# 1

# INTRODUCTION TO MANAGEMENT ACCOUNTING

**Unit Structure :**



## 1.0 OBJECTIVES

After studying the unit the students will be able to:

- Define the term Management accounting.
- Explain the nature and functions of Management Accounting
- Discuss the role of management accountant.
- Explain the difference between Management accounting and financial accounting.
- Understand the limitations of MA.

## 1.1 INTRODUCTION

Management accounting can be viewed as Management-oriented Accounting. Basically it is the study of managerial aspect of financial accounting, "accounting in relation to management function". It shows how the accounting function can be re-oriented so as to fit it within the framework of management activity. The primary task of management accounting is, therefore, to redesign the entire accounting system so that it may serve the operational needs of the firm. If furnishes definite accounting information, past, present or future, which may be used as a basis for management action. The financial data are so devised and systematically development that they become a unique tool for management decision.

## 1.2 MEANING AND NATURE OF MANAGEMENT ACCOUNTING

### 1.2.1 Meaning and Definition

The term "Management Accounting", observes Broad and Carmichael covers all those services by which the accounting department can assist the top management and other departments in the formation of policy, control of execution and appreciation of effectiveness.

The Report of the Anglo-American Council of Productivity (1950) has also given a definition of management accounting, which has been widely accepted. According to it, "Management accounting is the presentation of accounting information in such a way as to assist the management in creation of policy and the day to day operation of an undertaking". The reasoning added to this statement was, "the technique of accounting is of extreme importance because it works in the most nearly universal medium available for the expression of facts, so that facts of great diversity can be represented in the same picture. It is not the production of these pictures that is a function of management but the use of them." An analysis of the above definition shows that management needs information for better decision-making and effectiveness. The collection and presentation of such information come within the area of management accounting. Thus, accounting information should be recorded and presented in the form of reports at such frequent intervals, as the management may want. These reports present a systematic review of past events as well as an analytical survey of current economic trends. Such reports are mainly suggestive in approach and the data contained in them are quite up to date. The accounting data so supplied thus provide the informational basis of action. The quality of information so supplied depends upon its usefulness to management in decision-making.

### 1.2.2 Nature of Management Accounting

Following points explains the nature of Management Accounting:

1. The term management accounting is composed of 'management' and 'accounting'. The word 'management' here does not signify only the top management but the entire personnel charged with the authority and responsibility of operating an enterprise.
2. The task of management accounting involves furnishing accounting information to the management, which may base its decisions on it.
3. It is through management accounting that the management gets the tools for an analysis of its administrative action and can lay suitable stress on the possible alternatives in terms of costs,

prices and profits, etc. but it should be understood that the accounting information supplied to management is not the sole basis for managerial decisions.

4. Along with the accounting information, management takes into consideration or weighs other factors concerning actual execution. For reaching a final decision, management has to apply its common sense, foresight, knowledge and experience of operating an enterprise, in addition to the information that is already has.
5. The word 'accounting' used in this phrase should not lead us to believe that it is restricted to a mere record of business transactions i.e., book keeping only.
6. Management accounting has no set principles such as the double entry system of bookkeeping. In place of generally accepted accounting principles, the philosophy of cost benefit analysis is the core guide of this discipline. It says that no accounting system is good or bad but is can be considered desirable so long as it brings incremental benefits in excess of its incremental costs.

## 1.3 FUNCTIONS OF MANAGEMENT ACCOUNTING

The basic function of management accounting is to assist the management in performing its functions effectively. The functions of the management are planning, organizing, directing and controlling. Management accounting helps in the performance of each of these functions in the following ways:

1. **Provides data:** Management accounting serves as a vital source of data for management planning. The accounts and documents are a repository of a vast quantity of data about the past progress of the enterprise, which are a must for making forecasts for the future.

2. **Modifies data:** The accounting data required for managerial decisions is properly compiled and classified. For example, purchase figures for different months may be classified to know total purchases made during each period product-wise, supplier-wise and territory-wise.

3. **Analyses and interprets data:** The accounting data is analyzed meaningfully for effective planning and decision-making. For this purpose the data is presented in a comparative form. Ratios are calculated and likely trends are projected.

4. **Serves as a means of communicating:** Management accounting provides a means of communicating management plans upward, downward and outward through the organization. Initially, it means identifying the feasibility and consistency of the various segments of the plan. At later stages it keeps all parties

informed about the plans that have been agreed upon and their roles in these plans.

5. **Facilitates control:** Management accounting helps in translating given objectives and strategy into specified goals for attainment by a specified time and secures effective accomplishment of these goals in an efficient manner. All this is made possible through budgetary control and standard costing which is an integral part of management accounting.

6. **Uses also qualitative information:** Management accounting does not restrict itself to financial data for helping the management in decision making but also uses such information which may not be capable of being measured in monetary terms. Such information may be collected form special surveys, statistical compilations, engineering records, etc.

## 1.4 SCOPE OF MANAGEMENT ACCOUNTING

Management accounting is concerned with presentation of accounting information in the most useful way for the management. Its scope is, therefore, quite vast and includes within its fold almost all aspects of business operations. However, the following areas can rightly be identified as falling within the ambit of management accounting:

1. **Financial Accounting:** Management accounting is mainly concerned with the rearrangement of the information provided by financial accounting. Hence, management cannot obtain full control and coordination of operations without a properly designed financial accounting system.

2. **Cost Accounting:** Standard costing, marginal costing, opportunity cost analysis, differential costing and other cost techniques play a useful role in operation and control of the business undertaking.

3. **Revaluation Accounting:** This is concerned with ensuring that capital is maintained intact in real terms and profit is calculated with this fact in mind.

4. **Budgetary Control:** This includes framing of budgets, comparison of actual performance with the budgeted performance, computation of variances, finding of their causes, etc.

5. **Inventory Control:** It includes control over inventory from the time it is acquired till its final disposal.

6. **Statistical Methods:** Graphs, charts, pictorial presentation, index numbers and other statistical methods make the information more impressive and intelligible.

7. **Interim Reporting:** This includes preparation of monthly, quarterly, half-yearly income statements and the related reports, cash flow and funds flow statements, scrap reports, etc.

8. **Taxation:** This includes computation of income in accordance with the tax laws, filing of returns and making tax payments.

9. **Office Services:** This includes maintenance of proper data processing and other office management services, reporting on best use of mechanical and electronic devices.

10. **Internal Audit:** Development of a suitable internal audit system for internal control.

**CHECK YOUR PROGRESS**

1. "The basic function of management accounting is to assist the management in performing its functions effectively". Discuss.

2. Enlist the points explaining the scope of Management Accounting.

## 1.5 DIFFERENCE BETWEEN MANAGEMENT ACCOUNTING AND FINANCIAL ACCOUNTING

Financial accounting and management accounting are closely interrelated since management accounting is to a large extent rearrangement of the data provided by financial accounting. Moreover, all accounting is financial in the sense that all accounting systems are in monetary terms and management is responsible for the contents of the financial accounting statements. In spite of such a close relationship between the two, there are certain fundamental differences. These differences can be laid down as follows:

| Financial Accounting | Management Accounting |
|---|---|
| 1. **Objectives** | |
| Financial accounting is designed to supply information in the form of profit and loss account and balance sheet to external parties like shareholders, creditors, banks, investors and Government. Information is supplied periodically and is usually of such type in which management is not much interested. | Management Accounting is designed principally for providing accounting information for internal use of the management. Thus, financial accounting is primarily an external reporting process while management accounting is primarily an internal reporting process. |
| 2. **Analyzing performance** | |
| Financial accounting portrays the position of business as a whole. The financial statements like income statement and balance sheet report on overall performance or statues of the business.<br>Financial accounting deals with the aggregates and, therefore, cannot reveal what part of the management action is going wrong and why. | Management accounting directs its attention to the various divisions, departments of the business and reports about the profitability, performance, etc., of each of them.<br>Management accounting provides detailed analytical data for these purposes. |
| 3. **Data used** | |
| Financial accounting is concerned with the monetary record of past events. It is a post-mortem analysis of past activity and, therefore, out the date for management action. | Management accounting is accounting for future and, therefore, it supplies data both for present and future duly analyzed in detail in the 'management language' so that it becomes a base for management action. |
| 4. **Monetary measurement** | |
| In financial accounting only such economic events find place, which can be described in money. | Management is equally interested in non-monetary economic events, viz., technical innovations, personnel in the organization, changes in the value of money, etc. These events affect management's decision and, therefore, management accounting cannot afford to ignore them. |

| 5. **Periodicity of reporting** | |
|---|---|
| The period of reporting is much longer in financial accounting as compared to management accounting. The Income Statement and the Balance Sheet are usually prepared yearly or in some cases half-yearly.<br>Management requires information at frequent intervals and, therefore, financial accounting fails to cater to the needs of the management. | In management accounting there is more emphasis on furnishing information quickly and at comparatively short intervals as per the requirements of the management. |
| 6. **Nature** | |
| Financial accounting is more objective. | Management accounting is more subjective because management accounting is fundamentally based on judgment rather than on measurement. |
| 7. **Legal compulsion** | |
| Financial accounting has more or less become compulsory for every business on account of the legal provisions of one or the other Act. | A business is free to install or not to install system of management accounting. |

## 1.6 EXERCISE

1. What are the functions of a management accounting? Elaborate each one of them.
2. Distinguish management accounting from financial accounting.

3. Objective Type Questions:

a. Match Group A With Group B

| Group A | | Group B | |
|---|---|---|---|
| a) | Financial Accounting | 1. | Function of management accounting |
| b) | Reports of Management | 2. | Mandatory |
| c) | Management Accounting | 3. | Technique of management |
| d) | Collection of data | 4. | Future oriented |

| | | | |
|---|---|---|---|
| e) | Reports of Financial Accounting | 5. | Optional |
| f) | Budgetary Control | 6. | Historical Data |

**Ans. a – 6 ,b –5 , c- 4 , d-1 , e – 2 , f -3**

b. Fill in the Blanks with proper words / phase.

1. Inventory control is _____ in management accounting.
2. Financial accounting deals with _____ data.
3. Management accounting is _____ oriented.
4. There is no legal format for management accounting_____.
5. In management accounting publication of reports is _____.
6. Management account is _____in nature.

**(Answer: 1. Included, 2. Historical, 3. Future, 4. Reports, 5. Optional,**
**6. Analytical)**

c. State whether following statement are True or False.

1. Management accounting is analytical in nature.
2. Management accounting is dynamic.
3. Management accounting provides decisions to the management.
4. Management accounting is future oriented.
5. Management accounting includes Standard Costing.
6. Financial Accounting is future oriented.

**(Answer: 1. True 2.True 3. False 4. True 5. True 6. False)**

d. Multiple Choice Questions.

1. Financial accounting records only
   a) Actual Figures
   b) Budgeted figures
   c) Standard Figures
   d) All of the above

2. The use of management accounting is
   a) Mandatory
   b) Optional
   c) Compulsory
   d) All of the above

3. Management Accounting includes
   a) Financial Accounting
   b) Cost Accounting
   c) Budgetary control
   d) All of the above

4. Management Accounting is
   a) Analytical
   b) Future oriented
   c) Dynamic
   d) All of the above

5. Financial Accounting deals with
   a) Determination of cost
   b) Determination of profit
   c) Determination of prices
   d) None of the above

6. Management accounting relates to
   a) Recording of accounting data
   b) Recording of costing data
   c) Presentation of accounting data
   d) None of the above

**(Answer: 1. a, 2. b, 3.d, 4.d, 5. b, 6.c)**

# 2

# ANALYSIS AND INTERPRETATION OF FINANCIAL STATEMENTS

**Unit Structure :**



## 2.0 OBJECTIVES

After studying the unit the students will be able to:

- Understand the objectives and nature of Financial Statements.
- Know the characteristics of Financial Statements.
- Discuss about the qualities of Ideal Financial Statements.
- Interpret the financial statements.

## 2.1 INTRODUCTION

The joint stock companies are legally required to prepare set of financial statement to periodically assess the profit earned and to know the financial position of the company as on a specified date. Thus, as in the case of other business enterprises, a limited company prepare the income statement and the balance sheet. However, in the case of companies registered under Companies Act, the Act specifies the books of accounts to be maintained and also prescribes the format and content of financial statement. In addition, the accounts must be statutorily audited by the external person called the auditor and it is duty of the auditor to submit a report in the prescribed format to the shareholder.

Since the owner or shareholder elect a board of director to manage the company and rely on the ability and skills of these directors to conduct the business in the most profitable manner, the Companies Act tries to protect the shareholders' interest by prescribing a set of covenants according to which the financial statements are to be prepared and presented to the shareholders. The objective of the Company Act in laying down the various provisions with respect to accounts and audit is to ensure that adequate information is provided to be shareholders in order for them to judge the performance of the directors during an accounting period. The legal requirement laid down by the Companies Act therefore, assume a great importance in the preparation of the financial statements.

## 2.2 MEANING AND NATURE OF FINANCIAL STATEMENTS

### 2.2.1 Meaning :

Every business concern wants to know the various financial aspects for effective decision making. The preparation of financial statement is required in order to achieve the objectives of the firm as a whole. The term financial statement refers to an organized collection of data on the basis of accounting principles and conventions to disclose its financial information. Financial statements are broadly grouped in to two statements:

I. Income Statements (Trading, Profit and Loss Account)
II. Balance Sheets

In addition to above financial statements supported by the following statements are prepared to meet the needs of the business concern:

(a) Statement of Retained Earnings
(b) Statement of Changes in Financial Position

The meaning and importance of the financial statements are as follows :

**Income Statements:** The term 'Income Statements' is also known as Trading, Profit and Loss Account. This is the first stage of preparation of final accounts in accounting cycle. The purpose of preparing Trading, Profit and Loss Accounts to ascertain the Net Profit or Net Loss of a business concern during the accounting period.

**Balance Sheet:** Balance Sheet may be defined as "a statement of financial position of any economic unit disclosing as at a given

moment of time its assets, at cost, depreciated cost, or other indicated value, its liabilities and its ownership equities." In other words, it is a statement which indicates the financial position or soundness of a business concern at a specific period of time. Balance Sheet may also be described as a statement of source and application of funds because it represents the source where the funds for the business were obtained and how the funds were utilized in the business.

**Statement of Retained Earnings:** This statement is considered to be as the connecting link between the Profit and Loss Account and Balance Sheet. The accumulated excess of earning over losses and dividend is treated as Retained Earnings. The balance of retained earnings shown on the Profit and Loss Accounts and it is transferred to liability side of the balance sheet.

**Statement of Changes in Financial Position:** Income Statements and Balance sheet do not disclose the operational efficiency of the concern. In order to measure the operational efficiency of the concern it is essential to identify the movement of working capital or cash inflow or cash outflow of the business concern during the particular period. To highlight the changes of financial position of a particular firm, the statement is prepared may emphasize of the following aspects :

1. Fund How Statement is prepared to know the changes in the firm's working capital.
2. Cash Flow Statement is prepared to understand the changes in the firm's cash position.
3. Statement of Changes in Financial Position is used for the changes in the firm's total financial position.

### 2.2.2 NATURE OF FINANCIAL STATEMENTS

Financial Statements are prepared on the basis of business transactions recorded in the books of Original Entry or Subsidiary Books, Ledger, and Trial Balance. Recording the transactions in the books of primary entry supported by document proofs such as Vouchers, Invoice Note etc.

According to the American Institute of Certified Public Accountants, "Financial Statement reflects a combination of recorded facts, accounting conventions and personal judgments and conventions applied which affect them materially." It is therefore, nature and accuracy of the data included in the financial statements which are influenced by the following factors :

**(1)** Recorded Facts.
(2) Generally Accepted Accounting Principles.
**(3)** Personal Judgments.
(4) Accounting Conventions

### 2.2.3 OBJECTIVES OF FINANCIAL STATEMENTS

The following are the important objectives of financial statements:

1. To provide adequate information about the source of finance and obligations of the finance firm.
2. To provide reliable information about the financial performance and financial soundness of the concern.
3. To provide sufficient information about results of operations of business over a period of time.
4. To provide useful information about the financial conditions of the business and movement of resources in and out of business.
5. To provide necessary information to enable the users to evaluate the earning performance of resources or managerial performance in forecasting the earning potentials of business.

### 2.2.4 LIMITATIONS OF FINANCIAL STATEMENTS

1. Financial Statements are normally prepared on the basis of accounting principles, conventions and past experiences. Therefore, they do not communicate much about the profitability, solvency, stability, liquidity etc. of the undertakers to the users of the statements.
2. Financial Statements emphasize to disclose only monetary facts, i.e., quantitative information and ignore qualitative information.
3. Financial Statements disclose only the historical information. It does not consider changes in money value, fluctuations of price level etc. Thus, correct forecasting for future is not possible.
4. Influences of personal judgments leads to opportunities for manipulation while preparing of financial statements.
5. Information disclosed by financial statements based on accounting concepts and conventions. It is unrealistic due to difference in terms and conditions and changes in economic situations.

## 2.3 ANALYSIS AND INTERPRETATIONS OF FINANCIAL STATEMENTS

### 2.3.1 Need of interpretation

Presentation of financial statements is the important part of accounting process. Following are some points:

1. To provide more meaningful information
2. To enable the owners, investors, creditors or users of financial statements

3. To evaluate the operational efficiency of the concern during the particular period.
4. More useful information is required from the financial statements to make the purposeful decisions about the profitability and financial soundness of the concern.
5. In order to fulfill the needs of the above, it is essential to consider analysis and interpretation of financial statements.

### 2.3.2 Meaning of Analysis and Interpretations

The term "Analysis" refers to rearrangement of the data given in the financial statements. In other words, simplification of data by methodical classification of the data given in the financial statements.

The term "interpretation" refers to "explaining the meaning and significance of the data so simplified."

Both analysis and interpretations are closely connected and inter related. They are complementary to each other. Therefore presentation of information becomes more purposeful and meaningful—both analysis and interpretations are to be considered. **Metcalf and Tigard have defined** financial statement analysis and interpretations as, “a process of evaluating the relationship between component parts of a financial statement to obtain a better understanding of a firm's position and performance”.

The facts and figures in the financial statements can be transformed into meaningful and useful figures through a process called "Analysis and Interpretations.

In other words, financial statement analysis and interpretation refer to the process of establishing the meaningful relationship between the items of the two financial statements with the objective of identifying the financial and operational strengths and weaknesses.

## 2.4 PREPARATION OF FINANCIAL STATEMENTS

Financial statements should be rearranged for proper analysis and interpretations of these statements. It enables to measure the performance of operational efficiency and profitability of a concern during particular period. The items of operating revenues, non-operating revenues, operating expenses and non-operating expenses are rearranged into different heads and sub-heads are given below:

**Vertical Profit and Loss:**

Profit and loss account is a statement showing the net result of business operations during the period, usually a year.

**Vertical Profit and loss for the year ended_____**

| **Particulars** | **Rs.** | **Rs.** | **Rs** |
|---|---|---|---|
| Gross Sales | | | |
| Cash Sales | | Xx | |
| Credit Sales | | Xx | |
| **Less :** Returns and allowance | | (xx) | |
| **Net Sales** | | | **XX** |
| **Less: Cost of Goods Sold** | | | |
| Opening Stock of Raw Material | Xx | | |
| Purchases of Raw Material | Xx | | |
| **Less :** Closing Stock of Raw Material | (xx) | | |
| **Raw Material Consumed** | | **Xx** | |
| **Less:**<br>**Direct expenses ( Factory Expenses)** | | | |
| Carriage inwards | Xx | | |
| Factory power | Xx | | |
| Wages | Xx | | |
| Other factory expenses | Xx | | |
| Depreciation on Machinery | Xx | | |
| Depreciation on Factory Building | Xx | | |
| Depreciation on Patterns and Patents | Xx | | |
| **Total** | | xx | |
| **Add:** Opening stock of Finished goods | | Xx | |
| **Add:** Purchases of Finished Goods | | Xx | |
| **Less:** Closing Stock of Finished Goods | | (xx) | |
| **Cost of Goods Sold** | | | **(xx)** |
| **Gross Profit / Gross Margin** | | | **xx** |
| **Less:**<br>**a) Administration Expenses** | | | |
| Office Expenses | Xx | | |

| | | | |
|---|---|---|---|
| Office Rent , Rates and Taxes | Xx | | |
| Insurance, Office Electricity | Xx | | |
| Printing and stationery, Audit Fees | Xx | | |
| Repairs, other office expenses, Directors Fees | Xx | | |
| Depreciation on office Assets | Xx | | |
| Postage and telegrams | Xx | | |
| **Total Administrative Expenses** | | **xx** | |
| **b) Selling and Distribution Expenses** | | | |
| Salaries to salesman | Xx | | |
| Rent of shop, show room | Xx | | |
| Exhibitions, Trade fair, Sales Discount/ Commission | Xx | | |
| Normal Bad Debts | Xx | | |
| Depreciation on Delivery Van | Xx | | |
| Advertisement and publicity | Xx | | |
| Travelling / Van Expenses | Xx | | |
| **Total Selling and Distribution Expenses** | | **Xx** | |
| **c) Finance Charges / Expenses** | | | |
| Cash Discount | Xx | | |
| Bank Chagres | Xx | | |
| Abnormal bad Debts | Xx | | |
| **Total Finance Charges / Expenses** | | **Xx** | |
| **Total Operating Expenses (Except Interest)** | | | **(xx)** |
| **Operating Profit Before Interest** | | | **Xx** |
| **Less:**<br>**Interest Paid** | | | |
| Interest on Debentures Or Bonds | | Xx | |
| Interest on Loans | | Xx | |
| Interest on public deposits | | Xx | |
| Interest on short term loans | | Xx | |
| **Interest Paid** | | | **(xx)** |
| **Operating Profit After Interest** | | | **Xx** |

| | | | |
|---|---|---|---|
| **Add: Non-operating Income** | | | |
| Dividend on shares | | Xx | |
| Interest on debentures, loans etc. | | Xx | |
| Profit on sale of Fixed assets / investment | | Xx | |
| Damages received | | Xx | |
| Royalty / shares transfer fees | | Xx | |
| **Total Non-operating Income** | | | **Xx** |
| **Less:**<br>**Non-operating Expenses** | | | |
| Loss on sale of Fixed assets / Investment | | Xx | |
| Damages paid / due | | Xx | |
| Preliminary expenses written off | | Xx | |
| Fine and penalty | | Xx | |
| **Total Non-Operating Expenses** | | | **(xx)** |
| **Net Profit Before Tax** | | | **Xx** |
| **Less :** Income Tax | | | **(xx)** |
| **Net Profit After tax** | | | **Xx** |
| **Add: Profit and Loss A/c (Op. Balance)** | | | **Xx** |
| **Less:**<br>**Appropriations** | | | |
| Transfer to Sinking Fund | | Xx | |
| Dividend Paid | | Xx | |
| Interim Dividend | | Xx | |
| Transfer to Reserve | | Xx | |
| **Appropriation** | | | **(xx)** |
| **Retained Earnings / Balance Transfer to Balance Sheet** | | | **Xx** |

From the above rearrangement of operating statements, the following accounting equations may be given:

1. **Net Sales =** Cost of sales + operating expenses + Non-operating expenses
2. **Gross Profit =** Net sales – Cost of goods sold
3. **Net operating profit =** Gross profit – operating expenses.

4. **Gross Sales:** Gross sales also called 'Turnover' is the amount of total sales of goods and services. This includes both cash and credit sales.

**Gross sales =** Credit sales + cash sales

5. **Cost of Goods Sold:** This is the cost of purchases or cost of manufacturing the goods, which are sold during the year.

**Cost of Goods Sold =** Opening stock + Purchases + Direct Expenses + Depreciation – less closing stock

6. **Gross Profit:** This is the major source of operating income of an organization. This is the amount of profit earned on purchases, manufactures and sales of goods and services.

**Gross Profit =** Net Sales – Cost of goods sold

7. **Operating Expenses:** These are the expenses incurred in the course of normal conduct of business, which are related to the business activities. Broadly, operating expenses are classified into the following categories.

a. **Administrative Expenses:** These are the expenses pertaining to general office administrative of an organization.

b. **Selling and Distribution Expenses**: These are the expenses incurred for the purpose of increasing and maintaining the sales, distributing and delivering the goods.

c. **Finance Chagres**: This includes: Cash discount, Bad debts (Abnormal), Bank charges, bank Commission.

**Operating Expenses =** Administrative Expenses + Selling & Distribution Expenses + Finance Expenses

8. **Operating Profit:** Excess of operating income over operating expenses is called net operating profit. This is the amount of profit earned during the normal course of business. Operating profit may be

    a. **Operating Profit before Interest:** Gross Profit - Operating expenses (Before Interest)

    b. **Operating Profit After Interest :** Operating profit (before Interest) - Interest

9. **Non-operating Income:** Income not related to the ordinary course of business i.e. Interest on investment is not an operating income to a company, which is engaged in buying and selling of goods and services of goods. But for an investment company, interest will be considered as an operating income.

10. **Non-Operating Expenses:** These are the expenses, which do not relate to day to day conduct of business operations. These expenses arise due to certain unusual events and unexpected occurrences.

11. **Net Profit :** This is the excess of total operating and non-operating income over the total operating and non-operating expenses. It is therefore, ultimate profit earned by the organization.
    a. **Net Profit before Tax =** Net operating profit + Net non-operating Income
    b. **Net profit After Tax =**Net profit before tax - Income tax
12. **Retained Earnings:** Net profit after tax - dividend

**Vertical Balance Sheet:**
Balance sheet is a statement of assets and liabilities.
**Vertical Balance sheet as on _____**

| **Particulars** | **Rs.** | **Rs.** | **Rs.** |
|---|---|---|---|
| **A. Sources of Funds** | | | |
| **1) Owners funds** | | | |
| **a) Share capital** | | | |
| Equity share capital | Xx | | |
| Preference share capital | Xx | | |
| **Less:** Unpaid calls/ | (xx) | | |
| **Add:** Forfeiture shares | Xx | **Xx** | |
| **b) Reserve and Surplus** | | | |
| Capital Reserve / Capital Redemption Reserve | Xx | | |
| Share premium /General Reserve | Xx | | |
| Other reserve / Sinking Fund | xx | **xx** | |
| **c) Losses & Fictitious Assets** | | | |
| Profit and loss A/c Debit Balance | Xx | | |
| Miscellaneous Expenditure Not Written off | Xx | | |
| Preliminary Expenses | Xx | | |
| Shares Issue Expenses | Xx | | |
| Discount on Issue of shares or Debenture | Xx | **(xx)** | |
| **Own Funds or Net Worth (a+b-c)** | | | **xx** |
| **2) Loan Funds** | | | |
| **a) Long term Loans** | | | |
| Debentures or bonds | Xx | | |
| Loans from banks | Xx | | |

| | | | |
|---|---|---|---|
| Loans from financial Institutions | Xx | | |
| Public deposit | Xx | **Xx** | |
| Other Loans | | **Xx** | |
| **Owed Fund (a+b)** | | | **Xx** |
| **Total Funds Available / Capital Employed** | | | **xx** |
| **B. Application of Funds** | | | |
| **1) Net Fixed Assets** | | | |
| **a) Tangible Assets** | | | |
| Land and building (Cost) | Xx | | |
| Leaseholds, Plant and Machinery ( Cost) | Xx | | |
| Furniture and fitting, Vehicles (Cost) | Xx | | |
| **Less:** PFD | (xx) | Xx | |
| **b) Intangible Assets** | | | |
| Goodwill | Xx | | |
| Patents, Trademarks, And Designs | Xx | Xx | |
| **Total Fixed Assets (a+b)** | | | **Xx** |
| **2) Long Term Investment** | | | |
| Investment in Govt. Securities | | Xx | |
| Investment immovable properties | | Xx | |
| Investment in capital of partnership firm | | Xx | |
| Long term loans given | | Xx | Xx |
| **3) Working Capital** | | | |
| **a) Quick Assets** | | | |
| Cash and Bank | Xx | | |
| Debtors xx | | | |
| Less: RDD (xx) | Xx | | |
| Bills Receivable / Trade receivable | Xx | | |
| Current Investment | Xx | | |
| Accrued Income | Xx | | |
| Loans and Advance | Xx | | |
| Inventory | Xx | | |

| | | | |
|---|---|---|---|
| Prepaid Expenses | Xx | | |
| Advance Tax | Xx | | |
| Advance for goods | Xx | Xx | |
| **Less:**<br>**b) Current Liabilities** | | | |
| Creditors | Xx | | |
| Bills Payable / Trade Payable | Xx | | |
| Advance Received | Xx | | |
| Expenses Payable | Xx | | |
| Accrued Interest | Xx | | |
| Provision for taxation | Xx | | |
| Provision for dividend | Xx | | |
| Unclaimed Dividend | Xx | | |
| Provision for dividend Distribution Tax | Xx | | |
| Bank Overdraft | Xx | | |
| Income received in advance | Xx | (Xx) | |
| **Net current assets (a-b)** | | | **Xx** |
| **Total Application of Fund** | | | **Xx** |

**Application of Funds**

**1. Fixed Assets:**

Fixed Assets are called long-term assets. They do not flow through the cash cycle of business within one year or the normal operating cycle. They are used over several periods.

**Classification of Fixed Assets:**

a. Tangible movable assets;
b. Tangible immovable assets; and
c. Intangible assets.

a) **Tangible movable assets** are the assets which can be seen, touched and moved from one place to another place. Plant and Machinery, furniture and fixtures, transportation equipment etc. Are tangible movable assets.
b) **Tangible immovable assets** are the assets which can be seen and touched but cannot be moved from one place to another place. Such assets include land, buildings, mines, oil wells, etc.
c) **Intangible assets** are the assets which cannot be seen and touched. However, their existence can only be imagined such

as patents, trademarks, copyrights, goodwill etc. Their existence is very important for the business.

Fixed Assets = Tangible Assets + Intangible Assets

**2. Investments:**

Long term investments are "Fixed Assets". Marketable Investments are those investments which are acquired by the company by employing its surplus funds or cash temporarily.

Short term investments are grouped under "Current Assets".

**3. Current Assets and Quick Assets :**

a) **Current Assets:**

Current assets represent employment of money by the company on a short-term basis.

**Current Assets =** Stock + Debtors + Cash & Bank +Loans &Advances + Marketable Securities +Other Current Assets

b) **Quick Assets:**

These assets are known as 'near cash' assets. In other words, quick assets are those which can be converted into cash quickly**.** Therefore, they are also known as liquid assets.

**Quick Assets =** Current Assets–Inventory –Prepayments

**Sources of Fund**

**1. Proprietor's Funds**

These are the funds provided by the proprietors or the shareholders. Proprietors fund is also called as Proprietors Equity, Owners Funds, Owners Equity, or Share holders Funds. This is also known as the Net Worth of the business. Owners' Equity refers to the claim of the owners and it is made up of contributions of proprietors by way of:

**Share Capital** (May be Equity Share Capital only or Equity and Preference Share Capital)
**Plus:** Reserves
**Plus:** Profit and Loss Account (Credit) Balance (Surplus)
**Less:** Accumulated Losses
**Less:** Fictitious Assets (If any)

**a) Share Capital:**

Share capital is the amount that is raised by a company from the public at large, through the issue of shares. There are different concepts of share capital from the legal and accounting points of view.

i. **Authorised Capital:** Authorised Capital is the maximum capital a company can raise as mentioned in the Memorandum of Association under its Capital Clause. It is also called as the Registered Capital or Nominal Capital of the Company.

ii. **Issued and Unissued Capital:** A company usually does not need the entire registered capital. The capital may be raised as and when necessary. Only a part of the authorised capital may be issued at a time. Issued capital is that part of the authorised capital which is actually offered to the prospective investors for subscription.

iii. **Subscribed Capital:** The issued capital may not be fully subscribed by the public. Subscribed capital is that part of the issued capital which has been subscribed or taken up by the public.

iv. **Called up and Uncalled Capital:** The company may not need the entire capital subscribed by the public. The company, therefore, may collect the capital in several instalments. The called-up capital is that portion of the subscribed capital which has been called or demanded by the company to be paid. The capital that is not demanded from the shareholders is called uncalled capital.

v. **Paid up Capital:** Paid up capital is that part of the called up capital which has been actually paid by the members. The paid-up capital is the called-up amount less calls not paid.(calls unpaid or calls-in- arrears).

**b) Reserves and Surplus:**

According to Companies Act, Reserve shall not include any amount written off or retained by way of providing for depreciation, renewals or diminution in value of assets or retained by way of providing for any known liability. Generally reserves are divided into two categories viz. Specific Reserves and General Reserves. Reserve created for a specific purpose is called as a “specific reserve” and a reserve created for a general purpose is called a “general reserve. General reserves are free and can be utilized for:

a. Payment of Dividends.
b. Development and expansion,
c. Any other purpose the company thinks proper.

General Reserve is also called as revenue reserve or a free reserve. A free reserve is a reserve which is available for any purpose, including payments of dividend. It is not marked for any specific purpose.

**2. Capital Reserves:**

Capital reserve is created out of capital profits which do not arise in the normal course of business. The following reserves are capital reserves:

a. Profits prior to incorporation
b. Profit on redemption of preference shares,
c. Profit on redemption of debentures,
d. Securities premium,
e. Profit on forfeiture of shares,
f. Profit on sales of fixed assets,
g. Profit on revaluation of fixed assets,
h. Capital redemption of fixed assets,

**3. Long-term Liabilities**

External borrowings of a company which constitute its owed funds are important sources of long-term finance. These borrowings are termed as fixed liabilities or term liabilities or long term-loans.

**a) Secured loans:** It refers to loans which are secured by a fixed or floating charge on the assets of the business. It includes :
   i. Debenture
   ii. Loan and advance from banks,
   iii. Loan and advance from subsidiaries and
   iv. Other loan and advances.

**b) Unsecured loans:** It refers to the loans which are not secured by assets of the business. It is not covered by any security. It includes:
   i. Fixed deposits,
   ii. Loans and advance from subsidiaries,
   iii. Other loans and advance: loan from directors, secretaries, treasurers and managers should be shown separately.

**Loan Fund=** Secured loans +unsecured loans

**4. Current Liabilities and Provisions**

**a) Current Liabilities**

Current liabilities are those short-term obligations of an enterprise which mature within one year or within the operating cycle. They are as follows:

i. Sundry Creditors–when goods are purchased
ii. Bills Payable– by acceptance of bills drawn by creditor – (Accounts payable)
iii. Interest accrued but not due
iv. Wages and salaries payable–out standing expenses.
v. Unclaimed dividends.
vi. Bank Overdraft.

**b) Provisions:**

Provision means any amount retained by way of providing for any known liability of which the amount cannot be determined with substantial accuracy. They are at best estimates. The examples of provisions are asunder:

i. Provision for depreciation on assets.
ii. Provision for doubtful debts.
iii. Provision for proposed dividends.
iv. Provision for taxation.

Provisions relating to specific assets are shown as deduction from the specific assets.

**c) Quick Liabilities:** These are the current liabilities which mature within a very short period of time.

**Quick Liabilities=** Current Liabilities –Bank Overdraft

**Check Your Progress :**

1. Give the formulas of the following:
    a) Proprietors Fund
    b) Quick Liabilities
    c) Quick Assets
    d) Net profit before tax
    e) Retained earnings
    f) Cost of goods sold
    g) Operating expenses

_____
_____
_____
_____
_____

2. Give the examples of the following:
    a) Current Liabilities
    b) Provisions
    c) Secured loan
    d) Capital Reverses
    e) Current Assets
    f) Fictitious Assets
    g) Non-operating Income
    h) Administration expenses

_____
_____
_____
_____
_____

## 2.5 SOLVED PROBLEMS

**Illustration 1**

Following is the trial balance of Good Luck Ltd. as on 31.3.2014

**Trial Balance**

| Particulars | Amt. | Particulars | Amt. |
|---|---|---|---|
| Preliminary Expenses (Not yet written off) | 20,000 | Equity Shares Capital (Rs.100) | 7,00,000 |
| Administrative Expenses | 4,00,000 | Gross Sales | 20,40,000 |
| Land And Building | 8,00,000 | General Reserve | 3,20,000 |
| Plant & Machinery | 6,00,000 | Profit and loss A/c (Cr.) | 2,00,000 |
| Selling Expenses | 1,00,000 | 12.5% Debentures | 4,00,000 |
| Furniture | 3,00,000 | **Provision for Depreciation** | |
| Cost of production | 9,60,000 | On Land & Building | 2,00,000 |
| Return Inward | 40,000 | On Plant & Machinery | 1,00,000 |
| Finished Goods | 2,40,000 | On Furniture | 80,000 |
| Government Bonds | 2,80,000 | Trade Expenses | 4,00,000 |
| Advance Tax | 2,00,000 | | |
| Trade Receivable | 5,00,000 | | |
| | **44,40,000** | | **44,40,000** |

Other Information:

1. Closing stock of Finished goods as on 31.3.2014 was Rs.1,60,000.
2. Provide Dividend on Equity Shares at 10%.
3. Make provision for Income Tax of Rs.2,00,000.

From the following information you are required to prepare Income Statement for the year ended 31.3.2014 and balance sheet as on that date in vertical form suitable for analysis.

**Solution**

**Income Statement for the year ended 31.3.2014**

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| Gross Sales | 20,40,000 | |
| **Less**: Return Inward | 40,000 | |
| **Net Sales** | | **20,00,000** |
| Cost of Production | 9,60,000 | |
| Add Opening stock | 2,40,000 | |
| Less Closing Stock | (1,60,000) | |
| **Cost of Goods Sold** | | **10,40,000** |
| **Gross Profit** | | 9,60,000 |
| **Less:** Operating Expenses | | |
| **1.** Administrative Expenses | 4,00,000 | |
| **2.** Selling Expenses | 1,00,000 | |
| **Total Operating Expenses** | | 5,00,000 |
| Operating Profit before Interest | | 4,60,000 |
| **Less**: Debenture Interest | | 50,000 |
| Profit After Interest before Tax | | 4,10,000 |
| **Less:** Tax | | 2,00,000 |
| Profit after tax | | 2,10,000 |
| **Add:** Profit and loss balance | | 2,00,000 |
| Total Profit | | 4,10,000 |
| **Less:** Appropriation | | |
| Equity Dividend | | 70,000 |
| **Retained Earning** | | **3,40,000** |

**Balance Sheet as on 31.3.2014**

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| **Sources of Fund** | | |
| **1.** Share Holders Fund | | |
| Equity Share Capital | | 7,00,000 |
| Reserve and Surplus | | |
| General Reserve | 3,20,000 | |
| Profit and loss A/c | 3,40,000 | |
| **Total** | **6,60,000** | |

| | | |
|---|---|---|
| **Less**: Preliminary Expenses | (20,000) | 6,40,000 |
| **Share Holders Fund** | | **13,40,000** |
| **2.** Loan Fund | | |
| 12.5% Debentures | | 4,00,000 |
| **Total Sources of Fund** | | **17,40,000** |
| **Application of Fund** | | |
| **1.** Fixed Assets | | |
| Land & Building (8,00,000 – 2,00,000) | 6,00,000 | |
| Plant & Machinery (6,00,000 – 1,00,000) | 5,00,000 | |
| Furniture (3,00,000 – 80,000) | 2,20,000 | 13,20,000 |
| **2.** Investment Government Bonds | | 2,80,000 |
| **3.** Working Capital | | |
| **a.** Current Assets | | |
| Trade Receivable | 5,00,000 | |
| Stock of Finish Goods | 1,60,000 | |
| Advance Tax | 2,00,000 | |
| **Total current assets** | **8,60,000** | |
| **b.** Current Liabilities | | |
| Trade Payable | 4,00,000 | |
| Provision for tax | 2,00,000 | |
| Equity Dividend | 70,000 | |
| Debenture Interest outstanding | 50,000 | |
| **Total Current Liabilities** | **7,20,000** | |
| **Net Working Capital (a-b)** | | **1,40,000** |
| Total Application of Fund | | **17,40,000** |

**Illustration 2**

Following is the Trial balance of M/s. Anand Ltd. As on 31.3.2015.

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| Sales | | 20,00,000 |
| Fixed Assets | 10,00,000 | |
| Bills Receivable & Bills Payable | 2,00,000 | 1,50,000 |
| Cash and Bank Balance | 50,000 | |
| Opening Stock | 1,00,000 | |

| | | |
|---|---|---|
| Bank Overdraft | | 1,00,000 |
| Purchases | 12,50,000 | |
| Administrative Expenses | 30,000 | |
| Legal Expenses | 20,000 | |
| Salaries | 50,000 | |
| Advertisement | 40,000 | |
| Warehouse Rent | 20,000 | |
| Depreciation On Machinery | 50,000 | |
| Interest on Bank Overdraft | 10,000 | |
| Equity Shares Capital | | 6,00,000 |
| General Reserve | | 1,00,000 |
| Lap Top Repairs | 20,000 | |
| Direct Expenses | 20,000 | |
| Investment | 40,000 | |
| Debtors And Creditors | 1,00,000 | 50,000 |
| **Total** | **30,00,000** | **30,00,000** |

**Additional Information:**

1. Closing Stock on 31.3.2.15 was valued at Rs.50,000
2. Cash sales were 1/3 of credit sales.

You are required to prepare vertical Income statement for the year ended 31.3.2015 and vertical Balance sheet as on that date for financial analysis.

**Solution**

**Income Statement for the year ended 31.3.2015**

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| | | |
| Sales : Cash | 5,00,000 | |
| Credit | 15,00,000 | 20,00,000 |
| Less: Cost of Goods Sold | | |
| Opening Stock | 1,00,000 | |
| Add: Purchases | 12,50,000 | |
| Add: Direct expenses | 20,000 | |
| Less: Closing Stock | 50,000 | |
| Depreciation On Machinery | 50,000 | 13,70,000 |

| | | |
|---|---|---|
| **Gross Profit** | | **6,30,000** |
| Less:<br>**a. Operating Expenses** | | |
| Administrative Expenses | 30,000 | |
| Legal Expenses | 20,000 | |
| Salaries | 50,000 | |
| Lap Top Repairs | 20,000 | |
| Total Operating Expenses | **1,20,000** | |
| **b. Selling & Distribution Expenses** | | |
| Advertising | 40,000 | |
| Warehouse rent | 20,000 | |
| Total Selling expenses | **60,000** | |
| Total (a+b) | | 1,80,000 |
| **Net profit Before Interest** | | **4,50,000** |
| Less: Interest on Bank overdraft | | 10,000 |
| **Net profit before Tax** | | **4,40,000** |

**Balance Sheet as on 31.3.2015**

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| **Sources of Fund** | | |
| **1.** Share Holders Fund | | |
| Share capital | 6,00,000 | |
| Reserve and Surplus | | |
| General Reserve | 1,00,000 | |
| Profit and loss A/c | 4,40,000 | |
| Share Holders Fund | | 11,40,000 |
| **2. Loan Fund** | | |
| Bank Overdraft | | 1,00,000 |
| **Total Sources of Fund** | | **12,40,000** |
| **Application Of Fund** | | |
| **1.** Fixed Assets | | |
| Tangible Assets | | 10,00,000 |
| **2.** Investment | | 40,000 |
| **3.** Working Capital | | |

| | | |
|---|---|---|
| **a.** Current Assets | | |
| Inventories | 50,000 | |
| Trade receivable | 1,00,000 | |
| Debtors | 2,00,000 | |
| Cash | 50,000 | |
| Total Current Assets | 4,00,000 | |
| **b.** Current Liabilities | | |
| Creditors | 50,000 | |
| Bills Payable | 1,50,000 | |
| Total Current Liabilities | 2,00,000 | |
| Net Working Capital (a-b) | | 2,00,000 |
| **Total Application of Fund** | | **12,40,000** |

**Illustration 3**

M/s. Avinash Ltd. has provided you the following information for the year ended 31.3.2015.

| **Particulars** | **Amt.** | **Particulars** | **Amt.** |
|---|---|---|---|
| Sales | 20,00,000 | Return Inward | 50,000 |
| Opening Stock of Raw Material | 1,10,000 | Purchases of Raw Material | 5,00,000 |
| Staff Salaries | 1,50,000 | Commission allowed | 5,000 |
| Salesmen Salaries | 25,000 | Proposed Dividend | 1,50,000 |
| Bank Charges | 10,000 | Exhibition Expenses | 35,000 |
| Freight Inwards | 40,000 | Repairs of Computer | 5,000 |
| Office Rent and Insurance | 45,000 | Closing stock of WIP | 40,000 |
| Debenture Interest | 50,000 | Wages | 70,000 |
| Loss on sale of Machinery | 10,000 | Purchases of Finish Goods | 80,000 |
| Printing & Stationery | 5,000 | Interest Received on Investment | 40,000 |
| Direct expenses | 50,000 | Provision for Income Tax | 2,00,000 |
| Profit &Loss A/c (Credit) | 2,40,000 | Closing Stock of Raw Material | 80,000 |
| Depreciation on patterns | 10,000 | Sale of scrap | 20,000 |
| Depreciation on Machinery | 20,000 | | |

You are required to rearrange the above information and prepare vertical income statement, suitable for analysis.

**Solution**

**Income Statement for the year ended 31.3.2015**

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| | | |
| Sales | 20,00,000 | |
| Less: Return Inwards | 50,000 | 19,50,000 |
| Less: Cost of Material | | |
| Opening Stock | 1,10,000 | |
| Add: Purchases | 5,00,000 | |
| Add: Freight Inwards | 40,000 | |
| Less: Closing Stock | 80,000 | |
| Cost of Material | **5,70,000** | |
| Wages | 70,000 | |
| Direct Expenses | 50,000 | |
| Depreciation Machinery | 20,000 | |
| Depreciation Pattern | 10,000 | |
| Total Direct Expenses | **7,20,000** | |
| Less: Closing stock of WIP | 40,000 | |
| | 6,80,000 | |
| Less: Sale of Scrap | 20,000 | |
| **Cost of production** | **6,60,000** | |
| Add: Purchases of Finish Goods | 80,000 | 7,40,000 |
| **Gross Margin** | | **12,10,000** |
| Less: Operating Expenses | | |
| a) Administrative Expenses | | |
| Staff Salaries | 1,50,000 | |
| Office rent & Insurance | 45,000 | |
| Printing and Stationery | 5,000 | |
| Repairs and computers | 5,000 | |
| Total Administrative Exp | **2,05,000** | |
| b) Selling & Distribution Expenses | | |
| Salesman Salaries | 25,000 | |

| | | |
|---|---|---|
| Commission allowed | 5,000 | |
| Exhibition expenses | 5,000 | |
| Total Selling Exp. | **65,000** | |
| c) Finance Expenses | | |
| Bank charges | **10,000** | |
| **Total Exp. (a+b+c)** | | **2,80,000** |
| **Net profit before Interest** | | **9,30,000** |
| Less: Interest on Debenture | | 50,000 |
| **Net profit after Interest** | | **8,80,000** |
| Add: Non-operating Income | | |
| Interest on Investment | | 40,000 |
| | | 9,20,000 |
| Less: Non-operating Expenses | | |
| Loss on sale of Machinery | | 10,000 |
| **Net profit before tax** | | **9,10,000** |
| Less: Provision for Tax | | 2,00,000 |
| **Net profit after tax** | | **7,10,000** |
| Add: P/L A/c balance | | 2,40,000 |
| | | 9,50,000 |
| Less: Proposed Dividend | | 1,50,000 |
| **Net profit carried to Balance sheet** | | **8,00,000** |

**Illustration 4**

The following balances appear in the books of M/s Ram Ltd. as on 31.3.2015. You are required to prepare a balance sheet in the vertical form.

| **Particulars** | **Amt.** | **Particulars** | **Amt.** |
|---|---|---|---|
| Sundry Debtors | 2,00,000 | Creditors | 1,50,000 |
| Trade Investment | 2,50,000 | Capital Reserve | 1,50,000 |
| Bank Overdraft | 1,00,000 | Short term Investment | 50,000 |
| Public deposit | 3,00,000 | Plant and Machinery | 12,00,000 |
| Bills Payable | 7,90,000 | Outstanding Expenses | 1,20,000 |

| | | | |
|---|---|---|---|
| General Reserve | 1,00,000 | Cash at Bank | 7,00,000 |
| Bills Payable | 2,00,000 | Profit and loss A/c (Credit ) | 4,00,000 |
| Vehicles | 9,00,000 | Stocks | 5,00,000 |
| 10% Pref. Sh. Capital | 8,00,000 | Land and Building | 12,00,000 |
| Commission on issue of shares( not w/off) | 40,000 | Preliminary Expenses (not w/off) | 10,000 |
| Provision for tax | 1,00,000 | Equity shares capital | 16,00,000 |
| Bank Loan | 3,00,000 | Debentures | 5,00,000 |
| Advance tax | 3,00,000 | Proposed Dividend | 3,00,000 |
| Prepaid Expenses | 1,00,000 | Advance to suppliers | 60,000 |

**Solution**

**Balance Sheet as on 31.3.2015**

| **Particulars** | **Amt.** | **Amt.** |
|---|---|---|
| **Sources of Fund** | | |
| **1.** Share Holders Fund | | |
| a) Share Capital | | |
| Equity sh. Capital | 16,00,000 | |
| 10% Pref.sh Capital | 8,00,000 | |
| Total (a) | 24,00,000 | |
| b) Reserve And Surplus | | |
| General Reserve | 1,00,000 | |
| P & L A/c | 4,00,000 | |
| Capital Reserve | 1,50,000 | |
| Total (b) | 6,50,000 | |
| **Total (a+b)** | **30,50,000** | |
| **Less:** Preliminary Expenses | 10,000 | |
| Commission on shares | 40,000 | 30,00,000 |
| **2.** Loan Fund | | |
| Debentures | 5,00,000 | |
| Public Deposit | 3,00,000 | |

| | | |
|---|---|---|
| Bank Loan | 3,00,000 | 11,00,000 |
| **Total** | | **41,00,000** |
| Application of Funds | | |
| **1.** Fixed Assets | | |
| Tangible Assets | | |
| Land and Building | 12,00,000 | |
| Plant and Machinery | 12,00,000 | |
| Vehicles | 9,00,000 | 33,00,000 |
| **2.** Investments | | |
| Trade Investment | | 2,50,000 |
| **3.** Working Capital | | |
| **a)** Current Assets | | |
| Stock | 5,00,000 | |
| Sundry Debtors | 2,00,000 | |
| Bills Receivable | 2,00,000 | |
| Short Term Investment | 50,000 | |
| Cash & bank | 7,00,000 | |
| Adv. To suppliers | 60,000 | |
| Adv. Tax | 3,00,000 | |
| Prepaid Expenses | 1,00,000 | |
| Total Current Assets | 21,10,000 | |
| **b)** Current Liabilities | | |
| Creditors | 1,50,000 | |
| Outstanding Expenses | 1,20,000 | |
| Bank Overdraft | 1,00,000 | |
| Bills Payable | 7,90,000 | |
| Provision for Tax | 1,00,000 | |
| Proposed Dividend | 3,00,000 | |
| Total Current Labilities | 15,60,000 | |
| Working Capital (a-b) | | 5,50,000 |
| **Total** | | **41,00,000** |

## 2.6 EXERCISE

1. Discuss the nature of Financial Statement.
2. Define financial statement analysis. Explain the need and importance of it.
3. Define Assets. Explain various types of Assets.
4. Objective type Questions

**A.** Match Group A With Group B

| Group A | | Group B | |
|---|---|---|---|
| a) | Source of Fund | 1. | Current Assets |
| b) | Liquid Assets Fund | 2. | Net Worth + Loan Fund |
| c) | Call in Arrears | 3. | Current Asset - Stock |
| d) | Retained Earnings | 4. | Deduct from subscribed capital |
| e) | Over subscription | 5. | Profit & Loss A/c balance |
| f) | Loose tools | 6. | Subscribed capital is more than issued capital |

**(Answer: a – 2 ,b – 3, c- 4 , d- 5, e – 6 , f – 1)**

**B.** Fill in the Blanks with proper words / phase.

1. Trade Mark is an _____ assets.
2. Advance tax is shown under _____.
3. Current Liabilities = _____ - Current Assets.
4. Fictitious Assets are _____ .
5. Securities Premium forms part of _____.
6. Capital Employed = Fixed Assets +_____ capital.

**(Answer : 1. Intangible , 2. Loans and Advances, 3. Working Capital, 4. Intangible, 5. Reserve & Surplus 6. Working.)**

**C.** State whether following statement are True or False.

1. Balance sheet shows result of activities.
2. Goodwill will be shown under fictitious assets.
3. Arrears of preference dividend are contingent liabilities.
4. All quick liabilities are current liabilities.
5. Operating expenses are incurred to conduct the operations smoothly.
6. Public deposit is a secured loan.

**(Answer: 1. False 2. False 3.True 4.True 5.True 6. False)**

**D.** Multiple Choice Questions.

1. Patents and Copyrights is an
   a) Intangible Assets
   b) Movable assets
   c) Intangible fixed assets
   d) Fictitious Assets

2. Balance sheet is a
   a) Statement of assets and liabilities
   b) Statement of operating results
   c) Statement of working capital
   d) None of the above

3. Income Statement is a
   a) Statement of working results
   b) Statement of Sources of Fund
   c) Statement of Cash Flow
   d) Fund from Operation

4. Fixed assets are Rs.5, 00,000; Current Assets are Rs.3, 00,000; Current Liabilities are Rs. 1, 00,000. There is no investment, Find out capital employed.
   a) 8,00,000
   b) 7,00,000
   c) 9,00,000
   d) 6,00,000

5. Sales are Rs.5, 00,000; operating cost is Rs.2, 00,000; profit on sale of machinery is Rs.10, 000, find out operating profit.
   a) 3,00,000
   b) 3,10,000
   c) 3,10,000
   d) 3,50,000

6. Short term investments are shown under which head in the vertical balance sheet.
   a) Investment
   b) Current Assets
   c) Current Liabilities
   d) Fictitious Assets

(**Answer: 1. c, 2. a, 3. d, 4. b, 5.a, 6.b)**



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# 3

# TOOLS OF ANALYSIS OF FINANCIAL STATEMENTS

**Unit Structure:**



## 3.1 OBJECTIVES

After studying the unit the students will be able to:

- Explain the meaning of financial statement analysis.
- Know the meaning and utility of Trend analysis.
- Understand the meaning of Comparative and Common Size Statements
- Prepare the Comparative and Common Size Statements from the given information.

## 3.2 INTRODUCTION

Financial statements are prepared to meet external reporting obligations and also for decision making purposes. They play a dominant role in setting the framework of managerial decisions. As the information provided in the financial statements is not an end in itself as no meaningful conclusions can be drawn from these statements alone. However, the information provided in the financial statements is of immense use in making decisions through analysis and interpretation of financial statements. To overcome

from the limitations it becomes necessary to analyse the financial statements. The analytical tools generally available to an analyst for this purpose are:

1. Comparative financial and operating Statements
2. Common-size statement
3. Trend ration and trend analysis
4. Average Analysis
5. change in working capital
6. Fund-flow and cost-flow analysis
7. Ratio analysis

## 3.3 TREND RATION AND TREND ANALYSIS

### 3.3.1 Meaning

Trend analysis is an important and useful technique of analysis and interpretation of financial statement. Under this technique the ration of different items for various periods are calculate for the company over a definite period of time say three to five years and then we can analysis trend highlighted by this ratio. Trend analysis can be done in following way:

i) Trend percentage,
ii) Trend ratio,
iii) Graphic and diagrammatic representation.

### 3.3.2 Utility of Trend Analysis:

a) It is a simple technique. it does not involve tedious calculation and not requires trained experts
b) It is brief method to indicate the future trend
c) It reduces the chances of errors as it provides the opportunity to compare the percentage with absolute figures
d) It computes the percentage change for different variables over a long period and then makes a comparative study of them.
e) The trend percentage helps the analytics to study the changes that have occurred during the period. Such an analysis indicates the progress of business by showing ups and downs in it activity.

### 3.3.3 Steps involved in calculation of trend percentage

The calculation of trend percentage involves the following steps.

a) Selection of base year.
b) Assigning a weight of 100 to be value of the variable of the base year and
c) Expressing the percentage change in value of variable from base year as shown below.

### 3.3.4 Following is the example of Trend analysis

| Years | Sales | Percentage ( + ) Increase or ( - ) Decrease |
|---|---|---|
| 1980 | 20,000 | 100 (Base year ) |
| 1981 | 35,000 | 175 |
| 1982 | 28,000 | 140 |
| 1983 | 30,000 | 150 |
| 1984 | 35,000 | 175 |
| 1985 | 14,000 | 70 |
| 1986 | 22,000 | 110 |

A trend for single financial item is seldom very informative. A comparison of trend for relative items often help to analysis in perfect understanding of the business fact as is clear from the below mentioned comparative balance sheet.

### 3.3.5 Comparative Balance Sheet

| Assets | 1986 Rs. | 1987 Rs. | 1988 Rs. | Trend Percentage ( base year – 1988 ) | | |
|---|---|---|---|---|---|---|
| | | | | 1986 | 1987 | 1988 |
| **A) Current Assets** | | | | | | |
| Inventory | 20,000 | 30,000 | 25,000 | 100 | 150 | 125 |
| Debtor | 30,000 | 50,000 | 60,000 | 100 | 167 | 200 |
| Cash balance | 20,000 | 55,000 | 30,000 | 100 | 175 | 150 |
| **Total (A)** | **70,000** | **1,15,000** | **1,15,000** | **100** | **164** | **164** |
| **B) Fixed Assets** | | | | | | |
| Building | 250,000 | 300,000 | 3,00,000 | 100 | 120 | 120 |
| Plant | 1,25,000 | 150,000 | 1,60,000 | 100 | 120 | 128 |
| Investment | 80,000 | 1,00,000 | 1,20,000 | 100 | 125 | 150 |
| **Total (B)** | **4,55,000** | **5,50,000** | **5,80,000** | **100** | **121** | **127** |
| **Total Assets (A + B)** | **5,25,000** | **6,65,000** | **6,95,000** | **100** | **127** | **132** |

### 3.3.6 Illustration:

Calculate trend percentage from the following figures of X L td, taking 1979 as the base and interpret.

| Year | Sales | Stock | Profit before tax |
|---|---|---|---|
| 1979 | 1,881 | 709 | 321 |
| 1980 | 2,340 | 781 | 435 |
| 1981 | 2,655 | 816 | 458 |
| 1982 | 3,021 | 944 | 527 |
| 1983 | 3,768 | 1,154 | 672 |

**Solution :**
**Trend percentage**

| Years before | Sales (Rs. in Lakhs) | Stock (Rs. in Lakhs) | Profit before Tax (Rs. in Lakhs) | Sales | Stock | Profit Tax |
|---|---|---|---|---|---|---|
| 1979 | 1,881 | 709 | 321 | 100 | 100 | 100 |
| 1980 | 2,340 | 781 | 435 | 124 | 110 | 136 |
| 1981 | 2,655 | 816 | 458 | 141 | 115 | 143 |
| 1982 | 3,021 | 944 | 527 | 161 | 133 | 164 |
| 1983 | 3,768 | 1,154 | 672 | 200 | 162 | 209 |

**Interpretation:**

The study of the above given statement of Trend percentage reveals that –

i) The sales of the firm have continuously increased over a period of a five year commencing from 1979. However there has been a substantial increase in the amount of sales in the 1983 when it increased by 39%.
ii) The trend of Stock is also upward although the increase in this item has been constant yet in 1983 the increased has been exceptionally.
iii) The Profit of the firm has increased at much higher rat in comparison to increase in Sale and Stock during the period under study.

The overall analysis of the financial items indicated that the firm is doing well, and therefore, its financial position it bound to be good.

## 3.4 COMPARATIVE STATEMENT

### 3.4.1 Meaning and Definition:

The comparative statements are an important tool of horizontal financial analysis. Financial data become more meaningful when compared with similar data for previous period or a number of previous periods. Such analysis helps as in forming an opinion regarding the progress of the enterprise.

Comparative statements are defined as:

**Foulke** has defined these statement as “statement of financial position of business so designed as to provide time perspective to the consideration of various elements of financial position embodied in such statement.’’

In any comparative statement columns for more than one year’s position or working can be drawn and figures may be provided. The annual date can be compared with similar monthly or quarterly data or can be compared with similar data for the same monthly or quarterly data of the previous years.

In such statement the figure can be shown at the following value.

a. Absolute date (money values or rupee amount).
b. Increase or decrease in absolute values
c. By the way of percentages
d. By the way of common—size statement

Two comparable units can be compared regarding profitability and financial position. The two organization may not have the identical heads of account In order to get over the difficulty, the data must first be property set before comparison In the preparation of comparative financial statement, uniformity is essential.

### 3.4.2 Importance of Comparative Statement:

Following points explain the importance of these statements:

1. These statements are very useful in measuring the effect of the conduct of a business enterprise over the period under consideration. Regardless of its financial strength at a given point of time, the enterprises must operate successfully if it hopes to continue as a going concern.
2. The income statement measures the effects of operation. But the progress of these operations may be viewed over number of periods by preparing the income statement in a comparative form.
3. Similarly the effect of operation of financial position and the progress of a business in term of financial position can be presented by means of a comparative balance sheet.
4. The accounting authorities in U. S. A. have strongly recommended and encouraged the preparation of financial statement in the comparative from Recognising the importance of comparative financial date for two years.
5. The Indian companies Act 1956 has made this fact compulsory that in the balance sheet of a company the figure for the previous year should also be given to facilitate comparison. Though the balance sheet is a useful statement, the comparative balance sheet is even more useful for the contains not only the data of a single balance sheet but also for the past years which may be useful in studying the trends.

### 3.4.3 Preparation of Comparative Statements:

The form of comparative balance sheet consists of two or more columns according to the number of year we prepare the balance sheet, for the date of original balance sheet and columns for the increases or decreases in various items.

Proforma of comparative balance sheet for two years

**ABC Co. Ltd.**
**Specimen of Comparative Balance Sheet**
**As on 31st December 1980 and 1981**
**(Amount in Lakhs of rupees)**

| | 31st Dec. 1980 | 31st Dec. 1981 | Increase (+) /Decrease (-) Amount | % | Rate |
|---|---|---|---|---|---|
| **Assets :** | | | | | |
| **Current Assets :** | | | | | |
| Cash | 240 | 80 | - 160 | - 66 | 1.24 |
| Debtors less reserve for doubtful debts | 120 | 96 | - 24 | - 40 | 1.60 |
| Merchandise Inventory | 260 | 320 | + 66 | + 46 | 2.46 |
| Prepaid Expenses | 100 | 80 | - 20 | - 40 | 1.60 |
| Total Current Assets | 720 | 656 | - 64 | - 18 | 1.82 |
| **Fixed Assets :** | | | | | |
| Land and Building less Depreciation | 480 | 720 | + 240 | +100 | 2.0 |
| Furniture &Fixture less Depreciation | 60 | 80 | + 20 | + 66 | 2.66 |
| Plant and Machinery less Depreciation | 240 | 480 | + 240 | + 200 | 4.00 |
| Total fixed Assets | 780 | 1,280 | + 500 | + 128 | 2.20 |
| **Total Assets** | **1,500** | **1,936** | **+ 436** | **+ 58** | **2.58** |
| **Liabilities and Capital:** | | | | | |
| **Current Liability :** | | | | | |
| Trend creditors | 234 | 510 | + 276 | + 108 | 3.08 |
| Accrued Expenses | 400 | 360 | - 40 | - 20 | 1.08 |
| Total Current liabilities | 634 | 870 | + 236 | + 74 | 2.74 |
| Equity Capital | 400 | 500 | + 100 | + 50 | 2.50 |
| Retained Earnings | 466 | 566 | + 100 | + 42 | 2.42 |
| Total Capital | 866 | 1,066 | + 200 | + 46 | 2.46 |
| **Total Liabilities and Capital** | **1,500** | **1,936** | **+ 436** | **+ 58** | **2.58** |



### 3.4.4 Preparation of a Comparative Income Statement:

An Income Statement shows the Net Profit or Net Loss from business operation of a definite accounting period. Like a balance sheet, a comparative income statement show the operating results for a number of accounting periods so that the changes in absolute date from one period to another may be explained and analysis.

The Comparative income statement contains the some columns as the comparative balance sheet and provides the same in the figures.

Specimen of a Comparative Income Statement

**ABC Co. Ltd.**
**Comparative Income Statement**
**For the year ended 31st Dec. 1980 and 1981**

(Amount in Lakhs of Rupees)

| | 31st Dec. 1980 | 31st Dec. 1981 | Increase (+) / Decrease (-) Amount | % |
|---|---|---|---|---|
| Net Sales | 1370 | 1442 | + 72 | +0.6 |
| Less : Cost of Goods Sold | 838 | 926 | + 88 | + 21 |
| **Gross Profit** | **532** | **516** | **- 16** | **- 6.4** |
| Operating Expenses : | | | | |
| Selling Expenses | 188 | 182 | - 6 | - 6.4 |
| Gen. and Admn. Expenses | 94 | 92 | - 2 | - 4.2 |
| Total Operating Expenses | 282 | 274 | - 8 | - 5.6 |
| **Operating Profit** | **250** | **242** | **- 8** | **- 6.4** |
| Add : Other Income | | | | |
| Dividend | 44 | 50 | + 6 | + 2.8 |
| | **294** | **292** | **- 2** | **- 1.4** |
| Less : Other Deduction | | | | |
| Interest Paid | 44 | 44 | Nil | Nil |
| | **250** | **248** | **- 2** | **- 1.6** |
| Less : Income Tax | 124 | 124 | Nil | Nil |
| **Net Profit after Tax** | **126** | **124** | **- 2** | **- 3.2** |

## 3.5 COMMON SIZE STATEMENT

### 3.5.1 Meaning

Financial statements that depict financial data in the shape of vertical statement percentage are known as common size statements. Such statements provide readers with vertical analysis of the profit and loss account and balance sheet. In such statement all figure are converted to a common unit by expressing than as percentage of a key figure in the statement. The total of financial statement is reduced to 100 and each item is shown as component to the whole. For example profit and loss account, the figure of each item of the financial year expressed as a percentage of sales

likewise, assets and liabilities can be shown as percentage of total assets and total equities respectively in common sized balance sheet. Thus expressing each monetary item of financial statement as a percentage of some total of which that item as apart transforms a financial statement what is referred as common size statement such a statement show the relative significance of the items contend in the financial statement and facilitate comparisons. It point out efficiencies and in efficiencies that are otherwise difficult to see and of this reason is a valuable management tool a common size statement is especially useful when data for more than one year are used.

**Vertical analysis** is the procedure of preparing and presenting *common size statements*. **Common size statement** is one that shows the items appearing on it in percentage form as well as in dollar form.

*Common size statements* are particularly useful when comparing data from different companies.

Common size statements are also very helpful in pointing out efficiencies and inefficiencies that might otherwise go unnoticed

**Illustration 1**

The balance sheet of Shaheen Ltd are given for the year 2007 and 2008 convert them into common size balance size balance sheet and interpret the changes.

**Balance Sheet**

| Liabilities | 2007 Rs | 2008 Rs. | Assets | 2007 Rs. | 2008 Rs. |
|---|---|---|---|---|---|
| Equity share | 1,46,800 | 1,91,000 | Buildings | 1,80,000 | 2,00,000 |
| Capital reserve | 50,000 | 70,000 | Plant and machinery | 40,000 | 55,000 |
| Revenue reserve & surplus | 20,000 | 30,000 | Furniture | 10,000 | 20,000 |
| | | | Freehold property | 20,000 | 12,000 |
| Trade creditors | 30,000 | 40,000 | Goodwill | 25,000 | 30,000 |
| Bills payable | 80,000 | 60,000 | Cash balance | 25,000 | 20,000 |
| Bank overdraft | 90,000 | 80,000 | Sunday debtors | 30,000 | 35,000 |
| Provisions | 30,000 | 20,000 | Inventories Bills receivable(temporary) | 70,000 | 57,000 |
| | **4,46,800** | **4,91,000** | | **4,46,800** | **4,91,000** |

## Common size Balance Sheet

| Assets | 1987 | | 1987 | |
|---|---|---|---|---|
| | Amt. (Rs.) | Percentage | Amt. (Rs.) | Percentage |
| **A. Current Assets** | | | | |
| Sundry Debtor | 30,000 | 6.71 | 35,000 | 7.13 |
| Cash balance | 25,000 | 5.59 | 20,000 | 4.07 |
| Inventories | 70,000 | 15.71 | 57,000 | 11.60 |
| Investment (Temporary) | 36,500 | 8.17 | 42,000 | 8.55 |
| Bill Receivable | 10,300 | 2.30 | 20,000 | 4.08 |
| **Total (A)** | **1,71,800** | **38.44** | **1,74,000** | **35.43** |
| **B. Fixed Assets** | | | | |
| Building | 1,80,000 | 40.29 | 2,00,000 | 40.75 |
| Plant and Machinery | 40,000 | 8.95 | 55,000 | 11.20 |
| Furniture | 10,000 | 2.24 | 20,000 | 4.07 |
| Freehold Property | 20,000 | 4.48 | 12,000 | 2.44 |
| Goodwill | 25,000 | 5.60 | 30,000 | 6.11 |
| **Total (B)** | **2,75,000** | **61.5** | **3,17,000** | **64.57** |
| **Total Assets (A+B)** | **4,46,800** | **100.00** | **4,91,000** | **100.00** |
| | | | | |
| **Liabilities** | | | | |
| **C. Current Liabilities** | | | | |
| Trade Creditors | 30,000 | 6.17 | 40,000 | 8.15 |
| Bill Payable | 80,000 | 17.91 | 60,000 | 12.22 |
| Bank Overdraft | 90,000 | 20.14 | 80,000 | 16.29 |
| Provision | 30,000 | 6.71 | 20,000 | 4.07 |
| **Total (C)** | **2,30,000** | **51.47** | **200,000** | **40.73** |
| | | | | |
| **D. Long-term Liabilities** | | | | |
| Equity Share | 1,46,800 | 32.86 | 1,91,000 | 38.90 |
| Capital Reserve | 50,000 | 11.19 | 70,000 | 14.26 |
| Revenue Reserve and Surplus | 20,000 | 4.48 | 30,000 | 6.11 |
| **Total (D)** | **2,16,800** | **48.53** | **2,91,000** | **59.27** |
| **Total Liabilities (C+D)** | **4,46,800** | **100.00** | **4,91,000** | **100.00** |

**Interpretation:**

1. Out of every rupee of sales 60.72 per cent in 1986 and 63.63 per cent in 1987 account for cost of goods sold.
2. The percentage ratio of gross profit to sales was 39.28 per cent in 1986 which was reduced 36.37 percent 1987.
3. The operating expenses increased from 15.71 per cent of sales in 1986 to 16.37 per cent in 1987 All this reduced the percentage ratio of net income after taxi to sales from 14.15 per cent in 1986 to 12.00 per cent in 1987.
4. The operating expenses increased from 15.71 per cent of sales in 1986 to 16.37 per cent in 1987 All this reduced to percentage ratio of net income after tax to sales from 14.15 per cent in 1987.

In the ultimate analysis it can be said that the operating efficiency of the concern has not been satisfactory during the period under study.

**Illustration 2 :** Following the Balance Sheet of X Co. Ltd and Y Co. Ltd as on 31.12.1990.

| Particulars | X Co. Ltd | Y Co. Ltd |
|---|---|---|
| **Assets** | 27 | 72 |
| Sundry Debtors | 220 | 226 |
| Stock | 100 | 174 |
| Prepaid Expenses | 11 | 21 |
| Other Current Assets | 10 | 21 |
| Total Current Assets | 368 | 514 |
| Fixed Assets (Net) | 635 | 513 |
| **Total** | **1,003** | **1,027** |
| **Liabilities** | | |
| Sundry Creditors | 42 | 154 |
| Other | 78 | 62 |
| Total Current Liabilities | 120 | 216 |
| Fixed Liabilities | 225 | 318 |
| Total Liabilities | 345 | 534 |
| Capital | 658 | 493 |
| **Total** | **1,003** | **1,027** |

**Solution:**

**Common Size Balance Sheet (as on 31st December 1992)**

| | X Co. Ltd Amount (Rs. in Lakhs) | percentage | Y Co. Ltd Amount (Rs. in Lakhs) | percentage |
|---|---|---|---|---|
| **Assets :** | | | | |
| A) Current Assets | | | | |
| Cash | 27 | 2.69 | 72 | 7.01 |
| Sundry Debtor | 220 | 21.93 | 226 | 22.01 |
| Stock | 100 | 9.97 | 174 | 16.94 |
| Prepaid Expenses | 11 | 1.10 | 21 | 2.04 |
| Other | 10 | 1.00 | 21 | 2.04 |
| Total (A) | 368 | 36.69 | 514 | 50.04 |
| B) Fixed Assets | 635 | 63.61 | 513 | 49.96 |
| Total (B) | 635 | 63.31 | 513 | 49.96 |
| **Total Assets (A+B)** | **1003** | **100.00** | **1027** | **100.00** |
| | | | | |
| **Liabilities :** | | | | |
| C) Current Liabilities | | | | |
| Sundry Debtor | | | | |
| Others | 42 | 4.19 | 154 | 14.99 |
| Total (C) | 78 | 7.78 | 62 | 6.04 |
| D) Long Term Liabilities | 120 | 11.97 | 216 | 21.03 |
| Fixed Liabilities | | | | |
| Capital | 225 | 22.43 | 318 | 30.97 |
| Total (D) | 658 | 65.60 | 493 | 48.00 |
| **Total liabilities (C+D)** | 883 | 88.03 | 811 | 78.97 |
| | **1003** | **100.00** | **1027** | **100.00** |



**Comments:**

1. The study of common size balance sheet show that 63.31 per cent of total assets of X company Ltd were fixed whereas the same percentage for Y Co was 49.96.
2. The current liability of X Co L td were 11.97 per cent of total liability and for Y Co L td this percentage was 21.03 both the companies have used more equity capital.

**Illustration 3:** From the income statement give below you are required to prepare common – sized income statement.

| Particulars | 1986 Rs. | 1987 Rs. |
|---|---|---|
| Sales | 1,40,000 | 1,65,000 |
| Less : Cost of Goods Sold | 85,000 | 1,05,000 |
| Gross Profit | 55,000 | 60,000 |
| Operating Expenses | | |
| Selling and Distribution Expenses | 12,000 | 16,000 |
| Administrative Expenses | 10,000 | 11,000 |
| Total Operating Expenses | 22,000 | 27,000 |
| Net Income before Tax | 33,000 | 33,000 |
| Income Tax (40%) | 13,000 | 13,200 |
| Net Income | 19,800 | 19,800 |

**Solution:**

**Common size income statement**
**(For the year ending 1986 and 1987)**

| Particulars | 1986 | | 1987 | |
|---|---|---|---|---|
| | Amt. (Rs.) | Percentage | Amt. (Rs.) | Percentage |
| Sales | 1,40,000 | 100.00 | 1,65,000 | 100.00 |
| Less : Cost of Sales | 85,000 | 60.72 | 1,05,000 | 63.63 |
| Gross Profit | 55,000 | 39.28 | 60,000 | 36.37 |
| Selling & Distribution Expenses | 12,000 | 8.57 | 16,000 | 9.70 |
| Administrative Exp. | 12,000 | 7.14 | 11,000 | 6.67 |
| Total operating Exp. | 22,000 | 15.71 | 27,000 | 16.67 |
| Net Income before Tax | 33,000 | 23.57 | 33,000 | 20.00 |
| Income Tax (40%) | 13,000 | 9.42 | 13,200 | 8.00 |
| Net Income after Tax | 19,800 | 14.15 | 19,800 | 12.00 |

**Interpretation:**

1. The study of common size balance show that 61.56 per cent total asset in 1986 were fixed This percentage increased 64.57 per cent 1987 if concern requires considerable investment in fixed assets these percentage might be acceptable if the company needs be acceptable if the company need liquid assets the interested parties might have cause to be concerned about the decreasing trend liquidity.
2. There was a wide shift from the use of creditor provided fund to the use of owner equity fund in 1986 external equity (current liability) and owner equity (long term liability) accounted from

51.47 per cent and 48.73 per cent for external equities and 59.27 per cent for owner equity These changes indicate that the concern has started to use internal sources more frequently than external sources more frequently than external sources in the generation of fund for this business.

3. The concern has not only succeeded in getting its current liability down from 51.47 per cent in 1986 to 40.73 per cent in 1987 of their respective of the total equity In but it has also increased the percentage of its revenue and surplus from 4.48 per cent in 1986 to 6.11per cent in 1987 of other respective total equities.

**Illustration 4:** You have given the following common size percentage of AB Company Ltd for 1997 and 1988.

| | 1997 | 1998 |
|---|---|---|
| Inventory | 5.20 | 5.83 |
| Debtors | 10.39 | ? |
| Cash | ? | 7.35 |
| Machinery | 49.35 | 45.35 |
| Building | 27.27 | 29.59 |
| Creditors | 20.78 | ? |
| Overdraft | ? | 10.81 |
| Total Current Liabilities | 31.17 | ? |
| Capital | 51.95 | 49.67 |
| Long-term loan | 16.88 | 17.91 |
| Total Liabilities | 3,85,000 | 4,63,000 |

From the above information, compute the missing common size percentage. Also calculate the value of all assets and liabilities.

**Solution:**

**Common Size Balance Sheet**
**(As on 31 December 1997 and 1998)**

| Assets | 1997 | | 1998 | |
|---|---|---|---|---|
| | Amt. (Rs.) | Percentage | Amt. (Rs.) | Percentage |
| **Assets :** | | | | |
| **A. Current Assets** | | | | |
| Inventory | 20,000 | 5.20 | 27,000 | 5.83 |
| Debtors | 40,000 | 10.39 | 55,000 | 11.88 |
| Cash | 30,000 | 7.79 | 34,000 | 7.35 |
| **Total (A)** | **90,000** | **23.38** | **1,16,000** | **25.06** |
| **B. Fixed Assets** | | | | |
| Machinery | 1,90,000 | 49.35 | 2,10,000 | 45.35 |

| | | | | |
|---|---|---|---|---|
| Building | 10,05,000 | 27.27 | 1,37,000 | 29.59 |
| **Total (B)** | **2,95,000** | **76.62** | **3,47,000** | **74.94** |
| **Total Assets (A+B)** | **3,85,000** | **100.00** | **4,63,000** | **100.00** |
| **Liabilities :** | | | | |
| **C. Current Liabilities** | | | | |
| Creditors | 80,000 | 20.78 | 1,00,000 | 21.59 |
| Overdraft | 40,000 | 10.39 | 50,000 | 10.81 |
| **Total (C)** | **1,20,000** | **31.17** | **1,50,000** | **32.40** |
| **D. Long-term Liabilities** | | | | |
| Capital | 2,00,000 | 51.95 | 2,30,000 | 49.67 |
| Loan | 65,000 | 16.88 | 83,000 | 17.91 |
| **Total (D)** | **2,65,000** | **68.83** | **3,13,000** | **67.55** |
| **Total Liabilities (C+D)** | **3,85,000** | **100.00** | **4,63,000** | **100.00** |

**Note :** Calculation have been made to the nearest rupee.

(i) Calculation of percentage of Cash for 1997
Cash = 23.38* – 15.59*
= 7.79
* Current Assets = Total Assets – Fixed Assets
= 100 – 76.62
= 23.38
** Inventory + debtor = 5.20 + 10.39 = 15.59

(ii) Calculation of Percentage of overdraft for 1997
Total Current Liability – Creditor = 31.17 – 20.78 = 10.39

(iii) Calculation of percentage of Debtors for 1998
Debtor = 25.06* – 13.18 = 11.88
* Current Assets = Total Assets – Fixed Assets
= 100 – 74.94
= 25.06

## 3.6 EXERCISE

1. Define common size financial statement and explain their usefulness during financial statement analysis.
2. What are the steps involved in the financial statement analysis?
3. Discuss various techniques of financial statement.
4. Write short note on
   a. Comparative financial statement
   b. Trend analysis
   c. Qualification of financial analysis

5. What do you understanding by comparative financial statement? What information is required to prepare a comparative balance sheet?
6. Explain the procedure of preparing common size balance sheet.
7. The following are the balance sheet of a concern as on 31st December, 1987 and 1988.
8. Critically examine the various tools available to the financial analysis. What are the limitations of such tool?
9. **Objective Type Questions**

A. Rewrite the following sentences by selecting correct choice.

a) An asset which is shown in the balance sheet but it has no real balance.
   (i) Fixed Asset
   (ii) Current Asset
   (iii) Wasting Asset
   (iv) Intangible Asset

b) An expenditure from which no future benefit is expected.
   (i) Capital Expenditure
   (ii) Revenue Expenditure
   (iii) Deferred Revenue Expenditure
   (iv) Misc. Expenditure

c) Which of the following is not a financial statement?
   (i) Balance Sheet
   (ii) Profit & Loss account
   (iii) Funds Flow Statement
   (iv) Trial Balance

d) The comparative income statement shows the increase or decrease over_____
   (i) Previous Year
   (ii) Future Year
   (iii) Current Year
   (iv) Percentage

e) In common size balance sheet analysis, the total assets are taken as
   (i) 100 %
   (ii) 50 %
   (iii) 10 %
   (iv) 0 %

**(Answers: a)- (iii), b)- (ii), c)- (iv), d)- (i), e)- (i) )**

B. Fill in the blanks :-
   a) In a common size income statement _____ is taken as 100.
   b) _____ form of balance sheet shows the assets on the right side and the liabilities on the left side.

c) _____ Reserves are not available for distribution of dividend.
d) Receipts from customer for sale of goods are known as _____ receipts.
e) The excess of current assets over current liabilities is known as _____.

**(Answers: i) Total Assets, ii) Horizontal, iii) Capital, iv) Revenue, v) Working Capital)**

C. Match the following:-

| Group A | Group B |
|---|---|
| 1. Bank overdraft | a) Reserve and Surplus |
| 2. Owned Funds | b) Fixed Asset |
| 3. Intangible Asset | c) Non-operating Expenditure |
| 4. Loss on sale of fixed assets | d) Current Liability |
| 5. Depreciation | e) goodwill |

**(Answer: 1. d), 2. a) 3. e), 4. c), 5. b) )**

D. State whether the following statements are true or false:-
(i) Issue of shares is an internal source of Finance.
(ii) A comparative balance sheet is prepared for the purpose of intra-firm comparison
(iii) Common size statements are used for vertical analysis only.
(iv) Analysis of profit & loss account means breaking down the profit & loss account into its various components.
(v) Accounting principles are generally accepted guidelines used by accountants for the purpose of preparing the financial statements.

**( Answers: (i) True, (ii) False, (iii) False, (iv) True, (v) False )**

## 10. Practical Problems:

1. Prepare a comparative balance sheet of the concern and study its financial position.

| Liability | 1987 Rs. | 1988 Rs. | Assets | 1987 Rs. | 1988 Rs. |
|---|---|---|---|---|---|
| Sundry Creditors | 55,000 | 83,000 | Cash | 25,000 | 18,000 |
| Bills Payable | 20,000 | 16,000 | Sundry Debtors | 1,60,000 | 2,00,000 |
| Proposed Dividend | 40,000 | 50,000 | Bills Receivable | 20,000 | 30,000 |
| Proposed Dividend | 42,000 | 50,000 | Stock in trend | 77,000 | 1,09,000 |
| 6% Debenture | 1,50,000 | 1,00,000 | Machinery | 80,000 | 2,00,000 |
| General Reserve | 40,000 | 70,000 | Building | 2,00,000 | 1,70,000 |
| Profit and Loss A/c | 30,000 | 48,000 | Goodwill | 1,15,000 | 90,000 |
| Capital | 3,00,000 | 4,00,000 | | | |
| | **6,77,000** | **8,17,000** | | **6,77,000** | **8,17,000** |

2. From the following information prepare a comparative statement and make brief comments.

**Income Statement**
**(For the year ended 31st March 1987 and 1988)**

| Particulars | 1987 Rs. | 1988 Rs. |
|---|---|---|
| Sales | 2,80,000 | 3,10,000 |
| **Less :** Cost of Good Sold | 1,92,000 | 2,22,000 |
| Gross Profit | 88,000 | 88,000 |
| **Less :** Administrative Expenses | 15,000 | 12,000 |
| Selling and Distribution Expenses | 18,000 | 18,000 |
| Total Operating Expenses | 33,000 | 30,000 |
| Net Income before Tax | 55,000 | 58,000 |
| **Less :** Tax (40%) | 22,000 | 23,200 |
| Net Income after Tax | 33,000 | 34,800 |

3. Convert the following balance sheet into common size balance sheet and make brief comments.

**Balance Sheet (as on 31 March 1983 and 1984)**

| Liabilities | 1983 Rs. | 1984 Rs. | Assets | 1983 Rs. | 1984 Rs. |
|---|---|---|---|---|---|
| Share Capital | 5,00,000 | 6,50,000 | Machinery | 2,80,000 | 3,20,000 |
| 6% Debenture | 3,40,000 | 2,00,000 | Building | 3,50,000 | 3,50,000 |
| Sundry creditor | 1,60,000 | 67,000 | Investment | 2,65,000 | 2,65,000 |
| Provision for | | | Goodwill | 70,000 | 55,000 |
| doubtful debtor | 45,000 | 3,000 | Bank balance | 40,000 | 30,000 |
| Profit and loss A/c | 75,500 | 1,65,000 | Inventory | 60,000 | 40,000 |
| | | | Bill receivable | 40,000 | 25,000 |
| | **10,80,000** | **10,85,000** | | **10,80,000** | **10,85,000** |

4. Following income statement of a business is given the for the year ending 31st December, 1987 and 1988 prepare a common size statement and make comments on the business result.

**Income Statement (for the ending on 31st Dec. 1987 and 1988)**

| Particulars | 1987 Rs. | 1988 Rs. |
|---|---|---|
| Gross Sales | 7,20,000 | 8,40,000 |
| Sales Return and Allowance | 40,000 | 50,000 |
| Net Sales | 6,80,000 | 7,90,000 |
| Cost of Good Sold | 5,00,000 | 5,80,000 |
| Gross Profit from Sales | 1,80,000 | 2,10,000 |
| **Operating Expenses :** | | |
| **Selling Expenses** | | |
| | 10,000 | 12,000 |

| | | |
|---|---|---|
| Advertising Expenses | 12,000 | 16,000 |
| Sales Salary | 7,000 | 5,000 |
| Delivery Expenses | 10,000 | 16,000 |
| Depreciation Expenses | 39,000 | 49,000 |
| Total Selling Expenses | | |
| **General and Administrative Expenses** | 50,000 | |
| Office Salaries | 20,000 | 75,000 |
| Insurance | 5,000 | 35,000 |
| Depreciation | 3,000 | 16,000 |
| Bad Debs | 78,000 | 12,000 |
| Total General and Administrative Expenses | 1,17,000 | 1,38,000 |
| **Total Operating Expenses** | 63,000 | 1,87,000 |
| Operating Income | | 23,000 |

# 4

# RATIO ANALYSIS AND INTERPRETATION – I

**Unit Structure:**

## 4.0 OBJECTIVES:-

After studying the unit the students will be able to

- Understand meaning of Ratios.
- Know the modes of expressing ratios.
- Know the objectives of ratios analysis.
- Classify the ratios.

## 4.1 INTRODUCTION:-

During the half of the 19th century, the bankers have started using accounting ratios for analyzing credit standing of prospective buyer (debtors). But the ratios analysis of bankers was very much restricted to the study of current ratios only.

In 1919, Alexander was has criticized such restrictions and narrow analysis and pointed out the possible dangers of such analysis. He expressed in his view that in order is get clear picture of financial health of the business enterprise, one has to take into account various other relationships other than current ratios. Then the ratio analysis is considered as strong and efficient tools of analyzing the financial statement.

Ratio analysis is the method or process of expressing relationship between items or group of items in the financial statement are computed, determined and presented. It is an attempt to draw quantitative measures or guides concerning the financial health and profitability of an enterprise. It can be used in trend and static analysis.

It is the process of comparison of one figure or item or group of items with another, which make a ratio, and the appraisal of the ratios to make proper analysis of the strengths and weakness of the operations of an enterprise.

## 4.2 MEANING AND OBJECTIVES OF RATIOS:-

### 4.2.1 Meaning

A ratio is one figure expressed in terms of another figure. It is mathematical yardstick of measuring relationship of two figures or items or group of items, which are related, is each other and mutually inter-dependent. It is simply the quotient of two numbers. It can be expressed in fraction or in decimal point or in pure number.

Accounting ratio is an expression relating to two figures or two accounts or two set accounting heads or group of items stated in financial statement.

### 4.2.2 Objectives

The accounting ratios are very useful in assessing the performance of business enterprise i.e. financial position and profitability. This is possible to achiever by comparison of ratios of the year or with the previous year.

The ratios are worked out to analyse the following aspect or areas of business organization.

1. Solvency: -
   a. Long-term solvency
   b. Short-term solvency
   c. Immediate solvency
2. Stability
3. Profitability
4. Operational efficiency
5. Credit standing
6. Structural analysis.
7. Utilization of resources and
8. Leverage or external financing.

The ratios are useful for the following parties.

1) Investors, both present as well as potential investors.
2) Financial analysist.
3) Stock broker and stock exchange authorities.
4) Government.
5) Tax Department.
6) Competitors
7) Research analysist and students.
8) Creditors and supplier.
9) Banks and financial institutions.
10) Company's management.
11) Finance managers
12) Mutual funds.
13) Other interested parties like credit rating agencies.

## 4.3 MODES OF EXPRESSING AN ACCOUNTING RATIO

An accounting ratio may be expressed in different ways as under.

**I) Simple or pure ratio: -** It is merely a quotient arrived by simple division of one number by another.

**Example :** When current assets of the business enterprise are Rs. 1, 00,000 and current liabilities are Rs. 25,000. The ratio between current assets and current liabilities will be expressed as $\frac{1,00,000}{25,000} = 04$ OR it is expressed as 4:1.

**II) Percentages :-** It is expressed as percentage relationship when simple or pure ratio is multiplied by 100.

**Example :** The current ratio in above example is expressed in percentage by multiplying 4 by 100.
i.e. 100 x 4 = 400%

**III) Rate :-** The ratio is expressed as rates which refer to the ratio over a period of time.

**Example :** Stock has turned over 8 times a year.

**IV) Number of days or week or month :-** Certain items of the financial statements are expressed better in the form of days or weeks or months.

**Example :** Debtors' collection period, credit payment period, movement of stock, etc are expressed in days or weeks or months in a year.
If stock turnover ratio is 8 times, they movement of stock is expressed as under :
$\frac{360}{8} = 45$ days, $\frac{52}{8} = 6.5$ weeks or $\frac{12}{8} = 1.5$ months

**V) Rupees :-** In this case numerator is divided by denominator and figure of result is expressed in rupees.

**Example :** Earnings per share, dividend per share etc are expressed in rupees.
It net profit after tax is Rs. 12,500 and number of shares of a company are 1250.
Earning per share = $\frac{\text{NPAT}}{\text{No. of shares}} = \frac{12,500}{1,250} =$ Rs.10 per share

**Check your progress:**

1. Define the following terms.
   a) Percentages
   b) Simple / Pure Ratio
   c) Rates
   d) Ratio

2. Explain the objectives of Ratio analysis.

## 4.4 CLASSIFICATION OF RATIOS: -

The ratios are used for different purposes, for different users and for different analysis.

The ratios can be classified as under:

a) Traditional classification
b) Functional classification
c) Classification from user's point of view

### 4.4.1 Traditional classification :

As per this classification, the ratios readily suggest through their names, their respective resources. From this point of view, the ratios are classified as follows.

a) **Balance Sheet Ratio: -** This ratio is also known as financial ratios. The ratios which express relationships between two items or group of items mentioned in the balance sheet at the end of the year.
**Example:** Current ratio, Liquid ratio, Stock to Working Capital ratio, Capital Gearing ratio, Proprietary ratio, etc.

b) **Revenue Statement Ratio: -** This ratio is also known as income statement ratio which expresses the relationship between two items or two groups of items which are found in the income statement of the year.

**Example:** Gross Profit ratio, Operating ratio, Expenses Ratio, Net Profit ratio, Stock Turnover ratio, Operating Profit ratio.

c) **Combined Ratio :-** These ratios shows the relationship between two items or two groups of items, of which one is from balance sheet and another from income statement (Trading A/c and Profit & Loss A/c and Balance Sheet).

**Example :** Return on Capital Employed, Return on Proprietors' Fund ratio, Return on Equity Capital ratio, Earning per Share ratio, Debtors' Turnover ratio, Creditors Turnover ratio.

### 4.4.2 Functional Classification of Ratios :

The accounting ratios can also be classified according their functions as follows.

a) **Liquidity Ratios :-** These ratios show relationship between current assets and current liabilities of the business enterprise.
   **Example :** Current Ratio, Liquid Ratio.
b) **Leverage Ratios :-** These ratios show relationship between proprietor's fund and debts used in financing the assets of the business organization.

**Example :** Capital gearing ratio, debt-equity ratio, and proprietary ratio.

This ratio measures the relationship between proprietors fund and borrowed funds.

c) **Activity Ratio :-** This ratio is also known as turnover ratio or productivity ratio or efficiency and performance ratio. These ratios show relationship between the sales and the assets. These are designed to indicate the effectiveness of the firm in using funds, degree of efficiency, and its standard of performance of the organization.

**Example :** Stock Turnover Ratio, Debtors' Turnover Ratio, Turnover Assets Ratio, Stock working capital Ratio, working capital Turnover Ratio, Fixed Assets Turnover Ratio.

d) **Profitability Ratio :-** These ratios show relationship between profits and sales and profit & investments. It reflects overall efficiency of the organizations, its ability to earn reasonable return on capital employed and effectiveness of investment policies.

**Example :** i) Profits and Sales : Operating Ratio, Gross Profit Ratio, Operating Net Profit Ratio, Expenses Ratio etc. ii) Profits and Investments : Return on Investments, Return on Equity Capital etc.

e) **Coverage Ratios: -** These ratios show relationship between profit in hand and claims of outsiders to be paid out of profits.

**Example:** Dividend Payout Ratio, Debt Service Ratio and Debt Service Coverage Ratio.

### 4.4.3 Classification from the view point of user:

Ratios from the users' point of view are classified as follows.

a) **Shareholders' point of view: -** These ratios serve the purposes of shareholders. Shareholders, generally expect the reasonable return on their capital. They are interested in the safety of shareholders investments and interest on it.

   **Example:** Return on proprietor's funds, Return on capital, Earning per share.

b) **Long term creditors: -** Normally leverage ratios provide useful information to the long term creditors which include debenture holders, vendors of fixed assets, etc. The creditors interested to know the ability of repayment of principal sum and periodical interest payments as and when they become due.

**Example:** Debt equity ratio, return on capital employed, proprietary ratio.

c) **Short term creditors: -** The short-term creditors of the company are basically interested to know the ability of repayment of short-term liabilities as and when they become due. Therefore, the creditors has important place on the liquidity aspects of the company's assets.

**Example:** a) Liquidity Ratios - Current Ratio, Liquid Ratio.
b) Debtors Turnover Ratio.
c) Stock working capital Ratio.

d) **Management: -** Management is interested to use borrowed funds to improve the earnings.

**Example:** Return on capital employed, Turnover Ratio, Operating Ratio, Expenses Ratio.

## 4.5 BALANCE SHEET RATIOS

### 4.5.1 Current Ratio :

This ratio is also known as **Working Capital Ratio**. This expresses the relationship between current assets and current liabilities. This ratio is calculated by dividing current assets by current liabilities. It is expressed as pure ratio. Standard current ratio is 2:1. It Means current assets should be double the current liabilities.

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

a) **Current assets** includes I) Inventories of raw materials, finished goods, work-in-progress, stores & spare, loose tools, II) Sundry debtors, III) Short-term loan, deposits, advance, IV) Cash on hand and bank, V) Prepaid expenses, accrued income, VI) Bills receivables, VII) Marketable investments, short term securities.

b) **Current liabilities** includes sundry creditors, bills payables, outstanding expenses, unclaimed dividends, interest accrued but not due on secured and unsecured loans, advances received, income received in advance, provision for tax, purposed dividend loan installment of secured and unsecured loan payable within 12 months.

**c) Significance:**

1) This ratio tests the credit strength and solvency of an organization.
2) It shows strength of working capital,
3) It indicates ability to discharge short term liabilities.

### 4.5.2 Liquid Ratio:

This ratio expresses the relationship between liquid assets and liquid liabilities. This ratio is also known as **Quick Ratio or Acid Test Ratio**. This ratio is calculated by dividing liquid assets by liquid liabilities. Standard quick ratio is 1:1.

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

**a) Liquid assets** = Current assets less (Stock, prepaid expenses and advance tax etc)

**b) Liquid liabilities** = Current liabilities less (Bank overdraft and cash credit etc)

**c) Significance :-**

1) Indicate immediate solvency of enterprise.
2) Unlike CR it is more qualitative concept
3) As it eliminates inventories, it is rigorous test of liquidity.
4) More important for financial institutions.

### 4.5.3 Proprietary Ratio:

Proprietary ratio is a test of the financial and credit strength of the business. It establishes relationship between proprietors to total assets. This ratio determines the long term solvency of the company.

Alternatively this ratio is also known as Worth Debt Ratio. Net worth to Total Assets Ratio, Equity Ratio, Net Worth Ratio or Assets Backing Ratio, Proprietor's funds to Total Assets Ratio or Share holders Funds to Total Assets Ratio.

This ratio is expressed in percentage.

**a) Formula :-**

$$\text{Proprietory Ratio} = \frac{\text{Proprietors' or Shareholders' Fund}}{\text{Total Assets}} \times 100$$

**b) Components:-**

1) **Proprietors Funds** = Paid up equity + Reserves and surplus less accumulated loss + paid up preference capital.
2) **Total assets** = Fixed assets + investment + current assets.

c) **Purpose: -** This ratio is exercised to indicate the long term solvency of the business.

d) **Significance: -**
This ratio shows general financial strength of the business.
1) It determines the extent of trade on equity.
2) It indicates long term solvency of business.
3) It tests credit strength of business.
4) It can be used to compare proprietary ratio with others firms or industry.

### 4.5.4 Stock-Working Capital Ratio:

This ratio establishes relationship between stock and working capital. Alternatively it is known as **"Inventory-working capital ratio".**

a) **Formula :-**

$$\text{Stock-Working Capital Ratio} = \frac{\text{Stock}}{\text{Working Capital}}$$

b) **Components :**-
1) Stock (closing stock)
2) Working capital i.e. current assets less current liabilities.

It can be expressed in percentage also by multiplying this ratio by 100.

c) **Purpose: -** This ratio shows the extent to which the working capital is blocked in inventories.

d) **Significance:-**
1) This ratio highlights the predominance of stocks in current financial position of organization.
2) A higher ratio indicates week working capital.
3) This ratio is the indicator of the adequacy of working capital.

e) **Standard Ratio: -** Standard stock working capital ratio is 1:1.

### 4.5.5 Capital Gearing Ratio :

This ratio brings out the relationship between capital carrying fixed rate of interest or fixed dividend and capital that doesn't carry fixed rate of interest or fixed dividend. This ratio indicates degree to which capital has been geared in the capital structure of the company.

Alternatively this ratio is also known as **"Leverage ratio" or "Financial leverage ratio" or " Capital structure ratio".**

**a) Formula :-**

$$\text{Capital Gearing Ratio} = \frac{\text{Capital bearing Fixed Interest or dividend}}{\text{Capital not bearing Fixed Interest or dividend}}$$

**b) Components :-**

1) Capital bearing fixed interest or dividend comprises of debentures, secured and unsecured loans, and preference share capital.
2) Capital not bearing fixed interest or dividend is equity share capital and reserve & surplus.

This ratio also can be expressed in %age by multiplying this ratio by 100.

**c) Purpose :-** This ratio is used to understand the effective capital structure of the company.

**d) Significance :-**

1) It is mechanism to ascertain the extent to which the company is practicing trade or equity.
2) It brings one balanced capital structure.

### 4.5.6 Debt Equity Ratio :

This ratio express the relationship between external equities and external equities i.e. owners' capital and borrowed capital.

**a) Formula :-**

$$\text{Debt equity ratio} = \frac{\text{Debt}}{\text{Equity}} \text{ OR } \frac{\text{Long Term Debts}}{\text{Shareholders Fund}} \text{ OR}$$

$$\frac{\text{Long Term Debts}}{\text{Shareholders Funds + Long Term Debts}}$$

**b) Components :-**

1) Debts include all liabilities including short term & long term i.e. mortgage loan and debentures.
2) Shareholders' funds consist of Preference share capital, Equity share capital, Capital and Revenue Reserves, Surplus, etc.

**c) Significance:-**

1) It shares favorable or non favorable capital structure of the company.
2) It shows long term capital structure.
3) It reveals high margin of safety to creditors.
4) It makes us understand the dependence on long terms debts.

**d) Standard: -** Standard debt- equity ratio is 2:1. It means debts should be double the shareholders funds.

## 4.6 REVENUE STATEMENT RATIOS: -

Revenue statement ratios are the ratios which highlights the relation between two items from revenue statements i.e. Trading Account and Profit and Loss Account.

### 4.6.1 Gross profit ratio :

Gross profit ratios express the relationship between gross profit and net sales. This ratio is also known as **"Turnover ratio" OR "Margin ratio" OR "Gross margin ratio" OR "Rate of gross profit".** This ratio is expressed in percentage of net sales. This ratio says about %age gross profit to net sales.

**a) Formula :-**

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

**b) Components of this ratio are :-**

1) Net sales = Total sales less sales return
2) Gross profit = Sales - Cost of sales
3) Cost of sales = (opening stock + purchases + direct labour + other direct charge) - closing stock

**c) Significance:-**

1) This ratio analyse the basic profitability of business.
2) It shows the degree to which the selling price per unit may decline without resulting in loss from operations.
3) Yearly comparisons of gross profit ratio reveal the trend of trading results.

### 4.6.2 Operating Ratio :

This ratio studies the relationship between cost of activities and net sales i.e. cost of goods sold and net sales. This ratio shows the percentage of cost of goods sold with net sales.

**a) Formula :-**

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

**b) Components: -**

Operating cost = Cost of goods sold + Other Operating Expenses (administrative expenses, selling & distribution expenses etc.) - Finance Expenses ( income taxes, loss on sale of assets, etc.)

**c) Purpose :-** Purpose of operating ratio is to ascertain the efficiency of the management regarding operation of business concern.

**d) Significance :-**

1) It is used to test operational efficiency of business.
2) This ratio is the yardstick which measures the efficiency of all operational activities of business i.e. production, management, administration, sales, etc.

**e) Limitation of operating ratio :-**

1) It cannot test profitability of business without considering extra - ordinary items.
2) The utility of operating ratio is limited owing to its vulnerability to changes in management decisions.

### 4.6.3 Expenses Ratio :

This ratio explains relationship of items or group of expense to net sales. Such ratios are collectively known as expanses ratio. This is calculated and expressed in percentage. This ratio expresses the percentage of items of expenses with net sales.

**a) Formula :-**

$$\text{Expenses Ratio} = \frac{\text{Item or Group of Expenses}}{\text{Net sales}} \times 100$$

**b) Various expenses ratios are as follows :-**

1) $\text{Administrative expenses ratio} = \frac{\text{Administrative expenses}}{\text{Net sales}} \times 100$
2) $\text{Selling \& Dist. expenses ratio} = \frac{\text{Selling \& Dist. expenses}}{\text{Net sales}} \times 100$
3) $\text{Cost of material consumed ratio} = \frac{\text{Cost of material sonsumed}}{\text{Net sales}} \times 100$
4) $\text{Manufacturing expenses ratio} = \frac{\text{Manufacturing expenses}}{\text{Sales}} \times 100$
5) $\text{Non-operating expenses ratio} = \frac{\text{Non operating expenses}}{\text{Net sales}} \times 100$

**c) Purpose and significance:-**

1) This ratio helps us to know the cause behind overall changes in operating ratio
2) Purpose of this ratio is to take corrective action.
3) It indicates the efficiency of management in controlling expenses and improving profitability.

4) This ratio enables the income tax department to judge the correctness and reliability of income disclosed in income tax returns.
5) Analytical study of this ratio can be judged by trend of expenses.
6) Comparative study of year to year expenses can be possible.

### 4.6.4 Net Profit Ratio:-

Net profit ratio indicates the relationship between net profit and net sales. Net profit can be either operating net profit or net profit after tax or net profit before tax. Alternatively this ratio is also known as **"Margin on sales ratio".** Normally this ratio is calculated & expressed in percentage.

**a) Formula :-**

$$\text{Net profit ratio} = \frac{\text{Net profit}}{\text{Net sales}} \times 100 \quad \text{OR} \quad \frac{\text{NPAT}}{\text{Net sales}} \times 100$$

$$\text{OR} \quad \frac{\text{NPBT}}{\text{Net sales}} \times 100 \quad \text{OR} \quad \frac{\text{ONP}}{\text{Net sales}} \times 100$$

**b) Significance :-**

1) It measures overall profitability of business.
2) It is very useful in judging return on investments.
3) It provides useful inferences as to the efficiency and profitability of business.
4) It indicates the portion of net sales is available for proprietors.
5) It is clear index of cost control, managerial efficiency, sales promotion, etc.

### 4.6.5 Net Operating Profit Ratio:

Operating Profit Ratio indicates the relationship between operating profit and net sales. This ratio is expressed in percentage.

**a) Formula :-**

$$\text{Net operating profit ratio} = \frac{\text{Net operating profit}}{\text{Net sales}} \times 100$$

**b) Components:-**

1) Net Operating Profit = Gross Profit - All Operating Expenses **or** Sales - Cost Of Goods Sold and Operating Expenses.
2) Net sales = Sales - Sales Returns.

**c) Significance :-**

1) It signifies higher operating efficiency of management and control over operating cost.
2) It indicates profitability of various operations of the organization i.e. buy, manufacture, sales, etc.
3) It shows ability of organization to generate operating profit out of its daily operations.

### 4.6.6 Stock Turnover Ratio:

Stock turnover ratio shows relationship between costs of goods sold and average stock. This ratio is also known as **"Inventory Ratio" or "Inventory Turnover Ratio" or "Stock Turn Ratio" or "Stock Velocity Ratio" or "Velocity of Ratio".**

This ratio measures the number of times of stock turns or flows or rotates in an accounting period compared to the sales affected during that period. This ratio indicated the frequency of inventory replacement. This ratio is expressed as rate.

**a) Formula :-**

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average stock}}$$

**b) Components :-**

1) Cost of goods sold = Sales – Gross Profit
2) $\text{Average Stock} = \frac{\text{Opening stock + closing stock}}{2}$

***** If opening stock is not given, the closing stock is treated as average stock.

**c) Alternative method of stock turnover ratio :-** This ratio can be calculated by using average stock at selling price at as the denominator. Under this method, average stock at selling price is related to net sales.

$$\text{Stock Turnover Ratio} = \frac{\text{Net sales}}{\text{Average inventory at selling price}}$$

**d) Purpose: -** Purpose of stock turnover ratio is to

1) Calculate the speed at which the stock is being turned over into sales.
2) Calculate the stock velocity to indicate the period takes by average stock to be sold out.
3) Judge how efficiently the stock are managed and utilised to generate sales.

## 4.7 COMBINES RATIO / COMPOSITE RATIOS :-

Combined or composite ratios relate two items or group of items of which one is from balance sheet and another from revenue statements of an enterprise.

**4.7.1 Return on Capital Employed** (including Long Term Borrowings):

This ratio explains the relationship between total profit earned by business and total investment made or total assets employed. It is expressed in percentage. This ratio is also known as "**Return on Investment", or "Return on Total Resources".**

**a) Formula :-**

$$\text{Return on capital employed} = \frac{\text{Profit before tax Interest}}{\text{Capital Employed}} \times 100$$

**b) Components :-**

1) Net profit before tax, interest & dividends (PBIT)
2) **Capital employed =** Equity Share Capital+ Preference Share Capital + Reserve & Surplus+ Long term borrowings (Term loan + Debentures) - Fictitious assets like miscellaneous expenses not written off - Profit & Loss A/c Debit Balance (loss)

**c) Purpose:-**

1) Purpose of this ratio is to measure overall profitability from the total funds made available by owners and leaders.
2) Purpose of this ratio is to judge how efficient the business concern is in managing the funds at its disposal.

**d) Significance: -**

1) This ratio is effective tools to measure overall managerial efficiency of business.
2) Comparison of this ratio with other company and this information can be obtained for determining future course of action.
3) This ratio indicates the productivity of capital employed and measures the operating efficiency of the business.

**4.7.2 Return on Proprietors Funds** (Share Holders Fund and Preference Capital):

This ratio measures the relationship between net profit after tax & interest and proprietors fund. This ratio is alternatively known as "**Return on proprietors' equity" or "Return on shareholders' investment" or "Investors' ratio".** This ratio is expressed in percentage.

**a) Formula :-**

$$\text{Return on Proprietor's Fund} = \frac{\text{Net profit after tax \& Interest (NPATI)}}{\text{Proprietors' Fund}} \times 100$$

**b) Components :-**

1) Net profit after tax and interest
2) Proprietors' Funds
   (Term Proprietors Fund is explained in para 4.5.3 - b)

**c) Purpose: -**

1) Purpose of this ratio is to measure the rate of return on the total fund made available by the owners.
2) This ratio helps to judge how efficient the concern is in managing owners' funds at its disposal.

**d) Significance: -**

1) This ratio is very significant to prospective investors and shareholders.
2) With the help of this ratio company can decide to rise finance from external sources even from public deposit it ratio is satisfactory.
3) Shareholders can expect to capitalize its reserves and issue bonus shares when ratio is higher for reasonable period of time.

### 4.7.3 Return on Equity Share Capital :

This ratio explains relationship between net profit (after tax and interest and dividend on preference share) and equity share holders' funds. This ratio is expressed in percentage.

**a) Formula :-**

$$\text{Return on Equity Capital} = \frac{\text{Net profit after tax less preference dividend}}{\text{Equity share capital}} \times 100$$

Alternatively this ratio may be calculated by using following formula for calculating the return per equity shares.

$$\text{Return on Equity Shares} = \frac{\text{Net profit after tax less preference dividend}}{\text{Number of Equity share}}$$

**b) Components :-**

1) Net profit after tax & interest and preference dividend.
2) Equity share capital by adding reserves or deducting miscellaneous expenditures.

**c) Purpose :-**

Purpose of this ratio is to calculate amount of profit available to take care of equity dividend, transfer to reserves, etc.

**d) Significance :-**

1) It is useful to the investors while deciding whether to purchase or sale of shares.
2) This ratio helps to make comparative study of equity capital with other company and it will be appreciate if there is high return.

### 4.7.4 Earning Per Share :

Earning per share is calculated to find out overall profitability of the organization. It represents earnings of the company whether or not dividends are declared.

Earning per share is determined by dividing net profit by the number of equity shares.

**a) Formula :-**

$$\text{Earning per shares (EPS)} = \frac{\text{Net profit after tax - preference dividend}}{\text{Number of Equity share}}$$

**b) Components :-**

1) Net Profit after Tax & Interest - Preference Dividend.
2) Number of equity shares.

**c) Purpose :-**

Purpose of this ratio is to calculate the amount of profits available on each equity share to take care of equity dividend, transfer to reserves, etc.

**d) Significance :-**

1) This ratio helps the investors or shareholders to take decision while purchasing or selling shares.
2) This ratio shows the possibilities of issue of bonus shares.
3) Higher ratio indicates overall profitability.

### 4.7.5 Dividend Payout Ratio :

This ratio shows relationship between dividends paid to equity shareholders out of profit available to the equity share holders.

**a) Formula: -**

This ratio is calculated as follows.

$$\text{Dividend payout ratio} = \frac{\text{Dividend per equity shares}}{\text{Earning per shares}}$$

**b) Components: -**

1) Dividend per equity shares means total dividend paid to equity shareholder dividend by number of equity shares.
2) Earning per shares (as per Para 4.7.4 a)

**c) Purpose: -** Purpose of this ratio is to measure the dividend paying capacity of the company.

**d) Significance: -**

1) Higher ratio signifies that the company has utilized the larger portion of its earning for payment of dividend to equity shareholders.
2) It says lesser amount of earning has been retained.

### 4.7.6 Debt Service Ratio :

Debt service ratio shows relationship between net profit and interest payable on loans. This ratio is also called as **Interest Coverage Ratio.** This ratio is expressed as a pure number.

**a) Formula :-**

$$\text{Debt service ratio} = \frac{\text{Net profit before interest \& tax}}{\text{Interest charges}}$$

**b) Components :-**

1) Profit Before Interest & Tax means net profit before payment of interest on loan and tax.
2) Interest means interest on long term loans.

**c) Purpose :-**

1) Purpose of this ratio is to measure the interest paying capacity the company.
2) The purpose of this ratio is to find out the number of times the fixed financial charges are covered by income before interest and tax.

**d) Significance :-**

1) It is important from the lenders' point of view.
2) It indicated whether the company will earn sufficient profits to pay periodical interest charges.
3) It shows that the company will be able is pay interest regularly.

### 4.7.7 Creditors' Turnover Ratio :

This ratio shows relationship between the net credit purchases and the average creditors. This ratio is express as a rate.

**a) Formula :-**

$$\text{Creditors' Turnover Ratio} = \frac{\text{Net credit purchases}}{\text{Average creditors}} \text{ OR } \frac{\text{Credit purchases}}{\text{Creditors + Bills payable}}$$

$$\text{Credit payment period OR (Creditors velocity)} = \frac{\text{365 day or 12 months}}{\text{Creditors turnover ratio}} \text{ OR}$$

$$= \frac{\text{Creditors + Bills payable}}{\text{Daily credit purchases}}$$

**b) Components: -**

1) Credit Purchases = Gross Credit Purchases - Purchases Returns.
2) Average creditors mean average of opening and closing amount of creditors. If details are not given then only closing creditors may be considered as average creditors.
3) Amount of bills payable.

**c) Purpose: -**

1) Calculate the speed with which creditors are paid off on aan average during the year.
2) Calculate the creditors' velocity to indicate the period taken by the average creditors to be paid off.
3) Judge how efficiently the creditors are managed.

### 4.7.8 Debtors' Turnover Ratio:

This ratio shows relationship between credit sales and average trade debtors. Alternatively this ratio is known as **"Accounts Receivable Turnover Ratio" or "Turnover of Debtors' Ratio**". This ratio is expressed as a rate.

**a) Formula :-**

$$\text{Debtors turnover ratio} = \frac{\text{Credit sales}}{\text{Average debtors}} \text{ OR } \frac{\text{Credit sales}}{\text{Accounts receivable}}$$

$$\text{OR } \frac{\text{Credit sales}}{\text{Debtors + Bills receivable}}$$

$$\text{Average collections period} = \frac{\text{Debtors + Bills Receivable}}{\text{Daily credit sales}} \text{ OR}$$

$$\frac{\text{365 days or 12 months}}{\text{Debtors turnover ratio}} \text{ OR } \frac{\text{365 days}}{\text{Credit sales}} \times \text{Average debtors}$$

**b) Components :-**

1) Sundry debtors
2) Accounts receivables i.e. bills receivables.
3) Average daily sales.

**c) Purpose :-** Purpose of this ratio is to.

1) Calculate the speed with which debtors get settled on an average during the year.
2) Calculate debtors' velocity to indicate the period of credit allowed to average debtors.
3) Judge how efficiently the debtors are managed.

## 4.8 LIMITATIONS OF RATIOS: -

1. Ratios are mainly based on financial statements therefore weaknesses of financial statements are carried forward in the ratios.
2. Ratios calculated between two unrelated items or groups would be useless. e.g. ratio between cost of goods sold and preliminary expenses.
3. Ratios are just indicators. Just calculation of ratios cannot improve the financial position. Corrective and preventive steps should be taken to improve financial position and profitability of business.
4. Standard ratios changes from industry to industry. Maintenance of ratios is not only the objective but improving the financial stability and solvency and profit maximization should be the objective.
5. Increase or decrease in the ratio may be due to change in the economic factors of the country or due is inflation. Such increase or decrease not due to efficiency or inefficiency of the management of the business organization.
6. It is very difficult make correct inter-comparison of the firm because two firms are not similar in age, size and in system of following accounting policies.
7. Financial statements are prepared at ending the year. It might be subject to window dressing for covering bad financial position and ratios are not reliable which are based on manipulated financial statement.

## 4.9 EXERCISE

1. Explain the term Ration and explain its advantages and limitations.
2. Give the formula and significance of the following ratios.
   a) Debtor's Turnover Ratio
   b) Earnings per share Ratio
   c) Return on Proprietors Ratio
   d) Operating Ratio
   e) Capital Gearing Ratio
3. Give the formula and components of the following ratios.
   a) Stock Turnover Ratio
   b) Net Profit Ratio
   c) Debt Equity Ratio
   d) Proprietary Ratio
   e) Debt Service Ratio

4. Objective type Questions

A. Re –write the following sentences by selecting correct choice.

i) An Accounting ratio is an expression relating to two _____

(a) Accounts (b) Figures (c) Balance (d) Assets.

ii) The Balance sheet ratios deal with the relationship between two _____.

(a) Assets (b) Liabilities (c) Items (d) Capital

iii) The relationship between capital entitled to fixed rate of return and the capital not so entitled to fixed rate of return is known as:

(a) Fixed Capital (b) Working Capital (c) Gearing Capital (d) owned Capital .

iv) Decrease in gross profit ratio may be due to

a) Decrease in cost of goods sold

b) Increase in selling price

c) Overvaluation of Stock (closing)

d) Decrease in cost of materials.

v) The relationship between net operating profit and net sales is expressed in _____.

(a) Percentage (b) Figures (c) Ratios (d) Standard Deviation.

**(Answer: i –b, ii – C, iii - C, iv – b, v – a)**

B. Fill in the blanks

a) A ratio is one figure expressed in forms of another_____

b) Leverage ratio measures the relationship between proprietor's fund and _____.

c) _____ is the difference between current assets and current liabilities.

d) Those current assets which can be realized immediately at short notice are _____ assets.

e) _____ Ratio is a test of the financial and credit strength of the business.

**(Answer: a) Figure (b) Borrowed Funds (c) Working Capital (d) Quick (e) Proprietary)**

C. Match the following:

| **Group A** | **Group B** |
|---|---|
| 1. Gross profit Ratio | a. Net Profit |
| 2. Current Ratio | b. Cost of goods sold |
| 3. Operating ratio | c. Trading results |
| 4. Capital gearing | d. Short term liquidity |
| 5. Stock Turnover ratio | e. Debenture capital |

**(Answer: 1 - c, 2 – d, 3 – a, 4 –e, 5 – b)**

D. State Whether the following statements are true or false:

a) The ratio should be expressed in percentage.

b) Over trading means increase in activities without adequate funds.

c) It is difficult to establish a standard inventory ratio as inventory levels differ from industry to industry.

d) The return on capital employed measures the overall efficiency of the business operations.

e) High debtors' turnover ratio indicates overall efficiency in collecting receivables.

**(Answer: (a) False (b) True (c) True (d) True (e) False )**

❖❖❖❖

# 5

# RATIO ANALYSIS AND INTERPRETATION – II

**Unit Structure :**



## 5.0 OBJECTIVES

After studying the unit the students will be able to

- Calculate the ratios if the Balance Sheet and Profit Statements are given.

## 5.1 ILLUSTRATIONS

**1. Following is the trading A/c and profit and loss A/c for the year ended 31st December, 2009.**

| Particulars | Rs. | Particulars | Rs. |
|---|---|---|---|
| To Opening Stock | 40,000 | By Sales | 9,00,000 |
| To Purchases | 4,00,000 | By Closing Stock | 1,60,000 |
| To Wages | 1,00,000 | | |
| To Factory Expenses | 1,40,000 | | |
| To Gross Profit c/d | 3,80,000 | | |
| | 10,60,000 | | 10,60,000 |
| To Administrative Expenses | 1,20,000 | By Gross Profit b/d | 3,80,000 |
| To Selling Expenses | 80,000 | By Interest Received | 10,000 |
| To Interest on Loan | 10,000 | | |
| To Debenture Interest | 16,000 | | |
| To Net Profit c/d | 1,64,000 | | |
| | 3,90,000 | | 3,90,000 |
| To Tax Provision | 40,000 | By net profit b/d | 1,64,000 |
| To Proposed Dividend | 40,000 | | |
| To Balance Profit | 84,000 | | |
| | 1,64,000 | | 1,64,000 |

**Balance sheet as on 31st December, 2009**

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Equity share capital (Rs.10) | 4, 00,000 | Land and building | 3,50,000 |
| 9% preference share capital | 3,00,000 | Machinery | 3,00,000 |
| 8% debentures | 2,00,000 | Furniture | 2,00,000 |
| Reserves | 1,00,000 | Goodwill | 1,00,000 |
| Profit & Loss A/c | 60,000 | Patents | 1,00,000 |
| Short term loan (Repaid within | | Vehicles | 2,80,000 |
| one year) | 2,00,000 | Investment | 1,00,000 |
| Bank overdraft | 1,50,000 | Stock | 1,60,000 |
| Sundry creditors | 2,80,000 | Debtors | 1,80,000 |
| Bills payable | 60,000 | Bills receivable | 60,000 |
| Provision for tax | 40,000 | | |
| proposed dividend | 40,000 | | |
| | 18,30,000 | | 18,30,000 |

Market price of equity share is Rs. 8 calculate the following ratios.

a) Current ratio
b) Acid test ratio
c) Capital gearing ratio
d) Stock turnover ratio
e) Debtors turnover ratio
f) Creditors turnover ratio
g) Return on capital employed ratio
h) Stock working capital ratio
i) Operating ratio
j) Earnings per share
k) Price earnings ratio
l) Net profit ratio
m) Gross profit ratio
n) Debt equity ratio
o) Proprietary ratio
p) Operating profit ratio
q) Debtors' collection period.

**Solution :**

a) Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{4,00,000}{7,70,000} = 0.519 : 1$

b) Acid Test Ratio = $\frac{\text{CA} - \text{Stock}}{\text{CL} - \text{Bank Overdraft}} = \frac{4,00,000 - 1,60,000}{7,70,000 - 1,50,000}$

$= \frac{2,40,000}{6,20,000} = 0.387 : 1$

c) Capital Gearing Ratio

$$= \frac{\text{Pref. Share Capital + Borrowed Funds}}{\text{Equity Share Capital + Reserve} - \text{Misc. Expenses}}$$

$$= \frac{3,00,000 + 2,00,000}{4,00,000 + 1,00,000 + 60,000 - \text{NIL}}$$

$$= \frac{5,00,000}{5,60,000} = 0.893$$

d) Stock Turnover Ratio = $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

$$= \frac{5,20,000}{1,00,000} = 5.20 \text{ times}$$

* Cost of Goods Sold = Sales − Closing Stock
= 9, 00,000 − 3, 80,000
= 5, 20,000

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

$$= \frac{40,000 + 1,60,000}{2}$$

$$= \frac{2,00,000}{2} = 1,00,000$$

e) Debtor Turnover Ratio = $\frac{\text{Credit Sales}}{\text{Debtors + B.R.}}$

$$= \frac{9,00,000}{1,80,000 + 60,000} = 3.75$$

f) Debtor Collection Period = $\frac{\text{Debtors + B.R.}}{\text{Credit Sales}} \times$ No. of working days in a year

$$= \frac{1,80,000 + 60,000}{9,\ 00,000} \times 360$$

$$= \frac{2,40,000}{90,000} \times 360 = 96 \text{ days}$$

g) Creditors Turnover Ratio = $\frac{\text{Credit Purchases}}{\text{Creditors + BP}}$

$$= \frac{4,00,000}{2,80,000 + 60,000}$$

$$= \frac{4,00,000}{3,40,000} = 1.716$$

h) Return on Capital Employed Ratio

$$= \frac{\text{Profit before Interest \& Tax}}{\text{Capital Employed}} \times 100$$

$$= \frac{(1,64,000 + 16,000)}{10,60,000} \times 100$$

$$= \frac{1,80,000}{10,60,000} \times 100 = 16.98\%$$

i) Stock Working Capital Ratio = $\frac{\text{Closing Stock}}{\text{Working Capital}}$

$$= \frac{1,60,000}{3,70,000} = 0.43$$

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

$$= \frac{(5,20,000 + 1,20,000 + 80,000 + 10,000)}{9,00,000} \times 100$$

$$= \frac{7,30,000}{9,00,000} \times 100 = 81.11\%$$

k) Earnings per Share = Net Profit after Tax and

$$= \frac{\text{Preference Dividend}}{\text{No. of Equity Shares}}$$

$$= \frac{1,64,000 - 40,000 - 27,000}{40,000}$$

$$= \frac{97,000}{40,000} = \text{Rs.}2.425$$

l) Price Earning Ratio = $\frac{\text{Market price of Equity Shares}}{\text{Earning per Shares}}$

$$= \frac{8}{2.425} = 3.298$$

m) Net Profit Ratio = $\frac{\text{Net Profit after Tax \& Interest}}{\text{Sales}} \times 100$

$$= \frac{1,64,000 - 40,000}{9,00,000} \times 100$$

$$= \frac{1,24,000}{9,00,000} \times 100 = 13.78\%$$

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

$= \frac{3,80,000}{9,00,000} \times 100 = 42.22\%$

o) Proprietory Ratio = $\frac{\text{Proprietors Fund}}{\text{Total Assets}} \times 100$

$= \frac{8,60,000}{18,30,000} \times 100 = 46.99\%$

p) Debt Equity Ratio = $\frac{\text{Borrowed Fund}}{\text{Proprietor's Fund}}$

$= \frac{2,00,000}{8,60,000}$

$= 0.232 : 1$

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

$= \frac{1,70,000}{9,00,000} \times 100$

$= 18.89\%$

**Working Notes: -**

**W.N.1** Vertical income statement for the year ended 31st December, 2009.

| Particulars | Rs. | Rs. | Rs. |
|---|---|---|---|
| 1. Net Sales | | | 9,00,000 |
| 2. Less: Cost of Goods Sold | | | |
| Opening Stock | 40,000 | | |
| Purchases | 4,00,000 | | |
| Wages | 1,00,000 | | |
| Factory Expenses | 1,40,000 | 6,80,000 | |
| Less: Closing Stock | | 1,60,000 | |
| cost of Cost sold | | | 5,20,000 |
| 3. Gross Profit | | | 3,80,000 |
| 4. Less: Operating Expenses | | | |
| a) Administrative Expenses | 1,20,000 | | |
| b) Selling Expenses | 80,000 | | |
| c) Financing Expenses | | | |
| - Interest on Share Term Loan | 10,000 | 2,10,000 | 2,10,000 |
| 5. Operating Profit | | | 1,70,000 |
| 6. Add: Nom-operating Income | | | |
| - Interest received | | | 10,000 |
| 7. Net Profit interest & Tax | | | 1,80,000 |
| 8. Less: Interest on Debenture | | | 16,000 |

| | | | |
|---|---|---|---|
| 9. Net Profit before Tax | | | 1,64,000 |
| 10. Less: Income Tax | | | 40,000 |
| 11. Net Profit after Tax | | | 1,24,000 |
| 12. Less: Preference Dividend (9% of 3, 00,000) | | | 27,000 |
| 13. Net Profit available for Equity shareholders. | | | 97,000 |
| 14. Less: Equity Dividends (40,000 - 27,000) | | | 13,000 |
| 15. Retained Earnings | | | 84,000 |

**W.N.2** Vertical balance sheet as on 31st December, 2009.

| Particulars | Rs. | Rs. | Rs. |
|---|---|---|---|
| . Sources of Funds | | | |
| I. Owner's / shareholder's funds | | | |
| a) Equity Share Capital | | 4,00,000 | |
| b) Reserves & Surplus | | | |
| Reserve | 1,00,000 | | |
| P & L A/c | 60,000 | 1,60,000 | |
| c) Preference Share Capital | | 3,00,000 | 8,60,000 |
| II. Borrowed / Loan Funds | | | |
| 8% Debentures | | | 2,00,000 |
| CAPITAL EMPLOYED (I + II) | | | 10,60,000 |
| | | | |
| B. Application of funds | | | |
| I. Fixed Assets | | | |
| Land & Building | | 3,50,000 | |
| Machinery | | 3,00,000 | |
| Furniture | | 2,00,000 | |
| Vehicles | | 2,80,000 | |
| Goodwill | | 1,00,000 | |
| Patents | | 1,00,000 | 13,30,000 |
| II. Investments | | | 1,00,000 |
| III. Working Capital | | | |
| a) Current Assets | | | |
| Quick Assets | | | |
| Debtors | 1,80,000 | | |
| Bills Receivables | 60,000 | | |
| Non-quick Assets | 2,40,000 | | |
| Closing Stock | 1,60,000 | 4,00,000 | |
| b) Less: Current Liabilities | | | |
| Quick Liabilities | | | |
| Creditors | 2,80,000 | | |
| Bills Payable | 60,000 | | |
| Provision for Tax | 40,000 | | |
| Proposed Dividends | 40,000 | | |
| Short Term Loan | 2,00,000 | | |
| | 6,20,000 | | |
| Non-quick Liabilities | | | |
| Bank Overdraft | 1,50,000 | (7,70,000) | |
| Working Capital (CA-CL) | | | (3,70,000) |
| CAPITAL EMPLOYED (I+II+III) | | | 10,60,000 |

**2. M/s Raj & Sons presents you the following balance sheet as on 31st December, 2008.**

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Share capital | | Fixed assets | 10,00,000 |
| Equity share of Rs. 10 each | 10,00,000 | Stock | 4,00,000 |
| Reserve fund | 1,00,000 | Debtors | 3,00,000 |
| 7% debentures | 3,00,000 | Cash | 2,00,000 |
| Overdraft | 2,00,000 | | |
| Creditors | 3,00,000 | | |
| | **19,00,000** | | **19,00,000** |

Calculate - I) Liquidity ratios
II) Solvency ratios
III) Debt-equity ratio

**Solution :**

**1) Liquidity ratios :-**

a) Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{9,00,000}{5,00,000} = 1.8:1 \text{ or } 1.8$

b) Acid Test Ratio = $\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$

$= \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities} - \text{Overdrafts}}$

$= \frac{9,00,000 - 4,00,000}{5,00,000 - 2,00,000} = \frac{5,00,000}{3,00,000} = 1:66:1$

OR

If Liquid Liabilities = Current Liabilities, then Acid Test Ratio is as under –

$\therefore \quad \frac{5,00,000}{5,00,000} = 1:1$

c) Stock Working Capital Ratio = $\frac{\text{Stock}}{\text{Working Capital}}$

$= \frac{4,00,000}{9,00,000 - 5,00,000}$

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

**2) Solvency ratios :-**

(a) Proprietory Ratio = $\frac{\text{Shareholders Funds}}{\text{Total Tangible Assets or Total Assets}}$

$$= \frac{11,00,000}{19,00,000} = 0.58:1 \text{ or } 0.58 \times 100 = 58\%$$

**Note:** I) Shareholders Fund= Eq. Share Capital + Reserve
= 10,00,000 + 1,00,000
= 11,00,000

II) Total Tangible Assets = Total Assets = Rs.19,00,000

(b) Equity to Fixed Assets Ratio = $\frac{\text{Shareholders' Funds}}{\text{Fixed Assets}}$

$$= \frac{11,00,000}{10,00,000} = 1.1:1$$

OR

$$= 1.1 \times 100 = 11.1\%$$

(c) Equity to Current Assets Ratio = $\frac{\text{Shareholders' Funds}}{\text{Current Assets}}$

$$= \frac{11,00,000}{10,00,000} = 1.1:1$$

OR

$$= 1.1 \times 100 = 100\%$$

**3) Debt Equity Ratio** = $\frac{\text{Outsiders' Funds}}{\text{Shareholder's Fund}} = \frac{8,00,000}{11,00,000} = 0.73:1$

Outsider's Fund = Debentures + Creditors + Overdraft
= 3,00,000 + 3,00,000 + 2,00,000
= Rs. 8,00,000

OR

It outsiders fund = Debentures only

Then Debt Equity Ratio = $\frac{\text{Outsiders' Funds}}{\text{Shareholder's Fund}} = \frac{3,00,000}{8,00,000} = 0.373:1$

**3. From the following financial statements of M/s Sunny Ltd. calculate.**

1) Current Ratio
2) Liquid Ratio
3) Gross Profit Ratio
4) Net Profit Ratio
5) Net Profit to Capital Employed Ratio
6) Fixed Assets Turnover Ratio
7) Sales to Capital Ratio
8) Debtors Turnover Ratio

**Balance sheet as on 31st March, 2009.**

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Share capital | 1, 50,000 | Fixed Assets (Net) | 80,000 |
| Reserve | 60,000 | Current Assets | |
| Profit & Loss A/c | 24,000 | Stock | 1, 88,000 |
| Debentures | 60,000 | Debtors | 1, 64,000 |
| Current Liabilities | 1, 52,000 | Cash | 14,000 |
| | 4, 46,000 | | 4, 46,000 |

**Income statement for the year ending 31st March, 2009**

| Particulars | Rs. | Rs. |
|---|---|---|
| Sales : Cash | 64,000 | |
| Credit | 6,84,000 | 7,48,000 |
| Less: cost of sales | | 5,96,000 |
| Gross profit | | 1,52,000 |
| Less: Expenses | | |
| Warehouse & Transport | 48,000 | |
| Administration | 38,000 | |
| Selling & Distribution | 28,000 | |
| Debenture Interest | 4,000 | 1,18,000 |
| Net profit before tax | | 34,000 |
| Less: Income tax | | 4,000 |
| Net profit after tax | | 30,000 |

**Solution :**

$$1)\ \text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$= \frac{1,88,000 + 1,64,000 + 14,000}{1,52,000}$$

$$= \frac{3,66,000}{1,52,000} = 2.4078 : 1$$

$$= 2 : 41 : 1$$

2) Liquid Ratio = $\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$

$$= \frac{\text{Current Assets - Stock}}{\text{Liquid Liabilities = Current Liabilities}}$$

$$= \frac{1,88,000 + 1,64,000 + 14,000 - 1,88,000}{1,52,000}$$

$$= \frac{3,66,000 - 1,88,000}{1,52,000} = \frac{1,78,000}{1,52,000} = 1.171:1$$

$$= 1.17:1$$

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

$$= \frac{1,52,000}{7,48,000} \times 100 = 20.3208\%$$

$$= 20.32\%$$

4) Net Profit Ratio = $\frac{\text{Net Profit after Tax}}{\text{Sales}} \times 100$

$$= \frac{30,000}{7,48,000} \times 100 = 4.010\%$$

$$= 4.01\%$$

OR

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

$$= \frac{34,000}{7,48,000} \times 100 = 4.545\%$$

$$= 4.55\%$$

5) Net Profit to Capital Employed = $\frac{\text{Net Profit after Tax}}{\text{Capital Employed}} \times 100$

$$= \frac{30,000}{2,94,000} \times 100$$

$$= 10.20\%$$

OR

If Net Profit before Tax is considered then Net Profit to Capital employed will be as under.

$$= \frac{\text{Net Profit before Tax}}{\text{Capital Employed}} \times 100$$

$$= \frac{34,000}{2,94,000} \times 100$$

$$= 11.56\%$$

Capital Employed = Fixed Assets + Investment + Working Capital

= 80,000 + 0000 + (3,66,000 - 1,52,000)

= 80,000 + 2,14,000

= 2,94,000

$$6) \text{ Fixed Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Fixed assets}}$$

$$= \frac{5,96,000}{80,000}$$

$$= 7.45 \text{ Times}$$

$$7) \text{ Sales to Capital Employed} = \frac{\text{Sales}}{\text{Capital Employed}}$$

$$= \frac{7,48,000}{2,94,000}$$

$$= 2.54 \text{ Times}$$

$$8) \text{ Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Debtors}}$$

$$= \frac{6,84,000}{1,64,000}$$

$$= 4.17 \text{ Times}$$

**4. From the following financial statement of X co. Ltd. for the year ended 31st December, 2009, calculated the following ratios.**

I) Current Ratio
II) Liquid Ratio
III) Operating Ratio
IV) Stock-Turnover Ratio
V) Turnover to Fixed Assets Ratio
VI) Return on Total Resources
VII) Return on Proprietors Fund
VIII) Net Profit to Capital Employed
IX) Debtors Velocity
X) Creditors' Turnover Ratio.

**Balance sheet as on 31st March, 2009.**

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Equity Share capital | 5,00,000 | Land & Buildings | 3,50,000 |
| General Reserve | 3,00,000 | Plant & Machinery | 2,50,000 |
| Profit & Loss A/c | 2,00,000 | Stock | 3,00,000 |
| Sundry Creditors | 2,00,000 | Sundry debtors | 2,00,000 |
| | | Cash & Bank | 1,00,000 |
| | 12,00,000 | | 12,00,000 |

**Trading and profit & Loss A/c for the ended 31st December 2009.**

| Particulars | Rs. | Particulars | Rs. |
|---|---|---|---|
| To Opening Stock | 1,00,000 | By Sales | 16,00,000 |
| To Purchases (Credit) | 8,00,000 | By Closing Stock | 2,00,000 |
| To Gross Profit | 9,00,000 | | |
| | 18,00,000 | | 18,00,000 |
| To Office & Administrative Expenses | 2,00,000 | By Gross Profit | 9,00,000 |
| To Selling & Distribution Expenses | 1,00,000 | By Profit on Sale of Assets | 25,000 |
| To Other Expenses | 25,000 | | |
| To Net Profit | 6,00,000 | | |
| | 9,25,000 | | 9,25,000 |

**Solution :**

I) Current ratio= $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{3,00,000 + 2,00,000 + 1,00,000}{2,00,000}$

$= \frac{6,00,000}{2,00,000} = 3:1$

II) Liquid Ratio = $\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}} = \frac{2,00,000 + 1,00,000}{2,00,000}$

$= \frac{3,00,000}{2,00,000} = 1.5:1$

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

$$= \frac{7,00,000 + 3,25,000}{16,00,000} = \frac{10,25,000}{16,00,000} = 0.64 : 1$$

OR

$0.64 \times 100 = 64\%$

IV) Stock Turnover Ratio $= \frac{\text{COGS}}{\text{Averages Stock}} = \frac{7,00,000}{\frac{(1,00,000 + 2,00,000)}{2}}$

$$= \frac{7,00,000}{1,50,000} = 4.67 \text{ Times}$$

V) Turnover to Fixed Assets Ratio $= \frac{\text{Turnover}}{\text{Fixed Assets}}$

$$= \frac{16,00,000}{6,00,000} = 2.67 : 1$$

VI) Return on Proprietors Fund $= \frac{\text{Net profit after Tax \& Interest}}{\text{Proprietor's Fund}}$

$$= \frac{6,00,000}{10,00,000} = 0.60 : 1$$

OR

$= 0.60 \times 100 = 60\%$

VII) Net Profit to Capital Employed $= \frac{\text{Net Profit after Tax \& Interest}}{\text{Capital Employed}}$

$$= \frac{6,00,000}{10,00,000} = 0.60 : 1$$

OR

$= 0.60 \times 100 = 60\%$

VIII) Debtors Velocity Ratio $= \frac{\text{Debtors}}{\text{Credit Sales}} \times 365$

$$= \frac{2,00,000}{16,00,000} \times 365$$

$$= 46 \text{ Days}$$

IX) Creditors Velocity = $\frac{\text{Creditors}}{\text{Credit Purchases}} \times 365$

$= \frac{2,00,000}{8,00,000} \times 365$

$= 91 \text{ Days}$

## 5.2 EXERCISE

1. From the following financial statement of Sanket Ltd. calculate the following ratios.
   a) Current Ratios
   b) Liquid Ratios
   c) Stock Turnover Ratio
   d) Debtors Turnover Ratio
   e) Operating Ratio
   f) Capital Gearing Ratio
   g) Net Profit Ratio
   h) Stock Working Capital Ratio
   i) Earnings per Equity Share
   j) Interest Coverage Ratio
   k) Creditors Turnover Ratio
   l) Dividend Payout Ratio
   m) Gross Profit Ratio

**Trading and profit & Loss Account for the year ended 31st December, 2009.**

| Particulars | Rs. | Particulars | Rs. |
|---|---|---|---|
| To Opening Stock | 1,50,000 | By Sales | 15,00,000 |
| To Purchases | 12,90,000 | By Closing Stock | 1,50,000 |
| To Gross Profit c/d | 2,10,000 | | |
| | 16,50,000 | | 16,50,000 |
| To Administrative Expenses | 20,000 | By Gross Profit b/d | 2,10,000 |
| To Rent & Taxes | 14,000 | By Profit on Sale of Fixed | |
| To Interest | 22,500 | Assets | 27,500 |
| To Selling Expenses | 11,000 | | |
| To Depreciation | 50,000 | | |
| To Income Tax Provision | 60,000 | | |
| To Net Profit | 60,000 | | |
| | 2,37,500 | | 2,37,500 |

**Balance sheet as at 31st December 2009**

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Equity Share Capital of Rs. 10 each | 2,50,000 | Fixed Assets | 6,50,000 |
| 10% Preference Share Capital | 50,000 | Bank Balance | 25,000 |
| General Reserve | 2,00,000 | Short term Investment | 75,000 |
| 12% Debentures | 3,50,000 | Debtors | 1,00,000 |
| Creditors | 30,000 | Stock | 1,50,000 |
| Outstanding Expenses | 55,000 | | |
| Income Tax Provision | 65,000 | | |
| | 10,00,000 | | 10,00,000 |

The company declared dividend on Equity Shares @ 20%.

2. The condensed balance sheet of Dixit Ltd. as on 31st March 2006 is as follows:

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Equity Share Capital | 6,00,000 | Fixed Assets | 9,00,000 |
| Reserve | 2,00,000 | Stock | 3,00,000 |
| 6% Debentures | 5,00,000 | Marketable Investment | 1,00,000 |
| Current Liabilities | 2,00,000 | Debtors | 1,50,000 |
| Bank Overdraft | 1,00,000 | Cash and Bank balance | 1,00,000 |
| | | Preliminary Expenses | 50,000 |
| | 16,00,000 | | 16,00,000 |

Net profit for the years was Rs.75,000/-.

Prepare a statement suitable for analysis and indicate the soundness of the financial positions of the company by calculating the following ratios and comment on the same.

a) Current Ratio
b) Liquid Ratio
c) Proprietary Ratio
d) Return on Capital Employed
e) Return on Proprietors Equity
f) Return on Equity Capital
g) Stock Working Capital Ratio

**(M.U.B.Com. April 1999)**

3. The following is the Balance Sheet of Swapnaja Ltd. as on 31st December 2009.

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Paid up Capital (Rs.10) | 2, 00,000 | Fixed Assets | 3, 00,000 |
| Reserves & Profit | 1, 38,000 | Stock | 1, 00,000 |
| Debentures | 2, 00,000 | Debtors | 1, 22,000 |
| Creditors | 32,000 | Bills Receivable | 8,000 |
| Bills Payable | 12,000 | Bank Balance | 52,000 |
| | 5, 82,000 | | 5, 82,000 |

Sales Rs.4,00,000/-; Gross Profit Rs.1,20,000/-; Net Profit Rs.80,000/-. Rearrange the above Balance Sheet in suitable form for analysis and workout the following ratios.

a) Net Profit Ratio
b) Gross Profit Ratio
c) Current Ratio
d) Liquid Ratio
e) Return on Capital Employed
f) Debtors Turnover Ratio
g) Earnings per Share
h) Stock Turnover Ratio.

**Answer :-**

1.
a) Current Ratio = 1.72:1
b) Liquid Ratio = 0.97:1
c) Stock Turnover Ratio - 8.6 Times
d) Debtors Turnover Ratio - 15
e) Operating Ratio - 89%
f) Capital Gearing Ratio - 1.012:1
g) Net Profit Ratio - 4%
h) Stock Turnover Ratio - 1.034
i) Earnings per Share - Rs.2.2 per share
j) Interest Coverage Ratio - Rs.6.33
k) Creditors Turnover Ratio - 43
l) Dividend Payout Ratio - 0.909
m) Gross Profit Ratio - 14%]

2.
a) Current Ratio - 1.83:1
b) Liquid Ratio - 1.25:1
c) Proprietary Ratio - 46.88%
d) Return on Capital Employed - 6%
e) Return on Proprietors Equity - 10%
f) Return on Equity Capital - 12.5%
g) Stock Working Capital Ratio - 1.2:1

3.

a) Net Profit Ratio - 20%
b) Gross Profit Ratio - 33%
c) Current Ratio - 6.41:1
d) Liquid Ratio - 4.14:1
e) Return on Capital Employed - 14.87%
f) Debtors Turnover Ratio - 3.077
g) Earnings per Share - Rs.04 per share
h) Stock Turnover Ratio - 2.8

**Note: -** Closing Stock = Average Stock

# 6

# WORKING CAPITAL MANAGEMENT - I

**Unit Structure:**



## 6.0 OBJECTIVES :

After studying the unit the students will be able to:

- Define Working Capital.
- Explain types of working capital.
- Elaborate the determinants of working capital.
- Know the sources of working capital.
- Understand the concept projection of working capital

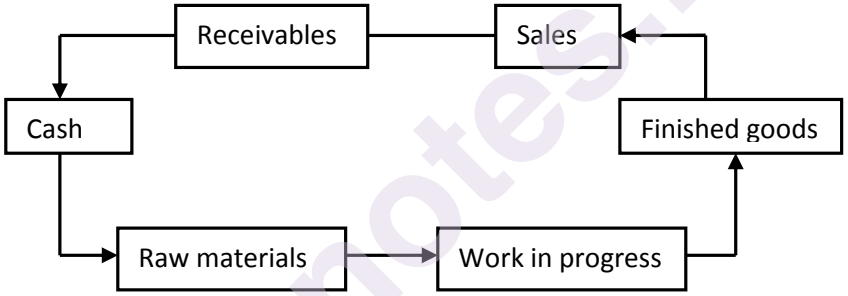
## 6.1 INTRODUCTION

Capital required for a business can be divided into two categories i.e. Fixed Capital and Working Capital. Fixed capital is the part of total capital which is used for purchasing permanent a fixed asset like land, Buildings, Plant and machinery, furniture and fixtures, vehicles, etc. This capital is invested by organization in the beginning of running the business. In addition to fixed capital an organization requires additional capital for financing day to day activities like purchase of Raw materials, payment of direct and indirect expenses, carrying out production, investment in stocks and stores, receivables and assets to be maintained in the form of cash is generally known as working capital (fluctuating capital). In other words, this capital refers to the investment in current assets such as cash inventory, receivables, etc. All such assets are likely to be convertible into cash within one a year.

## 6.2 MEANING AND DEFINITION OF WORKING CAPITAL

### 6.2.1 Meaning

The capital used for performing day to day activities i.e. purchases of Raw material, making payment of direct and indirect expenses, carrying out of production of goods and services, investment in stocks, stores, etc is called as working capital. All assets consisting of working capital revolve around cash. Firstly, cash is used to purchase of raw materials, which when certain expenses are in carried on it gets itself converted into semi finished goods and finally into inventory of finished products. Inventory (finished goods), after adding certain profit margin to it, is sold to the customers, which may take the form of cash or receivables or debtors. Receivables or debtors when realized again take the form of cash and the cycle goes on. The revolving nature of current assets consisting of working capital has been cleared with the help of following chart:




Because of this revolving nature of the assets consisting working capital, later is also known as 'fluctuating' or 'floating' or ' circulating' capital.

### 6.2.2 Definition

**J.M. Mill: -** "The sum of the current assets is the working capital of the business"

**Shubin: -** "Working capital is the amount of funds necessary to cover cost of operating the enterprise."

**Hoaglandi: -** "Working capital is descriptive of that capital which is not fixed. But the more common use of the working capital is to consider it as the difference between the block value of the current assets and current liabilities."

**Gerestenberg: -** "Circulating capital wears current assets of a company that are changed in the ordinary course of business from one to another, as for example, from cash to inventories, inventories to receivables, and receivables to cash."

**The accounting principles of board of American institute of Certified Public Accountants** has defined the working capital as: "Working capital is represented by the excess of current assets or current liabilities and identifies the relatively liquid portion of the total enterprise capital which constitutes a margin or buffer for maturing obligations within the ordinary operating cycle of the business."

Thus working capital means investment made by a business organization in short-term current assets like cash, debtors, etc.

## 6.3 TYPES OF WORKING CAPITAL

The working capital is classified as under:

1. **Gross Working Capital:** Gross working capital means the total current assets without deducting current liabilities. This equal to the cash balance and the amount blocked in debtors and stocks, etc.

2. **Net Working Capital:** Net working capital means total current assets minus total current liabilities. It means net current assets. This capital indicates the amount available to meet short term liabilities or debt of the business organizations.

3. **Permanent or Fixed Working Capital:** This capital represents the value of the current assets required on continuing basis over the entire year and for several years. Permanent working capital is the minimum amount of current assets which is needed to conduct business even during the dullest season of the year. Thus, the minimum level of current assets is called permanent or fixed working capital is the part of capital permanently blocked in current assets. This amount changes from year to year depending on growth of the company and the stage of the business cycle in which it operates. It is used to produce goods necessary to satisfy the customer's demand.

   It has the following characteristics:

a) It is classified on the basis of time.
b) It constantly changes from one asset to another and continuously remains in the business.
c) Size of this capital increases with the growth of business operations.

4. **Temporary or Variable Working Capital:** This component represents a certain amount of fluctuations in current assets during a short period. These fluctuations are increases or decreases in current assets. Generally these are in cyclical nature. This is called as additional capital required at different times during the operating year. This capital is used to meet

seasonal needs of a firm or organization is called seasonal or variable working capital. Additional funds or capital specifically used to meet extraordinary needs or contingencies arising due to strikes, fire, unexpected competition, rising price tendencies launching of advertisement campaigns.

It has the following features:

a) It is not always gainfully employed, though it may change from one asset to another, as permanent working capital does.
b) It is particularly suited to business of a seasonal or cyclical nature.
c) It is arranged from temporary source i.e. short term loan, deposits, bank over drafts etc.

5. **Balance Sheet Working Capital:** Usually this capital is determined on the basis of current assets and current liabilities shown in closing balance sheet of the concern. It means the net current assets as on last date of the balance sheet.

6. **Cash Working Capital:** This capital is the net current assets if realized at its book value. The cash realized from current assets is really less than the book value because i) Debtors includes profit margin ii) Depreciation included in over valuation of stock of finished goods. The concept of this capital makes proper adjustment in balance sheet working capital for the items to arrival at cash working capital. The cash working capital indicates the working capital at cost because stocks and debtors are at cost.

7. **Positive Working Capital:** When a net current asset is in positive figure, it is called as positive working capital. It means the current assets are more than the current liabilities. This working capital shows favorable liquidity solvency position of the company.

8. **Negative Working Capital:** In this case, difference between current assets and current liabilities is negative figure. Therefore, it is called are negative working capital. It means current liabilities are more than the current assets. This capital indicates lack of liquidity and adverse solvency position of the company.

## 6.4 FACTORS DETERMINING WORKING CAPITAL REQUIREMENT

Normally following factors determines the need of working capital:

1. **Nature of business: -** Working capital requirements of an enterprise are basically related to conduct of the business. Public utility undertakings like electricity, water supply,

Railways, etc need very limited working capital because they offer cash sales only and supply services, not products, and as such no funds are tied up in inventories and receivables. But at the same time, trading firm need large amount of working capital in current assets like inventories, cash, receivables etc but they have less investment in fixed assets.

2. **Terms of purchases and sales: -** Credit terms granted by the concerns to its customers as well as credit terms granted by its supplier also affect the working capital. If credit terms of purchases are more favorable and those sales less liberal, less cash will be invested in the inventory. Working capital requirement can be reduced if terms of credit are more. The ratio of credit and cost purchases or sales affects the level of working capital. If firm purchases on credit and sales on cash then it requires less working capital and if firm purchases on cash and sales on credit, then it requires large working capital. This means funds are tied up in debtors and bills receivables.

3. **Manufacturing cycle: -** The quantum of work capital needed is influenced by the length of manufacturing cycle. The manufacturing process always involves time lag between the time when raw materials are fed into the production line and finished products are finally turned out by it. The length of period of manufacture in turn needs on the nature of product as well as production technology used by a concern.

4. **Size of business unit: -** Amount of working capital requirement depends on the scale of operation of the business organization. Large business organization performs large business activities which require huge working capital than small scale organization.

5. **Turnover of inventories: -** A business organization having low turnover of inventory would need more working capital where as high turnover of inventory need small or limited working capital.

6. **Turnover of circulating capital: -** The speed with which circulating capital completes its cycle if conversion of cash into inventory of raw material, raw material into finished goods, finished goods into debts and debts into cash, which decides need of working capital in the organization. Slow movement of working capital cycle necessitates large provision of working capital.

7. **Seasonal variations production: -** In case of seasonal production in the industries like sugar, oil mills, etc need more working capital during peak seasons.

8. **Degree of mechanization: -** In highly mechanized concerns having low degree of independence on labour, requires less

working capital. Conversely, in labour intensive industries greater sum of working shall be required to pay wages and related facilities.

9. **Growth and expansion: -** Every firm wants to grow over a period of time and with the increase in its size, the working capital requirements are bound to increase. The growing company would need therefore, larger amount of working capital.

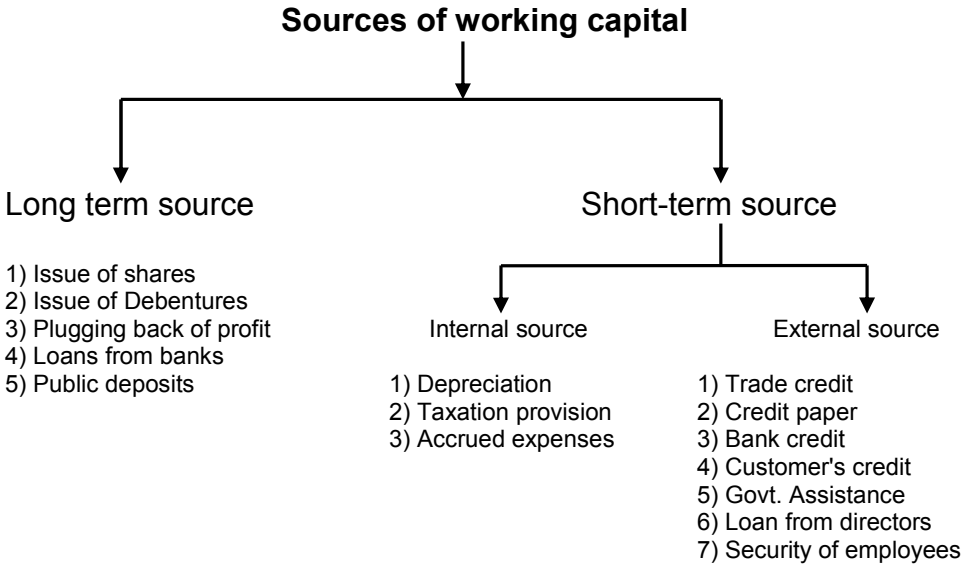
10. **Policy regarding dividend: -** Dividend policy of a firm will also influence the working capital position. The company which declares large amount of dividends in the form of cash requires large working capital to pay off such dividends. But sometimes, companies' issues bonus shares by way of dividend in such cases working capital requirements will be comparatively less. This is depending on Psychology of shareholders i.e. whether they prefer cash income or capital appreciation.

11. **Inflation: -** A business concern requires more working capital during the inflation period. This factor may be compensated to some extent by rise in selling price of inventory.

12. **Changes in technology: -** Changes in production technology have an impact on the need of more working capital.

13. **Depreciation policy: -** Charges of depreciation on assets do not involve any cash outflows. Depreciation affects tax liability and retention profits. It is allowable expenditure while calculating net profits. Higher depreciation will mean lower disposal of profit and therefore dividend will be paid in smaller amount. Thus cash will be preserved.

## 6.5 SOURCES OF WORKING CAPITAL :



## 6.6 PROJECTION OF WORKING CAPITAL REQUIREMENTS

### 6.6.1 Methods of projecting working capital requirements

1. **Conventional method:** In this method cash flow i.e. inflow and out flow are matched with each other. Greater emphasis is laid down on liquidity of a business organization.

2. **Operating cycle method:** This method refers to working capital in a realistic way. The working capital is decided on the basis of length of the operating cycle. It is calculated by dividing operating expenditures by the number of operating cycle.

### 6.6.2 Projection of working capital requirements

The businessman mainly faces the problem of determination of working capital requirements for financing particular level of activity. The finance manager has to perform the activities of forecasting working capital requirements. This process involves the following aspects.

1. **Level of activity:** - Estimation of working capital begins with the level of activity. Therefore the finance manager has to ascertain the required quantum of production in advance on the basis of past experience, installed and utilized capacity of the factory and demand.

2. **Raw materials: -** The finance manager has to estimate the quantity and cost of raw materials. Lengths of time of raw materials remain in the store before issue for production is considered longer period of stay of raw material need greater working capital. This must be valued at cost.

3. **Labour and overheads: -** Expenses incurred on wages and overheads are considered while ascertaining raw materials.

4. **Work-in-progress: -** While ascertaining work-in-progress the ‘period of processing' or 'period of production cycle' has to be considered. Longer the production cycle, greater the working capital requirement. Therefore, the finance manager has to consider the amount required for raw materials, wages and overheads while estimating volume of production.

5. **Finished Goods: -** The period of storing finished goods before sale has to be taken into consideration. This is depending on season, sales forecasting, etc. If the sales are seasonable and production is throughout the year, then working capital requirement would be the higher during the slack seasons.

6. **Sundry Debtors: -** While calculating amount of sundry debtors, period credit allowed to customers is to be taken into consideration. This period is known as "time lag in payment by debtors". If this period is longer, required working capital will be higher in the absence of similar time lag in payment to creditors. The sundry debtors are value at sales price while calculating working capital.

7. **Cash and bank balance: -** As per past experience every businessman is suppose to know the amount cash float or bank balance necessary to pay day is day payments. This amount is given in the information and added in the amount of working capital required.

8. **Prepaid Expenses: -** There may be some expenses i.e. insurance, sales promotion would be paid in advance and in this case working capital requirement would be higher is that extent.

9. **Sundry Creditors: -** The period of credit allowed by supplier has to be taken in to consideration while estimating required amount of working capital. It longer the period credit from suppliers, lower will be the working capital requirements.

10. **Creditors for expenses: -** Time lag in payment of wages and overheads also should be considered while deciding amount of working capital requirements. If there is no time lag in payment of wages and overheads, more working capital will be required and there will be less requirement of working capital when there is time-lag in payment of wages and overheads.

11. **Advance from customers: -** If and when advance required from customers then there will be lower working capital requirements.

12. **Contingencies: -** After calculating the amount of working capital as discussed above, a provision for contingencies may be made to make allowances for likely variations. This is the sort of cushion against uncertainties involved in estimating working capital.

## 6.7 EXERCISE

1. Define Working Capital. Explain the types of Working Capital.
2. Which are the Determinants of Working Capital?
3. Write short note on Projection of Working Capital Requirements.
4. Objective type questions:

**A. Rewrite the following sentences by selecting correct choice-**

1) The period required for the whole operation starting with cash and ending up with Cash plus –
   i) Operating cycle ii) Trading Cycle
   iii) Working Cycle iv) Main Cycle

2) Cross working Capital is equal to –
   i) Total Current Assets ii) Total fixed assets
   iii) Total Assets iv) Net Assets

3) The cost to be excluded from the cost of goods sold for the purpose of determining working in process and finished goods is –
   i) Interest ii) Depreciation
   iii) Taxation iv) Dividend

4) The primary objective of Working Capital Management is to manage –
   i) Current Assets ii) Current Liabilities
   iii) Current Assets and Current Liabilities iv) Fixed Assets

5) It Is a normal principles that current assets should be valued at cost or market value whichever is
   i) Higher ii) Lower iii) More iv) earlier

**(Answer: . 1) - i, 2) - iii, 3) - ii, 4) - iii, 5) – ii)**

**B. Fill in the blanks**

1) Advances received from customer will ---------- the working capital requirements.
2) Provision for contingencies may be made to make allowances for likely variations or for ------- expenses.
3) In valuation of world in progress labor & overhead are assumed to be incurred to the extent of ----------
4) It would be more practical if investment in debtors is a cetined at cost of sales, not as -------- price.
5) The Capital required to meet seasonal requirements is called as -------- working capital.

**Answer: 1) – Reduce 2) –unforeseen 3) – 50% 4) – selling 5)- circulating**

C. **Match the following**

| **Group A** | **Group B** |
|---|---|
| 1) Gross working capital | a. Receivables |
| 2) Negative working capital | b. Excess of current Assets |
| 3) Debtors | c. Total current Assets |
| 4) Bank Balance | d. Excess of current liabilities |
| 5) Net working capital | e. Quick Assets |

**(Answer: 1) – c 2) – d 3) – a 4) – e 5)- b )**

D. **State whether the following statements are true or false**

a) Closing stock of raw material is a liquid asset.

b) Profit included in debtors is an expense hence; it is a part of current asset.

c) Finished goods stock should be valued at FIFO basis.

d) Working capital management aims to strike a judicious balance between current assets & current liberalities.

e) Prepaid expenses increase the amount of working capital.

**(Answer: a – False, b – False, c – False, d – True, e- True)**

# 7

# WORKING CAPITAL MANAGEMENT - II

**Unit Structure:**



## 7.0 OBJECTIVES

After studying the unit the students will be able to:

- Calculate the figures required for Working Capital Projection.
- Draw the statement of Working Capital.
- Solve the practical problems on Working Capital requirement.

## 7.1 INTRODUCTION

In the previous unit we have studied the concept Working Capital in detail. That unit have already explained the types of working capital, elaborate the determinants and sources of working capital. That unit also explained the concept projection of working capital. In this unit we are going to study how to estimate the requirement of working capital and related calculations.

## 7.2 CALCULATION OF FIGURES REQUIRED FOR WORKING CAPITAL PROJECTION

### 7.2.1 Calculations

1. **Stock of raw materials: -** The cost of raw materials ascertained as under.

$$\left(\begin{array}{l}\text{Budgeted production}\\ \text{(units) p.a}\end{array}\right) \times \left(\begin{array}{l}\text{cost of material}\\ \text{per unit}\end{array}\right) \times \left(\begin{array}{l}\text{Raw material}\\ \text{holding period}\\ \text{(365 days or 52}\\ \text{Weeks or 12 months)}\end{array}\right)$$

2. **Work-in-progress: -** The value of work-in-progress is decided as follows:

(Budgeted production p.a (units)) x (per unit cost material 100% + Labour 50% + overhead 50%) x (Process period (365 days or 52 weeks or 12 months))

3. **Stock of finished goods: -** The investment in finished stock by a firm is decided as follows:

(Budget production p.a (units)) x (Cost of goods Produced p.u.) x (Finished goods holding period (365 days or 52 weeks or 12 months))

4. **Investment in debtors: -** Debtors are calculated at sales prices as well as at cost price as follows:

**At sales price**

(Budgeted credit sales p.a units) x (Selling Price per unit) x (Debtors collections period (365 days or 12 months or 52 weeks)

**At Cost Price**

(Budgeted credit sales p.a units) x (Cost of sale per unit) x (Debtors collections period 365 days or 12 months)

5. **Cost and bank balance: -** Required amount of cash & bank can be determined on the basis of cash budget. This budgeted cash and bank balance should be enough to meet day to day expenses. This is readily given in the problem and included in the list of current assets.

6. **Advance payment: -** The payment of expenses for the period which is not expired. It is calculated as follows.

(Expenses (365 days or 52 weeks or 12 months)) x (Period of prepayment)

7. **Sundry Creditors: -** The amount of creditors depends on the credit purchases and the period of credit allowed by supplier is calculated as follows:

(Budgeted production p.a units) x (Cost per unit of raw material) x (Period of credit allowed 365 days or 52 weeks or a. 12 months)

8. **Creditors for wages & overheads: -** It is not necessary to pay wages and expenses immediately which will ease working capital requirements. This amount is calculated as follows:

(Budgeted production p.a. unit) x (Wages or expenses per unit) x (Lag in payment 365 days or 52 Weeks or 12 months)

9. **Advance from customer: -** The amount received from customer in advance along with purchases result into less working capital requirement. This amount is given in the problem.

### 7.2.2 Proforma of Working Capital Statement :

**XYZ Co. Ltd.**
**Statement of Working Capital Requirement for the period ____**

| Particulars | Working | Rs. | Rs. |
|---|---|---|---|
| **A. Current Asset** | | | |
| **1.** Stock of Raw Material | (Units x Rate x Period of holding) | | xxx |
| **2.** Stock of WIP | | | |
| a) Raw Material Labour | (Units x Rate x Processing period) | xxx | |
| b) Labour | (Units x Rate x Processing period x 1/2) | xxx | |
| c) Overheads | (Units x Rate x Processing Period x 1/2) | xxx | xxx |
| **3.** Stock of Finished Goods | | | |
| a) Raw Material | (Units x Rate x Period of holding) | xxx | |
| b) Labour | (Units x Rate x Period of holding) | xxx | |
| c) Overheads | Units x Rate x Period of holding) | xxx | xxx |
| **4.** Debtors at S.P. | (Units X S.P. x Period of Credit) | | xxx |
| **OR** Debtors at Cost | | | |
| a) Raw Materials | (Unit x Rate x Period of credit) | xxx | |
| b) Labour | (Unit x Rate x Period of credit) | xxx | |
| c) Overhead | (Unit x Rate x Period of credit) | xxx | xxx |
| **5.** Prepaid Expenses | Units x Rate x Period of Payment | | xxx |
| **6.** Advance to Supplier | | | xxx |
| **7.** Cash & Bank | | | xxx |
| **Total Current Assets** | | | **xxxx** |

| | | | |
|---|---|---|---|
| **B. Less: Current Liabilities** | | | |
| 1. Creditors for Materials | (Units x Rate X period of credit) | xxx | |
| 2. Lag in payment Wages | | | |
| a) Wages | (Units x Rate x Lag in Payment) | xxx | |
| b) Overheads | (Units x Rate x Lag in Payment) | xxx | |
| 3. Advance from Customers | | xxx | |
| **Total Current Liabilities** | | | **xxxx** |
| **C. Net Current Assets** | | | **xxxx** |
| Add: - Margin of Safety | (A - B) | | xxx |
| D. Working Capital | | | xxxx |

## 7.3 SOLVED PROBLEMS

**Illustration 1.**

Sanket Ltd. had an annual sale of 50,000 units, at Rs.100 per unit. The company works for 50 weeks in the year.

The cost details of the company are as follows:

| Elements of cost | Cost per unit Rs. |
|---|---|
| Raw Materials | 30 |
| Labour | 10 |
| Overheads | 20 |
| | 60 |
| Profit per unit | 40 |
| Sales price per unit | **100** |

The company has to practice of storing raw materials for 4 week's requirements. Wages and other expenses are paid after a lag of 2 weeks. Further the debtors enjoy a credit of 10 weeks and company gets a credit of 4 weeks from the suppliers. The processing time is 2 weeks and finished goods inventory is maintained for 4 weeks. From the above information prepare a working capital estimates, allowing for a 15% contingency.

**Solution:-**

**Working notes:**

a) Sales per week $\frac{50,000}{50} = 1,000$ units per week.

b) Debtors are valued at selling price and finished goods at sales loss profits.

c) It has been assumed that the labour and overheads accrue on an average, so half the labour and overheads would be included in work in progress.

**Statement Showing Estimation of Working Capital.**

| Particulars | Working (unit x Rate x Period) | Rs. | Rs. |
|---|---|---|---|
| A. Current Assets | | | |
| I. Stock | | | |
| Raw Materials | (1000 x 80 Rs. x 4 week) | | 1,20,000 |
| Work-in-progress | | | |
| Raw materials | (1000 x 30 Rs. x 2 week) | 60,000 | |
| Labour | (1000 x 10 x 2 weeks x 1/2) | 10,000 | |
| Overheads | (1000 x 20 x 2 weeks x 1/2) | 20,000 | 90,000 |
| Finished goods | (1000 x 60 x 4 weeks) | | 2,40,000 |
| II. Debtors | (1000 x Rs. 100 x 10 week) | | 10,00,000 |
| Total Current Assets | | | 14,50,000 |
| B. Less: - Current Liabilities | | | |
| I) Creditors | (1000 x 30 Rs. x 4 weeks) | | 1, 20,000 |
| II) Outstanding wages | (1000 x Rs.10 x 2 week) | | 20,000 |
| III) Outstanding Overheads | (1000 x 20 x 2 weeks) | | 40,000 |
| | | | 1, 80,000 |
| Working Capital (A-B) | | | 1, 27,000 |
| Add. 15% Con. Reserve | | | 1, 90,500 |
| Net working capital | | | 14, 60,500 |

**Illustration 2.**

A factory produces 48,000 units during the year and sells them for Rs. 50 per unit. The cost structure of a product is as follows.

| | |
|---|---|
| Raw Materials | 60% |
| Labour | 15% |
| Overheads | 10% |
| | 85% |
| Profit | 15% |
| Selling price | 100% |

The following additional information is available.

a) The activities of purchasing producing and selling occur evenly through and the year.
b) Raw materials equivalent to 1 months supply is stored in godown.
c) The production process takes are month.
d) Finished goods equal to three month's production are carried in stock.
e) Debtors get two month's credit.

f) Time lag in payment of wages and overheads in 1/2 months.
g) Cash and bank balance is to be maintained at 10% of the working capital.
h) 10% of sales are made at 10% above the normal selling price.

Draw the statement showing working capital requirement of the factory.

**Solution:**

**Statement showing working capital requirement.**

| Particulars | Working (units x Rate x period) | Rs. | Rs. |
|---|---|---|---|
| A. Current Assets | | | |
| I. Stock | | | |
| Raw Materials | (48,000 x $\frac{1}{12}$ x Rs.30 x 1m) | 1,20,000 | 1,20,000 |
| Work-in-progress | | | |
| - Raw Materials | (48,000 x $\frac{1}{12}$ x Rs.30 x 1m) | 15,000 | |
| - Labour | (48,000 x $\frac{1}{12}$ x Rs.7.5 x $\frac{1}{2}$ m) | 10,000 | |
| - Overheads | (48,000 x $\frac{1}{12}$ x Rs.5 x $\frac{1}{2}$ m) | | 1,45,000 |
| Finished Goods at cost | (48,000 x $\frac{1}{12}$ x Rs.42.5 x 3 m) | 3,60,000 | 5,10,000 |
| II. Debtors at selling price | | | |
| Normal | (48,000 x $\frac{1}{12}$ x 90% x Rs.50 x 2m) | 44,000 | |
| Higher S.P. | (48,000 x $\frac{1}{12}$ x 10% x Rs.55 x 2m) | | 4,04,000 |
| | Total | 1,80,000 | 11,79,000 |
| B. Current Liabilities | | | |
| I. Sundry Creditors | (48,000 x $\frac{1}{12}$ x Rs.30 x 1.5m) | 15,000 | |
| II. O/S wages | (48,000 x $\frac{1}{12}$ x Rs.7.50 x $\frac{1}{2}$ m) | 10,000 | |
| III. O/S Overheads | (48,000 x $\frac{1}{12}$ x Rs.5 x $\frac{1}{2}$ m) | | 2,05,000 |
| C. Working capital (A-B) | (90%) | | 9,74,000 |
| Add : 10% for cash & Bank balance | (10%) | | 1,08,222 |
| i.e. 10% of cost | (100%) | | 10,82,222 |
| Required working capital | | | |

**Working notes.**

| 1) | Cost Structure | %age | Cost per unit |
|---|---|---|---|
| | Raw material | 60 | 30.00 |
| | Labour/Wages | 15 | 7.50 |
| | Overheads | 10 | 5.00 |
| | | 85 | 42.50 |
| | Add. Profits | 15 | 7.50 |
| | Selling price | | **50.00** |

2) Sundry debtors

| | |
|---|---|
| Normal selling price | Rs.50.00 |
| 10% above normal selling price | Rs.55.00 |

$\left(\frac{5\times1}{10}=5\therefore 50+5=55\right)$

3) Cash & Bank balance

$\frac{974000\times10}{90}=$
$= 10,8,222.222$ } Rs. 1, 08,222

4) M = Months

**Illustration 3.**

The Board of Directors of Century Rayon Ltd. requests you to prepare a statement showing requirements of working capital for a forecast level of activity of 52,000 units in the ensuring year (52 weeks) from the following information made available.

| | **Cost per unit** |
|---|---|
| | **Rs.** |
| Raw Material | 40.00 |
| Labour | 15.00 |
| Overheads Manufacturing | 20.00 |
| Overheads Selling & Distribution | 10.00 |
| | **85.00** |

**Additional Information:**

a) Selling price - Rs. 100/- per unit.
b) Raw material in stock - average 4 weeks.
c) Work-in-progress - average 4 weeks.
d) Finished goods in stock - average 4 weeks.
e) Credit allowed to debtors - average 8 weeks.
f) Credit allowed by supplier - average 4 weeks.
g) Cash at bank is expected to be Rs. 50,000.
h) All sales are a credit basis.
i) All the activities are evenly spread out during the year.
j) Debtors are to be valued at sales.

**Solution:**

**Statement of working capital requirement.**

| Particulars | Working (units x Rate x period) | Rs. | Rs. |
|---|---|---|---|
| **A. Current Assets** | | | |
| I. Stock | | | |
| Raw Materials | | | 1,60,000 |
| Work-in-progress | | | |
| Raw Materials | (52,000 x $\frac{1}{52}$ x Rs.40 x 4 weeks) | | |
| Labour | (52,000 ÷ 52 x Rs.40 x 4 weeks) | 1,60,000 | |
| Overheads | (52,000 ÷ 52 x Rs.15 x 4 weeks x $\frac{1}{2}$) | 30,000 | |
| Finished Goods at cost | (52,000 ÷ 52 x Rs.20 x 4 weeks x $\frac{1}{2}$) | 40,000 | |
| II. Debtors at selling price | (52,000 ÷ 52 x Rs.75 x 4 weeks) | | 2,30,000 |
| III. Bank Balance | (52,000 ÷ 52 x Rs.100 x 8 weeks) | | 3,00,000 |
| **B.Less Current Liabilities** | | | 8,00,000 |
| Sundry Creditors | | | 50,000 |
| **C. Working Capital (A-B)** | | | 15,40,000 |
| | (52,000 ÷ 52 x Rs.40 x 4 weeks ) | | 1,60,000 |
| | | | 13,80,000 |

**Working Notes:**

1)

| **Particulars** | **Cost per unit Rs.** |
|---|---|
| Raw materials | 40.00 |
| Labour | 15.00 |
| Manufacturing overheads | 20.00 |
| Cost of goods produced | 75.00 |
| Add: Selling & Distribution Expenses | 10.00 |
| Cost of goods sold | 85.00 |
| Add: Profit | 15.00 |
| Sales price | **100.00** |

2) W= weeks

**Illustration 4.**

From the following data, prepare a statement showing working capital requirement for the year 2009:

a) Estimated activity for the year 1, 95,000 units (52 weeks).
b) Stock of raw material 2 weeks and material in progress 2 weeks, 50% of wages and overheads are incurred.
c) Finished goods 3 weeks storage.
d) Creditors 2 weeks.
e) Debtors 4 weeks.
f) Outstanding wages and overheads 2 weeks each.
g) Selling price per unit Rs. 30.

h) Cost analysis per unit is as follows.
   I. Raw materials 1/3 of sales.
   II. Labour and overheads in the ratio of 3:2 per unit.
   III. Profit per unit is Rs. 10
i) Cash balance Rs.50,000

Assume that operations are evenly spread throughout the year.

**Solution:**

**Working notes**

1) Cost structure

| | Rs. | Cost per unit Rs. for 195000 unit |
|---|---|---|
| Raw Materials | 19,50,000 | 10.00 |
| Labour | 11,70,000 | 6.00 |
| Overheads | 7,80,000 | 4.00 |
| Total Cost Profit | 39,00,000 | 20.00 |
| Profit | 19,50,000 | 10.00 |
| Sales price | 58,50,000 | 30.00 |

2) After deducting profit we get total cost per unit Rs.20.
3) Total cost Rs.20 includes Rs.10 cost of raw materials.
4) Balance Rs.10 per unit will be divided in the ratio of 3:2 i.e. Rs.6 labour and Rs.4 overheads.
5) W = week

**Statement of working capital requirements for the year 2009.**

| Particulars | Working (units x Rate x period) | Rs. | Rs. |
|---|---|---|---|
| **A. Current Assets** | | | |
| I. Raw Materials | (19,5,000 ÷ 52 x 10 x 2w) | | 75,000 |
| II. Work-in-progress | | | |
| Raw Materials | (19,5,000 ÷ 52 x 10 x 2w) | 75,000 | |
| Labour | (19,5,000 ÷ 52 x 6 x 2w x 50%) | 22,500 | |
| Overheads | (19,5,000 ÷ 52 x 4 x 2w x 50%) | 15,000 | 11, 2,500 |
| III. Finished Goods | (19,5,000 ÷ 52 x 20 x 2w) | | 1, 50,000 |
| IV. Debtors | (19,5,000 ÷ 52 x 30 x 4w) | | 4, 50,000 |
| V. Cash | Given | | 50,000 |
| Total | | | |
| **B. Less Current Liabilities** | | | |
| I. Creditors | (19,5,000 ÷ 52 x 10 x 2w) | 75,000 | 8, 37,500 |
| II. Outstanding wages | (19,5,000 ÷ 52 x 6 x 2w) | 45,000 | |
| III. Outstanding overheads | (19,5,000 ÷ 52 x 4 x 2w) | 30,000 | |
| Total | | | |
| **C. Working Capital (A-B)** | | | 1, 50,000<br>6, 87,500 |

**Illustration 5.**
Sangeet Swapna Ltd. Furnisher in the following information and request you to prepare a statement showing the requirement of working capital for the year ended 31st March 2009.

| | **Budgeted for 2009** |
|---|---|
| Production capacity for the year | 10,000 units |
| Production | 90% |
| **Cost structure** | |
| Crude material | Rs. 30 per unit |
| Other direct material | Rs. 20 per unit |
| Wages | Rs. 25 per unit |
| Overheads | Fixed Rs. 9000 p.m. and Rs. 15 variable per unit |
| Profit | 25% on sales |

**Other information: -**

a) Crude oil material remains in the stock for 2 months.
b) Other direct material remains stock for 1 month.
c) Finished goods remain in stock for 2 month. (to be valued at direct cost)
d) Production process takes place 1 month work-in-progress valuation to be made crude material plus direct material at cost; plus 50% of wages and variable overheads.
e) Time lag in payment of wages 1 month and variable overhead half month.
f) Fixed overhead payable quarterly in advance.
g) Crude material purchased from suppliers against advance payment of two months and other direct material suppliers allow credit of 1 month.
h) Credit allowed to customers as under at sales price.
   a) 50% of invoice price against acceptance of bill for 4 months.
   b) 25% of invoice of time lag 2 months.
i) Bank balance to be maintained Rs. 50,000.
j) Production and sales takes place evenly throughout the year.

**Solution: -**

**Working notes: -**

1) Estimated production 90% of 10,000 = 9000 units.
2)

| Cost structure | **Rs.** |
|---|---|
| Crude material | 30.00 |
| Other direct material | 20.00 |
| Wages | 25.00 |

| | |
|---|---|
| Fixed overhead (9000 x 12) 108000 ÷ 9000 | 12.00 |
| Variable overheads | 15.00 |
| Total Cost | 102.00 |
| Profit 25% on sales (Means 331/3 of cost) | 34.00 |
| Selling price | **136.00** |

3) M = months

**Statement of working capital**

| Particulars | Working (units x Rate x period) | Rs. | Rs. |
|---|---|---|---|
| A. Current Assets | | | |
| a) I. Stock: | | | 75,000 |
| Crude Material | (9000 ÷ 12 × Rs.30 × 2 m) | 45,000 | |
| Other direct material | (9000 ÷ 12 × 20 × 1 m) | 15,000 | 60,000 |
| II. Work-in-progress | | | |
| Crude material | (9000 ÷ 12 × 30 × 1 m) | 22,500 | |
| Other direct material | (9000 ÷ 12 × 20 × 1 m) | 15,000 | |
| Wages | (9000 ÷ 12 × 25 × 1 m × 50%) | 9,375 | |
| Overheads | (9000 ÷ 12 × 15 × 1 m × 50%) | 5,625 | 52,500 |
| III. Finished goods | (9000 ÷ 12 × 102 × 2 m) | | 1,53,000 |
| b. Debtors | (9000 ÷ 12 × 136 × 1 m × 50%) | | 51,000 |
| c. Bills receivables | (9000 ÷ 12 × 136 × 4 × 50%) | | 2,04,000 |
| d. Advance to suppliers | (9000 ÷ 12 × 30 × 2 m) | | 45,000 |
| e. Prepaid fixed overhead | (9000 x 3 x 1) | | 27,000 |
| f. Bank balance | Given | | 50,000 |
| Total | | | **6,42,500** |
| B. Less Current Liabilities | | | |
| I. Creditors | (9,000 ÷ 12 x 20 x 1 m) | 15,000 | |
| II. Outstanding wages | (9,000 ÷ 12 x 25 x 1 m) | 18,750 | |
| III. Outstanding overheads | (9,000 ÷ 12 x 15 x 0.5 m) | 5,625 | |
| Total | | | **39,375** |
| C. Working Capital (A-B) | | | **6,03,125** |

**Illustration 6.**

From the books of The Board of KEM Ltd. Pune prepare a statement of working capital requirement to meet the programme planned for the year 2011.

1) Issued share capital Rs. 4,00,000
   5% Debentures Rs. 1,00,000
   Fixed assets at cost Rs. 2,50,000
2) The expected ratio of the cost to selling price are:
   Material 60%
   Labour 10%
   Overheads 20%
   Profit 10%
3) Raw materials are in stores for an average of 2 months. Finished goods are kept in warehouse for approximately three months.
4) Production during the previous year was 1,20,000 units and it is planned to maintain this level of activity in the current year also.

5) Each unit of production is expected to be in process for one month.
6) Credit given by suppliers is two months and allowed to customers is 3 months.
7) Selling price is Rs. 10 per unit.
8) There is regular production and sales cycle.
9) It is decided to maintain Rs. 30,000 cash balance.

**Solution: -**

**a)** Budgeted output 1, 20,000 units (given).
**b)** Budgeted sales - 1, 20,000 x 10 = Rs. 12, 00,000
**c)** **Cost Structure:**
R. M. 60% of Rs. 10 = Rs. 6.00 per unit
Labour 10% of Rs. 10 = Rs. 1.00 per unit.
Overheads 20% of Rs. 10 = Rs. 2.00 per unit.

d) Annual expenditure

| | |
|---|---|
| Raw material (1, 20,000 x Rs. 6) = | 7,20,000 |
| Labour (1, 20,000 x Rs. 1) = | 1,20,000 |
| Overheads (1, 20,000 x Rs. 2) = | 2,40,000 |
| Total | 10, 80,000 |
| Profit (1,20,000 x Rs.1) | 1,20,000 |
| Selling price | 12, 00,000 |

e) M = months

**Statement of working capital requirements**

| Particulars | Working (units x Rate x Period) | Rs. | Rs. |
|---|---|---|---|
| **A. Current Assets** | | | |
| I. Stock of Raw materials | $\left(\frac{1,20,000\times 6}{12}\times 2m\right)$ | | 1, 20,000 |
| II. Work-in-progress | | | |
| Raw Materials | $\left(\frac{1,20,000\times 6}{12}\times 1m\right)$ | 60,000 | |
| Labour | $\left(\frac{1,20,000\times 1}{12}\times \frac{1}{2}m\right)$ | 5,000 | |
| Overheads | $\left(\frac{1,20,000\times 2}{12}\times \frac{1}{2}m\right)$ | 10,000 | 21,000 |
| III. Finished goods | | | 2, 70,000 |
| IV. Debtors a) Raw materials | $\left(\frac{1,20,000\times 9}{12}\times 3m\right)$ | 1, 80,000 | |

| | | | |
|---|---|---|---|
| b) Labour | | 30,000 | |
| c) Overheads | $\left(\frac{1,20,000\times 6}{12}\times 3m\right)$ | 60,000 | 2,70,000 |
| V. Cash | $\left(\frac{1,20,000\times 1}{12}\times 3m\right)$ | | 30,000 |
| | $\left(\frac{1,20,000\times 2}{12}\times 3m\right)$ | | |
| Total | | | 7, 11,000 |
| **B. Less: Current liabilities** | | | |
| Creditors | $\left(\frac{1,20,000}{12}\times 6\times 2m\right)$ | 1, 20,000 | 1, 20,000 |
| **C. Working Capital** | (A – B) | | 5, 91,000 |

## 7.4 EXERCISES

**1.** You are required to prepare a statement showing the working capital required to finance the level of activity of 27,000 units per year from the following information.

| | **Per unit Rs.** |
|---|---|
| Raw materials | 24.00 |
| Direct labour | 6.00 |
| Overheads | 18.00 |
| Total Cost | 48.00 |
| Profit | 12.00 |
| Selling price | **60.00** |

**Information:**

I. Raw materials are in stock an average for two months.
II. Materials are in process on an average for half a month.
III. Finished goods are in stock on an average for two months.
IV. Credit allowed by creditors is two months of raw materials supplied.
V. Credit allowed to debtors is three months.
VI. Lag in payment a wages is half month.
VII. Cash on hand Rs. 4,000 and bank balance Rs. 10,000

(**Ans. Raw materials - Rs. 1,08,000; work in progress - Rs. 40,500; Finished stock - Rs. 2, 16,000; Debtors Rs. 4, 05,000; Creditors Rs. 10, 8,000; Labour/wages Rs. 6,750; working capital Rs. 6, 23,750)**

**2.** From the following data provided by M/s Alfa Ltd. estimate working capital requirements for the year ended 31st March 2006.

a) Estimate activity of operation for the year 2, 60,000 units (52 weeks)
b) Raw materials remain in stock for 2 weeks and production cycle takes two weeks.
c) Finished goods remain in stock for two weeks.
d) Two weeks credit is allowed by supplier.
e) Four weeks credit is allowed to debtors.
f) Time lag in payment of wages and overheads is two weeks.
g) Cash and bank balance to be maintained Rs. 25,000
h) Selling price per unit is Rs. 15
i) Analysis of cost per unit as follows:
   i. Raw material $33\frac{1}{3}\%$ of sales
   ii. Labour and overheads in the ratio of 6:4 per unit.
   iii. Profit is at Rs. 5 per unit.

Assume that operations are evenly throughout the year; wages and overheads accrue similarly. Manufacturing process required feeding a material fully at the beginning. Degree of work-in-progress is 50%. Debtors are to be estimated as selling price.

**(T.Y.B.Com March 2006)**

**(Ans. Stock Rs. 50,000 work-in-progress Rs. 75,000 debtors Rs.1,00,000, creditors Rs. 50,000, outstanding wages Rs. 30,000, outstanding overheads Rs. 20,000, working capital Rs. 4, 50,000)**

**3.** From the following details, prepare a statement showing working capital requirement for the year ended 31st March 2009.

| | |
|---|---|
| Production | 90,000 units |
| Selling price per unit | Rs. 10.00 |
| Raw Materials | 60% of selling price |
| Direct wages | 10% of selling price |
| Overheads | 20% of selling price |
| Materials in hand | 2 months requirement |
| Production time | 1 month |
| Finished goods in stores | 4 month |
| Credit for material | 2 month |
| Credit allowed to customers | 3 month |
| Average cash balance | Rs. 30,000 |
| Average bank balance | Rs. 20,000 |

Wages and overheads are paid at the beginning of the month following. In Production all the required materials are

charged in the initial stage and wages and overheads accrue evenly.

**(Ans. Raw materials Rs. 90,000, WIP- Rs. 56,250, Finished goods Rs. 2,70,000, Debtors - Rs. 2, 25,000, Creditors - 90,000, O/s wages Rs. 7,500, O/s overheads Rs. 15,000 - working capital 6, 78,750)**

**4.** From the following data, prepare a statement of working capital requirement for the year 2009

| | **Rs.** | **Rs.** |
|---|---|---|
| Budgeted sales | | 3, 60,000 |
| Less: cost of materials | 1, 08,000 | |
| Direct labour | 1, 44,000 | |
| Overheads | 72,000 | 3, 24,000 |
| Net profit | | **36,000** |

It is estimated that:

a) Raw materials are carried in stock for one months and finished goods for 15 days only.
b) The production cycle take one month.
c) One month's credit is granted both for purchase of raw materials and sales of finished goods.
d) Production and overheads are even through the year.

**(Ans. Raw materials Rs, 9,000, WIP Rs. 18,000 finished goods Rs. 13,500, Debtors Rs. 30,000, Creditors Rs. 9,000, working capital Rs. 61,500)**

**5.** The management of Fast and Thin Ltd. desires to know the working capital required with effect from 1st January, 2010 to finance. the production programme. Percentage cost structure of selling price is as follows.

| | |
|---|---|
| Raw Materials | 50% |
| Labour | 20% |
| Overheads | 10% |

You are further informed that:

a) Raw materials remain in the stores on an average for one month before issue to production.
b) Finished goods remain in the godown for 2 months before sales.
c) Each unit of production will be in process for one month.
d) Credit allowed by creditors is one month and allowed to debtors is 2 months.
e) Selling price per unit is Rs. 9.00
f) Production in 2010 is expected to be 1, 00,000 units.

**(Ans. Raw materials - Rs. 37,500, work-in-progress- Rs. 48,750, Finished goods - Rs. 1, 20,000, Debtors - Rs. 1, 20,000, Creditors - Rs. 37,500, working capital - Rs. 2, 88,750)**

# 8

# CAPITAL BUDGETING

**Unit Structure:**

## 8.0 OBJECTIVES

After studying the unit the students will be able to

- Know the concept of capital budgeting
- Understand the concept of project and budgeting report
- Understand the sources of project financing
- Understand the important considerations for capital budgeting

## 8.1 INTRODUCTION:

The financial requirements of business can be classified as short-term and long-term financial requirements. Short-term funds are required for meeting working capital needs. It is usually required for a period up to one year. Long-term funds are required to a great extent for meeting the fixed capital requirements of the business. It is required for a period of 1 to 5 years or more. Fixed capital is required for investment in land, building, plant and machinery, vehicles and furniture etc. The long-term funds are raised by issue of shares, debentures, loans from financial institutions and banks.

Capital investment involves a cash outflow in the immediate future in anticipation of returns of a future date. The planning and control of capital expenditure is called as capital budgeting decisions. Capital budgeting is an art of finding assets that are worth more than their cost to achieve the objectives i.e. optimizing the wealth of a business enterprise. A key challenge for the companies is to identify projects which fit the objectives and promise to be profitable. Capital expenditure decisions usually involve large sums of money, long-time spans and carry some degree of risk and uncertainty. Realistic investment appraisal requires the financial evaluation of many factors such as the choice

of size, type, location, timing of investments, taxation, and opportunity cost of funds available and alternative forms of financing the projects.

## 8.2 CAPITAL BUDGETING PROJECT

### 8.2.1 Meaning

A Project is a scheme for investing resources. It is a proposal of something to be done, plan or scheme. Every business plan is a project. The entrepreneur has to identify an opportunity to undertake a new venture. The business opportunity can be generated through various techniques like market research observations at market places, consultation with experts and brainstorming sessions. The entrepreneur should conduct cost-benefit analysis of each and every idea. The costs can be measured in terms of resources required to implement the opportunity and the benefits can be measured in terms of sales, profits etc. Thus, a project is a business plan. It describes the future direction of the business. The entrepreneur should prepare a sound business plan in order to exploit the opportunity. A good business plan is important in determining the resources required, obtain the resources and effectively manage the business venture.

### 8.2.2 Types / Classification of Projects

There are different types of projects undertaken by the business. The important types of projects are given below:-

1. **Modernization Project**: Modernization projects involve removal of old machines and installation of new machines in their place to cope with dynamic and competitive business environment.
2. **Expansion Projects**: Expansion projects are undertaken to enlarge the plant capacity with a view to produce a large volume of production than the current level of production.
3. **Diversification Projects**: Diversification project is an investment decision to set up an entirely new project which is not connected with the exiting line of business.
4. **Balancing Projects**: New plant and machinery is installed in order to remove the bottlenecks (imbalance) and to increase the capacity utilization of the total plant. In installing balancing equipment, these would be free flow in the process and uninterrupted production is ensured and there will be increase in the revenue.
5. **Replacement Project**: Replacement of an existing asset with more economic one is a replacement project. By replacement, the operational efficiency is increased, cost of production is reduced, cost of maintenance is reduced and profitability is increased.

### 8.2.3 New Concepts of Projects

In recent economic liberalization programme in India, few projects are emerging with new concept for financing and execution of project. Such new concepts of projects are given below:

1. **Building Operate and Transfer (BOT)**: Under this concept, the private sector is allowed to put the investment in bringing the project and the Government allows them to operate for certain period and then transfer the project to the Government. For example, Super Express Highways.
2. **Build, Own and Operate (BOD)**: Under this concept, the private entrepreneurs are allowed to build the project from their own resources, and then they will own the project and they are also entitled to operate the project subsequent to their commercial launching. For example, power sector.
3. **Lease, Rehabilitate, Operator and Transfer (LROT)**: Under LROT concept, the Government gives a running plant to the private entrepreneur for rehabilitation to put the plant on profitability track.
4. **Turnkey Projects**: When a single contractor undertakes the responsibility for the entire work and completes it so that the owner merely turns the key and operates the plant is known as "Turnkey" project. It covers the complete responsibility of engineering, design, manufacturing, supply, construction and commissioning the project.

## 8.3 CAPITAL BUDGETING PROCESS

Following are the major Stages of Capital Budgeting Process:

1. **Project identification and generation:**

On this stage ideas and suggestions for possible investment opportunities of enterprise resources are identified. Here the proposal for investments is generated taking into consideration the various reasons for taking up investments in a business. The reasons may be addition of a new product line or expanding the existing one. It could be a proposal to either increase the production or reduce the costs of outputs. The investment suggestions may be from inside the firm, such as from its employees, or from outside the firm, such as from a firm's advisors.

2. **Project Screening and Evaluation:**

In this phase ideas and suggestions having greatest income potential are developed into complete and detailed investment plans. This step mainly involves selecting all correct criteria's to judge the desirability of a proposal. The main object of this stage is

to avoid unnecessary wastage of resources like time, money and effort. The tool of time value of money becomes useful in this step. Also the estimation of the benefits and the costs needs to be done. The total cash inflow and outflow along with the uncertainties and risks associated with the proposal has to be analyzed thoroughly and appropriate provisioning has to be done for the same.

**3. Project Selection:**

In the third phase, investment plans are compared, and those that appear to be in the best interest of the enterprise are selected. Here it has been checked whether the proposed investment project would add value to the firm or not. Properly defined method for the selection of a proposal for investments is not there as different businesses have different requirements.

**4. Preparing the capital budget**

Once the proposal has been finalized, the different alternatives for raising or acquiring funds have to be explored by the finance team. This is called preparing the capital budget. The average cost of funds has to be reduced. A detailed procedure for periodical reports and tracking the project for the lifetime needs to be streamlined in the initial phase itself. The final approvals are based on profitability, Economic constituents, viability and market conditions.

**5. The acceptance or rejection of the project:**

In this phase it has been decided whether to accept or reject a project. All information, coming from the financial appraisal and qualitative results, is collected for making decisions. Managers with experience and knowledge also consider other relevant information using their routine information sources, expertise and judgments.

**6. Implementation and Monitoring:**

Once an investment project is accepted, then this phase involves the setting up of manufacturing facilities, project and engineering designs, negotiations and contracting, construction, and training and plant commissioning etc. Here the investment performance is monitored for any significant variations from expectations to determine if goals are being met Money is spent and thus proposal is implemented. The different responsibilities like implementing the proposals, completion of the project within the requisite time period and reduction of cost are allotted.

**7. Performance review or Post-implementation audit:**

This is the last phase which involves comparison of actual results with the standard ones. Post-implementation audit can provide useful feedback to project appraisal or strategy formulation. The feedback helps to identify and remove the various difficulties of the projects and for future selection and execution of the proposals.

## 8.4 CAPITAL BUDGETING TECHNIQUES

In order to maximize the return to the shareholders of a company, it is important that the most profitable investment projects should be selected. It is absolutely necessary that the method adopted for appraisal of capital investment proposals is a sound one. Any appraisal method should provide for the following:-

(i) A basis of distinguishing between acceptable and non-acceptable projects.
(ii) Ranking of projects in order of their desirability.
(iii) Choosing among several alternatives.
(iv) Recognizing the fact that bigger benefits are preferable to smaller ones and early benefits are preferable to later ones.

There are several methods used for evaluating and ranking the capital investment proposals. The basic approach is to compare the investment in the project with benefits derived there-from. The important methods or techniques of capital budgeting are explained below.

## 8.5 PAY BACK PERIOD METHOD

### 8.5.1 Meaning

It is the traditional technique of Capital Budgeting. The term pay-back period refers to the period in which the project generates the necessary cash to recoup the initial investments. The pay-back period is generally expressed in years. The method recognizes the recovery of original investment in a project. Thus, the payback period is the number of years required to recover the cost of the investment.

### 8.5.2 The formula is:

$$\text{Pay-back Period} = \frac{\text{Initial Investment } (\text{Cash outflows})}{\text{Annual Cash Inflow}}$$

The terms used in this method:-

- Cash outflows : It means the original cost of proposal or investment
- Cash inflows: It means the profits before depreciation but after tax.

### 8.5.3 Accept or reject criterion: -

While deciding between the two or more projects, usually the project having lowest payback period is accepted.

### 8.5.4 Advantages

1. This method is easy to calculate
2. It is simple to understand
3. Here investment recovery period is calculated therefore business unit can know about the period within which the funds will remain tied up.
4. The project having short pay- back period are accepted here this method is more suitable to the industries where risk of obsolescence is high.

### 8.5.5 Disadvantages

1. This method completely ignores all cash inflows after the pay-back period. This can be very misleading as it does not consider the total benefits occurring from the project.
2. It ignores the time value of money. In this method money received now and receivable in future are considered as of equal value.
3. This method does not take into consideration the entire life of the project. As a result project with large cash inflows in the latter part of payback period and less cash inflows in the earlier years may be rejected.
4. This method ignores residual value.

In spite of these limitations the industries having high risk of obsolescence prefer this method. Likewise where, quick return to recover the investment is the primary goal this method is preferred.

### 8.5.6 Solved Problems

A project requires an initial investment of Rs. 2, 00,000 and the annual cash inflows for 5 years are Rs. 60,000, Rs. 80,000, Rs. 50,000, Rs. 40,000 and Rs. 30,000 respectively. Calculate the payback period.

Here the students have to prepare the column of **Cumulative Cash Inflows** showed as below:

| Year | Cash Inflows (Rs/) | Cumulative Cash Inflows (Rs.) |
|---|---|---|
| 0 | (2,00,000) | (2,00,000) |
| 1 | 60,000 | (1,40,000) |
| 2 | 80,000 | (60,000) |
| **3 X** | 50,000 | **(10,000) Y** |
| 4 | **40,000 Z** | 30,000 |
| 5 | 30,000 | 60,000 |

- X = is the last time period where the cumulative discounted cash flow (CCF) was negative
- Y = is the absolute value of the CCF at the end of that period X
- Z = is the value of the DCF in the next period after X

**Payback Period = X + Y / Z**

The actual pay-back period can be determined as under:-

$$\text{Pay-back Period} = 3 + \frac{10,000}{40,000}$$

= 3 + 0.25 years

= 3.25 years

## 8.6 ACCOUNTING RATE OF RETURN

### 8.6.1 Meaning

The capital investment proposals are judged on the basis of their relative profitability. The **accounting rate of return is also known as return on investment or return on capital employed**. It is normal accounting technique used to measure the increase in profit expected to result from an investment by expressing the net accounting profit arising from the investment as a percentage of that capital invested.

### 8.6.2 The formula is:

$$\text{Accounting Rate of Return} = \frac{\text{Average Annual Profit after tax}}{\text{Average Investment}} \times 100$$

$$\text{Average Investment} = \frac{\text{Initial investment} + \text{Salvage value}}{2}$$

The term average annual net profit is the average of earning (after depreciation and tax) over the whole of the economic life of the project. The projects can be ranked on the basis of their accounting rate of return.

### 8.6.3 Accept or reject criterion: -

The project which gives higher rate of return will be preferred for investment.

### 8.6.4 Advantages:

1. It is very simple to understand and use.
2. It can be readily calculated using the accounting data.
3. It uses the entire stream of incomes in calculations.

### 8.6.5 Disadvantages:

1. While appraising the project it uses the accounting profits not the cash inflows.
2. It ignores the time value of money
3. This technique does not consider the lengths of project lives.

### 8.6.6 Solved problem:

A machine is available for purchase of a cost of Rs. 8,00,000. It is expected to have a life of 5 years and have a scrap value of Rs. 1,00,000 at the end of five years period. The machine will generate the following profits over its life as under:-

| Year | Amount (Rs.) |
|---|---|
| 1 | 2,00,000 |
| 2 | 3,00,000 |
| 3 | 4,00,000 |
| 4 | 1,50,000 |
| 5 | 50,000 |

The above estimates are profits before depreciation. You are required to calculate the accounting rate of return.

**Solution**

Total profit before depreciation over the life of machine = Rs. 11 lakhs

Average Profit $= \frac{11,00,000}{5} = Rs.2,20,000$

Total Depreciation over the life of the machine= Cost - Scrap Value

= 8,00,000 – 1,00,000 = Rs. 7,00,000

Average Depreciation = $\frac{7,00,000}{5} = Rs.1,40,000$ **Average Annual** Profit after depreciation = Rs. 2,20,000 – 1,40,000 = Rs. 80,000

**Original Investment = Rs. 8,00,000**

Rate of Return = $\frac{80,000}{8,00,000} \times 100 = 10\%$

Average Investment = $\frac{8,00,000 + 1,00,000}{2} = 4,50,000$

Accounting Rate of Return = $\frac{80,000}{4,50,000} \times 100$

= 17.78%

## 8.7 NET PRESENT VALUE METHOD

### 8.7.1 Discounted Cash Flow Technique:

The discounted cash flow technique is an improvement on the payback period method. It takes into account the interest factor as well as the return after the pay-back period. This method involves the following stages:

(a) Calculation of cash flows i.e. cash inflows as well as cash outflows, over the full life of an asset.

(b) Discounting the cash flows by a discount factor.

(c) Aggregating the discount cash inflows and comparing them with the total discounted cash outflows.

### 8.7.2 Meaning of Net present value

The net present value is obtained by discounting all cash inflows and outflows attributable to a capital investment project. For this purpose, rate of discount is chosen suitably. The difference between the present value of cash inflows and present value of cash outflows is called net present value (NPV).

### 8.7.3 How to calculate the Net Present Value

Net present value method (NPV) is the most suitable method used for evaluating the capital investment projects. Net present value is calculated as below:

1. Firstly the cash inflows and outflows associated with each project are worked out.
2. The present value of the cash flows is calculated by discounting the cash flows at the rate of return acceptable to the management.
3. The rate of return is considered as a cut-off rate. It is generally determined on the basis of cost of capital suitably adjusted to allow for the risk element involved in the project.
4. The cash outflows represent the investment and commitments of cash in the project at various points of time. The working capital is taken as a cash outflow in the initial year.
5. The **cash inflow represents the net profit after tax but before depreciation.** As depreciation is non-cash expenditure, it is added back to the net profit after tax in order to determine the cash inflows.
6. The cash inflows and outflows are discounted at a certain rate and present value of cash flows is calculated.
7. The difference between the present value of cash inflows and present value of cash outflows is called net present value (NPV).

### 8.7.4 Accept or reject criterion:

If the NPV is positive, the project is accepted and if it is negative, the project is rejected.

### 8.7.5 Formula:

Discounted cash flow is an evaluation of the future net cash flows generated by a project. This method considers the time value of money concept and hence it is considered better for evaluation of investment proposals. If there are mutually exclusive projects, this method is more useful. Thus, the following formula is used to determine the net present value:

**Net present value (NVP)** = Present value of future cash inflows – Present value of cash outflows.

### 8.7.6 Solved Problem

**Illustration**

An investment project costs Rs. 1,00,000 initially. It is expected to generate cash flow as follows:

| Year | Cash inflows (Rs.) |
|---|---|
| 1 | 50,000 |
| 2 | 40,000 |
| 3 | 30,000 |
| 4 | 20,000 |

(a) What is the net present value of the project assuming a 10 % risk-free rate? Should the project be accepted?

(b) If the project is risky and it is decided to use a higher rate to allow for the perceived risk. Assuming that rate is 15%, what will be the net present value of the project? Should the project be accepted?



The discounted factor @10% is:

| Year | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Discount factor | 0.9091 | 0.8254 | 0.7513 | 0.6830 |

The discounted factor @15% is:

| Year | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Discount factor | 0.8696 | 0.7561 | 0.6575 | 0.5718 |

**Solution:**

(a)

| Net Present Value at 10% discounting rate | | | |
|---|---|---|---|
| Year | Cash inflows (Rs) | Discount factor at 10% | Present value (Rs.) |
| 1 | 50000 | 0.9091 | 45455 |
| 2 | 40000 | 0.8254 | 33056 |
| 3 | 30000 | 0.7513 | 22539 |
| 4 | 20000 | 0.6830 | 13660 |
| | | Present value of cash inflows | 114710 |
| | | - Present value of cash outflow | 100000 |
| | | Net present value | 14700 |

The project should be accepted at risk free rate of 10% because net present value is positive.

(b)

| Net Present Value at 15% discounting rate | | | |
|---|---|---|---|
| Year | Cash inflows (Rs) | Discount factor at 15% | Present value (Rs.) |
| 1 | 50000 | 0.8696 | 43480 |
| 2 | 40000 | 0.7561 | 30244 |
| 3 | 30000 | 0.6575 | 19725 |
| 4 | 20000 | 0.5718 | 11436 |
| | | Present value of cash inflows | 104885 |
| | | - Present value of cash outflow | 100000 |
| | | Net present value | 4885 |

The project can be accepted at 15% because net present value is positive

## 8.8 PROFITABILITY INDEX

### 8.8.1 Meaning

The net present value method uses discounted cash flows. It expresses cash flows in present rupees. The NPV of different

projects can be compared. It implies that each project can be evaluated independent of others on its own merit. Sometimes we have to compare a number of projects each involving different amount of cash inflows and outflows. If the cash flows are different and period of the project are also different and two or more projects give positive net present value, then we have to use the technique of profitability index. It represents a ratio of the present value of future cost benefit at the required rate of return to the initial cash outflow of the investment.

### 8.8.2 Merits

1. This method is helpful in comparing the project having different amounts of investment therefore it is superior to Net Present Value method.
2. It considers the time value of money.
3. It considers all cash inflows.

### 8.8.3 Demerits

1. It is difficult to understand and to calculate.
2. In case of mutually exclusive nature investment the Present Value Method is superior to this method.

### 8.8.4 Procedure

1. Calculate Cash outflows and its present value.
2. Calculate the present value of Cash Inflows.
3. Calculate the ratio of present value of cash inflows to the present value of cash outflows. This ratio is called as profitability index.

### 8.8.6 Formula -

$$\text{Profitability Index} = \frac{\text{Present value of cash inflows } (\text{PVCI})}{\text{Present value of cash outflows } (\text{PVCO})}$$

### 8.8.7 Accept / Reject criterion:-

The selection of project has based on ranking i.e. the project with the highest Profitability Index is given the first rank followed by others.

### 8.8.8 Solved Problem

**Illustration**

X Ltd is considering purchase of a machine in replacement of an old one. Two models viz. 'modern' and 'sky' are offered at price of Rs. 22.5 lakhs and Rs. 30 lakhs respectively. Further particulars regarding these models are given below:-

| Particulars | Modern | Sky |
|---|---|---|
| (I) Economic life in years | 5 | 6 |
| (II) After tax annual cash inflows | | |
| Years | Rs. Lakhs | Rs. Lakhs |
| 1 | 5.00 | 6.00 |
| 2 | 7.50 | 8.00 |
| 3 | 10.00 | 10.00 |
| 4 | 9.00 | 12.00 |
| 5 | 8.50 | 10.50 |
| 6 | - | 9.50 |
| (III) Present value factors at 12% per annuam are as follows | | |
| Years | P.V.Factor | |
| 1 | 0.893 | |
| 2 | 0.797 | |
| 3 | 0.712 | |
| 4 | 0.636 | |
| 5 | 0.567 | |
| 6 | 0.507 | |

(a) Evaluate the two proposals.
(b) Which model would you recommend any why?

**Solution:**

**Calculation of Net Present Values**

| Years | P.V.Factor | Modern | | Sky | |
|---|---|---|---|---|---|
| | | CFAT | PV | CFAT | PV |
| 1 | 0.893 | 5.00 | 4.465 | 6.00 | 5.358 |
| 2 | 0.797 | 7.50 | 5.977 | 8.00 | 6.376 |
| 3 | 0.712 | 10.00 | 7.120 | 10.00 | 7.120 |
| 4 | 0.636 | 9.00 | 5.724 | 12.00 | 7.632 |
| 5 | 0.567 | 8.50 | 5.954 | 10.50 | 5.953 |
| 6 | 0.507 | - | | 9.50 | 6.084 |
| | | | | 2.50 | |
| Less | Present Value of Cash inflows | | 29.240 | | 38.523 |
| | Present value of cash outflows | | 22.500 | | 30.000 |
| | Net present value | | 6.740 | | 8.523 |

(b) Considering net present value method, both the models have positive net present value and their initial investments are different. Hence, the decision will be based on Profitability Index which is calculated as follows:-

| | | Modern | Sky |
|---|---|---|---|
| Profitability Index | $= \frac{PVCI}{PVCO}$ | $= \frac{29.240}{22.500}$ | $= \frac{38.523}{30.00}$ |
| | | $= 1.299$ | $1.284$ |

(c) As the profitability index of model 'Modern' is higher, it is recommended

## 8.9 DISCOUNTED PAYBACK PERIOD

### 8.9.1 Meaning

The discounted payback period is a modified version of the payback period that considers the time value of money. Both metrics are used to calculate the amount of time that it will take for a project to "break even", or to get the point where the net cash flows generated cover the initial cost of the project. Both the payback period and the discounted payback period can be used to evaluate the profitability and feasibility of a specific project.

### 8.9.2 Procedure to calculate Discounted Payback Period

There are two steps:

1. First, we must discount (i.e., bring to the present value) the net cash flows that will occur during each year of the project.
2. Second, we must subtract the discounted cash flows from the initial cost figure in order to obtain the discounted payback period. Once we've calculated the discounted cash flows for each period of the project, we can subtract them from the initial cost figure until we arrive at zero.

$$\text{Discounted Pay} - \text{back Period} = \frac{\text{Discounted Cash outflows}}{\text{Discounted Cash Inflow}}$$

### 8.9.3 Solved Problem

**Illustration 1**

ABC Ltd., is considering a given project. Below are some selected data from the discounted cash flow model created by the company's financial analysts:

The initial investment is Rs 75,000/-

| Year | Discounted Cash inflows Rs. |
|---|---|
| 1 | 10,000 |
| 2 | 15,000 |
| 3 | 20,000 |
| 4 | 30,000 |
| 5 | 30,000 |

Solution

| Year | Discounted Cash Flow Rs. | Cumulative Cash inflows Rs. |
|---|---|---|
| 0 | (75,000) Initial investment | (75,000) |
| 1 | 10,000 | (65,000) |
| 2 | 15,000 | (50,000) |
| 3 | 20,000 | (30,000) |
| **4 X** | 30,000 | **0 Y** |
| 5 | 30,000 **Z** | 30,000 |

- X = is the last time period where the cumulative discounted cash flow (CCF) was negative
- Y = is the absolute value of the CCF at the end of that period X
- Z = is the value of the DCF in the next period after X

**Discounted Payback Period = X + Y / Z**
= 4+ 0 / 30,000
**= 4Years**

In this case, we see that the project's payback period is 4 years. Since the project's life is calculated at 5 years, we can infer that the project returns a positive NPV. Thus, the project will likely add value to the business if pursued.

**Illustration 2**

Calculate the Discounted Payback Period from the following details. The initial investment is Rs. 23,40,000

| Year | Cash inflows Rs. | Present Value Factor @ 10% |
|---|---|---|
| 1 | 6,00,000 | 0.9009 |
| 2 | 6,00,000 | 0.8116 |
| 3 | 6,00,000 | 0.7312 |
| 4 | 6,00,000 | 0.6587 |
| 5 | 6,00,000 | 0.5935 |
| 6 | 6,00,000 | 0.5346 |

| Year | 1. Cash inflows Rs. | 2. Present Value Factor @ 10% | 3. Discounted Cash Flow (**Cash inflow * PV.**) | 4. Cumulative Discounted Cash Flow |
|---|---|---|---|---|
| 0 | (23,40,000) | 1 | (23,40,000) | (23,40,000) |
| 1 | 6,00,000 | 0.9009 | 5,40,541 | (17,99,456) |
| 2 | 6,00,000 | 0.8116 | 4,86,973 | (13,12,486) |
| 3 | 6,00,000 | 0.7312 | 4,38,715 | (8,73,771) |
| 4 | 6,00,000 | 0.6587 | 3,95,239 | (4,78,532) |
| **5 X** | 6,00,000 | 0.5935 | 3,56,071 | **(1,22,461) Y** |
| 6 | 6,00,000 | 0.5346 | **3,20,785 Z** | 1,98,324 |

- X = is the last time period where the cumulative discounted cash flow (CCF) was negative
- Y = is the absolute value of the CCF at the end of that period X
- Z = is the value of the DCF in the next period after X

**Discounted Payback Period = X + Y / Z**
= 5 + ( 1,22,461 ÷ 3,20,785)
= 5 + 0.38
**= 5.38 years**

## 8.10 MODEL QUESTIONS

Q.1 Arvind Ltd. is currently analyzing capital expenditure proposals for the purchase of equipment. The company uses the net present value technique to evaluate projects. The capital budget is limited to Rs. 5,00,000 which the company believe is the maximum capital it can raise. The initial investment and projected net cash flows for each project are given below. The cost of capital of the company is 12%. You are required to compute the NPV of the different projects.

| Projects | A | B | C | D |
|---|---|---|---|---|
| Initial Investment (Rs.) | 2,00,000 | 2,00,000 | 2,40,000 | 2,10,000 |
| Cash inflows | | | | |
| 1st Year | 50,000 | 40,000 | 75,000 | 75,000 |
| 2nd Year | 50,000 | 50,000 | 75,000 | 75,000 |
| 3rd Year | 50,000 | 70,000 | 60,000 | 60,000 |
| 4th Year | 50,000 | 75,000 | 80,000 | 40,000 |
| 5th Year | 50,000 | 75,000 | 1,00,000 | 20,000 |

Q.2 Which project would you recommend and why?

Calculate Payback period of the investment of Rs. 1,36,000 which yields the following cash flows:-

| Year | Cash inflows (Rs.) |
|---|---|
| 1 | 30,000 |
| 2 | 40,000 |
| 3 | 60,000 |
| 4 | 30,000 |
| 5 | 20,000 |

Q.3 A choice is to be made between two competing projects which require an equal investment of Rs. 50,000 and are expected to generate net cash flow as under:

| Year | Project A (Rs.) | Project B (Rs.) |
|---|---|---|
| 1 | 25,000 | 10,000 |
| 2 | 15,000 | 12,000 |
| 3 | 10,000 | 18,000 |
| 4 | 10,000 | 25,000 |
| 5 | 12,000 | 8,000 |
| 6 | 6,000 | 4,000 |

The cost of capital of the company is 10%. The following are the present value factors @ 10%.

| Year | PV Factors @ 10 % |
|---|---|
| 1 | 0.9091 |
| 2 | 0.8264 |
| 3 | 0.7513 |
| 4 | 0.6830 |
| 5 | 0.6209 |
| 6 | 0.5645 |

Which project should be selected and why? Evaluate the project under:

a) Payback method

b) NPV method.

c) Discounted Payback Period

## 8.11 EXERCISE

1. Explain the major Stages of Capital Budgeting Process.
2. Discuss the different types of projects undertaken by the business.
3. Explain in short the various techniques of Capital budgeting.
4. Write Short notes:
    a) Payback Period Method
    b) Accounting rate of Return
    c) Present Value Method
    d) Discounted Pay back Period