (Fixed Assets To Proprietary Funds) 0.75
- E) Overdraft ₹10,000
- F) Retained Earnings ₹30,000

There Are No Long Term Loans And Fictitious Assets.

Find Out:

- 1) Current Assets
- 2) Current Liabilities
- 3) Fixed Assets
- 4) Quick Assets
- 5) Quick Liabilities
- 6) Stock
- 7) Equity

Solution

Current Assets

Current Assets 2.5

Current Liability 1.0

Working Capital 1.5

If Working Capital is 1.5, Current Asset will be 2.5.

If working capital is Rs.45,000, Current assets will be ₹75,000

$$\text{Current Assets} = ₹75,000$$

Current Liability

$$\begin{aligned}\text{Current Liability} &= \text{Current Assets} - \text{Working Capital} \\ &= ₹75,000 - ₹45,000 \\ &= ₹30,000\end{aligned}$$

Fixed Assets

Shareholders' Fund + Current Liabilities = Fixed Assets + Current Assets

Shareholders' Fund = Fixed Assets + Current Assets – Current Liabilities

$$= \text{Fixed Assets} + ₹75,000 - ₹30,000$$

$$= \text{Fixed Assets} + ₹45,000$$

Let the Shareholders' Fund Be X, Fixed Assets will be $\frac{3}{4} X$

X	=	₹ $\frac{3}{4} X + ₹45,000$
$\frac{1}{4} X$	=	₹45,000
X	=	₹1,80,000
$\frac{3}{4} X$	=	₹1,35,000
Fixed Assets	=	₹1,35,000
Shareholders Funds	=	₹1,35,000 + ₹45,000
	=	₹1,80,000

Stock

$$\text{Liquid Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

$$\text{Quick Assets} = \text{Current Assets} - \text{Stock}$$

$$\text{Quick Liabilities} = \text{Current Liabilities} - \text{Bank Overdraft}$$

Let The Value Of Stock Be X.

$$\frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{₹75,000 - X}{30,000 - 10,000}$$
$$= \frac{75,000 - X}{20,000} = 1.5$$

Cross Multiplying

$$75,000 - X = 20,000 \times 1.5$$

$$75,000 - X = 30,000$$

$$X = 45,000$$

Stock	=	₹45,000
Quick Assets	=	₹75,000 – ₹45,000
	=	₹30,000
Quick Liabilities	=	₹20,000

Equity

Shareholders' Fund	=	Equity + Retained Earnings
Shareholders' Fund	=	₹1,80,000 (As Calculated)
Retained Earnings	=	₹30,000 (As Given)
Equity	=	₹1,50,000

Illustration 7

From the following balance sheet of dinesh limited calculate (i) current ratio (ii) liquid ratio (iii) debt-equity ratio (iv) proprietary ratio, and (v) capital gearing ratio.

Balance sheet of dinesh limited as on 31-12-2005

Liabilities	₹	Assets	₹
Equity share capital	10,00,000	Good will	5,00,000
6% preference capita	5,00,000	Plant & Machinery	6,00,000
Reserves	1,00,000	Land & Buildings	7,00,000
Profit & loss a/c	4,00,000	Furniture	1,00,000
Tax provision	1,76,000	Stock	6,00,000
Bills payable	1,24,000	Bills receivables	30,000
Bank overdraft	20,000	Sundry debtors	1,50,000
Sundry creditors	80,000	Bank Account	2,00,000
12% debentures	5,00,000	Short term investment	20,000
	-----		-----
	29,00,000		29,00,000
	-----		-----

$$(I) \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$= \frac{\text{Stock} + \text{Bills Receivables} + \text{Debtors} + \text{Bank} + \text{S.T. Investments}}{\text{S.Creditors} + \text{Bills Payable} + \text{Bank O.D.} + \text{Tax Provision}}$$

$$= \frac{10,00,000}{4,00,000} = 2.5 : 1.$$

Interpretation

The current ratio in the said firm is 2.5:1 against a standard ratio of 2:1. It is a good sign of liquidity. However, the stock is found occupying 60 percent of current assets which may not be easily realisable.

$$\begin{aligned} \text{(II) Liquid Ratio} &= \frac{\text{Current Assets} - \text{Stocks}}{\text{Current Liabilities}} \\ &= \frac{\text{Liquid Assets}}{\text{Current Liabilities}} \\ &= \frac{4,00,000}{4,00,000} = 1:1 \end{aligned}$$

Interpretation

The standard for quick ratio is 1:1. The calculated ratio in case of dinesh limited is also 1:1. The above two ratios show the safety in respect of liquidity in the said firm.

$$\begin{aligned} \text{(III) Debt Equity Ratio} &= \frac{\text{Long Term Debt}}{\text{Equity Shareholders' Fund}} \\ &= \frac{\text{Debentures}}{\text{Equity Capital} + \text{Preference Capital} + \text{Reserves} + \text{Profit \& Loss A/C}} \\ &= \frac{5,00,000}{10,00,000 + 5,00,000 + 1,00,000 + 4,00,000} = 1:4. \end{aligned}$$

Interpretation

Debt-equity ratio indicates the firm's long term solvency. It can be observed that the firm's long term loans are constituting 25 percent to that of the owners' fund. Although such a low ratio indicates better long term solvency, the less use of debt in capital structure may not enable the firm to gain from the full stream of leverage effects.

$$(IV) \text{ Proprietary Ratio} = \frac{\text{Proprietors' Funds}}{\text{Total Assets}}$$

$$= \frac{20,00,000}{29,00,000} = 20:29$$

Interpretation

Out of total assets, seven-tenths are found financed by owners' funds. In other words a large majority of long term funds are well invested in various long term assets in the firm.

$$(V) \text{ Capital Gearing Ratio} = \frac{\text{Owners' Resources}}{\text{Fixed-Interest Bearing Resources}}$$

$$= \frac{\text{Equity Share Capital} + \text{Reserves} + \text{P\&L A/C}}{\text{Preference Capital} + \text{Debentures}}$$

$$= \frac{10,00,000 + 1,00,000 + 4,00,000}{5,00,000 + 5,00,000}$$

$$= \frac{15,00,000}{10,00,000} = 1.5:1.$$

Interpretation

Keeping ₹15 lakhs of equity funds as security, the firm is found to have mobilised ₹10 lakhs from fixed interest bearing sources. It indicates that the capital structure is low geared.

Illustration 8

The following are the balance sheet and profit and loss account of sundara products limited as on 31st december 2005.

Profit And Loss Account

	₹		₹
To Opening Stock	1,00,000	By Sales	8,50,000
Purchases	5,50,000	Closing Stock	1,50,000
Direct Expenses	15,000		
Gross Profit	3,35,000		
	-----		-----
	10,00,000		10,00,000
	-----		-----
To Admn. Expenses	50,000	By Gross Profit	3,35,000
Office Establishment	1,50,000	Non-operating Income	15,000
Financial Expenses	50,000		
Non-Operating	50,000		
Expenses/Losses	50,000		
Net Profit	-----		-----
	3,50,000		3,50,000
	-----		-----

Balance Sheet

Liabilities	₹	Assets	₹
Equity Share Capital (2000 @ 100)	2,00,000	Land & Buildings	1,50,000
Reserves	1,50,000	Plant & Machinery	1,00,000
Current Liabilities	1,50,000	Stock in Trade	1,50,000
P&L A/C Balance	50,000	Sundry Debtors	1,00,000
		Cash & Bank	50,000
	-----		-----
	5,50,000		5,50,000
	-----		-----

Calculate Turnover Ratios.

Solution

(i) Share Capital To Turnover Ratio

$$\begin{aligned}
 &= \frac{\text{Sales}}{\text{Total Capital Employed}} \\
 &= \frac{\text{Sales}}{\text{Equity + Reserve + P \& L A/C Balance}} \\
 &= \frac{8,50,000}{4,00,000} = 2.13\text{times.}
 \end{aligned}$$

Interpretation

This turnover ratio indicates that the firm has actually converted its share capital into sales for about 2.13 times. This ratio indicates the efficiency in use of capital resources and a high turnover ratio ensures good profitability on operations on an enterprise.

(ii) fixed asset's turnover ratio

$$\begin{aligned} &= \frac{\text{Sales}}{\text{Total fixed assets}} \\ &= \frac{\text{Sales}}{\text{Land + Plant \& Machinery}} \\ &= \frac{8,50,000}{2,50,000} = 3.4 \text{ times} \end{aligned}$$

Interpretation

Although fixed assets are not directly involved in the process of generating sales, these are said to back up the production process. A ratio of 3.4 times indicates the efficient utilisation of various fixed assets in this organisation.

(iii) Net working capital turnover

$$\begin{aligned} &= \frac{\text{Sales}}{\text{Net Working Capital}} \\ &= \frac{\text{Sales}}{\text{Current Assets – Current Liabilities}} \\ &= \frac{8,50,000}{3,00,000 - 1,50,000} = 5.67 \text{ times.} \end{aligned}$$

Interpretation

Net working capital indicates the excess of current assets financed by permanent sources of capital. An efficient utilisation of such funds is of prime importance to ensure sufficient profitability along with greater liquidity. A turnover ratio of 5.7 times is really appreciable.

(iv) Average Collection Period

$$\text{Debtor's Turnover} = \frac{\text{Credit Sales}}{\text{Average Debtors}}$$

Assuming that 80% of the sales of 8,50,000 as credit sales:

$$= \frac{6,80,000}{1,00,000} = 6.8 \text{ times.}$$

Average collection period

$$\begin{aligned} &= \frac{360 \text{ Days}}{\text{Debtors' Turnover}} \\ &= \frac{360}{6.8} = 53 \text{ Days.} \end{aligned}$$

Interpretation

Average collection period indicates the time taken by a firm in collecting its debts. The calculated ratio shows that the realisation of cash on credit sales is taking an average period of 53 days. A period of roughly two months indicate that the credit policy is liberal and needs a correction.

(v) Stock Turnover Ratio

$$\begin{aligned} &= \frac{\text{Cost Of Goods Sold}}{\text{Average Stock}} \\ &= \frac{\text{Sales} - \text{Gross Profit}}{(\text{Opening Stock} + \text{Closing Stock}) + 2} \\ &= \frac{5,15,000}{1,25,000} = 4.12 \text{ times.} \end{aligned}$$

Interpretation

Stock velocity indicates the firm's efficiency and profitability. The stock turnover ratio shows that on an average inventory balances are cleared once in 3 months. Since there is no standard for this ratio, the period of operating cycle of this firm is to be compared with the industry average for better interpretation.

Illustration 9

Comment on the performance of arasu limited from the ratios given below:

	Industry Average Ratios	Ratios of Arasu Ltd.
1. Current ratio	2:1	2.5:1
2. Debt-equity ratio	2:1	1:1
3. Stock turnover ratio	9.5	3.5
4. Net profit margin ratio	23.5%	15.1%

Solution

(i) Current Ratio

This ratio indicates the liquidity position of a firm. The ability of a firm in meeting its current liabilities could be understood by this ratio. The calculated results show that the liquidity in arasu limited is even greater than industry average, showing the safety. However, excess liquidity locks up the capital in unnecessary current assets.

(ii) Debt-Equity Ratio

It is an indicator of a firm's solvency in terms of its ability to repay long term loans in time. The calculated ratio shows better solvency of 1:1 indicating that for every one rupee of debt capital, to repay one rupee of equity base exists in arasu ltd. However, this ratio is not likely to ensure the leverage benefits that a firm gains by using higher dose of debt.

(iii) Stock Turnover Ratio

Stock velocity is an indicator of a firm's activeness. It directly influences the profitability of a firm. The calculated ratio for arasu ltd. Is very poor when compared to industry average. This poor ratio indicates the inefficient use of capacities, consequently, the likely low profitability.

(iv) Net Profit Margin Ratio

Although the firms in a particular industry could sell the product more or less at same price, the net profits differ among firms due to their cost of production, excessive administrative and establishment expenses etc. This picture is found true in case of arasu ltd. A poor profitability of 15.1% compared to an industry average of 23.5% may be due to low stock turnover, inefficiency in management, excess overhead cost and excessive interest burdens.

2.2.3.14 Summary

Financial statements by themselves do not give the required information both for internal management and for outsiders. They must be analysed and interpreted to get meaningful information about the various aspects of the concern. Analysing financial statements is a process of evaluating the relationship between the component parts of the financial statements to obtain a proper understanding of a firm's performance. Financial analysis may be external or internal analysis or horizontal or vertical analysis. Financial analysis can be carried out through a number of tools like ratio analysis, funds flow analysis, cash flow analysis etc. Among the various tools available for their analysis, ratio analysis is the most popularly used tool. The main purpose of ratio analysis is to measure past performance and project future trends. It is also used for inter-firm and intra-firm comparison as a measure of comparative productivity. The financial analyst x-rays the financial conditions of a concern by the use of various ratios and if the conditions are not found to be favourable, suitable steps can be taken to overcome the limitations.

2.2.3.15 Key Words

Analysis: analysis means methodical classification of the data given in the financial statements.

Interpretation: interpretation means explaining the meaning and significance of the data so classified.

Financial Statements: income statement and balance sheet.

Ratio: the relationship of one item to another expressed in simple mathematical form is known as a ratio.

Ratio Analysis: the process of computing, determining and presenting the relationship of items and groups of items in financial statements.

Financial Leverage: the ability of a firm to use fixed financial charges to magnify the effects of changes in ebit on the firm's earnings per share.

Net Worth: proprietors' funds – intangible assets – fictitious assets.

Debt: both long term and short term liabilities.

Operating Profit: gross profit – operating expenses.

Equity: proprietors' fund.

Capital Employed: net worth + long term liabilities.

2.2.3.16 Self Assessment Questions

1. Explain the meaning of the term 'financial statements'. State their nature and limitations.
2. Explain the different types of financial analysis.
3. Explain the various tools of financial analysis.
4. Justify the need for analysis and interpretation of financial statements.
5. Collect the annual reports of any public limited company for a period of 5 years Calculate the trend percentages and prepare a report.
6. What is meant by ratio analysis? Explain its significance in the analysis and interpretation of financial statements.
7. Explain the importance of ratio analysis in making comparisons between firms.

8. How are the ratios broadly classified? Explain how ratios are calculated under each classification.
9. What are the limitations of ratio analysis?
10. From the below given summary balance sheet, calculate current ratio and long term solvency ratio.

Balance Sheet As On 31st December 2005

Liabilities	₹	Assets	₹
Share Capital	4,00,000	Fixed Assets	4,00,000
Long Term Loans	2,00,000	Current Assets	4,00,000
Current Liabilities	2,00,000		
	-----		-----
	8,00,000		8,00,000
	-----		-----

11. From the following trading and profit and loss account and balance sheet calculate (i) stock turnover ratio (ii) debtors' velocity (iii) sales to working capital (iv) sales to total capital employed (v) return on investment (vi) current ratio (vii) net profit ratio and (viii) operating ratios.

Trading And Profit And Loss Account

	₹		₹
To Opening Stock	1,00,000	By Sales	10,00,000
To Purchase	5,50,000	By Closing Stock	1,50,000
To Gross Profit	5,00,000		
	-----		-----
	11,50,000		11,50,000
	-----		-----
Admn. Expenses	1,50,000	By Gross Profit	5,00,000
Interest	30,000		
Selling Expenses	1,20,000		
Net Profit	2,00,000		
	-----		-----
	5,00,000		5,00,000
	-----		-----

Balance Sheet

	₹		₹
Share capital	10,00,000	Land & Building	5,00,000,
Profit & loss a/c	2,00,000	Plant & Machinery	3,00,000
S.creditors	2,50,000	Stock	1,50,000
Bills payable	1,50,000	Debtors'	1,50,000
		Bills receivable	1,25,000
		Cash in hand	1,75,000
		Furniture	2,00,000
	-----		-----
	16,00,000		16,00,000
	-----		-----

12. Triveni engineering limited has the following capital structure:

9% preference shares of ₹100 each	10,00,000
Equity shares of ₹10 each	40,00,000

	50,00,000

The following information relates to the financial year just ended:

Profit after taxation	22,00,000
Equity dividend paid	20%
Market price of equity shares	₹20 each

You are required to find

- (A) Dividend Yield on Equity Shares
- (B) The Cover for Preference and Equity Dividend
- (C) Earnings Per Share
- (D) P/E Ratio

2.2.3.17 Key To Self Assessment Questions (For Problems Only)

- Q.no.10: current ratio: 2:1; debt equity ratio: 1:2 or 1:1.
- Q.no.11: (i) 4 times; (ii) 100 days; (iii) 5 times; (iv) 0.83 times;
(v) 19.17%; (vi) 1.5:1; (vii) 20%; (viii) 77%.
- Q.no.12: (a) 10%; (b) 24.4 times and 2.6 times (c) ₹5.275;
(d) 3.8 times.

2.2.3.18 Case Analysis

The following figures are extracted from the balance sheets of a Company:

	2002-03	2003-04	2004-05
Assets	₹	₹	₹
Buildings	12,000	10,000	20,000
Plant And Equipment	10,000	15,000	10,000
Stock	50,000	50,000	70,000
Debtors	30,000	50,000	60,000
	-----	-----	-----
	1,02,000	1,25,000	1,60,000
	-----	-----	-----
Liabilities			
Paid up capital	56,000	56,000	56,000
(₹10 shares –₹7-50 paid up)			
Profit & loss a/c	10,000	13,000	15,000
Trade creditors	11,000	26,000	39,000
Bank	25,000	30,000	50,000
	-----	-----	-----
	1,02,000	1,02,000	1,60,000
	-----	-----	-----
Sales	1,00,000	1,50,000	1,50,000
Gross profit	25,000	30,000	25,000
Net profit	5,000	7,000	5,000
Dividend paid	4,000	4,000	3,000

The opening stock at the beginning of the year 2002-03 was ₹4,000. As a financial analyst comment on the comparative short-term, activity, solvency, profitability and financial position of the company during the three year period.

Solution

To test the short-term solvency the following ratios are calculated for three years:

- I. Current ratio and
- II. Quick ratio

(i) Current Ratio

	2002-03	2003-04	2004-05
Current assets	80,000	1,00,000	1,30,000
-----	-----	-----	-----
Current liabilities	36,000	56,000	89,000
	2.22:1	1.80:1	1.46:1

(ii) Quick Ratio

	2002-03	2003-04	2004-05
Quick assets (debtors)	30,000	50,000	60,000
-----	-----	-----	-----
Quick liabilities (creditors)	11,000	26,000	39,000
	2.7:1	1.9:1	1.5:1

As the standard for current ratio is 2:1 the working capital position of the company has weakened in the 2nd year and 3rd year. However the quick ratio for all the three years is well above the standard of 1:1. Thus it can be said that the short term solvency position of the company shows a mixed trend.

Activity Ratios

To test the operational efficiency of the company the following ratios are calculated. Debtors turnover ratio and inventory turnover ratio.

Debtors Turnover Ratio

	2002-03	2003-04	2004-05
Sales	1,00,000	1,50,000	1,50,000
-----	-----	-----	-----
Average Debtors	30,000	40,000	55,000
	3.33 Times	3.75 Times	2.73 Times

The sales as a number of times of debtors has improved in the year 2003-04 but has deteriorated in the year 2004-05.

Inventory Turnover Ratio

	2002-03	2003-04	2004-05
Cost Of Goods Sold (Sales – G.P.)	75,000	1,20,000	1,25,000
-----	-----	-----	-----
O.S + C.S	27,000	50,000	60,000
Average Stock (-----)			
2	2.78 Times	2.40 Times	2.08 Times

Though there is no standard for inventory turnover ratio, higher the ratio, better is the activity level of the concern. From this angle the ratio has come down gradually during the three year period indicating slow moving of stock.

Profitability Ratios

To analyse the profitability position of the company, gross profit ratio and net profit ratio are calculated.

Gross Profit Ratio

	2002-03	2003-04	2004-05
Gross Profit	25,000	30,000	25,000
----- X 100	-----	-----	-----
Sales	1,00,000	1,50,000	1,50,000
	25%	20%	16.7%

Net Profit Ratio

	2002-03	2003-04	2004-05
Net Profit	5,000	7,000	5,000
----- X 100	-----	-----	-----
Sales	1,00,000	1,50,000	1,50,000
	5%	4.7%	3.3%

The profitability ratios show that there is steady decline in the profitability of the concern during the period. One reason for this declining profitability among others, is the low and decreasing inventory turnover ratio.

Financial Position: here the long term solvency position of the concern is analysed by calculating debt/equity ratio and debt/asset ratio.

Debt/Equity Ratio

	2002-03	2003-04	2004-05
Debt	36,000	56,000	89,000
-----	-----	-----	-----
Equity	66,000	69,000	71,000
	0.545:1	0.812:1	1.254:1

Debt/Asset Ratio

	2002-03	2003-04	2004-05
Debt	36,000	56,000	89,000
-----	-----	-----	-----
Assets	1,02,000	1,25,000	1,61,000
	0.35:1	0.448:1	0.556:1

Debt equity ratio expresses the existence of debt for every ₹1 of equity. From this standpoint the share of debt in comparison to equity is increasing year after year and in the last year the debt is even more than equity. Debt asset ratio gives how much of assets have been acquired using debt funds. The calculation of this ratio reveals that in the 1st year 35% of assets were purchased using debt funds which has increased to 44.8% in the 2nd year and 55.6% in the 3rd year. Thus both the ratios reveal that the debt component in the capital structure is increasing which has far reaching consequences.

2.2.3.19 Books For Further Reading

1. James Jiambalvo: *Managerial Accounting*, John Wiley & Sons.
2. Khan & Jain: *Management Accounting*, Tata Mcgraw Hill Publishing Co.
3. J.Made Gowda: *Management Accounting*, Himalaya Publishing House.
4. S.N.Maheswari: *Management Accounting*, Sultan Chand & Sons.
5. N.P.Srinivasan & M.Sakthivel Murugan: *Accounting For Management*,
6. S.Chand & Co. New Delhi.

DDE, Pondicherry University

Unit-III

Lesson 3.1: Funds Flow Analysis And Cash Flow Analysis

3.1.1 Introduction

At the end of each accounting period, preparation and presentation of financial statements are undertaken with an objective of providing as much information as possible for the public. The balance sheet presents a snapshot picture of the financial position at a given point of time and the income statement shows a summary of revenues and expenses during the accounting period. Though these are significant statements especially in terms of the principal goals of the enterprise, yet there is a need for one more statement which will indicate the changes and movement of funds between two balance sheet dates which are not clearly mirrored in the balance sheet and income statement. That statement is called as funds flow statement. The analysis which studies the flow and movement of funds is called as funds flow analysis. Similarly one more statement has to be prepared known as cash flow statement. This requires the doing of cash flow analysis. The focus of cash flow analysis is to study the movement and flow of cash during the accounting period. This lesson deals at length both the analyses.

3.1.2 Objectives

After reading this lesson, the reader should be able to

- Understand the concept of funds and flow.
- Evaluate the changes in working capital in an organization.
- Ascertain the sources and uses of funds from a given financial statement.
- Prepare fund flow statement.
- Understand the concepts of cash and cash flow.
- Understand the cash flow analysis.
- Prepare cash flow statement.

3.1.3 Contents

- 3.3.3.1 Concept of Funds
- 3.3.3.2 Flow of Funds
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3.1.3.1 Concept Of Funds

How are funds defined? Perhaps the most ambiguous aspect of funds flow statement is understanding what is meant by funds. Unfortunately there is no general agreement as to precisely how funds should be defined. To a lay man the concept of funds means 'cash'. According to a few, 'funds' means 'net current monetary assets' arrived at by considering current assets (cash + marketable securities + short term receivables) minus short term obligations. A third view, which is the most acceptable one, is that concept of funds means 'working capital' and in this lesson the term 'funds' is used in the sense of Working capital.

Working Capital Concept Of Funds

The excess of an enterprise's total current assets over its total current liabilities at some point of time may be termed as its net current assets or working capital. To illustrate this, let us assume that on the balance sheet date the total current assets of an enterprise are ₹3,00,000 and its

total current liabilities are ₹2,00,000. Its working capital on that date will be ₹3,00,000 – ₹2,00,000 = ₹1,00,000. It follows from the above, that any increase in total current assets or any decrease in total current liabilities will result in a change in working capital.

3.1.3.2 Flow Of Funds

The term 'flow' means change and therefore, the term 'flow of funds' means 'change in funds' or 'change in working capital'. According to manmohan and goyal, "the flow of funds" refers to movement of funds described in terms of the flow in and out of the working capital area. In short, any increase or decrease in working capital means 'flow of funds'. Many transactions which take place in a business enterprise may increase its working capital, may decrease it or may not effect any change in it. Let us consider the following examples.

(i) Purchased Machinery For ₹3,00,000

The effect of this transaction is that working capital decreases by 3,00,000 as cash balance is reduced. This change (decrease) in working capital is called as application of funds. Here the accounts involved are current assets (cash a/c) and fixed asset (machinery a/c).

(ii) Issue Of Share Capital Of ₹10,00,000

This transaction will increase the working capital as cash balance increases. This change (increase) in working capital is called as source of funds. Here the two accounts involved are current assets (cash a/c) and long-term liability (share capital a/c).

(iii) Sold Plant For ₹3,00,000

This transaction will have the effect of increasing the working capital by ₹3,00,000 as the cash balance increases by ₹3,00,000. It is a source of funds. Here the accounts involved are current assets (cash a/c) and fixed assets (plant a/c).

(iv) Redeemed Debentures Worth ₹1,00,000

This transaction has the effect of reducing the working capital, as the redemption of debentures results in reduction in cash balance. Hence this is an example of application of funds. The two accounts affected by this transaction are current assets (cash a/c) and long-term liability (debenture a/c).

(v) Purchased Inventory Worth ₹10,000

This transaction results in decrease in cash by ₹10,000 and increase in stock by ₹10,000 thereby keeping the total current assets at the same figure. Hence there will be no change in the working capital (there is no flow of funds in this transaction). Both the accounts affected are current assets.

(vi) Notes Payable Drawn By Creditors Accepted For ₹30,000

The effect of this transaction on working capital is nil as it results in increase in notes payable (a current liability) and decreases the creditors (another current liability). Since there is no change in total current liabilities there is no flow of funds.

(vii) Building Purchased For ₹30,00,000 And Payment Is Made By Shares

This transaction will not have any impact on working capital as it does not result in any change either in the current asset or in the current liability. Hence there is no flow of funds. The two accounts affected are fixed assets (building a/c) and long term liabilities (capital a/c).

From the above series of examples, we arrive at the following rules on flow of funds:

1. There will be flow of funds only when there is a cross-transaction i.e., Only when the transaction involves

- Current assets and fixed assets e.g., Purchase of machinery for cash (application of funds) or sale of plant for a cash (source of funds).

- Current assets and capital, e.g., Issue of shares (source of funds).
- Current assets and long term liabilities, e.g., Redemption of debentures in cash (application of funds).
- Current liabilities and long-term liabilities, e.g., Creditors paid off in debentures or shares (source of funds).
- Current liabilities and fixed assets, e.g., Building transferred to creditors in satisfaction of their claims (source of funds).

II. There will be no flow of funds when there is no cross transaction i.e., When the transaction involves:

- Current assets and current assets, e.g., Inventory purchased for cash.
- Current liabilities and current liabilities, e.g., Notes payable issued to creditors.
- Current assets and current liabilities, e.g., Payments made to creditors.
- Fixed assets and long term liabilities, e.g., Building purchased and payment made in shares or debentures.

(a) Sources And Application Of Funds: the following are the main sources of funds:

(i) Funds From Operations: the operations of the business generate revenue and entail expenses. Revenues augment working capital and expenses other than depreciation and other amortizations. The following adjustments will be required in the figures of net profit for finding out the real funds from operations:

Funds From Operations

Net profit for the year		x	x	x
Add*: depreciation of fixed assets	x	x	x	
Preliminary expenses, goodwill, etc.				
Written off		x	x	x
Loss on sale of fixed assets	x	x	x	
Transfers to reserve	x	x	x	
Less: profit on sale or revaluation		x	x	x
Dividends received, etc.		X	x	x
Funds from operations		x	x	x

These items are added as they do not result in outflow of funds. In case of 'net loss' for the year these items will be deducted.

(ii) Issue Of Share Capital: an issue of share capital results in an inflow of funds.

(iii) Long-Term Borrowings: when a long-term loan is taken, there is an increase in working capital because of cash inflow. A short term loan, however, does not increase the working capital because a short-term loan increases the current assets (cash) and the current liability (short term loan) by the same amount, leaving the size of working capital unchanged.

(iv) Sale Of Non-Current Assets: when a fixed asset or a long-term investment or any other non-current asset is sold, there will be inflow represented by cash or short-term receivables.

(b) Uses Of Funds: the following are the main uses of funds

(i) Payment Of Dividend: the transaction results in decrease in working capital owing to outflow of cash.

(ii) Repayment Of Long-Term Liability

The repayment of long-term loan involves cash outflow and hence it is used for working capital. The repayment of a current liability does not affect the amount of working capital because it entails an equal reduction in current liabilities and current assets.

(iii) Purchase Of Non-Current Assets

when a firm purchases fixed assets or other non-current assets, and if it pays cash or incurs a short-term debt, its working capital decreases. Hence it is a use of funds.

3.1.3.3 Importance And Utility Of Funds Flow Analysis

Funds flow analysis provides an insight into the movement of funds and helps in understanding the change in the structure of assets, liabilities and owners' equity. This analysis helps financial managers to find answers to questions like:

1. How far capital investment has been supported by long term financing?
2. How far short-term sources of financing have been used to support capital investment?

3. How much funds have been generated from the operations of a business?
4. To what extent the enterprise has relied on external sources of financing?
5. What major commitments of funds have been made during the year?
6. Where did profits go?
7. Why were dividends not larger?
8. How was it possible to distribute dividends in excess of current earnings or in the presence of a net loss during the current period?
9. Why are the current assets down although the income is up?
10. Has the liquidity position of the firm improved?
11. What accounted for an increase in net current assets despite a net loss for the period?
12. How was the increase in working capital financed?

3.1.3.4 Preparation Of Funds Flow Statement

Two statements are involved in funds flow analysis.

- (i) Statement or schedule of changes in working capital
- (ii) Statement of funds flow

(a) Statement Of Changes In Working Capital

This statement when prepared shows whether the working capital has increased or decreased during two balance sheet dates. But this does not give the reasons for increase or decrease in working capital. This statement is prepared by comparing the current assets and the current liabilities of two periods. It may be shown in the following form:

Schedule Of Changes In Working Capital (Proforma)

Items	As on	As on	Change	
			Increase	Decrease
Cash Balances				
Bank Balances				
Marketable Securities				
Stock In Trade				
Pre-Paid Expenses				
Current Liabilities				
Bank Overdraft				
Outstanding Expenses				
Accounts Payable				
Provision for Tax				
Dividend				
Increase / Decrease In Working Capital				

Any increase in current assets will result in increase in working capital and any decrease in current assets will result in decrease in working capital. Any increase in current liability will result in decrease in working capital and any decrease in current liability will result in increase in working capital.

(b) Funds Flow Statement

Funds flow statement is also called as statement of changes in financial position or statement of sources and applications of funds or where got, where gone statement. The purpose of the funds flow statement is to provide information about the enterprise's investing and financing activities. The activities that the funds flow statement describes can be classified into two categories:

- (I) Activities that generate funds, called sources, and
- (Ii) Activities that involve spending of funds, called uses.

When the funds generated are more than funds used, we get an increase in working capital and when funds generated are lesser than the funds used, we get decrease in working capital. The increase or decrease in working capital disclosed by the schedule of changes in working capital should tally with the increase or decrease disclosed by the funds flow statement.

The funds flow statement may be prepared either in the form of a statement or in 't' shape form. When prepared in the form of statement it would appear as follows:

Funds Flow Statement

Sources Of Funds

Issues of shares	X	X	X
Issue of debentures	X	X	X
Long term borrowings	X	X	X
Sale of fixed assets	X	X	X
*operating profit (funds from operations)	X	X	X
Total sources	X	X	X

Application Of Funds

Redemption of redeemable

Preference shares	X	X	X
Redemption of debentures	X	X	X
Payments for other long-term loans	X	X	X
Purchase of fixed assets	X	X	X
* operation loss (funds lost from Operations)	X	X	X
Total uses	X	X	X

Net increase / decrease in working capital

(total sources – total uses)

When prepared in 't' shape form, the funds flow statement would

Appear as follows:

Funds Flow Statement

Sources of Funds

* Funds From Operation	x x x
Issue of Shares	x x x
Issue of Debentures	x x x
Long-Term Borrowings	x x x
Sale of Fixed Assets	x x x
* Decrease in Working Capital	x x x

Application of Funds

*Funds Lost in Operations	xx x
Redemption of Preference Shares	x x x
Redemption of Debentures	x x x
Payment of other Long-Term Loans	x x x
Purchase of Fixed Assets	x x x
Payment of Dividend, Tax, etc.	x x x
Increase in Working Capital	x x x

*Only One Figure Will Be There.

It may be seen from the proforma that in the funds flow statement preparation, current assets and current liabilities are ignored. Attention is given only to change in fixed assets and fixed liabilities.

In this connection an important point about **provision for taxation and proposed dividend** is worth mentioning. These two may either be treated as current liability or long-term liability. When treated as current liabilities they will be taken to 'schedule of changes in working capital' and thereafter no adjustment is required anywhere. If they are treated as long-term liabilities there is no place for them in the schedule of changes in working capital. The amount of tax provided and dividend proposed during the current year will be added to net profits to find the funds from operations. The amount of actual tax and dividend paid will be shown as application of funds in the funds flow statement. In this lesson, we have taken them as **current liabilities**.

3.1.3.5 Illustrations

Illustration 1

The mechanism of preparation of funds flow statement is proposed to be explained with the help of annual reports for the years 2010-11 and 2011-12 pertaining to arasu limited.

Arasu limited
Balance sheet as at 31st march

₹`000

	2011-12	2010-11
Source of Funds		
1. Share capital	1,40,00	1,40,00
2. Reserves and surplus		
	2,77,84	2,30,62
	-----	-----
	4,17,84	3,70,62
II. Application of Funds	-----	-----
1. Fixed assets	4,83,15	4,61,23
Less: Dep. Provision		
2. Investments	2,57,85	2,25,30
	2,27,36	2,33,87
	-----	-----
	20,25	20,30
	-----	-----
III. Current Assets, Loans & Advances		
1. Inventories	1,52,83	1,92,54
2. Debtors	51,41	64,29
3. Cash and Bank	1,40,80	18,46
Loans and Advances	17,82	14,73
	-----	-----
	3,62,86	2,90,02
	-----	-----
Less: Current Liabilities & Provisions		
1. Liabilities	89,81	76,70
2. Provisions	100,76	96,87
	-----	-----
	1,90,57	1,73,57
	-----	-----
Net Current Assets (working capital)	1,72,29	1,16,45
	-----	-----
	4,17,84	3,70,62
	-----	-----

Profit And Loss Account
For The Year Ended 31st March

₹'000

	2011-12	2010-11
Income	₹	₹
Sales	4,94,19	5,36,63
Other Income	2,35,73	2,35,73
	-----	-----
	7,29,92	7,94,27
	-----	-----
Expenditure		
Opening Stock	20,45	25,59
Raw Materials Consumed	87,35	95,67
Packing Materials Consumed	2,87,78	3,29,04
Excise Duty	23,90	27,26
Expenses	1,65,38	1,29,94
Directors' Fees	11	10
Interest	94	5,69
Depreciation	30,49	39,98
	-----	-----
Less: Closing Stock	6,16,40	6,53,27
	19,06	20,45
Profit Before Taxation	-----	-----
Provision For Income-Tax	5,97,34	6,32,82
	-----	-----
Profit Brought Forward From	1,32,58	1,61,45
Previous year	(64,36)	(82,40)
Balance	-----	-----
Provision for taxation	68,22	79,05
Relating to earlier year	12	1
Miscellaneous expenditure	-----	-----
Written off	68,34	79,06
	183	
	-----	-----
	(46,27)	(15,67)
	-----	-----
Balance available for Appropriation	68,34	17,12
	-----	-----
Appropriations		
General reserve	47,25	3,00
Proposed reserve for appropriation	21,00	14,00
	-----	-----
	68,25	17,00
	-----	-----
Balance carried over to next year	9	12

For the above financial statements, funds flow statement is prepared as follows with necessary workings:

I. Calculation Of Funds From Operations For The Year 2011-12

(₹`000)

Balance of profit carried over to next year	9
Add: provision for depreciation	30,49
Transfer to general reserves	47,25

	77,71

Less: Balance of profit brought forward from previous year	77,83
	12

Funds from operations	77.71

Note: provision for income-tax and proposed dividend are taken as current liabilities. Hence they are not added here. They will be taken to schedule of Changes in working capital.

II. Fixed Assets

From a perusal of schedule relating to 'fixed assets' in the annual report, it is ascertained that there was a sale of fixed assets amounting to ₹16,62,000 and purchase of fixed assets to the tune of ₹38,54,000. These will be shown as source and application of funds respectively. (in examination problems information about, sale and purchase of assets can be ascertained by preparing respective asset accounts).

III. Investments

A similar perusal of schedule relating to 'investments' gives information that there was a redemption of investment amounting to ₹5,000 which is a source of fund.

Now the schedule of changes in working capital and funds flow Statement are prepared.

Arasu Limited
Schedule Of Changes In Working Capital 2011-12

(₹'000)

	2010-11	2011-12	Increase	Decrease
Current Assets	₹	₹	₹	₹
Inventories	1,92,54	1,52,83	---	39,71
Debtors	64,29	51,41	---	12,88
Cash and Bank	18,46	1,40,80	1,22,34	---
Loans and Advances	14,73	17,82	3,09	---
	-----	-----		
(A) Total of Current Assets	2,90,02	3,62,86		
	-----	-----		
Current Liabilities				
Creditors Unpaid	75,43	88,81	---	13,38
Dividend	1,27	1,00	27	---
Provision for Tax Proposed	82,87	79,76	3,11	---
Dividend	14,00	21,00	---	7,00
	-----	-----		
(B) Total Of Current	1,73,57	1,90,57		
	-----	-----		
Liabilities				
Working Capital(a)-(b)	1,16,45	1,72,29	---	---
Increase in Working Capital	55,84	---	---	55,84
	1,72,29	1,72,29	1,28,81	1,28,81

Arasu Limited
Funds Flow Statement 2011-12

Sources	₹	Applications	₹
Funds From Operations	77,71	Purchase of Fixed Assets	38,54
Sale of Fixed Assets	16,62	Increase in Working Capital	55,84
Redemption of Investment	5		
	-----		-----
	94,38		94,38
	-----		-----

It may be seen from the above statement that sources amount to ₹ 94,38,000 and applications amount to ₹38,54,000, thereby resulting in an increase in working capital amounting to ₹55,84,000. This figure tallies with the increase in working capital as shown by the schedule of changes in working capital.

Illustration 2

The balance sheet of mathi limited for two years was as follows:

Liabilities

Assets

	2010	2011		2010	2011
	₹	₹		₹	₹
Share Capital	40,000	60,000	Land & Buildings	27,700	56,600
Share Premium	40,000	6,000	Plant & Machinery	17,800	25,650
General Reserve	3,000	4,500	Furniture	1,200	750
Profit & Loss A/C	9,750	10,400	Stock	11,050	13,000
5% Debentures	---	13,000	Debtors	18,250	19,550
Creditors	16,750	18,250	Bank	2,400	2,000
Provision For Taxation	4,900	5,450			
	-----	-----		-----	-----
	78,400	1,17,550		78,400	1,17,550
	-----	-----		-----	-----

Additional Information

Depreciation written off during the year was:

Plant and Machinery	₹6,400
Furniture	₹ 200

Prepare: a schedule of changes in working capital and a statement of sources and application of funds.

Schedule Of Changes In Working Capital

	2010	2011	Working Capital	
			Increase ₹	Decrease ₹
Current Assets	₹	₹		
Stock	11,050	13,000	1,950	
Debtors	18,250	19,550	1,300	
Bank	2,400	2,000		400
	-----	-----		
(A)	31,700	34,550		
	-----	-----		
Current Liabilities				

Creditors	16,050	18,200		1,450
Provision for Taxation	4,900	5,450		550
	-----	-----		
(b)	21,650	23,650		
	-----	-----		
Working capital (a) – (b)	10,050	10,900		
Increase in working Capital	850			850
	-----	-----	-----	-----
	10,900	10,900	3,250	3,250
	-----	-----	-----	-----

Calculation Of Funds From Operations

	Date	₹
Profit and Loss a/c as on	31-12-2011	10,400
Add: Transfer to Reserve		1,500
Depreciation		
Plant & Machinery		6,400
Furniture		200

Less: P&L a/c as on	1-1-2011	18,500
		9,750

Funds from Operations		8,750

Land & Building A/C

	₹		₹
To Balance b/d	27,700	By Balance c/d	56,600
To Bank Purchase	28,900		-----
(Balancing Figure)	-----		56,600
	56,600		-----

Plant & Machinery A/C

	₹		₹
To Balance b/d	17,800	By Depreciation	6,400
To Bank Purchase	14,250	By Balance c/d	25,650
(Balancing figure)	-----		-----
	32,050		32,050
	-----		-----

Furniture A/C

	₹		₹
To Balance b/d	1,200	By Depreciation	200
	1,200	By Bank-Sale	250
		(Balancing figure)	
		By Balance c/d	750
	-----		-----
	1,200		1,200
	-----		-----

Statement of Sources And Application of Funds

Sources	₹	Applications	₹
Funds From Operations	8,750	Purchase of Land &	28,900
Share Capital	20,000	Buildings	
Share Premium	2,000	Purchase of Plant &	14,250
Debentures	13,000	Increase in Working Capital	850
Sale of Furniture	250		
	-----		-----
	44,000		44,000
	-----		-----

3.1.3.6 Meaning of Concepts of Cash, Cash Flow And Cash Flow Analysis

While explaining the concept of 'fund' it was mentioned that in a narrower sense the term 'fund' is also used to denote cash. The term 'cash' in the context of cash flow analysis stands for cash and bank balances. Cash flow refers to the actual movement of cash in and out of an organisation. When cash flows into the organisation it is called cash inflow or positive cash flow. In the same way when cash flows out of the organisation, it is called cash outflow or negative cash flows. Cash flow analysis is an analysis based on the movement of cash and bank balances. Under cash flow analysis, all movements of cash would be considered.

3.1.3.7 Cash Flow Statement

A cash flow statement is a statement depicting changes in cash position from one period to another i.e. The result of cash flow analysis is given in the cash flow statement. For example if the cash balance of a concern as per its balance sheet as on 31st march 2004 is ₹90,000 and the cash balance as per its balance sheet as on 31st march 2005 is ₹1,20,000, there has been an inflow of cash of ₹30,000 in the year 2004-05 as compared

to the year 2003-04. The cash flow statement explains the reasons for such inflows or outflows of cash as the case may be.

Normally the following are principal sources of inflows of cash:

- Issue of Shares and Debentures for Cash
- Sale of Fixed Assets and Investments for Cash
- Borrowings from Banks and Other Financial Institution
- Cash from Operations

Outflows of cash generally include:

- Redemption of Shares and Debentures by Cash
- Purchase of Fixed Assets and Investments by Cash
- Repayment of Loans
- Cash Lost in Operations

The following is the format of a cash flow statement:

Cash Flow Statement For The Year Ending Say 31st March 2012

Balance as on 1-4-2011		Balance as on 1-4-2011	
Cash in hand	x x x	bank overdraft (if any)	x x x
Cash at bank	x x x		
Add: cash inflows:		cash outflows:	
Here the items mentioned		here the items mentioned	
As sources of cash inflows		as outflows of cash above	
Above will be recorded		will be recorded	
Balance as on 31-3-2012		balance as on 31-3-2012	
Bank overdraft (if any)	x x x	cash in hand	x x x
Cash at bank	x x x	Cash at Bank	x x x
	-----		-----
	x x x		x x x
	-----		-----

The accounting standard 3 issued by the institute of chartered accountants of india requires the companies to prepare cash flow statement and present them as part of their annual reports.

3.1.3.8 Calculation of Cash From Operations

The important step in the preparation of cash flow statement is the calculation of cash from operations. It is calculated as follows:

The first step in the calculation of cash from operations is the calculation of funds from operations (which is already explained in the lesson on funds flow analysis). To the funds from operations the decrease in current assets and increase in current liabilities will be added (except cash, bank and bank o.d.). From the added total, increase in current assets and decrease in current liabilities will be deducted (except cash, bank and bank o.d.). The resultant figure is cash from operations (refer illustration 3).

Proforma Of Cash From Operations Statement

Funds from operations or funds lost from operations	X X X X
<i>Add:</i> Decrease in current assets	X X X X
Increase in current liabilities	X X X X

	X X X X

<i>Less:</i> Increase in current assets	X X X
Decrease in current liabilities	X X X

	X X X X
Cash from operations or cash lost from operations	-----

As in the case of fund flow analysis here also we assume **provision for taxation** and proposed dividend as current liabilities.

3.1.3.9 Utility of Cash Flow Analysis

Cash flow analysis yields the following advantages:

- It is very helpful in understanding the cash position of the firm. This would enable the management to plan and coordinate the financial operations properly.
- Since it provides information about cash which would be available from operations the management would be in a position to plan repayment of loans, replacement of assets, etc.

- It throws light on the factors contributing to the reduction of cash balance inspite of increase in income and vice versa.
- A comparison of the cash flow statement with the cash budget for the same period helps in comparing and controlling cash inflows and cash outflows.

However cash flow analysis is not without limitations. The cash balance as disclosed by the cash flow statement may not represent the real liquid position of the business since it can be easily influenced by postponing purchases and other payments. Further cash flow statement cannot replace the income statement or funds flow statement. Each of them has a separate function to perform.

3.1.3.10 Cash Flow Analysis Vs. Funds Flow Analysis

- A cash flow statement is concerned only with the changes in cash position while funds flow analysis is concerned with changes in working capital position between two balance sheet dates.
- Cash flow analysis is a tool of short-term financial analysis while the funds flow analysis is comparatively a long-term one.
- Cash is part of working capital and therefore an improvement in cash position results in improvement in the funds position but not vice versa. In other words “inflow of cash” results in “inflow of funds” but inflow of funds may not necessarily result in “inflow of cash”.
- In funds flow analysis, the changes in various current assets and current liabilities are shown in a separate statement called schedule of changes in working capital in order to ascertain the net increase or decrease in working capital. But in cash flow analysis, such changes are adjusted to funds from operations in order to ascertain cash from operations.

3.1.3.11 illustrations

Illustration 3

From the following balances calculate cash from operations:

	December 31	
	2010	2011
Profit and loss a/c balance	75,000	1,55,000
Debtors	45,000	42,000
Creditors	20,000	26,000
Bills receivable	12,000	15,000
Cash in hand	2,500	3,000
Prepaid expenses	1,600	1,400
Bills payable	18,000	16,000
Cash at bank	8,000	10,000
Outstanding expenses	1,200	1,600
Income received in advance	250	300
Outstanding income	800	900

Additional Information

- (i) Depreciation written off during the year ₹10,000
- (ii) Transfer to general reserve ₹10,000

Calculation Of Funds From Operations

	₹
Profit & Loss a/c as on 31st December 2011	1,55,000
Add: Depreciation	10,000
Transfer to General Reserve	10,000

	1,75,000
Less: P & L a/c as on 1st January 2011	75,000

Funds from Operations	1,00,000

Calculation of Cash from Operations	
Funds from operations	1,00,000
Add: Decrease In Current Assets	
Decrease in debtors	3,000
Decrease in prepaid expenses	200
Increase In Current Liabilities	
Increase in creditors	6,000
Increase in outstanding expenses	400
Increase in income received in advance	50

Less: Increase In Current Assets	1,09,650
Increase in bills receivables	3,000
Increase in outstanding income	100
Decrease In Current Liabilities	
Decrease in bills payable	2,000

	5,100

Cash from operations	1,04,550

Note: Decrease in current assets means current assets are converted into cash and increase in current liabilities results in further generation of cash. Hence they are added. Increase in current assets and decrease in current liabilities result in outflow of cash. Hence they are deducted.

Illustration 4

Balance sheets of some companies as on 1-1-2011 and 31-12-2011 were as follows:

Liabilities	2010	2011	Assets	2010	2011
	₹	₹		₹	₹
Credits	40,000	44,000	Cash	10,000	7,000
Bills Payable	25,000	---	Debtors	30,000	50,000
Loans From Bank	40,000	50,000	Stock	35,000	25,000
Capital	1,25,000	1,53,000	Machinery	80,000	55,000
			Land	40,000	50,000
			Building	35,000	60,000
	-----	-----		-----	-----
	2,30,000	2,47,000		2,30,000	2,47,000
	-----	-----		-----	-----

During the year, a machine costing ₹10,000 (accumulated depreciation ₹3,000) was sold for ₹5,000. The provision for depreciation against machinery as on 1-1-2011 was ₹25,000 and on 31-12-2011 it was ₹40,000. Net profit for the year 2011 amounted to ₹45,000. Prepare cash flow statement.

Calculation of Cash from Operations

	₹
Net Profit for the Year 2011	45,000
Add: Addition to Provision for Depreciation	18,000
Loss of Sale of Machinery	2,000

Funds from Operations	65,000
Add: Decrease in Stock	10,000
Increase in Creditors	-----
	4,000

	79,000
Less: Increase in Debtors	20,000
Decrease in Bills Payable	25,000

	45,000

Cash from Operations	34,000

Capital A/C

	₹		₹
To Drawings	17,000	By Balance b/d	1,25,000
(Balancing Figure)	1,53,000	By Net Profit for the year	45,000
To Balance c/d	-----		-----
	1,70,000		1,70,000
	-----		-----

Machinery A/C

	₹		₹
To Balance b/d (80000 + 25000)	1,05,000	By Bank Sale	5,000
		By Provision for Dep.	3,000
		By P&L a/c – Loss	2,000
		By Balance c/d	95,000
	-----	(55000 + 40000)	-----
	1,05,000		1,05,000
	-----		-----

Provision For Depreciation A/C

	₹		₹
To Machinery a/c (Dep. on Machinery Sold)	3,000	By Balance b/d	25,000
To Balance c/d	40,000	By P&L a/c	
	-----	Dep. for the Current Year	18,000
	43,000		-----
	-----		43,000

Cash Flow Statement

	₹		₹
Cash as on 1-1-2011	10,000	Cash Outflows:	
Add: Inflows		Drawings	17,000
Cash From		Purchase Of Land	10,000
Operations	34,000	Purchase Of Building	25,000
Loan From Bank	10,000	Cash As On 31-12-2011	7,000
Sale of Machinery	5,000		-----
	-----		59,000
	59,000		-----
	-----		-----

3.1.3.12 Summary

A funds flow statement officially called as statement of changes in financial position, provides information about an enterprise's investing and financing activities during the accounting period. Though there are many concepts of funds, the working capital concept of funds has been used in this lesson. Flow of funds results only when there is a cross transaction i.e. Only when a transaction involves a fixed asset or liability and a current asset or liability. The main sources of funds are: funds from operations, issue of shares and debentures and sale of non-current assets. The main uses of funds are repayment of long-term liabilities including redemption of preference shares and debentures, purchase of non-current assets and payment of dividends. Funds flow statement helps the financial analyst in having a more detailed analysis and understanding of changes in the distribution of sources between two balance sheet dates. In addition to funds flow statement concerns are also preparing cash flow statement which is the outcome of cash flow analysis. Cash flow analysis is based on the movement of cash and bank balances and the cash flow statement is a statement depicting changes in cash position from one period to another period.

3.1.3.13 Key Words

Working Capital

Working capital is that part of capital used for the purposes of day-to-day operations of a business.

Fund

Fund refers to the long term capital used for financing current assets. It can be ascertained by finding the difference between current assets and current liabilities.

Flow of funds

Flow refers to transactions which change the size of fund in an organisation. The flow transactions are divided into uses and sources. While the former refers to those transactions which reduce the funds, the latter increases the size of fund.

Cash

Cash refers to cash and bank balances.

Cash Flow

Cash flow refers to the actual movement of cash in and out of an organisation.

3.1.3.14 Self Assessment Questions

1. What do you mean by working capital concept of funds?
2. Explain the significance of funds flow analysis and cash flow analysis.
3. Distinguish between schedule of changes in working capital and funds flow statement.
4. Distinguish between cash flow analysis and funds flow analysis.
5. Shyam and company has the following information for the year ending 31st march 2012:sales ₹5,000, depreciation ₹ 450, other operating expenses ₹4,100

You are required to

- i. Estimate the amount of funds generated during the year.
 - ii. If the amount of depreciation increases to ₹9,000 What would be its effect on funds generated during the year.
 - iii. Under what circumstances can the funds from operation be zero?
6. From the following balance sheets of damodar ltd. As on 31st december 2010 and 2011 you are required to prepare:
- i. A schedule of changes in working capital
 - ii. A funds flow statement

Assets	2010	2011
	₹	₹
Goodwill	12,000	12,000
Building	40,000	36,000
Plant	37,000	36,000
Investments	10,000	11,000
Stock	30,000	23,400
Bills Receivable	2,000	3,200
Debtors	18,000	19,000
Cash at Bank	6,600	15,200
	-----	-----
	1,55,600	1,55,800
	-----	-----

Liabilities	2010	2011
	₹	₹
Share Capital	1,00,000	1,00,000
General Reserve	14,000	18,000
Creditors	8,000	5,400
Bills Payable	1,200	800
Provision for Taxation	16,000	18,000
Provision for Doubtful debts	400	600
Profit & loss a/c	16,000	13,000
	-----	-----
	1,55,600	1,55,800
	-----	-----

Additional information

- Depreciation charged on plant was ₹4,000 And on building ₹4,000.
- Provision for taxation ₹19,000.
- Interim dividend of ₹8,000 Was paid during the year 2011.

7. The financial position of subhulakshmi ltd. On 1-1-2011 and 31-12-2011 Was as follows:

Liabilities	2010	2010	Assets	2010	2011
	₹	₹		₹	₹
Current Liabilities	72,000	82,000	Cash	8,000	7,200
Loan From Rosary Ltd.		40,000	Debtors	70,000	76,800
Loan From Gayatri Ltd.	60,000	50,000	Stock	50,000	44,000
Capital & Reserves	2,96,000	2,98,000	Land	40,000	60,000
			Buildings	1,00,000	1,10,000
			Machinery	1,60,000	1,72,000
	-----	-----		-----	-----
	4,28,000	4,70,000		4,28,000	4,70,000
	-----	-----		-----	-----

During the year ₹52,000 were paid as dividends. The provision for Depreciation against machinery as on 1-1-2011 was ₹54,000 and on 31-12-2011 was ₹72,000. Prepare a cash flow statement.

3.1.3.15 Key To Self Assessment Questions (For Problems Only)

Q.No.5: (I) ₹900; (II) ₹900; (III) When Other Operating Expenses Are Increased To ₹5,000 Or Sales Decreased To ₹4,100 Without Any Decrease In Other Operating Expenses.

Q.No.6: Increase In Working Capital ₹5,000; Funds From Operations ₹17,000.

Q.No.7: Funds From Operations ₹72,000; Cash From Operations ₹81,200.

3.1.3.16 Case Analysis

Given below are the balance sheets of Bharathy Ltd. For a period of three years as at 31st March each.

₹ In lakhs			
Liabilities	2010	2011	2012
	₹	₹	₹
Share capital in equity shares of ₹10 each	30	35	35
General Reserve	10	15	18
Surplus	5	8	9
13% Debentures	10	5	10
Bank Credit	5	10	15
Trade Creditors	10	12	15
Income Tax Provision	8	11	14
Proposed Dividend	6	10.5	14
	----	-----	----
	84	106.5	130
	----	-----	----

Assets	2010	2011	2012
Plant and machinery	45	55	70
Investments	10	15	20
Stock	12	15	15
Debtors	14	15	12
Cash and Bank	3	6.5	13
	---	-----	----
	84	106.5	130
	---	-----	----

Other Details

1. Depreciation provided in the books:
2. 2009-10: ₹6 Lakhs; 2010-11: Rs.8 Lakhs; 2011-12: ₹10 Lakhs
3. A part of the debentures was converted into equity at par in September 2010.
4. There was no sale of fixed assets during the period.

As you are the management accountant of the concern, the management seeks your advice on the liquidity position of the company. Analyse the case and advice the management using funds flow analysis.

Hint:

1. Calculate funds from operations.
2. Prepare schedule of changes in working capital.
3. Prepare funds flow statement.
4. Calculate current ratio and liquidity ratio.

Based on the above workings suitable advice may be given to the management.

3.1.3.17 Books For Further Reading

1. James Jimbalvo: *Management Accounting*, John Wiley & Sons.
2. Khan & Jain: *Management Accounting*, Tata McGraw Hill Publishing Co., New Delhi.
3. J.Made Gowda: *Management Accounting*, Himalaya Publishing House, Delhi.
4. S.N.Maheswari: *Management Accounting*, Sultan Chand & Sons, New Delhi.
5. N.P.Srinivasan & M.Sakthivel Murugan: *Accounting For Management*, S.Chand & Co., New Delhi.

Unit – IV: Management Accounting

Lesson 4.1: Marginal Costing

4.1.1 Introduction

Marginal costing is a technique of costing. This technique of costing uses the concept 'marginal cost'. Marginal cost is the change in the total cost of production as a result of change in the production by one unit. Thus marginal cost is nothing but variable cost. In marginal costing technique only variable costs are considered while calculating the cost of the product, while fixed costs are charged against the revenue of the period. The revenue arising from the excess of sales over variable costs is known as 'contribution'. Using contribution as a vital tool, marginal costing helps to a great extent in the managerial decision making process. This unit deals with the various aspects of marginal costing.

4.1.2 Learning Objectives

- After Reading This Lesson, The Reader Should Be Able To:
- Know The Meaning Of Marginal Cost.
- Understand The Various Elements Of Marginal Costing Technique.
- Appreciate The Importance Of Marginal Costing As A Decision Making Tool.
- Realise The Advantages And Disadvantages Of Marginal Costing.
- Apply Marginal Costing Technique Under Appropriate Situations.

4.1.3 Contents

- 4.1.3.1 Various Elements of Marginal Costing
- 4.1.3.2 Benefits of Marginal Costing
- 4.1.3.3 Application of Marginal Costing
- 4.1.3.4 Limitations of Marginal Costing
- 4.1.3.5 Additional Illustrations
- 4.1.3.6 Summary
- 4.1.3.7 Key Words
- 4.1.3.8 Self Assessment Questions

- 4.1.3.9 Key to Self Assessment Questions
- 4.1.3.10 Case Analysis
- 4.1.3.11 Books for Further Reading

4.1.3.1 Various Elements of Marginal Costing

According to the institute of cost and management accountants (icma), london, 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'. Thus marginal cost is the added cost of an extra unit of output.

$$\begin{aligned} \text{Mc} &= \text{Direct Material} + \text{Direct Labour} + \text{Other Variable Costs} \\ &= \text{Total Cost} - \text{Fixed Cost.} \end{aligned}$$

Contribution

The difference between selling price and variable cost (or marginal cost) is known as 'contribution' or 'gross margin'. It may be considered as some sort of fund from out of which all fixed costs are met. The difference between contribution and fixed cost represents either profit or loss, as the case may be. Contribution is calculated thus:

$$\begin{aligned} \text{Contribution} &= \text{Selling Price} - \text{Variable Cost} \\ &= \text{Fixed Cost} + \text{Profit Or} - \text{Loss} \end{aligned}$$

It is clear from the above equation that profit arises only when contribution exceeds fixed costs. In other terms, the point of 'no profit no loss' will be at a level where contribution is equal to fixed costs.

Marginal cost equation

The algebraic expression of contribution is known as marginal cost equation. It can be expressed thus:

$$\begin{aligned} S - V &= F + P \\ S - V &= C \\ C &= F + P \text{ And In Case Of Loss} \\ C &= F - L \end{aligned}$$

Where:

S	=	Sales
V	=	Variable Cost
C	=	Contribution
F	=	Fixed Cost
P	=	Profit
L	=	Loss

Profit Volume Ratio (P/V Ratio)

The profitability of business operations can be found out by calculating the p/v ratio. It shows the relationship between contribution and sales and is usually expressed in percentage. It is also known as 'marginal-income ratio', 'contribution-sales ratio' or 'variable-profit ratio'. P/v ratio thus is the ratio of contribution to sales, and is calculated thus:

$$\begin{aligned} \text{P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{C}{S} \quad \text{or} \quad \frac{S - V}{S} \quad \text{or} \quad \frac{F + P}{S} \\ &= 1 - \frac{\text{Variable Costs}}{\text{Sales}} \end{aligned}$$

The ratio can also be shown by comparing the change in contribution to change in sales, or change in profit to change in sales. Any increase in contribution, obviously, would mean increase in profit, as fixed expenses are assumed to be constant at all levels of production.

$$\begin{aligned} \text{P/V Ratio} &= \frac{\text{Change in Contribution}}{\text{Change in Sales}} \\ &= \frac{\text{Change in Profit}}{\text{Change in Sales}} \end{aligned}$$

The importance of p/v ratio lies in its use for evaluating the profitability of alternative products, proposals or schemes. A higher ratio shows greater profitability. Management should, therefore, try to increase p/v ratio by widening the gap between the selling price and the variable costs. This can be achieved by increasing sale price, reducing variable costs or switching over to more profitable products.

Break-Even or Cost-Volume-Profit Analysis

Break-even analysis is a specific method of presenting and studying the inner relationship between costs, volume and profits. (hence, the name c-v-p analysis). It is an important tool of financial analysis whereby the impact on profit of the changes in volume, price, costs and mix can be found out with a certain amount of accuracy. A business is said to break even when its total sales are equal to its total costs. It is a point of no profit or no loss. At this point contribution is equal to fixed costs. Break-even point, can be calculated thus:

$$\begin{aligned}
 \text{B.E.P. (In Units)} &= \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}} \\
 &= \frac{\text{Fixed Cost}}{\text{Selling Price/Unit} - \text{Marginal Cost/Unit}} \\
 \text{B.E.P. (Sales)} &= \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}} \times \text{Selling Price/Unit} \\
 &= \frac{\text{Fixed Cost}}{\text{Total Contribution}} \times \text{Total Sales} \\
 \text{or} &= \frac{F \times S}{S - V}
 \end{aligned}$$

$$\text{or} = \frac{\text{Fixed Cost}}{1 - \frac{\text{Variable Cost Per Unit}}{\text{Selling Price Per Unit}}}$$

$$\text{or} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

At break-even point the desired profit is zero. Where the volume of output or sales is to be calculated so as to earn a desired amount of profit, the amount of desired profits has to be added to the fixed cost given in the above formula.

$$\text{Units To Earn A Desired Profit} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution Per Unit}}$$

$$\text{Sales To Earn A Desired Profit} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{P/V Ratio}}$$

Cash Break-Even Point

It is the level of output or sales where the cash inflow will be equivalent to cash needed to meet immediate cash liabilities. To this end, fixed costs have to be divided into two parts (i) fixed cost which do not need immediate cash outlay (depreciation etc.) And (ii) fixed cost which need immediate cash outlay (rent etc.). Cash break-even point can be calculated thus:

$$\text{Cash Break-Even Point (of Output)} = \frac{\text{Cash Fixed Costs}}{\text{Cash Contribution Per Unit}}$$

Composite Break-Even Point

Where a firm is dealing with several products, a composite breakeven point can be calculated using the following formula:

$$\text{Composite Break-Even Point (Sales)} = \frac{\text{Cash Fixed Costs}}{\text{Composite P/V Ratio}}$$

$$\text{or} = \frac{\text{Total Fixed Costs} \times \text{Total Sales}}{\text{Total Contribution}}$$

$$\text{or} = \frac{\text{Total Contribution}}{\text{Total Sales}} \times 100$$

Margin of Safety

Total sales minus the sales at break-even point is known as the margin of safety. Lower break-even point means a higher margin of safety. Margin of safety can also be expressed as a percentage of total sales. The formula is:

$$\text{Margin of Safety} = \text{Total Sales} - \text{Sales At B.E.P.}$$

$$\text{or} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

$$\begin{aligned} \text{Margin of Safety} &= \frac{\text{Margin of Safety}}{\text{Total Sales}} \times 100 \\ \text{(As A Percentage)} \end{aligned}$$

Higher margin of safety shows that the business is sound and when sales substantially come down, (but not below break even sales) profit might be earned by the business. Lower margin of safety, as pointed out earlier, means that when sales come down slightly profit position might be affected adversely. Thus, margin of safety can be used to test the soundness of a business. In order to improve the margin of safety a business can increase selling prices (without affecting demand, of course) reducing fixed or variable costs and replacing unprofitable products with profitable one.

Illustration 1

Beta manufacturers ltd. Has supplied you the following information in respect of one of its products:

	₹
Total Fixed Costs	18,000
Total Variable Costs	30,000
Total Sales	60,000
Units Sold	20,000

Find out (a) contribution per unit, (b) break-even point, (c) margin of safety, (d) profit, and (e) volume of sales to earn a profit of ₹24,000.

Solution

$$\text{Selling Price Per Unit} = \frac{60,000}{20,000} = ₹ 3$$

$$\text{Variable Cost Per Unit} = \frac{30,000}{20,000} = ₹ 1.50$$

$$\begin{aligned} \text{(A) Contribution Per Unit} &= \text{Selling Price Per Unit} - \text{Variable Cost Per Unit} \\ &= ₹3 - ₹1.50 \\ &= ₹1.50 \end{aligned}$$

$$\begin{aligned} \text{(B) Break-Even Point} &= \frac{\text{Total Fixed Cost}}{\text{Contribution Per Unit}} \\ &= \frac{₹18,000}{₹1.50} \\ &= 12,000 \text{ Units} \end{aligned}$$

$$\begin{aligned}
 \text{(C) Margin of Safety} &= \text{Units Sold} - \text{Break-Even Point} \\
 &= 20,000 - 12,000 \\
 &= 8,000 \text{ Units (Or) ₹24,000}
 \end{aligned}$$

$$\begin{aligned}
 \text{(D) Profit} &= (\text{Units Sold} \times \text{Contribution Per Unit}) - \text{Fixed Cost} \\
 &= (20,000 \times ₹1.50) - ₹18,000 \\
 &= ₹12,000
 \end{aligned}$$

(E) Volume Of Sales To Earn A Profit Of ₹24,000

$$\begin{aligned}
 &= \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution Per Unit}} \\
 &= \frac{18,000 + 24,000}{1.50} = 28,000 \text{ units}
 \end{aligned}$$

Illustration 2

Calculate 'Margin of Safety' from the following data:

Particulars	Mary & Co.	Geetha & Co.
	₹	₹
Sales	1,00,000	1,00,000
Cost	80,000	80,000
Fixed – Mary & Co.	30,000	
Geetha & Co.	50,000	
Variable – Mary & Co.	50,000	
Geetha & Co.	30,000	
	-----	-----
Profit	20,000	20,000
	-----	-----

Solution

Particulars	Mary& Co.	Geetha& Co.
	₹	₹
Actual Sales	1,00,000	1,00,000
Less: Sales at Break-Even Point	60,000	71,429
	-----	-----
Marginal of Safety	40,000	28,571
	-----	-----

$$\text{Break-Even Sales} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

$$\text{P/V Ratio} = \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}}$$

Therefore;

	₹	₹
P/V Ratio	1,00,000	1,00,000
	- 50,000	- 30,000
	-----	-----
	50,000	70,000
	50%	70%
	30,000	50,000
Break-Even Sales =	-----	-----
	50%	70%
	-----	-----
	₹60,000	₹71,429
	-----	-----

Illustration 3

From the following particulars, find out the selling price per unit if b.E.P. Is to be brought down to 9,000 units.

Variable Cost Per Unit	₹75
Fixed Expenses	₹2,70,000
Selling Price Per Unit	₹100

Solution

Let us assume that the contribution per unit at B.E.P. Sales of 9,000 is X.

$$\text{B.E.P.} = \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}}$$

Contribution per unit is not known. Therefore,

$$\begin{aligned} 9,000 \text{ Units} &= \frac{2,70,000}{X} \\ 9,000 X &= 2,70,000 \\ X &= 30 \end{aligned}$$

Contribution Is ₹30 Per Unit, In Place Of ₹25. So, The Selling Price Should Be ₹105, I.E. ₹75 + ₹30.

4.1.3.2 Benefits Of Marginal Costing

The technique of marginal costing is of immense use to the management in taking various decisions, as explained below:

1. How Much To Produce?

Marginal costing helps in finding out the level of output which is most profitable for running a concern. This, in turn, helps in utilising plant capacity in full, and realise maximum profits. By determining the most profitable relationships between cost, price and volume, marginal costing helps a business determine most competitive prices for its products.

2. What To Produce?

By applying marginal costing techniques, the most suitable production line could be determined. The profitability of various products can be compared and those products which languish behind and which do not seem to be feasible (in view of their inability to recover marginal costs),

may be eliminated from the production line by using marginal costing. It, thus, helps in selecting an optimum mix of products, keeping the capacity and resource constraints in mind. It will also serve as a guide in arriving at the price for new products.

3. Whether To Produce Or Procure?

The marginal cost of producing an article inside the factory serves as a useful guide while arriving at make or buy decisions. The costs of manufacturing can be compared with the costs of buying outside and a suitable decision can be arrived at easily.

4. How To Produce?

In case a particular product can be produced by two or more methods, ascertaining the marginal cost of producing the product by each method will help in deciding as to which method should be allowed. The same is true in case of decisions to use machine power in place of manual labour.

5. When To Produce?

In periods of trade depression, marginal costing helps in deciding whether production in the plants should be suspended temporarily or continued in spite of low demand for the firm's products.

6. At What Cost To Produce?

Marginal costing helps in determining the no profit- no-loss point. The efficiency and economy of various products, plants, departments can also be determined. This helps in profit planning as well as cost control.

4.1.3.3 Application Of Marginal Costing

Marginal costing technique helps management in several ways. These are discussed below:

1. Profit Planning

There are four important ways of improving the profit performance of a business: (i) increasing the volume, (ii) increasing the selling price, (iii) Decreasing variable cost, and (iv) decreasing fixed costs. Profit planning is the planning of future operations so as to attain maximum profit. The contribution ratio shows the relative profitability of various sectors of business whenever there is a change in the selling price, variable cost etc.

Illustration 4

Two businesses, p ltd. And q ltd. Sell the same type of product in the same type of market. Their budgeted profit and loss accounts for the coming year are as under:

	P Ltd.	Q Ltd.
	₹	₹
Sales	1,50,000	1,50,000
Less: Variable Costs	1,20,000	1,00,000
Fixed Costs	15,000	35,000
Budget Net Profit	1,35,000	1,35,000
	-----	-----
	15,000	15,000
	-----	-----

You are required to:

- I. Calculate the break-even point for each business
- II. Calculate the sales volume at which each business will earn ₹5,000 Profit.
- III. State which business is likely to earn greater profit in conditions of:
 - Heavy demand for the product
 - Low demand for the product, and, briefly give your argument also.

Solution

(I) For Calculating the Break-Even Points, P/V Ratio of P Ltd. and Q Ltd., Should be Calculated:

$$\text{P/V Ratio} = \text{Contribution} / \text{Sales}$$

$$= \frac{\text{Fixed Expenses} + \text{Profit}}{\text{Sales}}$$

$$\text{P/V Ratio of P} = \frac{15,000 + 15,000}{1,50,000} = \frac{1}{5} = 20\%$$

$$\text{P/V Ratio of Q} = \frac{35,000 + 15,000}{1,50,000} = \frac{1}{3} = 3\frac{1}{3}\%$$

$$\text{Break-Even Point} = \frac{\text{Fixed Expenses}}{\text{P/V Ratio}}$$

$$\text{P Ltd.} = \frac{15,000}{1/5} = ₹75,000$$

$$\text{Q Ltd.} = \frac{35,000}{1/3} = ₹1,05,000$$

(II) Sales Volume to Earn a Desired Profit (₹5000):

$$\text{Formula} = \frac{\text{Fixed Expenses} + \text{Desired Profit}}{\text{P/V Ratio}}$$

$$\text{P Ltd.} = \frac{15,000 + 5,000}{1/5} = ₹1,00,000$$

$$\text{Q Ltd.} = \frac{35,000 + 5,000}{1/3} = ₹1,20,000$$

1. In conditions of heavy demand, a concern with larger p/v ratio can earn greater profits because of greater contribution. Thus, q ltd. Is likely to earn greater profit.
2. In conditions of low demand, a concern with lower break-even point is likely to earn more profits because it will start earning profits at a lower level of sales. In this case, p ltd. Will start earning profits when its sales reach a level of ₹75,000, Whereas q ltd. Will start earning profits when its sales reach ₹1,05,000. Therefore, in case of low demand, break-even point should be reached as early as possible so that the concern may start earning profits.

2. Introduction of A New Product

Sometimes, a product may be added to the existing lines of products with a view to utilise idle facilities, to capture a new market or for any other purpose. The profitability of this new product has to be found out initially. Usually, the new product will be manufactured if it is capable of contributing something toward fixed costs and profit after meeting its variable costs.

Illustration 5

A concern manufacturing product x has provided the following information:

	₹
Sales	75,000
Direct materials	30,000
Direct labour	10,000
Variable overhead	10,000
Fixed overhead	15,000

In order to increase its sales by ₹25,000, the concern wants to introduce the product y, and estimates the costs in connection therewith as under:

	₹
Direct materials	10,000
Direct labour	8,000
Variable overhead	5,000
Fixed overhead	Nil

Advise whether the product Y will be profitable or not.

Solution

Marginal Cost Statement

(in Rupees)

	X	Y	Total
	₹	₹	₹
Sales	75,000	25,000	1,00,000
Less: Marginal Costs	30,000	10,000	40,000
Direct Materials	10,000	8,000	18,000
Direct Labour	10,000	5,000	15,000
Variable Overhead	-----	-----	-----
	50,000	23,000	73,000
	-----	-----	-----
Contribution	25,000	2,000	27,000
Fixed Cost			15,000

Profit			12,000

Commentary

If product Y is introduced, the profitability of product X is not affected in any manner. On the other hand, product Y provides a contribution of ₹2,000 Towards fixed cost and profit. Therefore, Y should be introduced.

3. Level Of Activity Planning

Marginal costing is of great help while planning the level of activity. Maximum contribution at a particular level of activity will show the position of maximum profitability.

Illustration 6

Following is the cost structure of sundaram corporation, pondicherry, manufacturers of colour tvs.

Level of activity			
	50%	70%	90%
Output (in units)	200	280	360
Cost (in ₹)	10,00,000	14,00,000	18,00,000
Materials	3,00,000	4,20,000	5,40,000
Labour	5,00,000	6,00,000	7,00,000
Factory overhead	-----	-----	-----
Factory Cost	18,00,000	24,20,000	30,40,000
	-----	-----	-----

In view of the fact that there will be no increase in fixed costs and import license for the picture tubes required in the manufacture of its tvs has been obtained, the corporation is considering an increase in production to its full installed capacity.

The management requires a statement showing all details of production costs at 100% level of activity.

Solution

Marginal Cost Statement

(At 100% Level of Activity With 400 Units)	Total Cost ₹	Cost Per Unit ₹
Materials	20,00,000	5,000
Labour	6,00,000	1,500
Variable Factory Overhead	5,00,000	1,250
	-----	-----
Marginal Factory Cost	31,00,000	7,750
Fixed Factory Overhead	2,50,000	625
	-----	-----
Total factory cost	33,50,000	8,375
	-----	-----

Thus, the marginal factory cost per unit is ₹7,750 and the total production cost per unit is ₹8,375.

Commentary

(i) Calculation Of Variable Factory Overheads Per Unit:

$$= \frac{₹6,00,000 - ₹5,00,000}{80 \text{ Units}} = ₹1,250$$

(ii) Calculation Of Fixed Factory Overheads:

Factory Overheads – (No. Of Units At Certain Level Of Activity
X Variable Factory Overheads Per Unit).

Therefore ₹5,00,000 – (200 Units X 1,250)

Therefore ₹5,00,000 – ₹2,50,000 = ₹2,50,000

The amount can be verified by making calculation t any other
level of activity.

(iii) Variable Factory Overheads At 100% Level Of Activity:

400 Units X 1,250 = ₹5,00,000

4. Key Factor

A concern would produce and sell only those products which offer maximum profit. This is based on the assumption that it is possible to produce any quantity without any difficulty and sell likewise. However, in actual practice, this seems to be unrealistic as several constraints come in the way of manufacturing as well as selling. Such constraints that come in the way of management's efforts to produce and sell in unlimited quantities are called 'key factors' or 'limiting factors'. The limiting factors may be materials, labour, plant capacity, or demand. Management must ascertain the extent of the influence of the key factor for ensuring maximisation of profit. Normally, when contribution and key factors are known, the relative profitability of different products or processes can be measured with the help of the following formula:

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key Factor}}$$

Illustration 7

From the following data, which product would you recommend to be manufactured in a factory, time, being the key factor?

	Per Unit of Product X	Per Unit of Product Y
Direct Material	24	14
Direct Labour at Re.1 Per Hour	2	3
Variable Overhead at ₹2 Per Hour	4	6
Selling Price	100	110
Standard Time to Produce	2 hours	3 Hours

Solution

	Per Unit of Product X		Per Unit of Product Y	
Selling Price		100		110
Less: Marginal Cost:				
Direct Materials		24		14
Direct Labour		2		3
Variable Overhead	4	30	6	23
	---	---	---	---
Contribution		70		87
Standard Time To Produce		2 hours		3 hours
		70/2		87/3
Contribution Per Hour		₹ 35		₹29

Contribution per hour of product x is more than that of product y by ₹6. Therefore, product x is more profitable and is recommended to be manufactured.

5. Make Or Buy Decisions

A company might be having unused capacity which may be utilized for making component parts or similar items instead of buying them from the market. In arriving at such a 'make or buy' decision, the cost of manufacturing component parts should be compared with price quoted in the market. If the variable costs are lower than the purchase price, the component parts should be manufactured in the factory itself. Fixed costs are excluded on the assumption that they have been already incurred, and the manufacturing of components involves only variable cost. However, if there is an increase in fixed costs and any limiting factor is operating while producing components etc. That should also be taken into account. Consider the following illustration, throwing light on these aspects.

Illustrations 8

You are the management accountant of XYZ CO. Ltd. The Managing director of the company seeks your advice on the following problem: the company produces a variety of products each having a number of computer parts. Product "B" takes 5 hours to produce on machine no.99 working at full capacity. "B" has a selling price of ₹50 and a marginal cost, ₹30 per unit. "A-10" a component part could be made on the same machine in 2

hours for marginal cost of ₹5 per unit. The supplier's price is ₹12.50 per unit. Should the company make or buy "A10"? Assume that machine hour is the limiting factor.

Solution

In this problem the cost of new product plus contribution lost during the time for manufacturing "A-10" should be compared with the supplier's price to arrive at a decision.

₹	
"B" – Selling Price	50.00
Marginal Cost	30.00

	20.00

It takes 5 hours to produce one unit of "B".

Therefore, contribution earned per hour on machine no.99 is ₹20/5 = ₹4.

"A-10" takes two hours to be manufactured on machine which is producing "B". Real cost of "A-10" to the company = marginal cost of "A-10" plus contribution lost for using the machine for "A-10".

$$\text{₹5} + \text{₹8} = \text{₹13}$$

This is more than the seller's price of ₹12.50 and so it is advisable for the company to buy the product from outside.

Illustration 9

A T.V. Manufacturing company finds that while it costs ₹6.25 To make each component X, the same is available in the market at ₹4.85 Each, with an assurance of continued supply. The break down of cost is:

₹	
Materials	2.75 each
Labour	1.75 each
Other Variables	0.50 each
Depreciation and Other Fixed Costs	6.25 each

	1.25

Should you make or buy?

Solution

Variable cost of manufacturing is ₹5; (₹6.25 – ₹1.25) but the market price is ₹4.85. If the fixed cost of ₹1.25 is also added, it is not profitable to make the component. Because there is a saving of ₹0.15 even in variable cost, it is profitable to procure from outside.

6. Suitable Product Mix/Sales Mix

Normally, a business concern will select the product mix which gives the maximum profit. Product mix is the ratio in which various products are produced and sold. The marginal costing technique helps management in taking appropriate decisions regarding the product mix, i.e., in changing the ratio of product mix so as to maximise profits. The technique not only helps in dropping unprofitable products from the mix but also helps in dropping unprofitable departments, activities etc. Consider the following illustrations:

Illustration 10: (Product Mix)

The following figures are obtained from the accounts of a departmental store having four departments.

Departments

(Figures in ₹)

Particulars	A	B	C	D	Total
Sales	5,000	8,000	6,000	7,000	26,000
	-----	-----	-----	-----	-----
Marginal Cost	5,500	6,000	2,000	2,000	15,500
Fixed Cost (Apportioned)	500	4,000	1,000	1,000	6,500
	-----	-----	-----	-----	-----
Total Cost	6,000	1,000	3,000	3,000	22,000
	-----	-----	-----	-----	-----
Profit/Loss(-)	10,000	(-)2,000	3,000	4,000	4,000

On the above basis, it is decided to close down dept. B immediately, as the loss shown is the maximum. After that dept. A will be discarded. What is your advice to the management?

Statement Of Comparative Profitability

Departments

Particulars	A	B	C	D	Total
Sales	5,000	8,000	6,000	7,000	26,000
Less: Marginal Cost	5,500	6,000	2,000	2,000	15,500
	-----	-----	-----	-----	-----
Contribution (-)	500	2,000	4,000	5,000	10,500
	-----	-----	-----	-----	-----
Fixed Cost					6,500

Profit					4,000

Commentary

From the above, it is clear that the contribution of dept. A is negative and should be discarded immediately. As dept. B provides ₹2,000 towards fixed costs and profits, it should not be discarded.

Illustration 11 (Sales Mix)

Present the following information to show to the management:
(a) the marginal product cost and the contribution per unit; (b) the total contribution and profits resulting from each of the following mixtures:

	Product	Per Unit (₹)
Direct Materials	A	10
	B	9
Direct Wages	A	3
	B	2
Fixed Expenses ₹800		

Variable Expenses are Allocated to Products as 100% of Direct Wages.

		₹
Sales Price	A	20
	B	15

Sales Mixtures

- I. 1000 Units of Product A and 2000 Units of B
- II. 1500 Units of Product A and 1500 Units of B
- III. 2000 Units of Product A and 1000 Units of B

Solution

(A) Marginal Cost Statement	A	B
Direct Materials	10	9
Direct Wages	3	2
Variable Overheads (100%)	3	2
	---	---
Marginal Cost	16	13
Sales Price	20	15
	---	---
Contribution	4	2

(B) Sales Mix Choice	1000A+ 2000B	1500A+ 1000B	2000A+ 1000B
	(i) ₹	(i) ₹	(iii) ₹
Total Sales	(1000 x 20 + 2000 x 15) = 50,000	(1500 x 20 + 1500 x 15) = 52,500	(2000 x 20 + 1000 x 15) = 55,000
Less: Marginal cost	(1000 x 16 + 2000 x 13) = 42,000	(1500 x 16 + 1500 x 13) = 43,500	(2000 x 16 + 1000 x 13) = 45,000
	-----	-----	-----
Contribution	8,000	9,000	10,000
Less: fixed costs	800	800	800
	-----	-----	-----
Profit	7,200	8,200	9,200
	-----	-----	-----

Therefore sales mixture (iii) will give the highest profit; and as such, mixture (iii) can be adopted.

7. Pricing Decisions

Marginal costing techniques help a firm to decide about the prices of various products in a fairly easy manner. Let's examine the following cases:

(I) Fixation of Selling Price

Illustration 12

P/V Ratio Is 60% and the marginal cost of the product is ₹50. What will be the selling price?

Solution

$$\text{P/V Ratio} = \frac{S - V}{S} = 1 - \frac{V}{S} = \frac{C}{S}$$

$$\frac{\text{Variable Cost}}{\text{Sales}} = 40\% \quad \text{or} \quad \frac{40}{100}$$

$$\text{Selling Price} = \frac{50}{40\%} = \frac{50 \times 100}{40} = ₹125$$

(ii) Reducing Selling Price

Illustration 13

The Price Structure of a Cycle Made by the Visu Cycle Co. Ltd. is

As Follows	Per Cycle
Materials	60
Labour	20
Variable Overheads	20

Fixed Overheads	100
Profit	50
Selling Price	50

	200

This is based on the manufacture of one lakh cycles per annum. The company expects that due to competition they will have to reduce selling prices, but they want to keep the total profits intact. What level of production will have to be reached, i.e., how many cycles will have to be made to get the same amount of profits, if:

- (a) The selling price is reduced by 10%?
- (b) The selling price is reduced by 20%?

Solution

	(₹)	(₹)
Existing profit	= 1,00,000 x 50	= 50,00,000
Total fixed overheads	= 1,00,000 x 50	= 50,00,000

(a) Selling price is reduced by 10% and to get the existing profit of ₹50 lakhs.

New Selling Price	= 200 – 10% of ₹200
	= 200 – 20 = ₹180
New Contribution	= 180 – 100 = ₹80 Per Unit
Total Sales (Units)	= F + P/Contribution Per Unit
	5,00,000 + 5,00,000
	= -----
	80
	= 1,25,000 Cycles

Are to be obtained and sold to earn the existing profit of ₹5,00,000.

(b) Selling price reduced by 20% and to get the existing profit of ₹5,00,000.

$$\begin{aligned}
 \text{New Selling Price} &= 200 - 20\% \text{ of } ₹200 \\
 &= 200 - 40 = ₹160 \\
 \text{New Contribution} &= S - V \\
 &= 160 - 100 = ₹80 \text{ Per Unit} \\
 \text{Total Sales (Units)} &= \frac{F + P}{\text{Contribution Per Unit}} \\
 &= \frac{5,00,000 + 5,00,000}{80} \\
 &= 1,66,667 \text{ cycles are to be produced and}
 \end{aligned}$$

sold to earn the existing profit of ₹50 Lakhs.

(iii) Pricing During Recession

Illustration 14

SSA company is working well below normal capacity due to recession. The directors of the company have been approached with an enquiry for special job. The costing department estimated the following in respect of the job.

Direct Materials	₹10,000
Direct Labour 500 Hours @	₹2 Per Hour
Overhead Costs: Normal Recovery Rates	
Variable	Re.0.50 Per Hour
Fixed	Re.1.00 Per Hour

The directors ask you to advise them on the minimum price to be charged. Assume that there are no production difficulties regarding the job.

Solution

Calculation Of Marginal Cost:

	(₹)
Direct Materials	10,000
Direct Labour	1,000
Variable Overhead @ Re.0.50 Per Hour	250

Marginal Cost	11,250

Commentary

Here the minimum price to be quoted is ₹11,250 which is the marginal cost. By quoting so, the company is sacrificing the recovery of the profit and the fixed-costs. The fixed costs will continue to be incurred even if the company does not accept the offer. So any price above ₹11,250 is welcome.

7. Accepting Foreign Order

Marginal costing technique can also be used to take a decision as to whether to accept a foreign offer or not. The speciality of this situation is that normally foreign order is requiring the manufacturer to supply the product at a price lower than the inland selling price. Here the decision is taken by comparing the marginal cost of the product with the foreign price offered. If the foreign order offers a price higher than the marginal cost then the offer can be accepted subject to availability of sufficient installed production capacity. The following illustration highlights this decision:

Illustration 15

Due to industrial depression, a plant is running at present at 50% of the capacity. The following details are available:

Cost Of Production Per Unit

(₹)	
Direct Materials	2
Direct Labour	1
Variable Overhead	3
Fixed Overhead	2

	8

Production Per Month	20,000 Units
Total Cost Of Production	₹1,60,000
Sale Price	₹1,40,000

Loss	₹20,000

An exporter offers to buy 5000 units per month at the rate of ₹6.50 per unit and the company is hesitant to accept the order for fear of increasing its already large operating losses. Advise whether the company should accept or decline this offer.

Solution

At present the selling price per unit is ₹7/- and the marginal cost per unit is ₹6/- (Material ₹2 + Labour Re.1 + Variable Overhead ₹3). The foreign order offers a price of ₹6.50 and there is ample production capacity (50%) available. Since the foreign offer is at a price higher than marginal cost the offer can be accepted. This is proved hereunder:

(₹)	
Marginal Cost Of 5000 Units = 5000 x 6	= 30,000
Sale Price Of 5000 Units = 5000 x 6.50	= 32,500

Profit	2,500

Thus by accepting the foreign order the present loss of ₹20,000 would be reduced to ₹17,500 I.E., ₹20000 Loss – ₹2,500 Profit.

4.1.3.4 Limitations Of Marginal Costing

Marginal costing has the following limitations:

1.difficulty in classification

In marginal costing, costs are segregated into Fixed and variable. In actual practice, this classification scheme proves to be Superfluous in that, certain costs may be partly fixed and partly variable and Certain other costs may have no relation to volume of output or even with the time. In short, the categorisation of costs into fixed and variable elements is a difficult and tedious job.

2. Difficulty In Application

The marginal costing technique cannot be applied in industries where large stocks in the form of work-in-progress (job and contracting firms) are maintained.

3. Defective Inventory Valuation

Under marginal costing, fixed costs are not included in the value of finished goods and work in progress. As fixed costs are also incurred, these should form part of the cost of the product. By eliminating fixed costs from finished stock and work-in-progress, marginal costing techniques present stocks at less than their true value. Valuing stocks at marginal cost is objectionable because of other reasons also:

1. In case of loss by fire, full loss cannot be recovered from the insurance company.
2. Profits will be lower than that shown under absorption costing and hence may be objected to by tax authorities.
3. Circulating assets will be understated in the balance sheet.

4. Wrong Basis For Pricing

In marginal costing, sales prices are arrived at on the basis of contribution alone. This is an objectionable practice. For example, in the long run, the selling price should not be fixed on the basis of contribution alone as it may result in losses or low profits. Other important factors such as fixed costs, capital employed should also be taken into account while fixing selling prices. Further, it is also not correct to lay more stress on selling function, as is done in marginal costing, and relegate production function to the background.

5. Limited Scope

The utility of marginal costing is limited to short-run profit planning and decision-making. For decisions of far-reaching importance, one is interested in special purpose cost rather than variable cost. Important decisions on several occasions, depend on non-cost considerations also, which are thoroughly discounted in marginal costing.

In view of these limitations, marginal costing needs to be applied with necessary care and caution. Fruitful results will emerge only when management tries to apply the technique in combination with other useful techniques such as budgetary control and standard costing.

4.1.3.5 Additional Illustrations

Illustration 16

From the following information, find out the amount of profit earned during the year, using marginal cost equation:

Fixed Cost	₹5,00,000
Variable Cost	₹10 Per Unit
Selling Price	₹15 Per Unit
Output Level	1,50,000 Unit

Solution

$$\begin{aligned}
 \text{Contribution} &= \text{Selling Price} - \text{Variable Cost} \\
 &= (1,50,000 \times 15) - (1,50,000 \times 10) \\
 &= ₹22,50,000 - ₹15,00,000 \\
 &= ₹7,50,000 \\
 \text{Contribution} &= \text{Fixed Cost} + \text{Profit} \\
 ₹7,50,000 &= 5,00,000 + \text{Profit} \\
 \text{Profit} &= 7,50,000 - 5,00,000 \\
 &= (C - F) \\
 \text{Profit} &= ₹2,50,000
 \end{aligned}$$

Illustration 17

Determine the amount of fixed costs from the following details, using the marginal cost equation.

	₹
Sales	2,40,000
Direct Materials	80,000
Direct Labour	50,000
Variable Overheads	20,000
Profit	50,000

Solution

$$\begin{aligned}\text{Marginal Costing Equation} &= S - V = F + P \\ &= 2,40,000 - 1,50,000 \\ &= F + P \\ &= 90,000 \\ &= F + 50,000 \\ F &= 90,000 - 50,000 \\ F &= ₹40,000\end{aligned}$$

Illustration 18

Sales 10,000 Units @ ₹25 Per Unit

Variable Cost ₹15 Per Unit

Fixed Costs ₹1,00,000

Find Out the Sales for Earning a Profit of ₹50,000

Solution

Sales To Earn A Profit Of ₹50,000

$$\begin{aligned}&= \frac{(\text{Fixed Cost} + \text{Profit}) \text{ Sales}}{\text{Sales} - \text{Variable Cost}} \\ &= \frac{1,00,000 + 50,000}{2,50,000 - 1,50,000} \times 2,50,000 \\ &= \frac{1,50,000}{1,00,000} \times 2,50,000 \\ &= ₹3,75,000\end{aligned}$$

Illustration 19

The records of ram ltd., Which has three departments give the following figures:

	Dept. A (₹)	Dept. B (₹)	Dept. C (₹)	Total (₹)
Sales	12,000	18,000	20,000	50,000
Marginal Cost	13,000	6,000	15,000	34,000
Fixed Cost	1,000	4,000	10,000	15,000
Total Cost	14,000	10,000	25,000	49,000
Profit/Loss	-2,000	+8,000	-5,000	1,000

The management wants to discontinue product c immediately as it gives the maximum loss. How would you advise the management?

Solution

Marginal Cost Statement

Particulars	A (₹)	B (₹)	C (₹)	Total (₹)
Sales	12,000	18,000	20,000	50,000
Less: Marginal Cost	13,000	6,000	15,000	34,000
Contribution	-1,000	12,000	5,000	16,000
Fixed Cost				15,000
Profit				1,000

Here department A gives negative contribution, and as such it can be given up. Department C gives a contribution of ₹5,000. If department C is closed, then it may lead to further loss. Therefore, C should be continued.

Summary

Marginal costing is an important technique of costing where only variable costs are considered while calculating the cost of the product. It is a technique of presenting cost information and can be used with other methods of costing (such as job costing, contract costing, etc). This

technique can be applied while taking decisions relating to profit planning, introducing a new product, level of activity planning, allocating scarce factors to profitable channels, make or buy decisions, suitable production/sales mix, fixing prices for products, etc. However this technique is not without limitations.

4.1.3.7 Key Words

Marginal costing: the change in total cost because of change in total output by one unit which is otherwise called as variable cost.

Contribution: the excess of selling price over variable cost.

Profit volume ratio: it shows the relationship between contribution and sales.

Break even point: it is that point of sales at which there is no profit or no loss i.e. Where total revenues and total costs are equal.

Margin of safety: excess of actual sales over break-even sales.

Marginal cost equation:

$$S - V = C$$

$$C = F + P$$

4.1.3.8 Self Assessment Questions

1. Define marginal cost.
2. What is meant by contribution? Explain its significance.
3. Explain the following:
 - i. Profit Volume Ratio
 - ii. Break Even Point
 - iii. Margin Of Safety
4. Explain how marginal costing technique is useful as a decision making tool.
5. Critically evaluate marginal costing technique.
6. Break-down of cost per unit at an activity level of 10,000 units of a company is as follows:

	₹
Raw materials	10
Direct expenses	8
Chargeable expenses	2
Variable overheads	4
Fixed overheads	6

Total cost per unit	30
Selling price	32

Profit per unit	2

How many units must be sold to break-even?

7. Tamarai ltd., gives you the following information:

	Sales	Profit
₹	₹	₹
Period I	1,50,000	20,000
Period II	1,70,000	25,000

Calculate

- the p/v ratio.
- the profit when sales are ₹2,50,000
- the sales required to earn a profit of ₹40,000
- the break-even point.

8. Production costs of selvi enterprises limited are as follows:

	Level of Activity		
Output (in %ge)	60%	70%	80%
Output (in Units)	1,200	1,400	1,600
	-----	-----	-----
Direct Materials	24,000	28,000	32,000
Direct Labour	7,200	8,400	9,600
Factory Overheads	12,800	13,600	14,400
	-----	-----	-----
Works Cost	44,000	50,000	56,000
	-----	-----	-----

A proposal to increase production to 90% level of activity is under consideration of the management. The proposal is not expected to involve any increase in fixed factory overheads.

[Hint: fixed factory overheads ₹8,000]

9. The following expenses are incurred in the manufacture of 1,000 units of a product in the manufacture of which a factory specialises:

Raw materials	2,800
Wages	1,900
Overhead charges (₹4,000 fixed)	4,200

10,000 units of the product can be absorbed by the home market where the selling price is ₹9 per unit. There is a demand for 50,000 units of the product in a foreign market if it can be offered at ₹8.20 per unit. If This is done, what will be the total profit or loss made by the manufacturer?

10. The following data are obtained from the records of a factory:

	₹	₹
Sales 4000 units @ ₹25 Each		1,00,000
Less: Marginal cost		
Materials Consumed	40,000	
Labour Charges	20,000	
Variable Overheads	12,000	

	72,000	
Fixed Cost	18,000	90,000
	-----	-----
Profit		10,000

It is proposed to reduce the selling price by 20%. What extra units should be sold to obtain the same amount of profit as above?

4.1.3.9 Key To Self Assessment Questions (for problems only)

- Q.No.6: 7500 Units.
 Q.No.7: (A) 25%; (B) ₹45,000;
 (C) ₹2,30,000; (D) ₹70,000.
 Q.No.8: Prime Cost ₹46,800;
 Marginal Cost ₹54,000;
 Works Cost ₹62,000.
 Q.No.9: Profit ₹2,02,000.
 Q.No.10: 10,000 Units.

4.1.3.10 Case Analysis

The cost per unit of the three products X, Y and Z of a concern is as follows:

	X (₹)	Y (₹)	Z (₹)
Direct Material	6	7	6
Direct Labour	10	8	9
Variable Expenses	4	5	3
Fixed Expenses	3	3	2
	---	---	---
Profit	23	23	20
	9	7	6
	---	---	---
Selling Price	32	30	26
	-----	-----	-----
No. Of Units Produced	10,000	5,000	8,000
	-----	-----	-----

Production arrangements are such that if one product is given up, the production of the others can be raised by 50%. The directors propose that z should be given up because the contribution in that case is the lowest. Analyse the case and give your opinion.

Solution

Statement of projected profitability with products x and y

	X	Y
Production (In Units)	10000	5000
Add 50% Increase (Proposed)	5000	2500
	-----	-----
	15000	7500
	-----	-----
Selling Price Per Unit	32	30
Less: Variable Cost Per Unit	-----	-----
Materials	6	7
Labour	10	8
Variable Expenses	4	5
	-----	-----
Contribution Per Unit	20	20
	-----	-----
Total Contribution	12	10

X	15000 Units X ₹12	=	₹1,80,000
Y	7500 Units X ₹10	=	₹ 75,000
			₹2,55,000
Less: Fixed Cost			
X	10000 X 3	=	3000
Y	5000 X 3	=	15000
Z	8000 X 2	=	16000

			₹ 61,000

Projected Profit		=	₹ 1,94,000

Statement of Present Profit With Products X, Y And Z			
			₹
Product X	= 10000 Units X ₹9	=	90,000
Product Y	= 5000 Units X ₹7	=	35,000
Product Z	= 8000 Units X ₹6	=	48,000

			1,73,000

Since by discontinuing product z and increasing the production of products X and Y the profit increases from ₹1,73,000 to ₹1,94,000. The directors proposal may be implemented.

4.1.3.11 Books For Further Reading

1. **P.Das Gupta:** Studies In Cost Accounting, *Sultan Chand & Sons, New Delhi.*
2. **Jain & Narang:** Advanced Cost Accounting, *Kalyani Publishers.*
3. **Jawaharlal:** Advanced Management Accounting, *S.Chand & Co.*
4. **S.N.Maheswari:** *Management Accounting And Financial Control, Sultan Chand & Sons.*
5. **V.K.Saxena And C.D.Vashist:** *Advanced Cost And Management Accounting, Sultan Chand & Sons, New Delhi.*

Lesson 4.2 - Cost Volume Profit Analysis

4.2.1 Introduction

The cost of a product consists of two items: fixed cost and variable cost. Fixed costs are those which remain the same in total amount regardless of changes in volume. Variable costs are those which vary in total amount as the volume of production increases or decreases. As a result, at different levels of activity, the cost structure of a firm changes. The effect on profit on account of such variations is studied through break even analysis or cost-volume-profit analysis. This lesson deals with the various concepts, tools and techniques of cost-volume profit analysis.

4.2.2 Learning Objectives

After reading this lesson, the reader should be able to

- Understand The Meaning Of Cost-Volume-Profit Analysis.
- Apply Cost-Volume-Profit Analysis While Taking Decisions.
- Construct The Break-Even Chart.
- Evaluate The Advantages And Limitations Of Break-Even Analysis.

4.2.3 Contents

- 4.2.3.1 Meaning of Cost-Volume-Profit Analysis
- 4.2.3.2 Application of Cost-Volume-Profit Analysis
- 4.2.3.3 Break Even Chart
- 4.2.3.4 Consultation of Break Even Chart
- 4.2.3.5 Profit Volume Graph
- 4.2.3.6 Advantages and Limitations of Break Even Analysis
- 4.2.3.7 Summary
- 4.2.3.8 Key Words
- 4.2.3.9 Self Assessment Questions
- 4.2.3.10 Key to Self Assessment Questions
- 4.2.3.11 Case Analysis
- 4.2.3.12 Books for Further Reading

4.2.3.1 Meaning of Cost-Volume-Profit Analysis

Cost-volume-profit (CVP) analysis focuses on the way cost and profit change when volume changes. It is, broadly speaking, that system of analysis which determines the probable profit at any level of activity. This technique is generally used to analyse the incremental effect of volume on costs, revenues and profits. At what volume of operations are costs and revenues equal? What volume of output or sales would be necessary to earn a profit of say ₹2 lakhs? How much profit will be earned at a volume of, say 10,000 units? What will happen if there is a reduction of 10 percent in the selling price? Questions like these are sought to be answered through cvp analysis. This detailed analysis will help the management to know the profit levels at different activity levels of production and sales and various types of costs involved in it.

4.2.3.2 Application Of Cost-Volume-Profit Analysis

CPV analysis helps in:

1. Forecasting the profit in an accurate manner
2. Preparing the flexible budgets at different levels of activity
3. Fixing prices for products

Illustration 1

(Profit Planning) based on the following information, find out the break even point, the sales needed for a profit of ₹6,00,000 and the profit if 4,00,000 units are sold at ₹6 per unit.

	₹
Units of Output	5,00,000
Fixed Costs	7,50,000
Variable Cost Per Unit	2
Selling Price Per Unit	5

Solution

(1) Break-Even Point (Of Sales)

$$\begin{aligned} & \text{Fixed Costs} \\ &= \frac{\text{-----}}{\text{Contribution Per Unit}} \times \text{Selling Price Per Unit} \end{aligned}$$

$$= \frac{7,50,000}{3} \times 5 = ₹12,50,000$$

(2) Sales Needed For A Profit Of ₹6,00,000

$$\begin{aligned} \text{Sales} &= \frac{\text{Fc} + \text{Desired Profit}}{\text{P/V Ratio}} \\ &= \frac{7,50,000 + 6,00,000}{3/5} \\ &= 13,50,000 \times \frac{5}{3} \\ &= ₹22,50,000 \quad [\text{or}] \\ &= \frac{22,50,000}{(\text{SP}) 5} \\ &= 4,50,000 \text{ Units} \end{aligned}$$

(3) Profit On Sale Of 4,00,000 Units At ₹6 Per Unit

$$\begin{aligned} \text{Sales} &= 4,00,000 \text{ Units} \\ &= 4,00,000 \times ₹6 \\ &= ₹24,00,000 \end{aligned}$$

Sales – V. Cost = Contribution

$$\begin{aligned} 24 \text{ Lakhs} - (4 \text{ Lakhs} \times 2 \text{ Per Unit}) &= 16,00,000 \\ \text{C} - \text{Fc} &= \text{Profit} \\ 16,00,000 - 7,50,000 &= ₹8,50,000 \quad [\text{Or}] \\ \text{Unit Sales} \times \text{Contribution Per Unit} - \text{Fc} \\ 4 \text{ Lakhs} \times ₹4 &= 16 \text{ Lakhs} - 7,50,000 = 8,50,000 \end{aligned}$$

Illustration 2: (Pricing)

A company is considering a reduction in the price of its product by 10% because it is felt that such a step may lead to a greater volume of sales.

It is anticipated that there will be no change in total fixed costs or variable costs per unit. The directors wish to maintain profit at the present level.

You are given the following information:

₹	
Sales (15,000 Units)	3,00,000
Variable Cost	13 Per Unit
Fixed Cost	60,000

From the above information, calculate P/V ratio and the amount of sales required to maintain profit at the present level after reduction of selling price by 10%.

Solution

$$\begin{aligned} \text{P/V Ratio} &= \frac{S - V}{S} = \frac{3,00,000 - (15,000 \times 13)}{3,00,000} \\ &= 0.35 \text{ Or } 35\% \end{aligned}$$

After reduction of price by 10% it will be ₹18 (original price per unit ₹20).

$$\text{Present profit level} = (35\% \text{ of } 3,00,000) - 60,000$$

$$= ₹45,000$$

P/v ratio after price reduction

$$= \frac{S - V}{S} = \frac{18 - 13}{18} = \frac{5}{18} \%$$

To earn the same profit level

$$= \frac{F + \text{Desired Profit}}{\text{P/V Ratio}}$$

$$= 1,05,000 \times \frac{18}{5}$$

$$= ₹3,78,000$$

Illustration 3

From the following data, calculate the break-even point.

	First year	Second Year
Sales	80,000	90,000
Profit	₹10,000	₹14,000

Solution

$$\text{Bep Sales} = \frac{\text{Fixed Costs}}{\text{P/V Ratio}}$$

$$\text{P/V Ratio} = \frac{\text{Change In Profit}}{\text{Change In Sales}} \times 100$$

$$= \frac{4,000}{10,000} \times 100 = 40\%$$

$$\text{Fixed Cost} = \text{Contribution} - \text{Profit}$$

$$= 80,000 \times \frac{40}{100} - ₹10,000$$

$$= 32,000 - 10,000$$

$$= 22,000$$

$$\text{Bep Sales} = \frac{22,000 \times 100}{40}$$

$$= ₹55,000$$

Illustration 4

A company is considering expansion. Fixed costs amount to ₹4,20,000 and are expected to increase by ₹1,25,000 when plant expansion is completed. The present plant capacity is 80,000 units a year. Capacity will increase by 50 percent with the expansion. Variable costs are currently ₹6.80 per unit and are expected to go down by ₹0.40 per unit with the

expansion. The current selling price is ₹16 per unit and is expected to remain the same under either alternative. What are the break-even points under either alternatives? Which alternative is better and why?

Solution

Computation of BEP Under Two Alternatives

Items	Currently ₹	After the Expansion ₹
Fixed Costs	4,20,000	5,45,000
Capacity	80,000 Units	1,20,000Units
Variable Cost Per Unit	6.80	6.40
Contribution Margin Per Unit	9.20	9.60
Selling Price Per Unit	16	16
	4,20,000	5,45,000
BEP	-----	-----
	9.20	9.60
	-----	-----
	45,652 Units	56,771 Units
	-----	-----

Assuming that the whole production can be sold, the profit under The two alternatives will be:

Items	Currently	After the Expansion
Sales	12,80,000	19,20,000
- Variable Cost	5,44,000	7,68,000
	-----	-----
Contribution	7,36,000	11,52,000
- Fixed Cost	4,20,000	5,45,000
	-----	-----
	3,16,000	6,07,000
	-----	-----

It is obvious from the above calculations that the profits will be almost double after the expansion. Hence, the alternative of expansion is to be preferred.

Illustration 5

A factory engaged in manufacturing plastic buckets is working at 40% capacity and produces 10,000 buckets per annum:

₹	
Material	10
Labour cost	3
Overheads	5 (60% fixed)

The selling price is ₹20 per bucket.

If it is decided to work the factory at 50% capacity, the selling price falls by 3%. At 90% capacity the selling price falls by 5%, accompanied by a similar fall in the prices of material.

You are required to calculate the profit at 50% and 90% capacities and also the break-even points for the same capacity productions.

Solution

Statement showing profit and break-even point at different capacity levels:

Capacity Level	50%	90%
Production (Units)	12,500	22,500

	Per Unit ₹	Total ₹	Per Unit ₹	Total ₹
(A) Sales	19.40	2,42,500	19.00	4,27,500
Variable Cost				
Materials	10.00	1,25,000	9.50	2,13,750
Wages	3.00	37,500	3.00	67,500
Variable Overhead	2.00	25,000	2.00	45,000
	-----	-----	-----	-----
(B) Total Variable Cost	15.00	1,87,500	14.50	3,26,250
(C) Contribution	-----	-----	-----	-----
(S-V)	4.40	55,000	4.50	1,01,250
or (a-b)				
Less Fixed Cost		30,000		30,000
		-----		-----
		25,000		71,250
		-----		-----
Break-even points at	50%		90%	

Fixed Costs

Units = -----

Contribution Per Unit

$$= \frac{30,000}{4.40} = 6818 \quad \frac{30,000}{4.50} = 6667$$

$$\text{Sales Value} = ₹1,32,269 = ₹1,26,667$$

Illustration 6

Calculate

- The amount of fixed expenses
- The number of units to break-even
- The number of units to earn a profit of ₹40,000

The selling price can be assumed as ₹10.

The company sold in two successive periods 9,000 units and 7,000 units and has incurred a loss of ₹10,000 and earned ₹10,000 as profit respectively.

Solution

Year	Sales	Profit/Loss
I	7,000 Units	₹ (-)10,000
II	9,000 Units	₹ (+)10,000
	-----	-----
	2,000	20,000 (Change)
	-----	-----

	Year I	Year II
(I) Contribution	= 9,000Units X ₹10 = ₹ 90,000	7,000Units X ₹10 = ₹ 70,000
Less: Profit/Loss	= ₹ -10,000 -----	= ₹ +10,000 -----
Fixed Cost	= ₹ 80,000	= ₹ 80,000
(Contribution = Fixed Cost + Profit)		

	₹20,000	
(II) Contribution	= ----- 2,000 Units	= ₹10 Per Unit

$$\text{BEP} = \frac{\text{FC}}{\text{C}} = \frac{\text{₹80,000}}{\text{₹10}} = 8,000 \text{ Units}$$

(III) The No. of Units to Earn a Profit of ₹40,000

$$= \frac{\text{F + Desired Profit}}{\text{C Per Unit}} = \frac{80,000+40,000}{10} = 12,000 \text{ Units}$$

Illustration 7

From The Following Data Calculate

- i. P/V Ratio
- ii. Profit When Sales Are ₹20,000
- iii. Net Break-Even if Selling Price is Reduced by 20%

Fixed Expenses ₹4,000, Break-Even Point 10,000

Solution

$$(I) \text{ Break-Even Sales} = \frac{\text{Fixed Expenses}}{\text{P/V Ratio}}$$

$$\text{or P/V Ratio} = \frac{\text{Fixed Expenses}}{\text{Break-Even Sales}}$$

$$\begin{aligned} &= \frac{4,000}{10,000} \\ &= 40\% \end{aligned}$$

(II) Profit When Sales are ₹20,000

$$\begin{aligned} \text{Profit} &= \text{Sales} \times \text{P/V Ratio} - \text{Fixed Expenses} \\ &= ₹20,000 \times 40\% - ₹4,000 \\ &= ₹8,000 - ₹4,000 \\ &= ₹4,000 \end{aligned}$$

(III) New Break-Even Point if Selling Price is Reduced by 20%
If Selling Price is ₹100, Now it will be ₹80

V. Cost Per Unit = ₹60 (I.E., 100 – 40% Old P/V Ratio)

$$\text{New P/V Ratio} = \frac{80 - 60}{80} = 25\%$$

$$\begin{aligned} \text{Break-Even Point} &= \frac{4,000}{25\%} = ₹16,000 \end{aligned}$$

Illustration 8

From the following data calculate:

- Break-even point in amount of sales in rupees.
- Number of units that must be sold to earn a profit of ₹60,000 Per year.
- How many units must be sold to earn a net profit of 15% of sales?

Sales Price	₹20 Per Unit
Variable manufacturing costs	₹11 per unit
Variable selling costs	₹ 3 per unit
Fixed factory overheads	₹5,40,000
Fixed selling costs	₹2,52,000

Solution

(I) Items		Per Unit ₹		Total Fixed Cost ₹
Sales Price		20	Factory Overheads	5,40,000
			Selling Costs	2,52,000
Variable Costs				-----
Manufacturing	11			7,92,000
Selling	3	14		-----

Contribution Per Unit		6		

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{Contribution Per Unit}} = \frac{7,92,000}{6}$$

$$= 1,32,000 \text{ Units}$$

$$\text{Total Sales} = 1,32,000 \times ₹20$$

$$= 26,40,000$$

$$(II) \quad \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution per unit}} = \frac{7,92,000 + 60,000}{6}$$

$$= \frac{8,52,000}{6} = 1,42,000 \text{ Units}$$

(III) Let the No. of Units Sold be X., Marginal Cost Equation:

$$\begin{array}{ll}
 = S - V & = F + P \\
 = 20X - 14X & = F + 15\% \text{ of Sales} \\
 = 20X - 14X & = 7,92,000 + 15\% \text{ of } 20X \\
 = 6X & = 7,92,000 + 3X \\
 = 6X - 3X & = 7,92,000 \\
 = 3X & = 7,92,000
 \end{array}$$

$$\begin{aligned}
 X = \text{No. of Units} &= \frac{7,92,000}{3} \\
 &= 2,64,000
 \end{aligned}$$

$$\text{Profit} = \frac{2,64,000 \times ₹20 \times 15}{100} = ₹7,92,000$$

4.2.3.3 Break-Even Chart

The break-even point can also be shown graphically through the break-even chart. The break-even chart 'shows the profitability or otherwise of an undertaking at various levels of activity and as a result indicates the point at which neither profit nor loss is made'. It shows the relationship, through a graph, between cost, volume and profit. The break-even point lies at the point of intersection between the total cost line and the total sales line in the chart. In order to construct the breakeven chart, the following assumptions are made:

Assumptions Of Break-Even Chart

1. Fixed costs will remain constant and do not change with the level of activity.
2. Costs are bifurcated into fixed and variable costs. Variable costs change according to the volume of production.
3. Prices of variable cost factors (wage rates, price of materials, suppliers etc.) Will remain unchanged so that variable costs are truly variable.
4. Product specifications and methods of manufacturing and selling will not undergo a change.
5. Operating efficiency will not increase or decrease.

6. Selling price remains the same at different levels of activity.
7. Product mix will remain unchanged.
8. The number of units of sales will coincide with the units produced, and hence, there is no closing or opening stock.

4.2.3.4 Construction Of Break-Even Chart

The following steps are required to be taken while constructing the Break-even chart:

1. Sales volume is plotted on the x-axis. Sales volume can be shown in the form of rupees, units or as a percentage of capacity. A horizontal line is drawn spacing equal distances showing sales at various activity levels.
2. Y axis represents revenues, fixed and variable costs. A vertical line is also spaced in equal parts.
3. Draw the sales line from point o onwards. Cost lines may be drawn in two ways (i) fixed cost line is drawn parallel to x axis and above it variable cost line is drawn from zero point of fixed cost line. This line is called the total cost line (fig.1) (ii) in the second method the variable cost line is drawn from point o and above this, fixed cost line is depicted running parallel to the variable cost line. This line may be called total cost line. (fig.2)
4. The point at which the total cost cuts across the sales line is the break-even point and volume at this point is break-even volume.
5. The angle of incidence is the angle between sales and the total cost line. It is formed at the intersection of the sales and the total cost line, indicating the profit earning capacity of a firm. The wider the angle the greater is the profit and vice versa. Usually, the angle of incidence and the margin of safety are considered together to show that a wider angle of incidence coupled with a high margin of safety would indicate the most suitable conditions.

Illustration 9

From the following information, prepare a break-even chart
Showing the break-even point.

Budget output	80,000 units
Fixed expenses	₹4,00,000
Selling price per unit	₹ 20
Variable cost per unit	₹ 10

Solution

Total costs and sales at varying levels of output

Output	Variable (Units) ₹	Fixed Cost ₹	Total Cost ₹	Sales Cost ₹
	@ 10 p.u.			@ 20 p.u.
20,000	2,00,000	4,00,000	6,00,000	4,00,000
40,000	4,00,000	4,00,000	8,00,000	8,00,000
60,000	6,00,000	4,00,000	10,00,000	12,00,000
80,000	8,00,000	4,00,000	12,00,000	16,00,000

Fig. 1

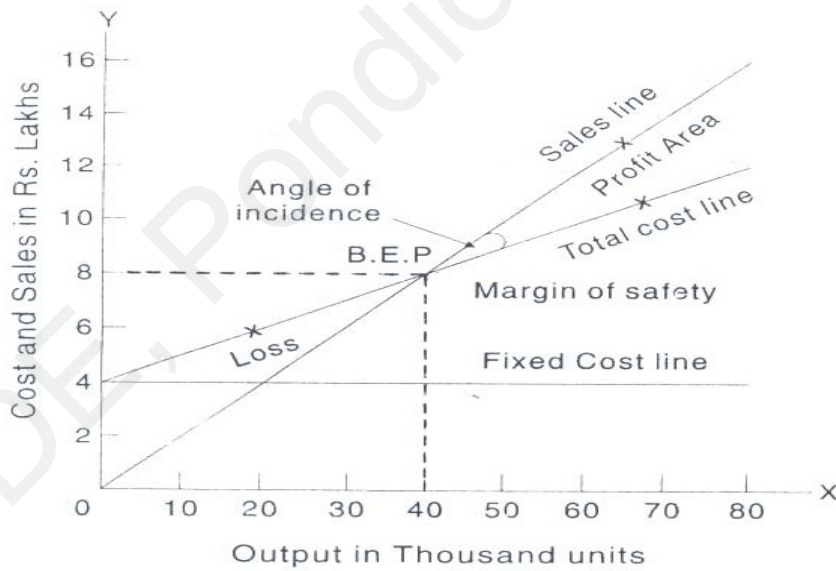
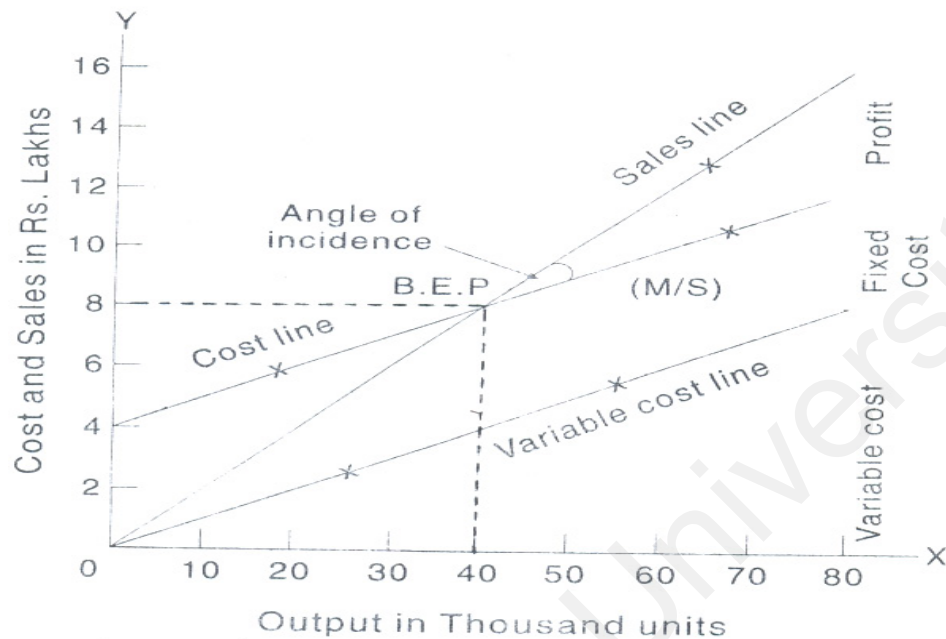


Fig. 2



First Method (Fig.1)

Fixed cost line runs parallel to x-axis. Total cost line is drawn at ₹4 lakhs on y-axis and runs upward. Sales line drawn from point o.

B.E.P. is at 40,000 units, i.e., ₹8,00,000

$$\begin{aligned}
 \text{M/S} &= \text{Sales} - \text{B.E. Volume} \\
 &= 80,000 - 40,000 \\
 &= 40,000 \text{ Units (I.E. ₹8,00,000)}
 \end{aligned}$$

Alternative Method (Fig.2)

Variable cost line starts from point o and runs upward. Total cost Line is drawn parallel to v.c.line from ₹4 lakhs point on y-axis. Total Cost and sales line cut each other at 40,000 units (i.e., ₹8,00,000 sales). This is the break-even point.

Cash Break-Even Chart

This chart is prepared to show the cash need of a concern. Fixed expenses are to be classified as those involving cash payments and those not involving cash payments like depreciation. As the cash break-even chart

is designed to include only actual payments and not expenses incurred, any time lag in the payment of items included under variable costs must be taken into account. Equal care must be shown on the period of credit allowed to the debtors for the purpose of calculating the amount of cash to be received from them, during a particular period.

Illustration 10

The following information is available in respect of graphics ltd., ghaziabad, for the budget period.

Sales 10,000 units at ₹10 per unit.

Variable costs ₹4 per unit.

Fixed costs ₹25,000 including depreciation of ₹5,000

Preference dividend to be paid ₹5,000

Taxes to be paid ₹5,000

It may be assumed that there are no lags in payment. Prepare a cash break-even chart.

4.2.3.5 Profit Volume Graph

This graph (called profit graph) gives a pictorial representation of cost-volume profit relationship. In this graph x axis represents sales. However, the sales line bisects the graph horizontally to form two areas. The ordinate above the zero sales line, shows the profit area, and the ordinate below the zero sales line indicates the loss or the fixed cost area. The profit-volume-ratio line is drawn from the fixed cost point through the break-even point to the point of maximum profit. In order to construct this graph, therefore, data on profit at a given level of activity, the break-even point and the fixed costs are required.

Illustration 11

Draw the profit volume graph and find out p/v ratio with the following information:

Output	3,000 units
Volume of sales	₹7,500
Variable cost	₹1,500
Fixed cost	₹1,500

Solution

In the above graph, the profit is ₹1,500. The fixed cost is ₹1,500. Pq represents sales line at point positive, which is the break even point i.e., ₹3,750. The p/v ratio can easily be found out with the help of this graph as follows:

$$\begin{aligned}\text{Sales At B.E.P.} &= \frac{F \times S}{S - V} = \frac{1,500 \times 7,500}{7,500 - 4,500} = ₹3,750 \\ \text{Margin of Safety} &= 7,500 - 3,750 = 3,750 \\ \text{P/V Ratio} &= \frac{S - V}{S} = \frac{7,500 - 4,500}{7,500} \\ &= \frac{2}{5} \quad \text{or} \quad 0.4 \text{ or } 40\%\end{aligned}$$

4.2.3.6 Advantages And Limitations Of Break-Even Analysis

The break-even analysis is a simple tool employed to graphically represent accounting data. The data revealed by financial statements and reports are difficult to understand and interpret. But when the same are presented through break-even charts, it becomes easy to understand them. Break-even charts help in:

1. Determining total cost, variable cost and fixed cost at a given level of activity.
2. Finding out break-even output or sales.
3. Understanding the cost, volume, profit relationship.
4. Making inter-firm comparisons.
5. Forecasting profits.
6. Selecting the best product mix.
7. Enforcing cost control.

On the negative side, break-even analysis suffers from the following limitations:

1. It is very difficult if not impossible to segregate costs into

fixed and variable components. Further, fixed costs do not always remain constant. They have a tendency to rise to some extent after production reaches a certain level. Likewise, variable costs do not always vary proportionately. Another false assumption is regarding the sales revenue, which does not always change proportionately. As we all know selling prices are often lowered down with increased production in an attempt to boost up sales revenue. The break even analysis also does not take into account the changes in the stock position (it is assumed, erroneously though, that stock changes do not affect the income) and the conditions of growth and expansion in an organisation.

2. The application of break-even analysis to a multiproduct firm is very difficult. A lot of complicated calculations are involved.

3. The break-even point has only limited importance. At best it would help management to indulge in cost reduction in times of dull business. Normally, it is not the objective of business to break-even, because no business is carried on in order to break-even. Further the term bep indicates precision or mathematical accuracy of the point. However, in actual practice, the precise break-even volume cannot be determined and it can only be in the nature of a rough estimate. Therefore, critics have pointed out that the term 'break-even area' should be used in place of bep.

4. Break-even analysis is a short-run concept, and it has a limited application in the long range planning.

Despite these limitations, break-even analysis has some practical utility in that it helps management in profit planning. According to wheldon, 'if the limitations are accepted, and the chart is considered as being an instantaneous photograph of the present position and possible trends, there are some very important conclusions to be drawn from such a chart'.

Summary

Cost-volume-profit analysis is a technique of analysis to study the effects of cost and volume variations on profit. It determines the probable profit at any level of activity. It helps in profit planning, preparation of flexible budgets, fixation of selling prices for products, etc.

The break-even point is generally depicted through the break-even chart. The chart shows the profitability of an undertaking at various levels of activity. It brings out the relationship between cost, volume and profit clearly. On the negative side, the limitations of break-even analysis are: difficulty in segregating costs into fixed and variable components, difficulty in applying the technique to multi-product firms, short-term orientation of the concept etc.

Key Words

Cost-volume-profit analysis: It is that system of analysis which determines the probable profit at any level of activity.

Profit planning: Estimating the profit as accurately as possible.

Pricing: Fixing prices for products.

Break-even chart: It is that chart which shows the bep graphically.

Cash break-even chart: This chart shows the cash need of a concern.

Profit-volume graph: This chart gives a pictorial representation of cost volume- profit analysis.

4.2.3.9 Self Assessment Questions

1. What is meant by cost-volume-profit analysis? Explain its application in managerial decision making.
2. How would you construct a break-even chart?
3. Make an evaluation of break-even analysis.
4. You are given the following data for the year 1989 of x company.

	₹	%
Variable costs	6,00,000	60
Fixed costs	3,00,000	30
Net profit	1,00,000	10
	-----	----
Total sales	10,00,000	100
	-----	----

- Find out
- (a) Break-Even Point
 - (b) P/V Ratio, and
 - (c) Margin of Safety Ratio

Also draw a break-even chart indicating contribution.

A firm is selling x product, whose variable cost per unit is ₹10 and fixed cost is ₹6,000. It has sold 1,000 articles during one month at ₹20 per unit. Market research shows that there would be a great demand for the product if the price can be reduced. If the price can be reduced to ₹12.50 per unit, it is expected that 5,000 articles can be sold in the expanded market. The firm has to take a decision whether to produce and sell 1,000 units at the rate of ₹20 or to produce and sell for the growing demand of 5,000 units at the rate of ₹12.50. Give your advice to the management in taking decision.

A publishing firm sells a popular novel at ₹15 each. At current sales of 20,000 books, the firm breaks even. It is estimated that if the author's royalties were reduced, the variable cost would drop by ₹1.00 to ₹7.00 per book. Assume that the royalties were reduced by ₹1.00, that the price of the book is reduced to ₹12 and that this price reduction increases sales from 20,000 to 30,000 books. What are the publisher's profits, assuming that fixed costs do not change?

An analysis of a manufacturing co. Led to the following information

	Variable Cost	Fixed Cost
Cost Element	(% Of Sales)	₹
Direct Material	32.8	
Direct Labour	28.4	
Factory Overheads	12.6	1,89,900
Distribution Overheads	4.1	58,400
General Administration Overheads	1.1	66,700
Budgeted Sales		18,50,000

You are required to determine

- The break-even sales volume
- The profit at the budgeted sales volume
- The profit if actual sales
 - Drop by 80%
 - Increase by 5% from budgeted sales.

4.2.3.10 Key To Self Assessment Questions (for problems only)

Q.No.4: (A) ₹7,50,000; (B) 40%; (C) 25%

Q.No.5: The Proposal Is Profitable

Q.No.6: ₹10,000

Q.No.7: (A) ₹15,000; (B) ₹73,000; (C) (I) ₹34,650; (Ii) ₹9,925

4.2.3.11 Case Analysis

The directors of anandam ltd. Provide you the following data relating to the cylce chain manufactured by them:

	₹	₹
Sales 4,000 units @₹50 each		2,00,000
Production cost details:		
Materials consumed	80,000	
Labour cost	40,000	
Variable overheads	20,000	
Fixed overheads	30,000	1,70,000
	-----	-----
Profit		30,000

They require you to answer their following queries:

- The number of units by selling which the company will be at break-even.
- The sales needed to earn a profit of 20% on sales.
- The extra units which would be sold to obtain the present profit if it is proposed to reduce the selling price by 20%

Solution

(i) Break Even Units

$$\frac{\text{Fixed Cost}}{\text{Contribution Per Unit}} = \frac{\text{₹30,000}}{\text{₹15}}$$

$$= 2000 \text{ Units}$$

(ii) Sales To Earn 20% On Sales

Let the units to be sold to earn 20% be x. Therefore sales will be 50x and profit is 20% of 50x i.e. 10x. Now the Total Sales Should be Fixed Cost + Variable Cost + Profit is

$$\begin{aligned}50x &= 30000 + 35x + 10x \\5x &= 30000 \\x &= 6000 \text{ units}\end{aligned}$$

Therefore sales required is 6000 units x ₹50 = ₹3,00,000

(iii) Extra units to be sold if selling price is reduced by 20%.

Present Selling Price	₹50
Less 20%	₹10

New Selling Price	₹40
Less Variable Cost	₹35

Contribution	₹ 5

$$\text{Units To Be Sold} = \frac{\text{Fixed Cost} + \text{Target Profit}}{\text{Contribution}}$$

$$\begin{aligned}&= \frac{30,000 + 30,000}{5} = 12000 \text{ Units}\end{aligned}$$

$$\text{Extra Units to be Sold} = 12000 - 4000 = 800 \text{ Units}$$

4.2.3.12 Books For Further Reading

- 1.**P.Das Gupta:** Studies In Cost Accounting, *Sultan Chand & Sons, New Delhi.*
- 2.**Jain & Narang:** Advanced Cost Accounting, *Kalyani Publishers.*
- 3.**Jawaharlal:** Advanced Management Accounting, *S.Chand & Co.*
- 4.**S.N.Maheswari:** Management Accounting and Financial Control, *Sultan Chand & Sons.*
- 5.**V.K.Saxena And C.D.Vashist:** Advanced Cost And Management Accounting, *Sultan Chand & Sons, New Delhi.*

DDE, Pondicherry University

UNIT V : Cost Estimation And Control

Lesson – 5.1 Cost Accounting

5.1.1 Introduction

Accounting can no longer be considered a mere language of business. The need for maintaining the financial chastity of business operations, ensuring the reliability of recorded experience resulting from these operations and conducting a frank appraisal of such experiences has made accounting a prime activity along with such other activities as marketing, production and finance. Accounting may be broadly classified into two categories – accounting which is meant to serve all parties external to the operating responsibility of the firms and the accounting, which is designed to serve internal parties to take care of the operational needs of the firm. The first category, which is conventionally referred to as “financial accounting”, looks to the interest of those who have primarily a financial stake in the organisation’s affairs – creditors, investors, employees etc. On the other hand, the second category of accounting is primarily concerned with providing information relating to the conduct of the various aspects of a business like cost or profit associated with some portions of business operations to the internal parties viz., management. This category of accounting is divided into “management accounting” and “cost accounting”. This section deals with cost accounting.

5.1.2 Learning Objectives

After reading this lesson, the reader should be able to:

- Understand The Different Dimensions of Cost Accounting.
- Distinguish Cost Accounting From Financial Accounting.
- Appreciate The Utility of Cost Accounting.
- Apply The Various Bases of Classification of Costs.
- Prepare A Cost Sheet or Tender or Quotations.

5.1.3 Contents

- 5.1.3.1 Meaning of Cost Accounting
- 5.1.3.2 Distinction Between Financial Accounting and Cost Accounting
- 5.1.3.3 Utility of Cost Accounting
- 5.1.3.4 Distinction Between Costing and Cost Accounting
- 5.1.3.5 Classification of Cost
- 5.1.3.6 Cost Sheet
- 5.1.3.7 Illustrations
- 5.1.3.8 Summary
- 5.1.3.9 Key Words
- 5.1.3.10 Self Assessment Questions
- 5.1.3.11 Key to Self Assessment Questions
- 5.1.3.12 Case Analysis
- 5.1.3.13 Books for Further Reading

5.1.3.1 Meaning Of Cost Accounting

Cost accounting developed as an advanced phase of accounting science and is trying to make up the deficiencies of financial accounts. It is essentially a creation of the twentieth century. Cost accounting accounts for the costs of a product, a service or an operation. It is concerned with actual costs incurred and the estimation of future costs. Cost accounting is a conscious and rational procedure used by accountants for accumulating costs and relating such costs to specific products or departments for effective management action. Cost accounting through its marginal costing technique helps the management in profit planning and through its another technique i.e. Standard costing facilitates cost control. In short, cost accounting is a management information system which analyses past, present and future data to provide the basis for managerial decision making.

5.1.3.2 Distinction Between Financial Accounting And Cost Accounting

Though there is much common ground between financial accounting and cost accounting and though in fact cost accounting is an outgrowth of financial accounting yet the emphasis differs. Firstly financial accounting

is more attached with reporting the results of business to persons other than internal management – government, creditors, investors, researchers, etc. Cost accounting is an internal reporting system for an organisation's own management for decision making. Secondly financial accounting data is historical in nature and its periodicity of reporting is much wider. Cost accounting is more concerned with short-term planning and its reporting period much lesser than financial accounting. It not only deals with historic data but also is futuristic in approach. Thirdly, in financial accounting the major emphasis in cost classification is based on the type of transaction e.g. Salaries, repairs, insurance, stores, etc. But in cost accounting the major emphasis is on functions, activities, products, processes and on internal planning and control and information needs of the organisation.

5.1.3.3 Utility Of Cost Accounting

A properly installed cost accounting system will help the management in the following ways:

- The analysis of profitability of individual products, services or jobs.
- The analysis of profitability of different departments or operations.
- It locates differences between actual results and expected results.
- It will assist in setting the prices so as to cover costs and generate an acceptable level of profit.
- Cost accounting data generally serves as a base to which the tools and techniques of management accounting can be applied to make it more purposeful and management oriented.
- The effect on profits of increase or decrease in output or shutdown of a product line or department can be analysed by adoption of efficient cost accounting system.

5.1.3.4 Distinction Between Costing And Cost Accounting

Costing is the technique and process of ascertaining costs. It tries to find out the cost of doing something, i.e., the cost of manufacturing an article, rendering a service, or performing a function. **Cost accounting** is a broader term, in that it tries to determine the costs through a formal system of accounting (unlike costing which can be performed even through informal means). Stated precisely, cost accounting is a formal mechanism by means of which costs of products and services are ascertained and

controlled. The institute of cost and management accountants, u.k. define cost accounting as: the application of accounting and costing principles, methods and techniques in the ascertainment of costs and the analysis of savings and/or excesses as compared with previous experience or with standards. It, thus, includes three things:

- Cost Ascertainment: finding out the specific and precise total and unit costs of products and services.
- Cost Presentation: reporting cost data to various levels of management with a view to facilitate decision making.
- Cost Control: this consists of estimating costs for production and activities for the future, and keeping them within proper limits. Budgets and standards are employed for this purpose.

Cost accounting also aims at cost reduction, i.e., achieving a permanent and real reduction in cost by improving the standards. Cost accountancy is a comprehensive term that implies the 'application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control'. It seeks to control costs and ascertain the profitability of business operations.

5.1.3.5 Classification Of Cost

In the process of cost accounting, costs are arranged and rearranged in various classifications. The term 'classification' refers to the process of Grouping costs according to their common characteristics. The different bases of cost classification are:

1. By nature or elements (materials, labour and overheads)
2. By time (historical, pre-determined)
3. By traceability to the product (direct, indirect)
4. By association with the product (product, period)
5. By changes in activity or volume (fixed, variable, semi-variable)
6. By function (manufacturing, administrative, selling, research and development, pre-production)
7. By relationship with the accounting period (capital, revenue)
8. By controllability (controllable, non-controllable)
9. By analytical/decision-making purpose (opportunity, sunk, differential, joint, common, imputed, out-of-pocket, marginal, uniform, replacement)
10. By other reasons (conversion, traceable, normal, avoidable, unavoidable, total)

1. Elements Of Cost

The elements of costs are the essential part of the cost. There are broadly three elements of cost, as explained below:

(A) Material

The substance from which the produce is made is called material. It can be direct as well as indirect.

i) Direct Material:

It refers to those materials which become an integral part of the final product and can be easily traceable to specific physical units. Direct materials, thus, include:

1. All materials specifically purchased for a particular job or process.
2. Components purchased or produced.
3. Primary packing materials (e.g., carton, wrapping, card-board boxes etc.).
4. Material passing from one process to another.

ii) Indirect Material

All materials which are used for purpose ancillary to the business and which cannot conveniently be assigned to specific physical units are known as 'indirect materials'. Oil, grease, consumable stores, printing and stationery material etc. Are a few examples of indirect materials.

(B) Labour

In order to convert materials into finished products, human effort is required. Such human effort is known as labour. Labour can be direct as well as indirect.

i) Direct Labour

It is defined as the wages paid to workers who are engaged in the production process and whose time can be conveniently and economically traceable to specific physical units. When a concern does not produce but

instead renders a service, the term direct labour or wages refers to the cost of wages paid to those who directly carry out the service, e.g., wages paid to driver, conductor etc. Of a bus in transport service.

ii) Indirect Labour

Labour employed for the purpose of carrying out tasks incidental to goods produced or services provided is called indirect labour or indirect wages. In short, wages which cannot be directly identified with a job, process or operation, are generally treated as indirect wages. Examples of indirect labour are: wages of store-keepers, foremen, supervisors, inspectors, internal transport men etc.

(C) Expenses

Expenses may be direct or indirect.

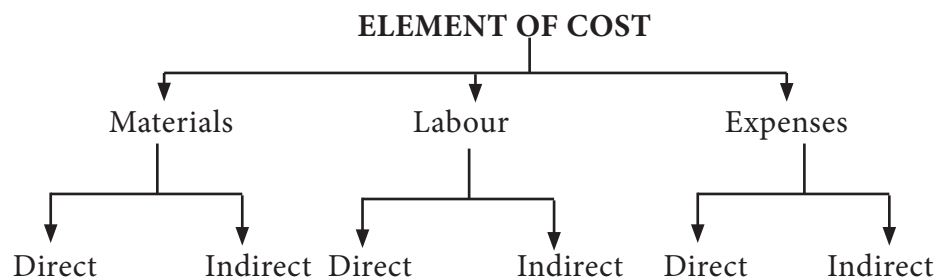
i) Direct Expenses

These are expenses which can be directly, conveniently and wholly identifiable with a job, process or operation. Direct expenses are also known as chargeable expenses or productive expenses. Examples of such expenses are: cost of special layout, design or drawings, hire of special machinery required for a particular contract, maintenance cost of special tools needed for a contract job, etc.

ii) Indirect Expenses

Expenses which cannot be charged to production directly and which are neither indirect materials nor indirect wages are known as indirect expenses. Examples are rent, rates and taxes, insurance, depreciation, repairs and maintenance, power, lighting and heating etc.

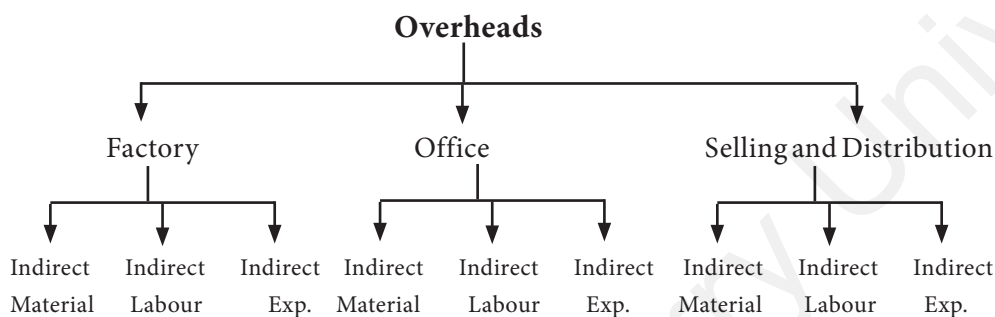
The above elements of cost may be shown by means of a chart:



1. Overheads

The term overheads includes, indirect material, indirect labour and indirect expenses, explained in the preceding paragraphs. Overheads may be incurred in the factory, office or selling and distribution departments/divisions in an undertaking. Thus overheads may be of three types: factory overheads, office and administrative overheads and selling and distribution overheads. This classification of overheads may be shown thus:

Classification Of Overheads



2. Cost Classification By Time

On the basis of the time of computing costs, they can be classified into historical and pre-determined costs.

i) Historical Costs

These costs are computed after they are incurred. Such costs are available only after the production of a particular thing is over.

ii) Pre-Determined Costs

These costs are computed in advance of production on the basis of a specification of all factors influencing cost. Such costs may be:

1. Estimated costs: estimated costs are based on a lot of guess work. They try to ascertain what the costs will be based on certain factors. They are less accurate as only past experience is taken into account primarily, while computing them.

2. Standard costs: standard costs is a pre-determined cost based on a technical estimate for material, labour and other expenses for a selected period of time and for a prescribed set of working conditions. It is more scientific in nature and the object is to find out what the costs should be.

3. Cost Classification By Traceability

As explained previously, costs which can be easily traceable to a product are called direct costs. Indirect costs cannot be traced to a product or activity. They are common to several products (e.g., salary of a factory manager, supervisor etc.) And they have to be apportioned to different products on some suitable basis. Indirect costs are also called 'overheads'.

4. Cost Classification By Association With Product

Costs can also be classified (on the basis of their association with products) as product costs and period costs.

1. Product Costs: product costs are traceable to the product and include direct material, direct labour and manufacturing overheads. In other words, product cost is equivalent to factory cost.

2. Period Costs: period costs are charged to the period in which they are incurred and are treated as expenses. They are incurred on the basis of time, e.g., rent, salaries, insurance etc. They cannot be directly assigned to a product, as they are incurred for several products at a time (generally).

5. Cost Classification By Activity/Volume

Costs are also classified into fixed, variable and semi-variable on the basis of variability of cost in the volume of production.

1. ***Fixed Cost***

Fixed cost is a cost which tends to be unaffected by variations in volume of output. Fixed cost mainly depends on the passage of time and does not vary directly with the volume of output. It is also called period cost, e.g., rent, insurance, depreciation of buildings etc. It must be noted

here that fixed costs remain fixed upto a certain level only. These costs may also vary after a certain production level.

2. *Semi-Variable Cost*

These costs are partly fixed and partly variable. Because of the variable element, they fluctuate with volume and because of the fixed element, they do not change in direct proportion to output. Semi-variable or semi-fixed costs change in the same direction as that of the output but not in the same proportion. For example, the expenditure on maintenance is to a great extent fixed if the output does not change significantly. Where, however, the production rises beyond a certain limit, further expenditure on maintenance will be necessary although the increase in the expenditure will not be in proportion to the rise in output. Other examples in this regard are: depreciation, telephone rent, repairs etc.

3. *Variable Cost*

Cost which tends to vary directly with volume of outputs is called 'variable cost'. It is a direct cost. It includes direct material, direct labour, direct expenses etc. It should be noted here that the variable cost per unit is constant but the total cost changes corresponding to the levels of output. It is always expressed in terms of units, not in terms of time.

6. Cost Classification By Function

On the basis of the functions carried out in a manufacturing concern, costs can be classified into four categories:

1. **Manufacturing/Production Cost:** it is the cost of operating the manufacturing division of an enterprise. It is defined as the cost of the sequence of operations which begin with supplying materials, services and ends with the primary packing of the product.

2. **Administrative/Office Cost:** it is the cost of formulating the policy, directing the organisation and controlling the operations of an undertaking, which is not directly related to production, selling, distribution, research or development. Administration cost, thus, includes all office expenses: remuneration paid to managers, directors, legal expenses, depreciation of office premises etc.

3. **Selling Cost:** selling cost is the cost of seeking to create and stimulate demand e.g., advertisements, show room expenses, sales promotion expenses, discounts to distributors, free repair and servicing expenses, etc.

4. **Distribution Cost:** it is the cost of the sequence of operations which begins with making the packed product, available for despatch and ends with making the reconditioned returned empty package, if any, available for re-use. Thus, distribution cost includes all those expenses concerned with despatching and delivering finished products to customers, e.g., warehouse rent, depreciation of delivery vehicles, special packing, loading expenses, carriage outward, salaries of despatch clerks, repairing of empties for re-use, etc.

5. **Research And Development Cost:** it is the cost of discovering new ideas, processes, products by experiment and implementing such results on a commercial basis.

6. **Pre-Production Cost:** expenses incurred before a factory is started and expenses involved in introducing a new product are preproduction costs. They are treated as deferred revenue expenditure and charged to the cost of future production on some suitable basis.

7. Cost Classification By Relationship With Accounting Period

On the basis of controllability, costs can be classified as controllable or uncontrollable.

1. **Controllable Cost:** a cost which can be influenced by the action of a specified member of an undertaking is a controllable cost, e.g., direct materials, direct labour etc.

2. **Uncontrollable Cost:** a cost which cannot be influenced by the action of a specified member of an undertaking is an uncontrollable cost, e.g., rent, rates, taxes, salary, insurance etc.

The term controllable cost is often used in relation to variable cost and the term uncontrollable cost in relation to fixed cost. It should be noted here that a controllable cost can be controlled by a person at a given organisation level only. Sometimes two or more individuals may be involved in controlling such a cost.

8. Cost Classification By Decision-Making Purpose

Costs may be classified on the basis of decision-making purposes for which they are put to use, in the following ways:

1. **Opportunity Cost:** it is the value of the benefit sacrificed in favour of choosing a particular alternative or action. It is the cost of the best alternative foregone. If an owned building, for example, is proposed to be used for a new project, the likely revenue which the building could fetch, when rented out, is the opportunity cost which should be considered while evaluating the profitability of the project.
2. **Sunk Cost:** a cost which was incurred or sunk in the past and is not relevant for decision-making is a sunk cost. It is only historical in nature and is irrelevant for decision-making. It may also be defined as the difference between the purchase price of an asset and its salvage value.
3. **Differential Cost:** the difference in total costs between two alternatives is called as differential cost. In case the choice of an alternative results in increase in total cost, such increase in costs is called 'incremental cost'. If the choice results in decrease in total costs, the resulting decrease is known as decremental cost.
4. **Joint Cost:** whenever two or more products are produced out of one and the same raw material or process, the cost of material purchased and the processing are called joint costs. Technically speaking, joint cost is that cost which is common to the processing of joint products or by-products upto the point of split-off or separation.
5. **Common Cost:** common cost is a cost which is incurred for more than one product, job territory or any other specific costing object. It cannot be treated to individual products and, hence, apportioned on some suitable basis.
6. **Imputed Cost:** this type of cost is neither spent nor recorded in the books of account. These costs are not actually incurred (hence known as hypothetical or notional costs) but are considered while making a decision. For example, in accounting, interest and rent are recognized only as expenditure when they are actually paid. But in costing, they are charged on a notional basis while ascertaining the cost of a product.

7. Out-of-Pocket Cost: it is the cost which involves current or future expenditure outlay, based on managerial decisions. For example a company has its own trucks for transporting goods from one place to another. It seeks to replace these by employing public carriers of goods. While making this decision, management can ignore depreciation, but not the out-of-pocket costs in the present situation, i.e., fuel, salary to drivers and maintenance paid in cash.
8. Marginal Cost: it is the aggregate of variable costs, i.e., prime cost plus variable overheads.
9. Replacement Cost: it is the cost of replacing a material or asset in the current market.

5.1.3.6 Cost Sheet

Cost sheet is a statement presenting the items entering into cost of products or services. It shows the total cost components by stages and cost per unit of output during a period. It is usually prepared to meet three objectives: to provide the classification of costs in a summarised form, to prepare estimates of costs for future use and to facilitate a comparative study of costs with previous cost sheets to know the cost trends.

The Layout of a typical cost sheet is provided below:

Specimen Cost Sheet

Particulars	Total Cost	Cost per Unit
Direct Materials		
Opening stock of materials		
<i>Add</i> purchases of materials		
<i>Less</i> closing stock of materials		
(a) Materials consumed	_____	_____
Direct Wages		
Direct Expenses		
PRIME COST		
<i>Add</i> Factory Overheads		
Factory Rent, Rates, Taxes		
Fuel-Power and Water		
Lighting and Heating		
Indirect Wages		
Depreciation, Repairs		
Salaries of Works Manager etc.	_____	
Indirect Materials		
Drawing Office and works Office Expenses		
Depreciation on Factory Land and Building		
<i>Less</i> Scrap Value		
Defective work		
<i>Add</i> work in progress (Opening)		
<i>Less</i> work in progress(closing)	_____	
WORKS COST		
<i>Add</i> Office / Administration overheads		
Office Rent, Insurance, Loghting, Cleaning		
Office Salaries, Telephone, Law and Audit		
Expenses	_____	
General Manager's Salary		
Printing and Stationery		
Maintenance, Repairs, Upkeep of Office Bldg		

Bank Charges and Miscellaneous Expenses		
COST OF PRODUCTION		
<i>Add</i> Opening stock of finished goods		
<i>Less</i> Closing stock of finished goods		
COST OF GOODS SOLD		
<i>Add</i> Selling and Distribution Overheads	_____	
Showroom expenses, salesmen's salaries & Commission, bad debts, discounts, warehouse rent, carriage outwards, advertising, delivery expenses, samples and free gifts etc.		
COST OF SALES		
<i>Add</i> Net Profit or deduct net loss:		
SALES		

Treatment of certain items in the cost sheet

(a) **Computation Of Profit**

Profit may be calculated either as a Percentage of cost or selling price.

Example

profit as a percentage of cost:

Factory cost	5,700
Administration overhead	600

Total cost	6,300

Profit 10% on cost	630

Selling price	6,930

$$\text{So profit} = \text{cost} \frac{\text{percent}}{100}$$

Example

Profit as a percentage of selling price. Here the percentage is on Selling price. Selling price includes Cost + Profit.

Sales price	=	100
Less profit	=	10

Cost price	=	90

This profit of ₹10 is on ₹90 which is the cost price. So it is 1/9th of cost price. In the above example,

Total cost	=	6,300
Profit on 10% on SP	=	700

Selling price		7,000

So sale price	=	$\frac{\text{Cost} \times \text{percent}}{100 - \text{percent}}$
	=	$\frac{6,300 \times 100}{100 - 10}$
	=	7,000

(b) Treatment Of Stock

The term 'stock' includes three items: raw materials, work in progress and finished goods. The value of raw materials is arrived at in the following manner:

Opening stock of raw material
Add purchases
Add Expenses involved in the purchases of raw material
Less closing stock of raw materials

Work-in-progress represents the quantity of semi-finished goods at the time of the preparation of the cost sheet. It represents cost of materials,

labour and manufacturing expenses to-date. Work-in-progress may be shown in the cost sheet either immediately after the prime cost or after the calculation of the factory overheads, as shown in the specimen cost sheet. Finally, in respect of stock of finished goods, adjustments have to be made where opening and closing stock of finished goods are given. This is done, as shown in the specimen cost sheet, by adding opening stock of finished goods to the cost of production arrived at on the basis of current figures and reducing the closing stock of finished goods from this total. Let's explore these aspects more clearly through the following illustrations:

Tenders And Quotations

While preparing tenders or quotations, manufacturers or contractors have to look into the figures pertaining to the previous year as shown in the cost sheet for that period. These figures have to be suitably modified in the light of changes expected in the prices of materials, labour, etc., and submit the tender or quotation accordingly.

5.3.6 Illustrations

Illustration 1

Prepare the cost sheet to show the total cost of production and cost per unit of goods manufactured by a company for the month of July 2012. Also find out the cost of sales.

Stock of raw materials 1-7-2012	3,000
Raw materials purchased	28,000
Stock of raw materials 31-7-2012	4,500
Manufacturing wages	7,000
Depreciation of plant	1,500
Loss on sale of a part of plant	300
Factory rent and rates	3,000
Office rent	500
General expenses	400
Discount on sales	300
Advertisement expenses to be fully charged	600
Income-tax paid	2,000
The number of units produced during July, 2012 was 3,000.	

The stock of finished goods was 200 and 400 units on 1-7-2012 and 31-7-2012 respectively. The total cost of units on hand on 1-7-2012 was ₹2,800. All these have been sold during the month. Output 3,000 units.

Cost sheet for the year ended 31-7-2012

Particulars		Total Cost ₹	Per Unitcost ₹
Raw materials consumed			
Opening stock	3,000		
Add purchases	28,000		

	31,000		
Less closing stock	4,500	26,500	8.83
Direct wages		7,000	2.33
		-----	-----
Prime cost		33,500	11.16
Factory overheads:			
Depreciation	1,500		
Factory rent	3,000	4,500	1.50
	-----	-----	-----
Factory cost		38,000	12.66
Office and administrative Overheads:			
Office rent	500		
General expenses	400	900	0.30
	-----	-----	-----
Cost of production		38,900	12.96
		-----	-----
Statement of cost of sales			
Cost of production		38,900	
Add: opening stock of Finished goods		2,800	

		41,700	
Less: closing stock of finished Goods (400 x ₹12.96)		5,184	

Cost of production of goods sold		36,516	
Add: selling and distribution overhead:			
Discount on sales	300		
Advertisement expenses	600	900	
	-----	-----	
Cost of sales		37,416	

Illustration 2

From the following particulars, prepare a cost sheet for the year ending 31-12-2011.

	₹
Opening stock of raw materials (1-1-2011)	50,000
Purchases of raw materials	1,60,000
Closing stock of raw materials (31-12-2011)	80,000
Wages – productive	1,50,000
General	20,000
Chargeable expenses	40,000
Rent, rates and taxes – factory	10,000
Rent, rates and taxes – office	1,000
Depreciation on plant and machinery	3,000
Salary – office	5,000
Salary – travellers	4,000
Printing and stationery	1,000
Office cleaning and lighting	800
Repairs and renewals (factory)	6,400
Other factory expenses	5,000
Management expenses (Including Managing Director's fees)	24,000
Travelling expenses of salesmen	2,200
Showroom expenses and samples	2,000
Carriage and freight – outwards	2,000
Carriage and freight – inwards	9,000
Octroi on purchases	1,000
Advertisement	30,000
Sales	4,60,000

Management expenses should be allocated in the ratio of 2:1:3 on factory, office and sales departments.

Solution

Statement of cost and profit for 2011

	₹	₹
Materials Consumed		
Opening Stock	50,000	
Add Purchases	1,60,000	
Add Carriages Freight Inwards	9,000	
Add Octroi on Purchases	1,000	

Less Closing Stock	2,20,000	
	80,000	
Cost of Materials Used	-----	1,40,000
Productive Wages		1,50,000
Chargeable Expenses		40,000

Prime Cost		3,30,000
Factory Expenses		
General Wages	20,000	
Rent, Rates and Taxes	10,000	
Depreciation on Plant and Machinery	3,000	
Repairs and Renewals	6,400	
Other Factory Expenses	5,000	
Management Expenses: 1/6 of ₹24,000	8,000	
	-----	52,400
Factory Cost		-----
Administrative Expenses		3,82,400
Rent, Rates and Taxes	1,000	
Salary	5,000	
Printing and Stationery	1,000	
Cleaning and Lighting	800	
Management Expenses: 1/6 of ₹24,000	4,000	
		11,800
Cost of Production		-----
Selling and Distribution Expenses		3,94,200
Advertising	4,000	
Show-Room Expenses and Samples	2,000	
Traveller's Salary	4,000	
Salesmen's Travelling Expense	2,200	
Carriage Outwards and Freight	2,000	
Management Expenses: 3/6 of ₹24,000	12,000	
		26,200

Cost of sales		4,20,400
Sales		4,60,000

Profit		39,600

Illustration 3

The following particulars relate to a company for a period of Three months:

	₹
Raw Materials (1-1-2012)	55,000
Raw Materials (31-3-2012)	35,000
Factory Wages	80,000
Materials Purchased	60,000
Sales	1,54,000
Indirect Expenses	10,000
Stock of Finished Goods (1-1-2012)	NIL
Stock of Finished Goods (31-3-2012)	30,000
No. Of units produced during the period was 2,000.	

Prepare a statement of cost for the period and compute the price to be quoted for 500 units in order to realise the same profit as for the period under review, assuming no alternation in wages and cost of materials.

Solution

Statement of cost for the period ending 31-3-2012

Output 2,000 Units

Particulars	Amount ₹
Opening stock of raw materials	55,000
Add: purchases	60,000

	1,15,000
Less: closing stock of raw materials	35,000

Raw materials consumed	80,000
Factory wages	80,000

Prime cost	1,60,000
Indirect expenses	10,000

Cost of production	1,70,000
Less: closing stock of finished goods	30,000

Cost of goods sold	1,40,000

14,000 x 100	
Profit (-----) = 10% of cost	
1,40,000	14,000

Sales	1,54,000

Tender statement showing quotations for 500 units	

Particulars	Amount ₹
80,000 x 500	
Materials Consumed (-----) = 10% of cost	
2,000	20,000
80,000 x 500	
Wages (-----) = 10% of cost	20,000
2,000	-----
Prime Cost	40,000
10,000 x 500	
Add: Indirect Expenses (-----) 2,500	
2,000	-----
Cost of Production	42,500
Add: Profit (10% of Cost fo Production	4,250

Price to be quoted	46,750

Illustration 4

The following information has been taken from a factory:

	₹
Materials	50,000
Direct wages	40,000
Factory overheads	30,000
Administration overheads	20,000

You are required to fix the selling price of a machine costing ₹4,200 in materials and ₹3,000 in wages so that it yields a profit of 25% on selling price.

Solution

Statement of cost

	₹
Materials	50,000
Direct wages	40,000

Prime cost	90,000
Factory overheads	30,000

Works cost	1,20,000
Administration overheads	20,000

Cost of production	1,40,000

Percentage of factory overheads to direct wages:

$$\frac{30,000}{40,000} \times 100 = 75\%$$

Percentage of office overheads to works cost:

$$\frac{20,000}{1,20,000} \times 100 = 16.67\%$$

Tender or quotation

	₹
Materials	4,200
Wages	3,000

Prime cost	7,200
Factory overheads - 75% of wages	2,250

Works cost	9,450
Administration overheads – 16.67% on Works cost	1,575

Cost of production	11,025
Profit 25% on selling price or	33 1/3
33 1/3	100
33 1/3% on cost 11,025 x -----	3,675
100	-----
Estimated selling price	14,700

5.1.3.8 Summary

Traditional accounting or financial accounting can no longer serve the purposes of all concerned. Especially the internal organs of the business concerns, namely managements, want a lot of analytical information which could not be provided by the financial accounting. Hence to serve the needs of management two more kinds of accounts – management accounting and cost accounting have evolved. Simply stated, management accounting serves the needs of management and cost accounting tries to determine the costs through a formal system of accounting. Costs can be classified on various bases and cost sheet is a statement presenting the items entering into cost of products or services.

5.1.3.9 Key Words

Direct Expenses: Expenses that can easily be identified with a particular product.

Indirect Expenses: Expenses which cannot be easily identified with a particular product.

Overheads: Total of all indirect expenses.

Works Cost: Prime cost + factory overheads.

Cost of Production: Works cost + administration overheads.

Cost of Sales: Cost of production + selling and distribution overheads.

Cost Sheet: A statement which is prepared to ascertain the cost of sales.

Tenders: A statement which quotes the price for a particular job or level of production activity.

5.3.10 Self Assessment Questions

1. What are the limitations of financial accounting?
2. Justify the need for cost accounting.
3. Explain the various bases for classification of costs.
4. What are the differences between a 'cost sheet' and 'tender'.
5. Prepare a cost sheet for the production of 100 units of an article using imaginary figures.
6. Prepare a statement of cost showing:
 - (a) Value of materials consumed
 - (b) Total cost of production
 - (c) Cost of goods sold and
 - (d) The amount of profit

From the following details relating to a Toy manufacturing concern:

	₹
Opening stock: Raw materials	25,000
Finished goods	20,000
Raw materials purchased	2,50,000
Wages paid to labourers	1,00,000
Closing stock: raw materials	20,000
Finished goods	25,000
Chargeable expenses	10,000
Rent, rates and taxes (factory)	25,000
Motive power	10,000
Factory heating and lighting	10,000
Factory insurance	5,000
Experimental expenses	2,500
Waste materials in factory	1,000
Office salaries	20,000
Printing and stationery	1,000
Salesmen's salary	10,000
Commission to travelling agents	5,000
Sales	5,00,000

7. Kolam products ltd., produces a stabilizer that sells for ₹300. An increase of 15% in the cost of materials and 10% in the cost of labour is anticipated. If the only figures available are those given below, what must be the selling price to give the same percentage of gross profit as before?

1. Material costs have been 45% of cost of sales
2. Labour costs have been 40% of cost of sales
3. Overhead costs have been 15% of the sales
4. The anticipated increased costs in relation to the present sale
5. Price would cause a 35% decrease in the amount of present gross Profit.

5.1.3.11 Key To Self Assessment Questions (For Problems Only)

6. Materials used ₹2,55,000; prime cost ₹3,65,000; works cost ₹4,18,500; cost of production ₹4,39,500; cost of sales ₹4,49,500 and profit rs,50,500.
7. Selling price: ₹332.25.

5.1.3.12 Case Analysis

A small scale manufacturer produces an article at the operated capacity of 10,000 units while the normal capacity of his plant is 14,000 units. Working at a profit margin of 20% on sales realisation, he has formulated his budget as under:

	10,000 units ₹	14,000 units ₹
Sales realisation	2,00,000	2,80,000
Variable overheads	50,000	70,000
Semi-variable overheads	20,000	22,000
Fixed overheads	40,000	40,000

He gets an order for a quantity equivalent to 20% of the operated Capacity and even on this additional production profit margin is desired At the same percentage on sales realisation as for production to operated Capacity. As you are a cost manager, he approached you to advise him as To what should be the minimum price to realise this objective.

Solution

Computation of prime cost

	₹	₹
Profit margin is 20% on sale		
Therefore cost of sale, 80% of ₹2,00,000 i.e.		1,60,000
Variable overheads	50,000	
Semi-variable overheads	20,000	
Fixed overhead	40,000	1,10,000
	-----	-----
Prime cost		50,000

Since an additional production of 4000 units requires an increase of ₹2000 in semi-variable expenses, an additional production of 2000 units will require an increase of ₹1000 in semi-variable expenses:

Differential cost of production of 2000 extra units

	10000 Units	12000 Units	Differential Cost For 2000 Units
	₹	₹	₹
Prime cost	50,000	60,000	10,000
Variable overheads	50,000	60,000	10,000
Semi-variable overheads	20,000	21,000	1,000
Fixed overheads	40,000	40,000	----
	-----	-----	-----
	1,60,000	1,81,000	21,000
	-----	-----	-----

The different cost for 1 unit is ₹21000 ÷ 2000 units i.e. ₹10.50. Profit margin required is 20% on sale or 25% on cost. Hence the minimum selling price = ₹10.50 + ₹2.625 = ₹13.125.

5.1.3.13 Books For Further Reading

1. **P.DasGupta:** Studies In Cost Accounting, *Sultan Chand & Sons, New*
2. *Delhi.*
3. **Jain & Narang:** Advanced Cost Accounting, *Kalyani Publishers.*
4. **Jawaharlal:** Advanced Management Accounting, *S.Chand & Co., New Delhi.*
5. **Lall Nigam & Sharma:** Advanced Cost Accounting, *Himalaya Publishing*
6. **House.**
7. **Vashist & Saxena:** Advanced Cost Accounting, *Sultan Chand & Sons.*

DDE, Pondicherry University

Lesson 5.2 Standard Costing And Variance Analysis

5.2.1 Introduction

During the evolutionary stage of costing, the focus was only on the determination of actual cost i.e. The main activity of the cost accountants was determining the actual cost of production. This resulted in the non-availability of cost control measures to the management. Standard costing was developed by cost accountants to meet these contingencies.

5.2.2 Learning Objectives

After reading this lesson the reader should be able to;

- Know the meaning of standard costing
- Understand the advantages of standard costing system
- Understand the different kinds of variances with special reference to material variance and labour variance
- Understand the reasons for these variances
- Realize the importance of variance analysis

5.2.3 Contents

- 5.2.3.1 Meaning of Standard Costing
- 5.2.3.2 Objectives of Standard Costing
- 5.2.3.3 Advantages of Standard Costing
- 5.2.3.4 Limitations of Standard Costing
- 5.2.3.5 Standard Costing and Budgetary Control
- 5.2.3.6 Variance Analysis
- 5.2.3.7 Cost Variances
- 5.2.3.8 Direct Material Cost Variance
- 5.2.3.9 Direct Labour Cost Variance
- 5.2.3.10 Summary
- 5.2.3.11 Keywords

- 5.2.3.12 Self Assessment Questions
- 5.2.3.13 Key to Self Assessment Questions
- 5.2.3.14 Books for Further Reading

5.2.3.1 Meaning Of Standard Costing

Standard costing is a technique which uses standards for costs and revenues for the purpose of control through variance analysis. Standard costing involves the setting of predetermined cost estimates in order to provide a basis for comparison with actual costs. Standard costing is universally accepted as an effective instrument for cost control in industries.

A standard cost is a planned cost for a unit of product or service rendered. According to h.j. wheldon, “standard costs are pre-determined or forecast estimates of cost to manufacture a single unit or a number of units of product during a specific immediate future period”. Standard cost is defined in the cima official terminology as: “a predetermined calculation of how much costs should be under specified working conditions. It is built up from an assessment of the value of cost elements and correlates technical specifications and the qualification of materials, labour and other costs to the prices and/or usage rates expected to apply during the period in which the standard cost is intended to be used. Its main purpose is to provide basis for control through variance accounting for the valuation of stock and work-in-progress and in some cases, for fixing selling prices”.

5.2.3.2 Objectives Of Standard Costing

- The objectives of standard costing technique are as follows:
- To provide a formal basis for assessing performance and efficiency.
- To control costs by establishing standards and analyzing of variances.
- To enable the principle of ‘management by exception’ to be practiced at the detailed operational level.
- To assist in setting budgets

To achieve the above objectives the following steps are adopted in standard costing:

- Determining the standard for direct material, direct labour and different overheads
- Ascertaining the actual cost of production
- Ascertaining the variances by comparing actual costs with standard costs
- Analyse the variances to know the reason for variances.
- Adopting corrective measures to control the variances in futures.

5.2.3.3 Advantages Of Standard Costing

A good standard costing system results in the following advantages:

1. The setting of standards should result in the best resources and methods being used and thereby increase efficiency.
2. Budgets are compiled from standards.
3. Actual costs can be compared with standard costs in order to evaluate performance
4. Areas of strengths and weakness are highlighted
5. It acts as a form of feed forward control that allows an organization to plan the manufacturing inputs required for different levels of output.
6. It acts as a form of feedback control by highlighting performance that did not achieve the standard set.
7. It operates via the management by exception principle where only those variances (i.e. Differences between actual and expected results) which are outside certain tolerance limits are investigated, thereby saving managerial time and maximizing managerial efficiency.
8. The process of setting, revising and monitoring standards encourages reappraised of methods, materials and techniques thus leading to cost control as an immediate effect and to cost reduction as a long term effect.

5.2.3.4 Limitations Of Standard Costing

Standard costing suffers from the following limitations:

1. A lot of input data is required which can be expensive
2. Unless standards are accurately set any performance evaluation will be meaningless.
3. Uncertainty in standard costing can be caused by inflation, technological change, economic and political factors, etc. Standards therefore need to be continually updated and revised.
4. The maintenance of the cost data base is expensive.
5. Setting of standards involves forecasting and subjective judgments with inherent possibilities of error and ambiguity.
6. Standard costing cannot be adopted in the firms which do not have uniform and standard production programme.
7. It is very difficult to predict controllable and uncontrollable variances.

5.2.3.5 Standard Costing Vs. Budgetary Control

Standard costing and budgetary control are control techniques adopted in a firm with specific objectives. Following points of differences between the two can be observed:

1. Standard costing is a long range control activity developed and adopted with focus on production. Budgetary control is an activity concerned with every functional area of the firms and functional budgets are prepared to control that function in a shorter term.
2. Standard costs are scientifically predetermined. Budgetary control is concerned with the overall profitability and financial position of the concern.
3. Standard costing is concerned with ascertainment and control of costs. Budgetary control is concerned with the overall profitability and financial position of the concern.
4. The emphasis of standard costing is on what should be the cost whereas in budgetary control the emphasis is on the level of costs not to be exceeded.
5. Standards are determined for each element of cost. Budgets are determined for a specified period.

6. Standard cost is a projection of cost accounts. Budget is a production of financial accounts.
7. Standard costing is concerned with the control of costs and is more intensive in scope. Budgetary control is concerned with the operation of business as a whole and is more extensive.

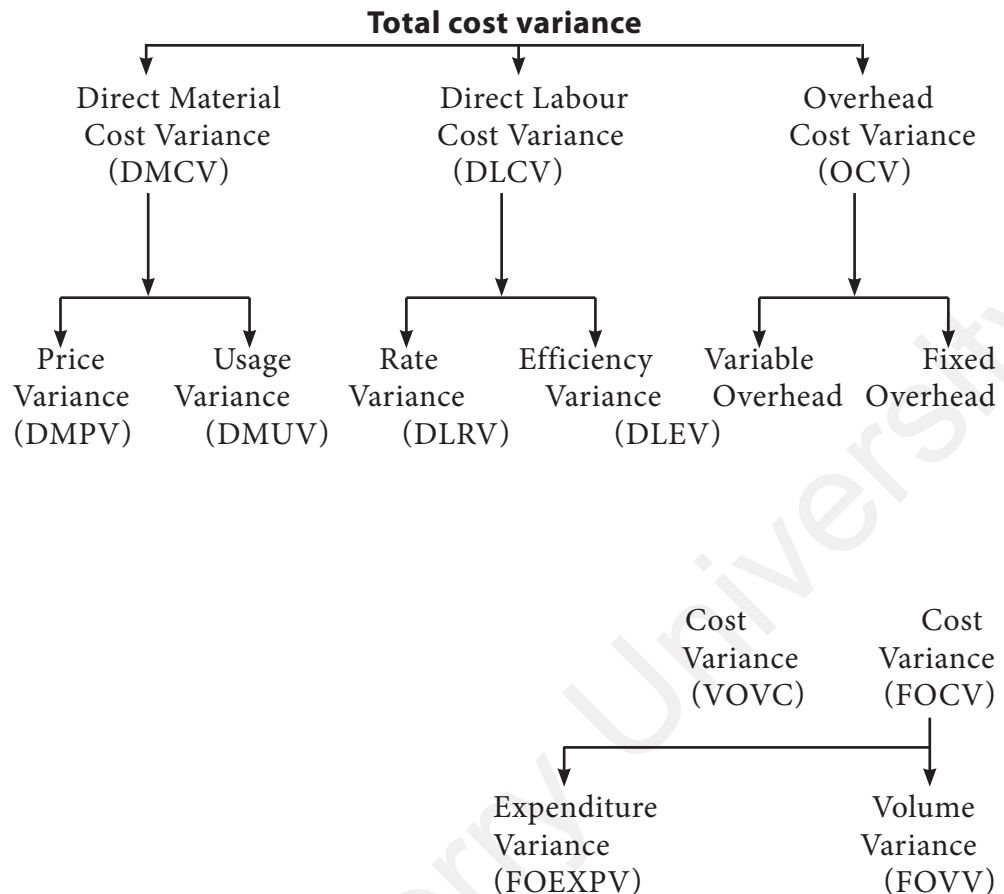
5.2.3.6 Variance Analysis

The difference between the standard cost and the actual cost is known as 'cost variance'. If actual cost is less than the standard cost, the variance is favorable. If the actual cost is more than the standard cost, the variance is unfavorable. A favorable variance indicates efficiency, while an unfavorable one denotes inefficiency. However, mere knowledge of these variances would not be useful for ensuring cost control. These have to be thoroughly analyzed so as to find out the contributory factors. It would then be possible to find out whether the variances are amenable to control or not. The term 'variance analysis', thus, may be defined as 'the resolution into constituent parts and the explanation of variances'.

Variances are of two types: cost variances and sales variances. In this lesson cost variances relating to material and labour are explained.

5.2.3.7 Cost Variances

As noted previously, the difference between the standard cost and the actual cost is known as 'cost variance'. The total cost variance should be split into its constituent parts, in order to analyze the cost variances in greater detail. The following figure reveals the picture clearly:



5.2.3.8 Direct Material Cost Variance

It is the difference between the standard cost of material specified for the output achieved and the actual cost of materials used. The standard cost materials is computed by multiplying the standard price with the standard quantity for actual output and the actual cost is obtained by multiplying the actual price with actual quantity. The formula is:

$$= \text{Standard Cost For Actual Output} - \text{Actual Cost}$$

or

$$\text{DMCV} = (\text{Standard Price} \times \text{Standard Quantity For Actual Output}) - (\text{Actual Price} \times \text{Actual Quantity})$$

$$= (\text{SP} \times \text{SQ}) - (\text{AP} \times \text{AQ}).$$

Example 1

The standard cost of material for manufacturing a unit of a particular product is estimated as under :

16 kg of raw materials @ ₹ 1 per kg. On completion of the unit it was found that 20 kg. Of raw material costing ₹ 1.50 per kg. Have been consumed. Compute material cost variance:

$$\begin{aligned}\text{DMCV} &= (\text{SP} \times \text{SQ}) - (\text{AP} \times \text{AQ}) \\ &= (16 \times 1) - (20 \times 1.50) \\ &= ₹ 14 \text{ (Adverse)}\end{aligned}$$

Direct Material Price Variance (DMPV)

It is that portion of material cost variance which is due to the difference between the standard prices specified and the actual price paid. This variance may be due to a number of reasons: change in price, inefficient buying, standard quality of materials not purchased, favorable discounts not obtained etc. The formula is:

$$\text{Dmpv} = \text{actual quantity (standard price - actual price)}$$

If the actual price is more than the standard price, the variance would be adverse and in case the standard price is more than the actual price, it would result in a favourable variance.

Example 2

Use the information given in example 1 and compute the material price variance.

$$\begin{aligned}\text{DMPV} &= \text{AQ (SP - AP)} \\ &= 20 (1 - 1.50) \\ &= ₹ (10) \text{ Adverse.}\end{aligned}$$

Direct Material Usage Or Quantity Variance (DMUV)

It is the difference between the standard quantity specified and the actual quantity used. This variance may arise because of: careless handling of materials, wastage, spoilage, theft, pilferage, changes in product design, use of inferior materials, defective tools and equipment etc. The formula is:

DMUV = Standard Price (Standard Quantity For Actual Output – Actual Quantity)

$$= SP (SQ - AQ).$$

Example 3

Use the information given in example 1 and compute the material usage variance.

$$\begin{aligned} \text{DMUV} &= SP (SQ - AQ) \\ &= 1 (16 - 20) \\ &= ₹ 4 \text{ (Adverse)} \end{aligned}$$

Note.

The total of material price and usage variances is equal to material cost variance. Thus,

$$\text{DMCV} = \text{DMPV} + \text{DMUV}$$

In the example that has been used so far, let us verify this:

$$\begin{aligned} \text{DMCV} &= \text{DMPV} + \text{DMUV} \\ ₹ 14 \text{ (A)} &= ₹ 10 \text{ (A)} + ₹ 4 \text{ (A)} \end{aligned}$$

Illustration 1

A manufacturing concern which had adopted standard costing furnishes the following information.

Standard

Material for 70 kgs. Finished products	100 kgs.
Price of Material	1 Per Kg.

Actual

Output	2,10,000 kgs.
Materials used	2,80,000 kgs.
Cost of materials	2,52,000

Calculate

- a) Material usage variance
- b) Material price variance
- c) Material cost variance

Solution

For an output of ₹70 kgs. Of finished products, standard quantity of material output is 100 kgs.

Therefore for the output of 2,10,000 kgs., standard quantity of material input should be = $\{100/70 \times 2,10,000\} = 3,00,000$ kgs.

Actual price per kg. = $2,52,000 / 2,80,000 = .90$ paise

(a) Material usage variance

= Standard Price (Standard Quantity – Actual Quantity)

= ₹1 (3,00,000 – 2,80,000) = ₹ 20,000 (Favorable)

(b) Material price variance

$$\begin{aligned} &= \text{Actual Quantity (Standard Price - Actual Price)} \\ &= 2,80,000 (1 - .90) = ₹ 28,000 \text{ (Favorable)} \end{aligned}$$

(c) Material cost variance

$$\begin{aligned} &= \text{Standard Quantity} \times \text{Standard Price} - \text{Actual Quantity} \times \text{Actual Price} \\ &= (3,00,000 \times 1) - (2,52,000) \\ &= ₹ 48,000 \text{ (Favorable)} \end{aligned}$$

Verification

Material cost variance = material price variance + material usage variance.
₹48,000 (Favorable) = ₹28,000 (Favorable) + ₹20,000 (Favorable).

Illustration 2 From the following particulars calculate :

1. Total materials cost variance;
2. Material price variance; and
3. Material usage variance.

		Price (₹)	Units	Price (₹)	Units
<i>Standard</i>	1.2	A	1,010	1.0	1,080
<i>Actual</i>	1.8	B	410	1.5	380
<i>Materials</i>	1.9	C	350	2.0	380

Solution

(i) Material Cost Variance = (SQ × SP) – (AQ × AP)

Standard Cost Materials		Actualcost Materials	
	₹		₹
Material A 1,010 Units @ 1.0 =	1,010	1080 Units @ 1.20 =	1,296
Material B 410 Units @ 1.5 =	615	380 Units @ 1.80 =	684
Material C 350 Units @ 2.0 =	700	380 Units @ 1.90 =	722
	-----		-----
Total Standard Cost	= 2,325	Total actual cost	= 2,702
	-----		-----

$$\begin{aligned} \dots \text{Materials Cost Variance} &= ₹ 2,325 - ₹ 2,702 \\ &= ₹ 377 \text{ Adverse.} \end{aligned}$$

(ii) Material Price Variance = Actual Quantity (St. Price – Actual Price)

Material A : 1,080 Units (1 – 1.20) = 216 Adverse

Material B : 380 Units (1.5 – 1.80) = 114 Adverse

Material C : 380 Units (2.0 – 1.90) = 38 Favourable

Total Material Price Variance = 292 Adverse

(iii) Material Usage Variance = St. Price (St. Quantity – Actual Quantity)

Material A : ₹ 1 (1,010 Units – 1,080 Units) = ₹ 70 Adverse

Material B : ₹ 1.5 (410 Units – 380 Units) = ₹ 45 Favourable

Material C : ₹ 2 (350 Units – 380 Units) = ₹ 60 Adverse

Total Material Usage Variance = ₹ 85 Adverse

Verification

Materials Cost Variance = Materials Price Variance + Material Usage Variance

$$\begin{aligned} ₹ 377 \text{ (A)} &= ₹ 292 \text{ (A)} + ₹ 85 \text{ (A)} \\ &= ₹ 377 \text{ Adverse} \end{aligned}$$

Illustration 3

From the following particulars compute material cost variance, price variance and usage variance.

Quantity of Materials Purchased	3000Unit
Value of Materials Purchased	9,000
Standard Quantity of Materials Required - Per Tonne of Output	30 Units
Standard Price of Material	2.50Per Unit
Opening Stock of Material	Nil
Closing Stock of Material	500Units
Output During the Period	80Tonnes.

Solution

$$\begin{aligned}\text{Material Consumed} &= 3,000 - 500 = 2,500 \text{ Units} \\ \text{Actual Price Of Material} &= 9,000/3,000 = ₹ 3 \text{ Per Unit} \\ \text{Standard Quantity For Actual Output} &= 30 \times 80 = 2,400 \text{ Units} \\ \text{Material Cost Variance (DMCV)} &= (\text{St. Price} \times \text{Std. Qty}) - (\text{Actual Price} \times \text{Actual Quantity}) \\ &= (2.50 \times 2,400) - (3 \times 2,500) \\ &= 6,000 - 7,500 = ₹ 1,500 \text{ (Adverse)} \\ \text{Material Price Variance (DMPV)} &= \text{Actual Quantity (Sp - Ap)} \\ &= 2,500 (2.50 - 3) = 2,500(.50) \\ &= 1,250 \text{ (Adverse)} \\ \text{Material Usage Variance (DMUV)} &= \text{Std. Price (Sq - Aq)} \\ &= 2.50(2,400 - 2,500) \\ &= ₹ 250 \text{ (Adverse)}\end{aligned}$$

Verification

$$\begin{aligned}\text{DMCV} &= \text{DMPV} + \text{DMUV} \\ 1,500 \text{ (A)} &= 1,250 \text{ (A)} + 250 \text{ (A)}\end{aligned}$$

Illustration 4

Given that the cost standards for material consumption are 40 kgs. At ₹ 10 per kg., compute the variances when actuals are :

- (a) 48 kgs. At ₹ 10 per kg.
- (b) 40 kgs. At ₹ 12 per kg.
- (c) 48 kgs. At ₹ 12 per kg.
- (d) 36 kgs. At ₹ 10 per kg.

Solution

$$\text{Material Cost Variance} = (\text{SQ} \times \text{SP}) - (\text{AQ} \times \text{AP})$$

- (a) 40 kgs. @ ₹ 10 – 48 kgs. @ ₹ 10 = ₹ 80 adverse
- (b) 40 kgs. @ ₹ 10 – 40 kgs. @ ₹ 12 = ₹ 80 adverse
- (c) 40 kgs. @ ₹ 10 – 48 kgs. @ ₹ 12 = ₹ 176 adverse
- (d) 40 kgs. @ ₹ 10 – 36 kgs. @ ₹ 10 = ₹ 40 favourable

$$\text{Material Usage Variance} = \text{Standard Price (Standard Qty. – Actual Qty.)}$$

- (a) ₹ 10 [40 kgs. – 48 kgs.] = ₹ 80 adverse
- (b) ₹ 10 [40 kgs. – 40 kgs.] = nil
- (c) ₹ 10 [40 kgs. – 48 kgs.] = ₹ 80 adverse
- (d) ₹ 10 [40 kgs. – 36 kgs.] = ₹ 40 favourable

$$\text{Material Price Variance} = \text{AQ}(\text{SP} - \text{AP})$$

- (a) 48 kgs. [₹ 10 – ₹ 10] = Nil
- (b) 40 kgs. [₹ 10 – ₹ 12] = 80 adverse
- (c) 48 kgs. [₹ 10 – ₹ 12] = 96 adverse
- (d) 36 kgs. [₹ 10 – ₹ 10] = Nil

5.2.3.9 Direct Labour Cost Variance (DLCV)

Labour variances are calculated like material variances. The direct labour cost variance is the difference between the standard direct wages specified for the activity achieved and the actual direct wages paid. The formula is :

$$\text{DLCV} = \text{Standard Cost For Actual Output} - \text{Actual Cost}$$

$$\begin{aligned} & \text{or} \\ & = (\text{Standard Rate} \times \text{Standard Time For Actual Output}) - \\ & \quad (\text{Actual Rate} \times \text{Actual Time}) \end{aligned}$$

$$= (\text{SR} \times \text{ST}) - (\text{AR} \times \text{AT})$$

Example 4

Standard Hours	5,000
Standard Wage Rate	4 Per Unit
Actual Hours	6,000
Actual Wage Rate calculate labour cost variance.	3.50 Per Unit

Solution

$$\begin{aligned}\text{DLCV} &= (\text{SR} \times \text{ST}) - (\text{AR} \times \text{AT}) \\ &= (4 \times 5,000) - (3.50 \times 6,000) \\ &= 20,000 - 21,000 \\ &= ₹ 1,000 \text{ (Adverse)}\end{aligned}$$

The labour cost variance may arise on account of difference in either rates of wage or time. Thus, it may be analysed further as (i) labour rate variance, and (ii) labour time or efficiency variance.

Direct Labour Rate Variance (DLRV)

It is the difference between the standard rate specified and the actual rate paid. It is also called 'rate of pay variance or wage rate variance'. This would arise, usually, because of : (i) excessive overtime, (ii) employment of wrong type of labour (employing skilled person in place of an unskilled one), (iii) overtime workers engaged more or less than the standard, (iv) employment of labour at higher rates due to shortage of workers etc. The formula for calculating labour rate variance is as under :

Direct Labour Rate Variance = Actual Time (Standard Rate – Actual Rate)

$$\text{DLRV} = \text{AT} (\text{SR} - \text{AR})$$

Direct Labour Time Or Efficiency Variance (DLEV)

It is the difference between the standard labour hours specified and the actual hours spent on the works. This variance is primarily concerned with the standard wage rate. As such, where piece wage payment is in force, there will be no labour efficiency variance. Labour efficiency variance

arises on account of any one or combination of factors such as : (i) lack of supervision, (ii) poor working conditions in the factory, (iii) use of sub-standard or higher standard materials, (iv) inefficiency of workers due to inadequate training, (v) lack of proper tools, equipment and machinery, (vi) higher labour turnover etc. Symbolically,

Labour Time or Efficiency Variance = Standard Rate (Standard Time For
Actual Output – Actual Time)

$$\text{DLEV} = \text{SR} (\text{ST} - \text{AT})$$

Illustration 5

	₹
Data Relating to a Job are as Thus:	
Standard Rate of Wages Per Hour	10
Standard Hours	300
Actual Rate of Wages Per Hour	12
Actual Hours	200

You are required to calculate –

- (i) Labour cost variance,
- (ii) Labour rate variance and
- (iii) Labour efficiency variance.

Solution

(i) Labour Cost Variance = Standard Cost – Actual Cost

$$\begin{aligned}
 &= \text{Std. Rate} \times \text{Std. Time} - (\text{Actual Rate} \times \text{Actual Time}) \\
 &= (300 \times 10) - (200 \times 12) \\
 &= 3,000 - 2,400 = 600 \text{ (Favourable)}
 \end{aligned}$$

(ii) Labour Rate Variance = Actual Time (Std. Rate – Actual Rate)

$$= 200 (10 - 12) = 400 \text{ (Adverse)}$$

(iii) Labour Efficiency Variance = Std. Rate (Std. Time – Actual Time)

$$= 10 (300 - 200) = 1,000 \text{ (Favourable).}$$

Verification

$$\begin{aligned}\text{DLCV} &= \text{DLRV} + \text{DLEV} \\ 600 (\text{F}) &= 400 (\text{A}) + 1000 (\text{F})\end{aligned}$$

Illustration 6

Standard hours for manufacturing two products m and n are 15 hours per unit and 20 hours per unit respectively. Both products require identical kind of labour and the standard wage rate per hour is ₹ 5. In the year 2011, 10,000 units of m and 15,000 units of n were manufactured. The total of labour hours actually worked were 4,50,500 and the actual wage bill came to ₹ 23,00,000. This included 12,000 hours paid for @ ₹ 7 per hour and 9,400 hours paid for @ ₹ 7.50 per hour, the balance having been paid at ₹ 5 per hour. You are required to compute the labour variances.

Solution

$$\text{Labour Cost Variance} = \text{Standard Cost For Actual Output} - \text{Actual Cost}$$

Standard cost

Standard Time : M	= 10,000 × 15 = 1,50,000	
N	= 15,000 × 20 = 3,00,000	
		----- = 4,50,000 Hours -----
		₹
For Product M	= 10,000 × 15 × 5 = 7,50,000	
For Product N	= 15,000 × 20 × 5 = 15,00,000	
Total Standard Cost		----- = 22,50,000 -----

₹

$$\text{Total Actual Cost} = 23,00,000$$

$$\begin{aligned}\text{Labour Cost Variance} &= 22,50,000 - 23,00,000 \\ &= 50,000 \text{ (A)}\end{aligned}$$

$$\text{Labour Rate Variance} = \text{Actual Hours} \times (\text{Std. Rate} - \text{Actual Rate})$$

₹	₹
= 12,000(5 - 7)	= 24,000 (A)
= 9,400(5 - 7.50)	= 23,500 (A)
= 4,29,100(5 - 5)	= -
Total	= <u>47,500 (A)</u>

$$\text{Labour Rate Variance} = \text{Std. Rate} \times (\text{Std. Time} - \text{Actual Time})$$

$$= ₹ 5 \times (4,50,000 - 4,50,500)$$

$$= ₹ 2,500 \text{ (A)}$$

Verification

$$\text{labour Cost Variance} = \text{Labour Rate Variance} + \text{Labour Efficiency Variance}$$

$$50,000 \text{ (A)} = ₹ 47,500 \text{ (A)} + ₹ 2,500 \text{ (A)}$$

$$= ₹ 50,000 \text{ (A)}$$

Idle Time Variance (ITV)

Idle time variance, a component of labour efficiency variance, is represented by the standard cost of the actual hours for which the workers remain idle due to abnormal circumstances, like non-availability of raw materials, power cut, breakdown of machinery etc. Symbolically :

$$\text{Idle Time Variance} = \text{Standard Hourly Rate} \times \text{Idle Time Or Hours}$$

$$= \text{SR} \times \text{IT}$$

This variance is always adverse.

The total of labour rate, idle time and efficiency variances would be equal to labour cost variance, as shown below:

Illustration 7

100 workers are working in a factory at a standard wage of ₹ 4.80 per hour. During a month there are four weeks of 40 hours each. The standard performance is set at 360 units per hour.

The following is the summary of the wages paid during the month:

91 workers were paid @ ₹ 4.80 per hour

5 workers were paid @ ₹ 5.00 per hour

The remaining were paid @ ₹ 4.60 per hour

Power failure stopped production for 2 hours actual production 57,960 units. Calculate labour variances.

Solution

1. Labour Cost Variance

= Standard Cost – Actual Cost

= ₹ 77,280 – ₹ 76,832 = ₹ 448 (Fav.)

(i) Standard Cost

= Std. Rate Per Hour × 100 × Units Produced /
Std. Production per hour

= 4.80 × 100 × 57,960 / 360 = ₹ 77,280

(ii) Actual Cost

For The Month (For 40 × 4 = 160 Hrs)

No. Of Workers × Hrs During The Month × Rate Paid.

	₹
91 × 160 × 4.80 =	69,888
5 × 160 × 4.80 =	4,000
4 × 160 × 4.60 =	2,944

	76,832

2. Labour rate variance

$$= \text{Actual Hours (Std. Rate - Actual Rate)}$$

$$(A) (5 \times 160) (\text{₹ } 4.80 - \text{₹ } 5.00) = \text{₹ } - 160 (\text{Adv.})$$

$$(B) (4 \times 160) (\text{₹ } 4.80 - \text{₹ } 4.60) = \text{₹ } + 128 (\text{Fav.})$$

$$\text{-----}$$
$$\text{₹ } - 32 (\text{Adv.})$$
$$\text{-----}$$

Note. For 91 workers rate variance is not calculated because they are paid at std. Rate.

3. Labour efficiency variance

$$= \text{Std. Rate (Standard Time - Actual Time)}$$

$$= \text{₹ } 4.80 (16,100 \text{ Hours} - 15,800 \text{ Hours})$$

$$= \text{₹ } 1,440 (\text{Fav.})$$

Notes. (i) Standard Time

$$= \text{No. Of Employees} \times \text{Quantity Produced} / \text{Std. Quantity Per Hour}$$

$$= 100 \times 57,960 / 360 = 16,100 \text{ Hours}$$

(ii) Actual Time

$$= \text{Possible Hours} - \text{Idle Time}$$

$$= 100 \times 160 \text{ Hours} - 100 \times 2 \text{ Hours}$$

$$= 15,800 \text{ Hours}$$

4. Idle Time Variance

$$= \text{Std. Rate} \times \text{Idle Time}$$

$$= \text{₹ } 4.80 \times 200 \text{ Hours} = 960 (\text{A})$$

Verification

$$\text{LCV} = \text{LRV} + \text{LEV} + \text{ITV}$$

$$448 (\text{F}) = \text{₹ } 32 (\text{A}) + \text{₹ } 1,440 (\text{F}) + 960 (\text{A})$$

$$= \text{₹ } 448 (\text{F}).$$

5.2.3.10 Summary

Cost control is a concrete step towards profit maximization and standard costing with the aid of variance analysis ensures this. Cost control is achieved by adopting the following steps: pre – determination of standard costs, consumption of actual costs, comparison of actual costs with standard costs and recording of the variances if any and analyzing and reporting on these variances to the management so that suitable action may be taken whenever necessary in order to control the costs in future.

5.2.3.11 Key Words

Standard costing: this is a technique of cost accounting employed for cost control.

Variances: Differences between the standards and the actual results

Favorable variances: Actual cost is lower than the standard cost.

Unfavorable variance: Actual cost is higher than the standard cost

5.2.3.12 Self Assessment Questions

1. The following are the particulars regarding the standard and the actual production of the product x:

Standard quantity of material per unit	–	5 kgs
Standard price	–	5Per kg
Actual number of units produced	–	400 units.
Actual quantity of material used		2,200 kgs
Actual price of material	–	4.80 Per kg

Calculate :

- (i) Material price and
- (ii) Material usage variances.

2. A furniture manufacturer makes sun mica tops for tables. From the following information, find out price variance, usage variance and material cost variance.

Standard quantity of sun mica per table 4 sqft.
 Standard price per sq. ft. of sun mica 5.00
 Actual production of tables 1,000
 Sun mica actually used 4,300sqft.
 Actual purchase price of sun mica per sq. ft. 5.50
 Who is the responsible for these variances?

3. From the data given below compute price and usage variances:

Standard				Actual		
	Total	Quantity Kg.	Unit Price	Total	Quantity Kg.	Unit Price
Material A	7.00	4	1.00	4.00	2	3.50
Material B	2.00	2	2.00	4.00	1	2.00
Material C	9.00	2	4.00	8.00	3	3.00
	-----	----		-----	---	
Total	18.00	8		16.00	6	
	-----	----		-----	---	

4. The standard cost card for a product shows:

Per unit	
₹	
Material cost – 2 kg. @ 2.50 Each	5.00
Wages – 2 hours @ 50 p. Each	1.00

The actual which have emerged from business operations are as follows:

Production Material consumed:	8,000units
16,500 Kgs. @ ₹2.40 Each	₹ 39,600
Wages paid: 18,000 Hours @ 40 p. Each	₹ 7,200

Calculate appropriate material and labour variances.

5. The standard cost for a product is:

Time 10 hours per unit, cost ₹ 5 Per hour.

The actual performance was:

Production	1,000 units
Hours taken:	
Production	10,400 hours
Idle time	400 hours

Total time	10,800 hours

Payment mode, ₹ 56,160 @ ₹ 5.20 Per hour

Calculate

- (a) Labour rate variance,
- (b) Labour efficiency variance,
- (C) Idle time variance,
- (d) Labour cost variance.

5.2.3.13 Key To Self Assessment Questions

Q.No 1: (I) Material Price Variance Rs 440 (F)

(II) Material Usage Variance Rs. 1000 (A)

Q.No 2: (I) Price Variance ₹ 2150 (A)

(II) Usage Variance ₹ 1500 (A)

(III) Cost Variance ₹ 3650 (A)

Q.No 3: (I) Material Cost Variance Rs. 2 (A)

(II) Material Price Variance Rs. 2 (A)

(III) Material Usage Variance – Nil

Q.No 4: (I) Material Cost Variance Rs. 400 (F)

(II) Material Price Variance Rs. 1650 (F)

(III) Material Usage Variance Rs. 1250 (A)

(IV) Lcv: Rs. 800 (F)

(V) Lev: Rs. 1000 (A)

(VI) Lrv: Rs.1800 (F)

Q.No 5: (I) Lcv: Rs.6160 (A)

(II) Lrv: Rs. 2160 (A)

(III) Lev: Rs. 2000 (A)

(IV) Itv: Rs. 2000 (A)

5.2.3.14 Books For Further Reading

(I) **Jain And Narang:** Advanced Cost Accounting, *Kalyani Publishers*

(II) **Maheswari S.N:** Management Accounting,
Sultan Chand And Sons.

DDE, Pondicherry University