

## ACCOUNTING DEFINED

American Institute of Certified Public Accountants (AICPA) defines accounting as *an art of recording, classifying, and summarising in a significant manner, and in terms of money and events which are, in part at least, of a financial character and interpreting the results thereof.*

From this definition, it is clear that the

- art of recording involves writing the financial transactions<sup>1</sup>, immediately after they occur, in the accounting records such as cash book, purchases book, sales book and so on, in an orderly manner
- art of classifying involves a classification of such data under appropriate heads of account such as sales, purchases, salaries, assets and so on
- art of summarising in a significant manner consists of presenting such classified data in such a way that is useful to the internal and external end-users of accounting statements

The American Accounting Association (AAA) defines accounting as *the process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by the users of the information.* The users may be internal or external.

In other words, the main function of accounting is to interpret the summarised data in a meaningful manner so that the end users, can take appropriate decisions on such questions as:

1. Is it profitable to invest in a particular company or not?
2. Does it sound sensible to lend funds to a particular company or not?
3. Is the particular company paying its taxes in time?
4. Is the company progressing in terms of profits, sales, assets, market share, etc? Are the profits sufficient to meet the expansion plans and attract investors?

## Significance of Accounting

Accounting is very important for every business organisation. It helps to

- maintain its own records of business
- monitor the business activities
- calculate profit or loss for a given period
- fulfill legal obligations
- show financial position for a given period
- communicate the information to the interested parties

## Users of Accounting Information

- **Owners:** Owners want to know about the profits. They want to know how their business is going on.
- **Creditors or financial institutions:** Creditors or financial institutions are those who lend finances to the business firm. They want to know whether their funds are safe or not. They use accounting information to judge the creditworthiness of a business firm. They wish to know whether the firm is capable of paying interest from time to time or not.

1. Financial transactions are those which can be expressed in terms of money or money's worth.

- **Managers:** Managers use accounting information to report to the owners or shareholders. From accounting information, they can know whether their decisions are effective or not.
- **Government or tax authorities:** Government is interested in taxes. From accounting information, it assesses the tax liability of a firm, based on the net profits earned for a particular period.
- **Employees:** Employees are personally interested in the accounting information to know if they can put forth their claims for better wages or better facilities.

## BRANCHES OF ACCOUNTING

Broadly speaking, there are three branches of accounting: (a) Financial Accounting (b) Cost Accounting, and (c) Management Accounting.

The basic purpose of financial accounting is to prepare the financial statements: *trading and profit and loss account* and *balance sheet*. The trading and profit and loss account, also called income statement, shows the net profit made or net loss incurred by the firm for the end of a given period. The balance sheet reveals the financial position of the business firm in terms of its assets and liabilities as on a given date. The definitions of AICPA and AAA give an idea of what financial accounting is. The tools and techniques of financial accounting include subsidiary books, ledger accounts, trial balance, and financial statements.

### Cost Accounting

The purpose of cost accounting is to ascertain and control the costs of a product or a department. In the words of Wheldon, cost accounting refers to the application of accounting and costing principles, methods and techniques in the ascertainment of costs and the analysis of savings and/or excesses as compared with the previous experience or with standards. Cost Accounting is more used for internal control purposes. Its main focus is to find cost of a product or service. The tools and techniques of cost accounting include Opportunity cost, Marginal Costing, Break-even Analysis and so on.

### Management Accounting

The purpose of management accounting is to assist management in taking appropriate decisions. The necessary accounting information is provided by the accountant to enable the top management to take timely decisions. According to Robert N. Anthony, management accounting is concerned with accounting information that is useful to management. Management accounting starts where financial accounting ends. The users of management accounting are essentially internal to the organisation. The tools and techniques of management accounting include ratio analysis, capital budgeting and so on.

### ACCOUNTING CYCLE

Accounting cycle covers all the important stages in accounting. They include the process of preparing journal, ledger, trial balance and final accounts. The moment transactions take place in business, these are recorded in the first book called journal. From journal, entries are posted into ledger accounts. On the basis of balances shown by ledger accounts, a statement showing debit and credit balances is prepared to ensure arithmetic accuracy of the accounts. This statement is called trial balance. From the information available in trial balance, final accounts are prepared. Final accounts comprise trading account, profit and loss account for the end of the given accounting period and balance sheet as on the given date. Fig. 13.1 shows accounting cycle.

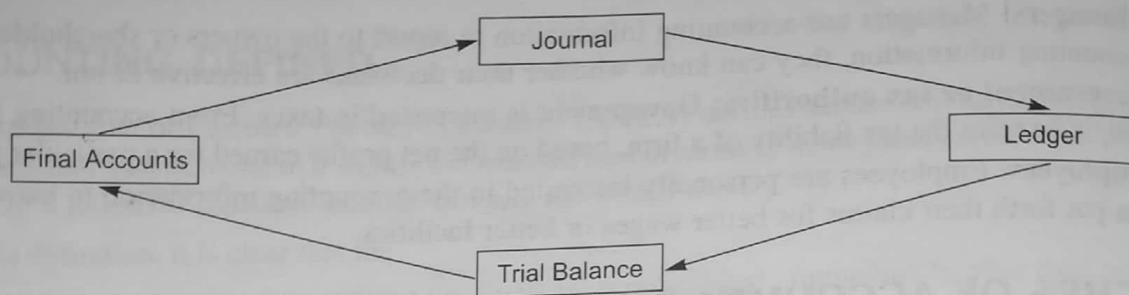


Fig. 13.1 Accounting Cycle

## ACCOUNTING TERMINOLOGY

The following are the terms used frequently in accounting process:

**Double-entry Book-keeping** This is a system of book-keeping where *for every debit, there is a corresponding credit*.

**Account** This is a financial record in T shaped format, under double entry book-keeping, dealing with financial transactions.

**Debit** The left hand side of the account.

**Credit** The right hand side of the account.

**Accounting Period** Accounting period refers to the period for which accounts are maintained. Normally it is a period of one year.

**Transaction** Transaction involves exchange of money or money's worth between two parties. Transaction may be of two types: *cash transaction* or *credit transaction*.

**Cash transaction** involves the payment or receipt of cash. For example, Sold goods worth Rs. 5000 to Gopal for cash. In this transaction, it is clear that the goods are sold for cash to Gopal.

**Credit transaction** does not involve cash. It involves a promise to pay cash at a future date. For example, Purchased goods worth Rs.30,000 from Gopal. Here Gopal supplies goods worth Rs.30,000 or we purchase goods on credit. Cash is to be paid at a future date, not immediately. So it is called a credit transaction.

**Assets** All such items that have value are known as assets. It refers to what a business owns, namely its plant, machinery, furniture, land and so on.

**Tangible fixed assets** Tangible fixed assets can be touched and seen. Examples are plant, machinery, etc. Such assets have long life, could be used in business, and resold later.

**Intangible fixed assets** Such fixed assets that cannot be seen or touched are called intangible fixed assets. They can be felt. The reputation of a firm (also called goodwill), the value of patents, trademarks and brand names such as Coke or Pepsi, refers to intangible fixed asset.

**Stock/Inventory** Stock or inventory refers to the goods in which the firm deals. A large business may have three types of stock: raw materials, work in progress and finished goods. The stock at the end of the year is valued on the basis of cost or selling price whichever is less. The closing stock of an accounting period becomes opening stock for the next accounting period.

## **DOUBLE-ENTRY BOOK-KEEPING**

In financial accounting, there are two systems of book-keeping: (a) single-entry book-keeping and (b) double-entry book-keeping.

Single-entry system is an unscientific and haphazard way of maintaining accounts. Small business units in the unorganised sector maintain their books of accounts under single-entry system of book-keeping. Double-entry book-keeping is a scientific way of recording transactions based on the fact that for every debit, there is a corresponding credit. Under double-entry system, both debit and credit aspects of the transaction are being recorded. This chapter deals with only double-entry system of book-keeping.

### **Advantages of Double-entry Book-keeping**

- 1. Information About Every Account** Under double-entry system, both aspects of a transaction are being recorded in the books of accounts. Hence, information about every account is available in the books of account as all accounts are to be found in the ledgers under double-entry system. Under single-entry system, only a few accounts such as cash account, debtors accounts, and creditors accounts are maintained.
- 2. Helps to Know the Receivables and Payables** It helps to know how much is owed to the creditors and how much is due from the debtors. Also it focuses on the bills payable and receivables.
- 3. Arithmetical Accuracy** The arithmetical accuracy can be ascertained by preparing a statement of debits and credits called trial balance and this is possible because both debit aspects and credit aspects of every transaction are recorded.
- 4. Helps to Locate Errors** Trial balance can reveal the errors that creep in accounts while recording the business information.
- 5. Helps to Ascertain Profit/Loss** The profit and loss statement can be prepared without much difficulty under double-entry system unlike in single-entry system.

**6. Helps to Know the Financial Position** Double-entry system helps to prepare balance sheet that reveals the financial position of the business as on a particular date.

**7. Monitoring and Auditing Made Easier** With double-entry system, the scope for frauds and misappropriations is less, provided proper internal audit system is in place. Because of these advantages double-entry system is very much popular all over the world.

## TYPES OF ACCOUNT & RULES GOVERNING EACH ACCOUNT

There are three types of account. They are personal account, real account and nominal account.

### (a) Personal Account

These are accounts opened in the name of persons, firms, and companies with whom the firm deals. The rule governing personal accounts is 'debit the receiver and credit the giver'. This rule can be explained with the following examples.

**Example 1** Suppose X buys goods worth Rs.5000 from us. This is not a cash transaction. This is credit transaction. So X is our debtor as he is receiving the goods. So debit X account in our books.

**Example 2** Suppose X sold goods worth Rs.10,000 to Y. Now Y is the receiver of goods. In the books of X, debit Y account. Similarly for Y, X is the giver. Hence in the books of Y, credit X account.

### (b) Real Account

These are accounts opened in the name of assets such as land and buildings, plant and machinery, furniture and fixtures etc. The rule governing real account is 'debit what comes in and credit what goes out'.

This rule can be explained with the following two examples.

**Example 3** Suppose XYZ firm buys plant worth Rs.40,000 for cash. What is coming into XYZ firm? Plant. The rule is 'debit what comes in'. So debit plant account.

Plant → Real account → Debit (coming in)

Now, what is going out? Cash. The rule is 'credit what goes out'. Credit cash account in the books of XYZ firm.

Cash → Real account → Credit (going out)

**Example 4** You sell your refrigerator for Rs.6,000. What do you debit and what do you credit?

When you sell the asset, cash is coming into business and the asset is going out of the business. So debit cash account and credit the refrigerator account.

Cash → Real account → Debit (coming in)

Refrigerator (Asset) → real account → credit (going out)

### (c) Nominal Account

This is also called fictitious account. It exists only for namesake. Nominal accounts cannot be seen. Nominal accounts are those which are opened in the name of expenses, losses, profits, incomes and gains. These cannot be physically seen. They can be felt. The rule governing nominal accounts is 'debit all expenses and losses and credit all incomes and gains'.

This can be explained with the following two examples:

**Example 5** Suppose you pay Rs.500 towards salary of clerk. What do you debit and what do you credit? Salary to the clerk is an expense. Expense is a nominal account. The rule is 'debit all expenses'. So debit the salary account.

Salary paid (expense) → Nominal account → Debit

Cash account is credited here because cash is real account. The rule for real account is 'credit what goes out'.

Cash paid (payment) → Real account → Credit

**Example 6** Received Rs.500 towards interest on fixed deposit. What do you debit and credit in this case?

Cash of Rs.500 is received towards interest on fixed deposit. Cash is real account. The rule for real account is 'debit what comes in'. So debit cash account.

Cash received → Real account → Debit

Now what is to be credited? Interest on fixed deposit is income for the business. Income relates to nominal account. The rule for nominal account is 'credit all incomes and gains'. So credit interest on fixed deposit account.

Interest on fixed deposit → Nominal account → Credit

### Box 13.2

#### Personal Account Rule

Debit the receiver and credit the giver

#### Real Account Rule

Debit what comes in and credit what goes out

#### Nominal Account Rule

Debit all expenses and credit all incomes and gains

# FINANCIAL ANALYSIS THROUGH RATIOS (RATIO ANALYSIS)

## Learning Objectives

**After completing this chapter, you should be able to understand**

- ratio, as an analytical tool
- concepts of liquidity, solvency and profitability
- types of liquidity ratios
- types of activity ratios
- types of solvency ratios
- types of profitability ratios
- significance of ratio analysis
- limitations of ratio analysis

## RATIO ANALYSIS

Ratio analysis is the process of determining and interpreting numerical relationships based on financial statements. By computing ratios, it is easy to understand the financial position of the firm. Ratio analysis is used to focus on financial issues such as liquidity, profitability and solvency of a given firm.

## LIQUIDITY, PROFITABILITY AND SOLVENCY

Liquidity, profitability and solvency, if independently looked into, are three conflicting factors which are mutually exclusive. If one factor is focussed, there is a danger of missing the others.

Liquidity refers to how well the firm is in a position to meet its short-term commitments such as payment of salaries, taxes, and so on. Profitability refers to how capably the firm is conducting its business operations in a profitable manner. Solvency refers to the firm's position to meet its long-term commitments such as repayment of long-term loans, and so on.

The issues when seen together, offer a complex job to deal with. It is because, if more funds are retained to take care of liquidity, it may erode profitability.

The crux of the job of the finance manager is to maintain a balance among the factors of Liquidity, solvency and profitability of the firm.

## WHAT IS A RATIO?

Ratio is simply a number expressed in terms of another. It refers to the numerical or quantitative relationship between two variables which are comparable. It is an expression derived by dividing one variable by the other. It is a statistical measure that provides an insight into the relationships between two variables. Ratios used rightly may even develop understanding and stimulate thinking. Ratios can be expressed in terms of percentages, proportions, and quotients also.

## How to Select a Ratio?

The utility of ratio is based on its selection. The ratio selected should match with the purpose. Use the standard ratios to avoid misinterpretation. Items selected for computation of ratio should be related so as to provide meaningful results. The quantity demanded for a particular product when studied in relation to income of the consumer provides meaningful results.

## Standard List of Ratios

There is no standard list of ratios used for financial analysis. A ratio can be conceptualised based on the need. There are significant variations in the ratios used in different firms of the same industry. Even the formula used for a given ratio may differ slightly. It is because the needs of these firms are different.

## Interpretation

Interpretation refers to evaluating the ratio in terms of the laid out standards or norms; nature of the industry/sector; and identifying the possible cause for improvement or decline in the performance of the company. An insight into the logical functioning of business and the knowledge of cause and effect relationship among the given variables in the micro- and macro-business environment will enhance the quality of interpretation. Interpretation is to be made with meticulous care because future decisions are based on the results of interpretation.

In this chapter, such ratios are used often in judging liquidity, profitability and solvency of the firm. These are discussed and illustrated.

## TYPES OF RATIOS

Based on their nature, the ratios can broadly be classified into four categories:

- (a) Liquidity ratios
- (b) Activity ratios
- (c) Capital structure ratios
- (d) Profitability ratios

## Liquidity Ratios

Liquidity ratios express the ability of the firm to meet its short-term commitments as and when they become due. Creditors are interested to know whether the firm will be in a position to meet its commitments on time or not. If the firm is not in a position to meet its short-term commitments such as payment of taxes, wages and salaries, and so on, then it cannot continue in business for long despite its strong capital base. Liquidity ratios help in identifying the danger signals for the firm in advance. Apart from the firm itself, all the financing companies offering short-term finances are interested in these ratios.

Liquidity ratios can be classified into two types:

**(a) Current Ratio** Current ratio is the ratio between current assets and current liabilities. The firm is said to be comfortable in its liquidity position if the current ratio is 2:1. It is almost considered as a yardstick to assess short-term liquidity. However, it may vary from one industry sector to the other. In other words, for every rupee of current liability, there should be two rupees worth current assets. The interests of the creditors are safeguarded if the current ratio is at least 2:1.

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

The current assets include stock, debtors, bills receivable, cash at bank, cash in hand, prepaid expenses, income yet to be received, and so on. All these are short term assets. The current liabilities are creditors, bank overdraft payable in a period less than one year duration, bills payable, outstanding expenses, incomes received in advance, all provisions, dividends payable, and so on. All these are current liabilities.

The current ratio is also called working capital ratio. It is because it is related to the working capital of the firm. Higher the current ratio, the better is the coverage of current assets for the short-term claims. This parameter is very useful in inter-firm comparison.

Extremely high current ratio may imply improper handling of stocks. If larger stocks are lying unsold, this will push up the current ratio. Unrealised debtors, too much cash balances or few creditors also could push up the current ratio. So, extremely high current ratios should not be taken for granted for increased efficiency. This also means profitability is eroded to that extent in the sense that stocks are lying unsold or debts are not realised. This affects working capital and also the volume of profits.

The yardstick to assess the short-term liquidity varies from industry to industry, firm to firm within the same industry and season to season within the same company. Indiscriminate use of this yardstick may result in wrong conclusions. It is to be noted that the current assets are not the only source of funds to meet the short-term commitments. A firm can borrow from new creditors to meet the old commitments.

**(b) Quick Ratio** Quick ratio is also called acid test ratio. It measures the firm's ability to convert its current assets quickly into cash in order to meet its current liabilities. It is the ratio between liquid assets and liquid liabilities. It supplements the information given by current ratio.

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

where Quick assets = Current assets - (Stock + Prepaid expenses)

Quick assets are those assets that can be converted into cash quickly. These are also called liquid assets. Since stock can not be sold quickly, it is not included in the list of quick assets. All current assets except stock and prepaid expenses, if any, are called quick or liquid assets. The standard for this ratio is 1:1. In other words, for every rupee of quick liability, there should be one rupee worth quick asset. Quick ratio provides a hard and rigorous measure of short term liquidity.

The quick ratio when read along with current ratio provides better picture of the firm's ability to meet its short-term commitments with the short-term assets.

*Note:* Stocks and prepaid expenses are not to be taken as quick assets.

### Example 1

From the following Balance Sheet of XYZ Co. Ltd., calculate liquidity ratios.

#### Balance Sheet of XYZ Co. Ltd.

as on 31.12.200X

(Rs in thousand)

Liabilities	Rs	Assets	Rs
Preference share capital	100	Land and Buildings	225
Equity share capital	150	Plant and Machinery	250
General reserve	250	Furniture and Fixtures	100
Debentures	400	Stock	250
Creditors	200	Debtors	125
Bills payable	50	Cash at Bank	250
Outstanding expenses	50	Cash in hand	125
Profit and loss account	100	Prepaid expenses	50
Bank Loan (Long-term)	200	Marketable securities	125
	1500		1500

### Solution

**Calculation of Current Ratio** From the above balance sheet, identify the current assets and current liabilities.

The current assets include stock (250), debtors (125), cash at bank (250), cash in hand (125), prepaid expenses (50), and marketable securities (125). The total of these is 925.

The current liabilities include creditors (200), bank overdraft (50), and outstanding expenses (50). The total of these is 300.

$$\begin{aligned}
 \text{Current ratio} &= \text{Current assets}/\text{Current liabilities} \\
 &= 925/300 \\
 &= 3.08:1
 \end{aligned}$$

For every one rupee of current liabilities, there is Rs 3.08 worth current assets. The liquidity position is **satisfactory** as it is more than the standard of 2:1.

**Calculation of Quick Ratio** Now identify the quick assets. Exclude stock and prepaid expenses from the list of current assets. In this case, the quick assets are  $925 - (250 + 50) = 625$ .

$$\begin{aligned}\text{Quick ratio} &= \text{Quick assets}/\text{Current liabilities} \\ &= 625/300 \\ &= 2.08\end{aligned}$$

Since this also is above the standard of 1:1, short-term liquidity position of the company is satisfactory.

## Activity Ratios

Activity ratios express how active the firm is in terms of selling its stocks, collecting its receivables and paying its creditors. These are three types:

- (a) Inventory turnover Ratio
- (b) Debtors Turnover Ratio
- (c) Creditors Turnover Ratio

## Inventory Turnover Ratio

It is also called stock turnover ratio. It indicates the number of times the average stock is being sold during a given accounting period. It establishes the relation between the cost of goods sold during a given period and the average amount of inventory outstanding during that period. The higher the inventory turnover ratio, the better is the performance of the firm in selling its stocks.

It helps in determining the liquidity of the firm by giving the rate at which inventories are converted into sales and then to cash. It also helps the financial manager to design an appropriate inventory policy so as to avoid piling of inventories. It is calculated as given below:

$$\text{Inventory turnover ratio} = \text{Cost of goods sold}/\text{Average inventory}$$

Where cost of goods sold = Sales - Gross profit;

Average inventory is the average of opening stock at the beginning of the year and the closing stock at the end of the year, that is,

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

A high inventory turnover ratio implies the efficiency of the firm whereas a low inventory turnover ratio indicates that the firm is not in a position to clear its stocks.

From inventory turnover ratio, we can also determine the inventory holding period. It is determined as given below:

$$\text{Inventory holding period} = 365 \text{ days}/\text{Inventory turnover ratio}$$

### Example 2

A firm sold goods worth Rs 5,00,000 and its gross profit is 20 percent of sales value. The inventory at the beginning of the year was Rs 16,000 and at end of the year was 14,000. Compute Inventory turnover ratio and also the Inventory holding period.

(a) Calculation of Inventory Turnover Ratio To calculate Inventory turnover ratio, we need cost of goods sold and average stock

$$\begin{aligned}\text{Cost of goods sold} &= \text{Sales} - \text{Gross Profit} \\ \text{Gross profit} &= 20\% \text{ of sales value, i.e., Rs } 1,00,000\end{aligned}$$

$$\begin{aligned}\text{Cost of goods sold} &= \text{Rs } 5,00,000 - \text{Rs } 1,00,000 \\ &= \text{Rs } 4,00,000.\end{aligned}$$

$$\begin{aligned}\text{Average inventory} &= (16,000 + 14,000)/2 \\ &= \text{Rs } 15,000\end{aligned}$$

$$\begin{aligned}\text{Inventory turnover ratio} &= \text{Cost of goods sold}/\text{average inventory} \\ &= 4,00,000/15,000 \\ &= 26.66 \text{ times}\end{aligned}$$

This means that during the year, the average stock is being sold 26.66 times.

(b) Inventory holding period

$$\begin{aligned}&= 365 \text{ days}/\text{Inventory turnover ratio} \\ &= 365 \text{ days}/26.66 \\ &= 13.69 \text{ days or 14 days approximately.}\end{aligned}$$

**Debtors' Turnover Ratio** Debtors turnover ratio reveals the number of times the average debtors are collected during a given accounting period. In other words, it shows how quickly the firm is in a position to collect its debts. It is necessary to keep close monitoring of realisation of debts because it directly affect the working capital position. In case, the firm is not in a position to collect its debts, to meet the working capital requirements, it has to borrow paying interest. This further erodes the profitability. The successful companies maintain the aged list of the debtors showing the details of when to collect, how much to collect and from which debtor.

Debtors' Turnover Ratio is calculated as given below:

$$\text{Debtors turnover ratio} = \text{Credit sales}/\text{Average debtors}$$

Where credit sales refer to goods sold on credit. Average debtors is the average of opening and closing balances of debtors for the given accounting period.

A higher debtors' turnover ratio explains that the firm is efficient in collecting its debts whereas lower ratio signifies its inefficiency.

**Debt Collection Period** Debt collection period refers to the time taken to collect the debts. From debtors' turnover ratio, we can find out the debt collection period as follows.

$$\text{Debt collection period} = 365 \text{ days}/\text{Debtors turnover ratio}$$

The lesser the time, more is the efficiency of the firm and vice versa.

### Example 3

A firm's sales during the year was Rs 400,000 of which 60 percent were on credit basis. The balance of debtors at the beginning and end of the year were 25,000 and 15,000 respectively. Calculate debtors' turnover ratio of the firm. Also find out debt collection period.

*Solution*

$$\begin{aligned}\text{Credit sales} &= 60\% \text{ of } 400,000 \\ &= 2,40,000\end{aligned}$$

$$\begin{aligned}\text{Average debtors} &= (\text{Opening balance of debtors} + \text{Closing balance of Debtors})/2 \\ &= (25,000 + 15,000)/2 \\ &= 20,000\end{aligned}$$

Calculation of debtors turnover ratio =  $240,000/20,000$   
= 12 times.

In this example, the firm is collecting its average debtors 12 times during the given accounting period.  
Debt collection period

$$\begin{aligned} &= 365 \text{ days}/\text{Debtors turnover ratio} \\ &= 365/12 \\ &= 30.41 \text{ days.} \end{aligned}$$

On an average, the firm is taking around 31 days to collect its debts.

**Creditors Turnover Ratio** Creditors turnover ratio reveals the number of times the average creditors are paid during a given accounting period. In other words, it shows how promptly the firm is in a position to pay its creditors. It is necessary to keep close monitoring of payment schedules because it directly affects the working capital position. In case, the firm is not in a position to pay its creditors, it will affect the goodwill or further supplies may be cut off. To be on safe side, most of the firms maintain the aged list of the creditors which provides the details of when to pay, how much to pay and to whom to pay.

Creditors turnover ratio is calculated as given below:

$$\text{Creditors Turnover Ratio} = \text{Credit Purchases}/\text{Average Creditors}$$

From this, we can also determine the creditors payment period by using the given formula:

$$\text{Creditors Payment Period} = 365 \text{ Days}/\text{Credit Turnover Ratio}$$

## Capital Structure Ratios (Leverage Ratios)

Capital Structure or leverage ratio is defined as 'the financial ratio, which focusses on the long-term solvency of the firm'. The long-term solvency of the firm is always reflected in its ability to meet its long-term commitments such as payment of interest periodically without fail, repayment of principal as and when due.

All the financial institutions offering long-term finances are interested in these ratios.

The following are the most commonly used capital structure ratios:

- (a) Debt-equity ratio
- (b) Interest coverage ratio

### Box 14.1 Is Debt-equity Ratio Important?

Debt-equity ratio is one of the principal norms followed by the financial institutions while funding the project proposals.

For small projects, the debt-equity norm is 2:1 whereas for medium and large scale projects it is 1.5:1. It is only a broad guideline, variations are permitted on a case-to-case basis. Other things remaining the same, the projects are funded based on the following considerations:

- A highly capital-intensive project is eligible for a significantly higher debt-equity ratio
- A project located in a backward area qualifies for funding based on higher debt-equity ratio
- An export-oriented unit is eligible for a higher debt-equity ratio

- (c) Ratio of Proprietors' funds to total assets
  - (i) Ratio of Fixed Assets to Proprietors' Funds
  - (ii) Ratio of Current Assets to Proprietors' Funds

**(a) Debt-Equity (D/E) Ratio** Debt-equity ratio is the ratio between outsiders' funds (debt) and insider's funds (equity). This is used to measure the firm's obligations to creditors in relation to the owners' funds. It is a measure of solvency. The yardstick for this ratio is 1:1. In other words, for every rupee of debt, there should be one rupee worth internal funds.

This is also industry/sector specific ratio. Depending upon the industry, the standard for the debt-equity ratio differs. For instance, in case of capital intensive industries such as shipping companies or steel manufacturing companies, the D/E ratio can be as high as 20:1. So this ratio has to be interpreted considering the nature of industry and competitors' D/E ratios.

A high D/E ratio implies that the creditors stake is more as compared to that of owners. In other words, if the project fails financially, there is greater risk for the creditors. This may further mean that the creditors have higher degree of control in the management of the company.

On the other hand, a low D/E ratio is desirable which means less risk to the creditors leaving higher margin of safety for the creditors. From the firm's point of view, this is also good in terms of lower commitment to pay fixed interest charges. This will deprive the company to take advantage of borrowed funds to enhance the profitability.

Debt-equity ratio is calculated as follows:

$$\text{Debt-Equity Ratio} = (\text{Debt}/\text{Equity}) \text{ or } \\ (\text{Outsiders' Funds}/\text{Insiders' or Shareholders' Funds})$$

Debt or outsiders' funds include debentures, bonds, long-term loans, and so on. Shareholders' funds or equity here includes share capital (both preference and equity), reserves (both general and specific), retained earnings, and such others. Equity does not only mean equity share capital. Equity here is interpreted as 'insiders' funds'. 'Debt' here means only long-term debt.

#### Example 4

Calculate Debt-Equity ratio from the data given in Example 1,

The following are the outsiders' funds:

$$\begin{aligned} \text{Outsiders' funds} &= \text{Debentures Rs. 4,00,000} + \text{Long-term loan 2,00,000} \\ &= \text{Rs. 6,00,000} \end{aligned}$$

$$\text{Insiders' funds} = \text{Rs. 6,00,000.}$$

(Preference share capital Rs 1,00,000 + Equity share capital Rs 1,50,000 + General Reserve Rs 2,50,000 + Profit and Loss Account Rs 100,000)

$$\begin{aligned} \text{Debt equity ratio} &= 6,00,000/6,00,000 \\ &= 1:1 \end{aligned}$$

Debt equity ratio of 1:1 means that for every Re 1.00 of debt, there is an equity fund of Re 1, which meets the standard yardstick of 1:1. This is quite satisfactory.

**(b) Interest Coverage Ratio** Interest coverage ratio is calculated to judge the firm's capacity to pay the interest on debt it borrows. It gives an idea of the extent the firm's earnings may contract before it is unable to pay interest payments out of current earnings. It is a very important ratio for the financial institutions to judge the ability of the borrower to service the loan from the current year's profits. The higher the ratio, better it is. In other words, a higher ratio implies that the company has no problems in paying interest.

Interest coverage ratio is calculated as follows:

Interest Coverage Ratio =

(Net profit before Interest and Taxes/Fixed Interest Charges)

The more the number of times of coverage, the better is the solvency position of the borrower.

#### Example 5

The earnings before interest and taxes (EBIT) of a company is Rs 5,60,000. Its fixed commitments include Payment of 10 percent on 7000 debentures of Rs 100 each. It is subject to tax of 30 percent per annum.

Calculate interest coverage ratio.

Net profit before interest and taxes = Rs 5,60,000

Fixed Interest charges on the debentures =  $(7000 \times 100) \times 10\% = \text{Rs } 70,000$

Interest coverage ratio =  $(5,60,000/70,000) = 8 \text{ times}$

Interest coverage ratio of 8 times means that the net profit earnings are 8 times to the fixed interest charges payable during the year.

The more the number of times the coverage, the safer is the investment. Extending finances to such a company getting a net profit covering 8 times of its fixed charges, is a safe bet for the lender.

**(c) Ratio of Proprietors' Funds to Total Assets** This establishes the relationship between proprietors' funds and the total assets. Here, the total assets include the tangible fixed assets plus current assets. As a guideline a ratio of around 0.5:1 or 50 percent is considered as the minimum desirable. In other words, half of the tangible assets are owned by the ordinary shareholders or owners and half by contributors of other types of share and loan capital and by creditors. Intangible assets such as goodwill are not considered here because, if the business has to be sold off forcibly, goodwill may not be of any worth. This shows that the proprietors have solid stake in the organisation.

Ratio of Proprietors' Funds to Total Assets =  $(\text{Proprietors Funds}/\text{Total Assets}^*) \times 100$

#### Example 6

Compute ratio of proprietors' funds to total assets from the data given in Example 1.

*Solution*

The ratio of Proprietors' funds to Total assets can be computed as follows:

---

\* Here, total assets include only tangible assets. Intangible assets such as goodwill are not considered.

Proprietors' funds = Rs 7,00,000 (Preference share capital Rs 1,00,000 + Equity share capital Rs 1,50,000 + General reserve Rs 2,50,000 + Employee provident fund Rs 1,00,000 + Profit and loss account Rs 1,00,000)

$$\text{Total assets} = \text{Rs } 15,00,000$$

$$\begin{aligned}\text{Ratio of proprietors' funds to total assets} &= (7,00,000/15,00,000) \times 100 \\ &= 46.66\%\end{aligned}$$

This reveals that 46.66 percent of the total assets are financed by proprietors' funds. In other words, the balance (53.34%) is financed by outsider's funds. This ratio is further explained in a finer way by considering the volume of fixed assets and current assets to the proprietors' funds separately.

**(i) Ratio of Fixed Assets to Proprietors' Funds** This ratio explains whether the fixed assets have been bought from the proprietors' funds or not. By matching the long-term investment with the long-term finance, it is possible to determine whether the borrowing has been made to finance fixed assets. It is not safe to use short-term finance to buy long-term assets because when the borrowing is to be repaid, there may be a problem, as the fixed assets cannot be readily converted into cash. The long-term sources of finance can be used for buying current assets but no short-term sources of finance can be utilised to acquire fixed assets.

This ratio shows the percentage of proprietors' funds locked up in fixed assets. Normally, for industrial establishments this can be 65 percent of the proprietors' funds.

$$\text{Ratio of Fixed Assets to Proprietors' Funds} = (\text{Fixed assets}/\text{Proprietors' funds}) \times 100$$

### Example 7

Compute ratio of fixed assets to proprietors' funds from the data given in Example 1:

From Example 1, Fixed assets are = Rs 5,75,000 and Proprietors' funds are = Rs 7,00,000

$$\text{Ratio of Fixed Assets to Proprietors' Funds} = (5,75,000/7,00,000) \times 100 = 82.14\%$$

Considering that this is industrial establishment, 82 percent is on very high side. A large portion of proprietors' funds is blocked in fixed assets. This is not desirable.

**(ii) Ratio of Current Assets to Proprietors' Funds** A higher ratio of current assets to proprietors' funds is considered as financial strength to the business. It is necessary to hold adequate funds in working capital to generate profits.

This is calculated as follows:

$$\text{Ratio of current assets to proprietors' funds} = (\text{Current assets}/\text{Proprietors' funds}) \times 100$$

### Example 8

Compute ratio of current assets to proprietors' funds from the data given in example 1:

$$\begin{aligned}\text{Ratio of current assets to proprietors' funds} &= (\text{Current assets}/\text{Proprietors' funds}) \times 100 \\ &= (9,25,000/7,00,000) \times 100 \\ &= 132\%\end{aligned}$$

## Profitability Ratios

Profitability ratios throw light on how well the firm is organising its activities in a profitable manner. The owners expect reasonable rate of return on their investment. The firm should generate enough profits not only to meet the expectations of the owners, but also to finance the expansion activities.

The following are the eight ratios most commonly used to explain profitability

1. Gross profit ratio
2. Net profit ratio
3. Operating ratio
4. Return on investment (ROI)
  - (i) Return on capital employed
  - (ii) Return on equity
5. Earnings per share (EPS)
6. Dividend yield
7. Price/Earnings ratio (P/E ratio)
8. Earning power

**1. Gross Profit Ratio** Gross profit ratio is the ratio between gross profit to sales during a given period. It is expressed in terms of percentage. Gross profit is the difference between the net sales and the cost of goods sold.

$$\text{Gross Profit Ratio} = (\text{Gross Profit}/\text{Sales}) \times 100$$

Gross profit should be adequate to cover the operating expenses and to provide fixed charges, dividends and reserves. There is no fixed norm to judge the gross profit ratio. The higher the gross profit ratio, the better it is. Gross profit is affected by several factors such as cash profits or cash losses, stock losses, mark ups or mark downs, purchase prices, stock valuation, expenses, and so on. For instance, if the mark up or profit margin is high, the gross profit is high. For any reason, goods have to be disposed off at throwaway prices or mark down, this affects the gross profit.

### Example 9

Suppose the Net sales is 50,000 for a firm and cost of goods sold is Rs 20,000. The gross profit ratio is calculated as below:

$$\begin{aligned}\text{Gross Profit Ratio} &= (30,000/50,000) \times 100 \\ &= 60 \text{ percent.}\end{aligned}$$

In other words, 60 percent of its sales is the gross profit.

**2. Net Profit Ratio** Net profit ratio is the ratio between net profits after taxes and net sales. It indicates what portion of sales is left to the owners after operating expenses. Non-operating income such as interest on investments, gain on sale of fixed assets and so on are added to the operating profit and non-operating expenses such as loss on sale of fixed assets and so on are deducted from such profit. This is the net profit after adjusting non-operating income and non-operating expenses.

$$\text{Net profit ratio} = (\text{Net profit after taxes}/\text{Net sales}) \times 100$$

### Example 10

Suppose the net sales is 50,000 for a firm and cost of goods sold is Rs 20,000. The details of expenses are as given below:

Administration expenses	Rs 3000
Selling and distribution expense:	Rs 4000
Loss on sale of fixed asset	Rs 3000
Interest on investment	Rs 2000
Taxes 20 %	

### Computation of Net Profits

(in Rs)

Sales	50,000	
Less Cost of goods sold	20,000	
Gross profit		30,000
Less Administration expenses	3,000	
Selling and Distr.Expenses	4,000	8,000
Net profit		22,000
Add: Interest on investments (Non-operating income)		2,000
		20,000
Less: Loss on sale of Asset		3,000
		17,000
Taxes @ 20%		3,400
<b>Net profit after taxes:</b>		<b>13,600</b>

$$\begin{aligned}\text{Net profit ratio} &= (13,600/50,000) \times 100 \\ &= 27.2\%\end{aligned}$$

The higher the net profit ratio, the better is the profitability and vice versa. This ratio is widely used as a measure of overall profitability. It should be used along with operating ratio for better interpretation.

**3. Operating Ratio** Operating ratio is the ratio between costs of goods sold plus operating expenses and the net sales. This is expressed as a percentage to net sales. The higher the operating ratio, the lower is the profitability and vice versa.

$$\text{Operating ratio} = (\text{Operating expenses}/\text{Net sales}) \times 100$$

Where Operating expenses = (Cost of goods sold + Administrative expenses + Selling and distribution expenses)

Administrative expenses cover all office and management expenses such as salaries, office rent, insurance, director's fee, legal expenses, and so on. Selling and distribution expenses include salaries to sales staff, advertising, travelling expenses, cost of samples and so on.

Net sales is equal to 'sales less sales returns'.

In interpreting operating ratio, the possibility of variations in expenses from year to year or company to company due to change in policies should be considered.

$$\text{Profitability (\%)} = (100 - \text{Operating ratio \%})$$

Operating ratio of 60 percent means the firm has remaining 40 percent of its sales revenue as profit. It is always desirable to have a low operating ratio.

Operating expenses are more in manufacturing firms than in service rendering firms. In manufacturing firms, the operating ratio ranges from 75–85 percent of the sales. The non-manufacturing organisations find their operating ratio anywhere between 40–60 percent.

**4. Return on Investment (ROI)** Return on investment is one of the very important parameters affecting business plans. The profitability of the firm is measured in terms of return on investment. The term 'investment' may refer to total assets, capital employed or owners' equity.

$$\text{ROI} = \text{Net Profit After Taxes/Total Investment}$$

Generally, the firm may be interested in assessing the return on total capital employed; the equity shareholders are interested in return on 'equity'. Some of the important ratios under this head are:

(i) **Return on capital employed (ROCE)** This is a widely used ratio. This is the only satisfactory measure which reveals the overall performance of a firm in terms of profitability. It shows whether the funds entrusted to the management have been properly used or not. ROCE is calculated as given below:

$$\text{ROCE} = (\text{Adjusted net profits/Capital Employed})$$

Where 'adjusted' net profits refer to

Net profits duly adjusted for

1. any abnormal or non-recurring losses or gains
2. depreciation based on replacement cost of the assets
3. income from investments outside the business
4. interest on long-term liabilities (which is to be added back to the net profits for consistency)
5. income tax (always take net profits before income tax).

Net capital employed refers to the total of

1. Paid up share capital
2. Reserves (both capital and revenue reserves)
3. Debentures, if any.

(ii) **Return on equity (ROE)** This relates the net profits available to equity shareholders to the amount invested by them. The higher the ROE is, the more is the profitability and vice versa.

$$\text{ROE} = (\text{Net profits} - \text{Dividends payable to Preference shareholders})/\text{Equity share capital.}$$

This ratio is compared with that of other companies. The equity shareholder can take a decision to switch over from one company to the other by selling the shares based on this ratio.

**5. Earnings Per Share (EPS)** EPS is the relationship between net profits and the number of shares outstanding at the end of the given period. This can be compared with previous years to provide a basis for assessing the company's performance.

$$\text{EPS} = (\text{Net profit after taxes}/\text{Number of shares outstanding})$$

#### Example 11

Given that the number of shares is 10,000 and the net profit after taxes for a given accounting period is Rs 4,50,000; the EPS can be calculated as follows:

$$\begin{aligned} \text{EPS} &= 4,50,000 / 10,000 \\ &= \text{Rs } 45. \end{aligned}$$

The higher the EPS is, the more is likely to be the demand for the shares of that company. However, it is to be noted that EPS is one of the many factors affecting the demand for a given share.

**6. Dividend Yield** Yield refers to the amount of total return the investor will receive for a given period of time for the amount of his investment.

Dividend yield refers to the percentage return on the price paid for shares. It is calculated as given below:

$$\text{Dividend yield} = \frac{\text{Nominal or face value of the share}}{\text{Cost or market price of the share}} \times \% \text{ dividend per annum}$$

### Example 12

Given that current market price of a share Rs 300; face value of the share is Rs 100; percentage of dividend declared is 20 percent, then yield is

$$\begin{aligned} \text{Dividend yield} &= (300/100) \times 20 \\ &= 6 \text{ per annum} \end{aligned}$$

In general, yield and risk are inversely proportional. In other words, the higher the yield reflects that the investments are riskier and the lower the yield, safer are the investments.

**7. Price/Earnings Ratio** This is the share price divided by the earnings per share.

$$\text{Price/Earnings Ratio} = (\text{Market price per share} / \text{Earnings per share})$$

### Example 13

Given that market price of a share is Rs. 340 and EPS is 10, calculate P/E ratio.

$$\begin{aligned} \text{Price/Earnings Ratio} &= (\text{Market price per share} / \text{Earnings per share}) \\ \text{EPS} &= (340/10) \\ &= 34 \end{aligned}$$

Thus a share with a market price of Rs 340 and an EPS of Rs 10 would have a P/E ratio of Rs 34.

Shares of companies with good profit record tend to have high P/E ratio and usually a low yield. On the other hand, companies with poor profit record will usually have a low P/E ratio.

The ratios of P/E, EPS and yield are very useful to take 'buy or sell' decisions in respect of company shares. Investors make use of the P/E ratio to assess the 'expensiveness' of a given share. In general, high P/E ratio indicates that the stock market price has been pushed up in anticipation of an expected rapid improvement in earnings. This makes the share now expensive. A low P/E ratio implies that investors do not expect much growth in the company's earnings in the nearest future.

In other words, selling a share with P/E ratio 20 at a price of Rs 100 is better than selling a share with P/E ratio 30 at a price of Rs 100. It is because the share with P/E ratio of 30 is more promising.

**8. Earning Power as a Measure of Overall Profitability** A firm can sell small quantities at higher prices or large quantities at relatively lower prices to continue to be making profits. In other words, the earning power of the company is based on two factors: (a) net profit margin and (b) the investment turnover.

These factors together present a complete picture of the effectiveness of the firms' operations. The percentage of return on investment (ROI) can highlight the firms operating efficiency. ROI reflects the earning power and it is the product of net profit margin and investment turnover.

$$\begin{aligned}\text{Earning power} &= \text{Return on investment} \\ &= \text{Net profit margin} \times \text{Investment turnover} \\ \text{Earning power} &= \frac{\text{Net profit after taxes}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total capital}} \\ &= \frac{\text{Net profit after taxes}}{\text{Total capital}}\end{aligned}$$

Here the total capital may mean (a) total assets or (b) equity share capital.

The following example illustrates the concept of earning power:

#### Example 14

There are two firms *P* and *Q* each having total assets worth Rs 4,00,000 and average net profits of 20 percent that is 80,000 each. Firm *P* has sales of Rs 100,000 and Firm *Q* has sales of Rs 10,00,000. Determine the earning power of both firms.

**Table 14.1 Earning Power of Firms *P* and *Q***

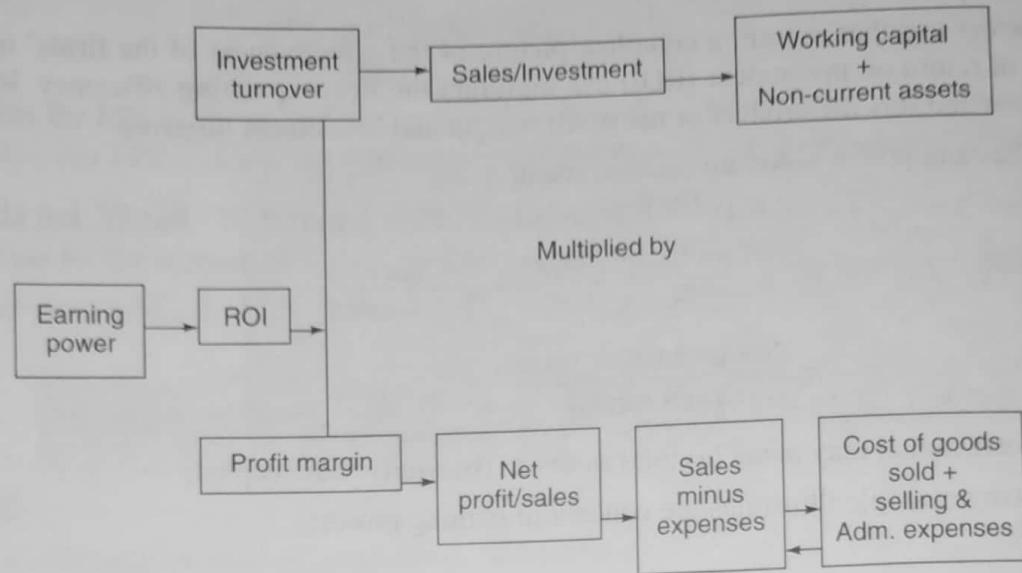
	<i>Firm P</i>	<i>Firm Q</i>
a. Net sales	1,00,000%	10,00,000%
b. Net profit	20,000%	20,000%
c. Total Assets	400,000%	400,000%
d. Profit margin (b/a)	20 %	2%
e. Investment turnover (a/c)	0.25 %	2.5 times
f. ROI ratio (d ' e)	5 %	5%

The Table 10.1 reveals that there is no advantage of higher volume of sales when profit margin is so low. Firm *P* could make similar ROI to that of firm *Q* despite lower volume of sales because the profit margin is high.

**DuPont Chart:** The elements that go into computation of earning power have been built into the following chart by Du Pont company for the first time and hence it is called Du Pont Chart (Fig. 14.1).

From Fig. 10.1, it can be seen that the earning power is dependent on many variables. Any change in these factors will affect the earning power. If the selling price increases, it will increase the profits and vice versa. If the cost of goods sold increases, the profit margin declines. The earning power will improve only if turnover or net profit or both increase.

Earning power is an important ratio that can be used to evaluate and compare the performances of departments as well as the firm as a whole. It is a valuable tool for inter-firm comparison also.



*Fig. 14.1 Du Pont Chart Showing the Elements of Earning Power*

## LIMITATIONS OF RATIO ANALYSIS

Ratio analysis, despite its wide applications, is not free from limitations.

1. *Accounting ratios are retrospective* The ratios are computed based on the past data or previous performance. They may not necessarily hold good in the future and may not be helpful in making projections into future.
2. *Accounting methods, policies and procedures are not common* Where accounting data is generated following different accounting methods (such as different methods of depreciation or methods of valuing closing stock following FIFO or LIFO), the ratios are not strictly comparable. The difference in the accounting methods or policies may lead to distorted conclusions.
3. *Inflationary tendencies cannot be highlighted* In times of inflation, the accounting data of several years cannot be compared. Any analysis of such data based on ratios cannot be meaningful.
4. *Concepts of Ratios are not the same* Based on the needs of the firm, the ratios are built upon. The formula may have been different. Interterm comparison cannot be realistic in such a case.
5. *Qualitative factors cannot be considered* Factors such as character or managerial abilities cannot be considered here. It is because Ratio analysis is purely quantitative analytical tool.
6. *Ratio by itself has no utility* Ratios to be meaningful have to be read along with the other ratios. Any single ratio is meaningless by itself.
7. *Ratios can be manipulated* During festival season, there will be good turnover of stocks when compared to the earlier periods. If this inventory turnover ratio is considered for decision making, the results get distorted. It is necessary to consider the average inventories to present a fair view of the business activity.
8. *Factors weakening ratio analysis* Sudden changes in the economy such as economic crisis, lack of uniform data, identifying the right type of ratio for analysis and interpretation and so forth are some of the factors that threaten the utility of ratio analysis.

Despite the limitations, ratio analysis continues to be a powerful tool for analysis and comparison of financial statements.

Despite the limitations, ratio analysis continues to be a powerful tool for analysis and comparison of financial statements.

## Financial Statement Analysis Limitations

There are many issues that affect the calculation of ratios and comparison complex. These limit the validity of the financial statements and their analysis too. Some of the limitations are as given below:

- *Ratios as good or as bad as estimates* Where the costs are allocated to each period based on estimates and the ratios are worked out for different years, the ratios may carry all the weaknesses of the estimates. In other words, the ratios are as accurate as the estimates.
- *Price changes are not reflected* The financial statements are based on the accounting data prepared on cost principle. In other words, the financial data is not adjusted for price changes or inflation/deflation.
- *Choice of accounting methods* Where the firms have choice of accounting methods in respect of inventory valuation using FIFO or LIFO, in respect of depreciation, comparison is difficult if the firms follow different methods while presenting their accounting information. The ratios cannot reflect these subtle insights.

- *Impact of cyclical trends* Where the firms have different closing dates of fiscal year, the cyclical trends are not reflected in their accounting data, ends making comparison difficult if the industry is cyclical.

## ILLUSTRATIONS

### Exercise 1 Current Ratio and Quick Ratio

The following is an extract of a balance sheet of a company during the last year. Compute current ratio and quick ratio. Also interpret the ratios.

Land and buildings	₹50,000
Plant and machinery	₹1,00,000
Furniture and fixtures	₹25,000
Closing stock	₹25,000
Sundry debtors	₹12,500
Wages prepaid	₹2,500
Sundry creditors	₹8,000
Rent outstanding	₹2,000

#### **Solution**

From the above ratios, the current assets include: closing stock, sundry debtors and wages prepaid. The total of the current assets is:

	₹
Closing stock	25,000
Sundry debtors	12,500
Wages prepaid	2,500
Total	40,000

The current liabilities are: Sundry creditors ₹8,000 and Rent outstanding ₹2000. The total of current liabilities is ₹10,000.

$$\begin{aligned}
 \text{Current ratio} &= \text{Current assets}/\text{current liabilities} \\
 &= 40,000/10,000 \\
 &= 4:1.
 \end{aligned}$$

This means for every one rupee of current liability, there is a coverage of 'four rupees' of current assets. The standard for current ratio is 2:1. As against this, the liquidity of the company is satisfactory.

The liquidity factor can further be verified based on the most liquid or quick assets and liabilities which is called quick ratio.

$$\begin{aligned}
 \text{Quick ratio} &= \text{Quick assets}/\text{Current liabilities} \\
 \text{Quick assets} &= \text{Current assets} - (\text{Stock} + \text{Prepaid wages}) \\
 &= 40,000 - (25,000 + 2,500) \\
 &= ₹12,500.
 \end{aligned}$$

$$\begin{aligned}
 \text{Quick ratio} &= 12,500/10,000 \\
 &= 1.25:1
 \end{aligned}$$

As against the standard of quick ratio of 1:1, the liquidity performance of the above company is satisfactory.

### Exercise 2 Inventory turnover Ratio

The following data is extracted from the financial statements of a firm dealing in fertilisers. The fertiliser business, in general, has an inventory ratio of 6 times.

Determine and interpret the following ratios:

- (a) Inventory turnover ratio

- (b) Average period of holding the stocks.

Sundry debtors	₹45,000
Closing stock	₹30,000
Sales	₹4,00,000
Sales returns	₹20,000
Stock as on 1.1.1999	₹40,000
Stock as on 31.12.1999	₹60,000

60% of the sales are credit sales.

### Solution

$$\begin{aligned} \text{Net sales} &= \text{Sales} - \text{Sales Returns} \\ &= ₹4,00,000 - ₹20,000 \\ &= ₹3,80,000 \end{aligned}$$

$$\begin{aligned} \text{Credit sales} &= 60\% \text{ of the sales} \\ &= (3,80,000 \times 0.6) \\ &= ₹2,28,000 \end{aligned}$$

$$\begin{aligned} \text{Inventory turnover ratio} &= (\text{Credit sales}/\text{Average stock}) \\ \text{Average stock} &= (\text{Opening stock} + \text{Closing stock})/2 \end{aligned}$$

$$\begin{aligned} \text{The stocks at the beginning and the end of the year are given above.} \\ \text{Average stock} &= (40,000 + 60,000)/2 \\ &= ₹50,000 \end{aligned}$$

$$\begin{aligned} \text{(a) Inventory turnover ratio} &= (2,28,000/50,000) \\ &= 4.56 \text{ times} \end{aligned}$$

Inventory turnover ratio of 4.56 is not satisfactory, as it is less than the industry average.

$$\begin{aligned} \text{(b) Average period of holding inventory} &= (365 \text{ days}/\text{Inventory turnover ratio}) \\ &= 365 \text{ days}/4.56 \\ &= 80.04 \text{ days} \end{aligned}$$

The average period of holding inventory is 80 days which is very high. As per the industry ITR, the average period is 61 days (365 days/6). The firm should identify what are the reasons obstructing its performance. The possible reasons could be lack of working capital, inability to collect its debts promptly or need for more advertisement, and so on.

**Exercise 3 Debtors and Creditors' turnover ratios**

Given the following data relating to firm X and firm Y in the hosiery business, calculate which firm is handling its debtors and creditors' position efficiently? Substantiate your answer.

	Firm X	Firm Y
Debtors (1.1.2017)	8,000	12,000
Debtors (31.12.2017)	16,000	14,000
Creditors (1.1.2017)	32,000	28,000
Sales (75% credit)	2,50,000	3,60,000
Purchases (60% credit)	1,50,000	2,25,000
Furniture and fixtures	25,000	35,000
Cash	5000	8000
Creditors (31.12.2017)	26,000	42,000

**Solution**

$$\text{Debtors' Turnover Ratio} = (\text{Credit sales}/\text{Average debtors})$$

From the given problem, credit sales is 75% of total sales.

Ratio	Firm X	Firm Y
Debtors Turnover Ratio		
= Credit sales/Average debtors		
Credit sales	75% of 2,50,000 = ₹1,87,500	75% of 3,60,000 = ₹2,70,000
Average debtors	(6000 + 18000)/2 = ₹12,000	(12,000 + 14,000)/2 = ₹13,000
= (Opening balance + Closing balance)/2		
Debtors Turnover Ratio	= 1,87,500/12,000 = 15.6 times	= (2,70,000/13,000) = 20.76 times
Average Debt collection Period	(365 days/DTR) = (365/15.625) = 23.36 days	(365 days/DTR) = (365/20.76) = 17.58 days

The debtors' turnover ratio of firm Y (20.76 times) is better than X (15.6 times). This indicates that the firm Y is collecting its average debtors 20.76 times which is higher than that of the firm Y.

The average debt collection period of Y is faster than 17.58 days whereas firm X is taking (23.36 days.)

**Creditors' Turnover Ratio**

Ratio	Firm X	Firm Y
Creditors'		
Turnover Ratio (CTR)		
Credit Purchases	Credit purchases/ Average creditors 60% of 1,50,000 = ₹90,000	Credit purchases/ Average creditors 60% of 2,25,000 = ₹1,35,000
Average Creditors	(32,000 + 26,000)/2 = ₹29,000	(28,000 + 42,000)/2 = ₹35,000
= (Opening balance + Closing balance)/2		
Creditors Turnover Ratio	= 90,000/29,000 = 3.1 times	= (1,35,000/35,000) = 3.8 times

From the above creditor turnover ratios, it is clear that X is slow in repaying his debts. In other words, he is taking time to repay the debts. Y is faster in repaying his debts; this has an advantage in itself. It builds a good reputation for the firm and Firm Y is likely to have full cooperation from the suppliers in times of crisis.

#### Exercise 4 Debt Equity Ratio

From the following extract of a balance sheet of a shipping company, calculate the debt-equity ratio and interest coverage ratio. Given that the debt-equity ratio is in the range of 20:1, how do you interpret this ratio?

- 10% 60,000 Preference shares of ₹100 each ₹60,00,000
- 1,00,000 Equity shares of ₹10 each 10,00,000
- 15% 50,000 Debentures of ₹100 each ₹50,00,000
- Net profit during the year was ₹1,00,00,000.

#### Solution

In this problem, the relevant ratios for debt equity ratio are debentures and equity shares only. Other information is not necessary.

$$\begin{aligned}
 \text{Debt-equity ratio} &= (\text{Debt}/\text{Equity}) \\
 &= \text{Debentures}/\text{Equity} \\
 &= (50,00,000/10,00,000) \\
 &= 5:1
 \end{aligned}$$

Debt-equity ratio of 5:1 means that for every one rupee of equity, there is a debt of ₹5. Normally, the standard is 1:1. In the light of the given debt-equity ratio of 20:1 for the shipping industry, the ratio of 5:1 is very good. In other words, there is no significant volume of debt for each rupee of equity.

While this is good for the equity shareholders, it has a disadvantage also. There is a possibility for the company to increase its profits by borrowing additional funds, which is called 'trading on equity'. If there is any need for additional funds, the company can safely borrow further. Even the financial institutions prefer to lend to such companies with debt-equity ratio.

#### Exercise 5 A Set of Ratios

Calculate the ratios of liquidity, activity, solvency and profitability from the following set of financial statements of MNO Co. Ltd.

**Profit and Loss Account  
for the year ended 30.6. 200X (in ₹)**

Sales	18,00,000	
Less: Cost of goods sold	<u>15,48,000</u>	2,52,000
Gross Profit		57,000
Less Operating expenses:		1,95,000
Net operating profit		9,000
Add: Non-operating income		2,04,000
Interest on government securities		27,000
Earnings before interest and taxes (EBIT)		1,77,000
Less: Interest		85,000
Net income before tax		92,000
Less Income Tax @ 50%		
Net income after tax		

## Balance Sheet as on 30.6.200X

(₹ in thousands)

<i>Liabilities</i>	₹	<i>Assets</i>	₹
Share capital:		Land and Buildings	4,40,000
10% preference shares	60,000	Plant and Machinery	2,35,000
Equity shares	3,00,000	Furniture and fixtures	1,40,000
15% Debentures	4,20,000	Motor vehicles	1,05,000
Reserves fund	2,40,000	Stock	60,000
Creditors	36,000	Sundry debtors	90,000
Bank overdraft	60,000	Short-term investments	75,000
Rent outstanding	6,000	Cash at bank	30,000
Provision for taxation	78,000	Cash in hand	25,000
	12,00,000		12,00,000

**Additional information**

1. Half of the net sales are credit sales.
2. Opening balance of debtors ₹60,000.
3. The average inventory turnover for the industry has been 20 times.
4. The period of credit allowed is 40 days.
5. The industry average percentage of net profit to sales is 12 per annum.
6. ROCE for the industry is 12–15% per annum.

**Solution****1. Liquidity ratios**

(a) Current ratio = Current assets/Current liabilities

In this problem, the following are the current assets:

Stock	60,000
Sundry debtors	90,000
Short-term investments	75,000
Cash at bank	30,000
Cash in hand	25,000
Total	2,80,000

The following are the current liabilities:

Creditors	36,000
Bank overdraft	60,000
Rent outstanding	6,000
Provision for Taxation	78,000
Total	1,80,000

Current ratio = 2,80,000/1,80,000 = 1.55:1

This is less than the standard of 2:1. The company cannot meet its short-term commitments with its current assets. Unless the company improves its liquidity position, it may be difficult to raise fresh loans.

(b) **Quick ratio** = Quick assets/current liabilities

$$\begin{aligned}\text{Quick assets} &= \text{Current assets} - \text{Closing stock} \\ &= 2,80,000 - 60,000 \\ &= 2,20,000\end{aligned}$$

$$\begin{aligned}\text{Quick ratio} &= 2,20,000 / 1,80,000 \\ &= 1.22 : 1\end{aligned}$$

This is more than the standard 1:1. This is hard measure of liquidity. This shows that the company can meet its short commitments with the funds available.

## 2. Activity ratios

(a) **Inventory turnover ratio**

Inventory turnover ratio = Cost of goods sold/Average inventory

Normally cost of goods sold particulars will contain the details of opening stock. In this problem, there is no mention about opening stock. Hence, we assume that the closing stock given in the balance sheet is the average stock.

Cost of goods sold (from P & L Account) ₹15,48,000

Average stock (Closing stock from balance sheet) ₹60,000

$$\begin{aligned}\text{Inventory turnover ratio} &= 15,48,000 / 60,000 \\ &= 25.8 \text{ times.}\end{aligned}$$

$$\begin{aligned}\text{Inventory holding period} &= 365 \text{ days/Inventory turnover ratio} \\ &= 365 \text{ days/25.8} \\ &= 14.14 \text{ days.}\end{aligned}$$

Given that the average inventory turnover ratio is 20 times for the industry, the performance can be stated as very good. This particular company is doing much better than the other firms in the same industry. The company is in a position to recycle its stock within 14 days.

(b) **Debtors turnover ratio**

Debtors turnover ratio = Credit sales/average debtors

It is given that half of the sales are credit sales

$$\begin{aligned}\text{In other words, credit sales are} &= 15,48,000 / 2 \\ &= ₹7,74,000\end{aligned}$$

$$\begin{aligned}\text{Average debtors} &= (\text{Opening balance of debtors} + \text{Closing balance of debtors}) / 2 \\ &= (60,000 + 90,000) / 2 \\ &= 75,000\end{aligned}$$

$$\begin{aligned}\text{Debtors turnover ratio} &= 7,74,000 / 75,000 \\ &= 10.32 \text{ times.}\end{aligned}$$

$$\begin{aligned}\text{Average collection period} &= 365 \text{ days/Debtors turnover ratio} \\ &= 365 / 10.32 \\ &= 35.36 \text{ days.}\end{aligned}$$

The company is taking 35 days to collect its debts on an average. Considering 40 days as period of credit allowed, the debt collection performance is excellent.

### 3. Solvency ratios

#### (a) Debt-equity ratio

Debt-Equity Ratio = Debt/Equity

There is only one item of Debentures worth ₹4,20,000. This is the debt or outsider's funds.

Equity funds are as given below:

Equity shares	3,00,000
Reserve Fund	2,40,000
Total insider's funds or Equity	5,40,000

$$\text{Debt equity ratio} = 4,20,000/5,40,000 \\ = 0.77:1$$

This means that there is not even one rupee worth debt for every rupee of equity. There is scope for the company to borrow further. The debt-equity ratio is good if it is less than 1:1.

#### Interest coverage ratio

The total commitment towards payment of fixed interest charges ₹63,000 (15 per cent of the debentures ₹4,20,000).

The net profit before interest and taxes is ₹2,04,000.

$$\text{Interest Coverage Ratio} = \text{Net profit before interest and taxes}/\text{Fixed interest charges} \\ = 2,04,000/63,000 \\ = 3.23 \text{ times.}$$

The higher the Interest coverage ratio, better it is. In this case, it is good that the net profits are 3.23 times higher than the fixed interest charges.

#### Ratio of proprietary funds to total assets

Ratio of Proprietary Funds to Total Assets = (Proprietary Funds/Total Assets) × 100

Proprietary funds:

10% preference shares	60,000
Equity shares	3,00,000
Reserves Fund	2,40,000
Total	6,00,000

Total Assets = 12,00,000

$$\text{Ratio of proprietary funds to total assets} = (6,00,000/12,00,000) \times 100 \\ = 50\%$$

The funds provided by the proprietors cover 50 percent of the total assets. The stake of the proprietors is quite significant. This can be further elaborated by the following two ratios:

#### Ratio of fixed assets to proprietors' funds

Ratio of Fixed assets to Proprietors' funds = (Fixed assets/Proprietors' funds) × 100

Fixed assets = 9,20,000; proprietors' funds = 6,00,000 (as shown above)

Fixed Assets	₹
Land and Buildings	4,40,000
Plant and Machinery	2,35,000

Furniture and fixtures	
Motor vehicles	1,40,000
Total	1,05,000
	9,20,000

Ratio of Fixed assets to Proprietors' funds =  $(920,000/600,000) \times 100 = 153\%$

When compared to the proprietors' investment, the fixed assets are substantial.

Ratio of Current Assets to Proprietors' Funds = (Current Assets/Proprietors' funds)  $\times 100$

The current assets are:

	₹
Stock	60,000
Sundry debtors	90,000
Short-term investments	75,000
Cash at bank	30,000
Cash in hand	25,000
Total	2,80,000

Ratio of current assets to proprietors' funds =  $(2,80,000/6,00,000) \times 100 = 46.66\%$

### Profitability ratios

Gross profit ratio = (Gross profit/sales)  $\times 100$

From Profit and Loss Account, we find Gross Profit and Sales are ₹2,52,000 and ₹18,00,000 respectively.

$$\begin{aligned} \text{Gross profit ratio} &= (2,52,000/18,00,000) \times 100 \\ &= 14\% \end{aligned}$$

Net profit ratio = (Net Profit/sales)  $\times 100$

From the Profit and Loss Account, net profit = ₹92,000; Sales ₹18,00,000  
 $= (92,000/18,00,000) \times 100$   
 $= 5.1\%$

Considering the industry average net profit of 12 percent, the performance of this company is not satisfactory. Cost of goods looks very high. There are no other expenses, which need close monitoring.

### Return on investment

$$\begin{aligned} \text{Return on investment} &= (\text{Net profits after taxes}/\text{Shareholders' funds}) \times 100 \\ &= (92,000/5,40,000) \times 100 \\ &= 17.03\% \end{aligned}$$

### Return on Capital Employed (ROCE)

Return on capital employed = (Net profit after Interest and taxes/Capital employed)  $\times 100$

Considering the total assets as 'capital employed', which is equal to ₹12,00,000

$$\text{ROCE} = (92,000/12,00,000) \times 100 = 7.6\%$$

It is given that the industry ROCE is in the range of 12–15%. In the light of this, the performance of the company is not satisfactory.

### Interpretation and evaluation of the above ratios

1. The present company has strong fixed assets base. Despite this, the profitability and liquidity positions are weak.
2. The ratios of inventory turnover, debtors' turnover, average holding period of inventory and debt collection period are very strong. But these have not helped to augment the profits.
3. Debt-equity ratio shows less than 1:1 ratio which means the company has some cushion to borrow further.
4. Overheads are normal, liquidity position is relatively satisfactory, piling up of stocks problem is not there, debtors are paying well, then what is the problem? Is it technology a problem? If so, these additional funds that can be borrowed can be used to modernise the equipment and reduce the cost of production.

### Example 6

#### Intra-firm Comparison (Evaluating the performance of the company over a given period)

The following are the selected financial ratios of Housing Development Financial Corporation (HDFC) Ltd. for the last five years.

How do you interpret these ratios?

<i>Financial ratios</i>	2016–17	2015–16	2014–15	2013–14
Debt-equity ratio	3:1	2.3:1	2:1	1.8:1
Gross profit ratio	25%	25%	28%	28%
Net profit ratio	19%	18%	20%	19%
Return on Investment (ROI) Ratio	55%	62%	66%	79%
Current ratio	12:1	12.2:1	13:1	14:1
Interest coverage ratio	1.35 times	1.35 times	1.41 times	1.42 times

The above ratios show a high degree of consistency in the financial performance in terms of solvency, profitability and liquidity as there are no wild fluctuations.

**Debt-equity Ratio** is the ratio of outsiders' funds to the insiders' funds. In this case, it has been constantly improving which shows that the company has just two or three times on an average outside debt to its equity.

**Gross Profit Ratio and Net Profit Ratio** indicate the profitability of the firm over a period of time. The profitability is marginally affected. The gross profit ratio has been consistent except during 2015–16 and 2016–17. There is marginal decline in the gross profit margin from (28% to 25%) during this period. The fall in the net profit ratio also during this period was marginal (20% to 18%). The difference between the gross profit ratio and net profit ratio shows the presence of overheads. Though the gross profit ratio has not increased, the net profit ratio has registered a marginal increase (from 18% to 19%) during this period. This means the overheads are controlled effectively.

**Current Ratio** is a measure of the liquidity of the business. In this case, it shows a continuous marginal decline which could mean that the volume of current assets is going down. As per the nature of business indication, the housing finance does not involve any liquid stocks and hence this does not imply any sign of

Table 13.2

## Ratios and Formulae at a Glance

Ratio	Formula
<b>1. Liquidity Ratios</b>	
(a) Current ratio (Standard 2:1)	Current assets/Current liabilities
(b) Quick ratio or Acid test ratio (Standard 1:1)	Quick Assets/Current liabilities where Quick assets = Current assets – (closing stock + Prepaid expenses)
<b>2. Activity Ratios</b>	
(a) Inventory turnover ratio <sup>φ</sup>	(Cost of goods sold/Average inventory)
(b) Debtors' turnover ratio <sup>φ</sup>	(Credit sales/Average debtors)
(c) Creditors' turnover ratio <sup>φ</sup>	(Credit purchases/Average creditors)
<b>3. Solvency Ratios</b>	
(a) Debt-Equity ratio (standard 1:1)	(Outsiders' funds/Insiders' funds)
(b) Interest coverage ratio <sup>φ</sup>	(EBIT/Fixed interest charges)
(c) Proprietors' funds to total assets ratio (0.5:1)	(Proprietors' funds/Total assets)
(i) Ratio of fixed assets to proprietors' funds (65%)	(Tangible fixed assets/proprietors' funds) × 100
(ii) Ratio of current assets to proprietors' funds (35%)	(Current assets/Proprietors' funds) × 100
<b>4. Profitability Ratios</b>	
(a) Gross profit Ratio <sup>φ</sup>	(Gross profit/Sales) × 100
(b) Net profit ratio <sup>φ</sup>	(Net profit/Sales) × 100
(c) Operating ratio <sup>♦</sup>	(Operating expenses/Net sales) × 100
(d) Return on investment (ROI) <sup>φ</sup>	(Net profit after taxes/Total investment)
(i) Return on assets <sup>†</sup>	(Net profit after taxes/Total tangible assets)
(ii) Return on capital employed <sup>φ</sup>	(Adjusted net profits/Capital employed)
(e) Earnings per share (EPS) <sup>φ</sup>	(Net profit after Taxes/No. of shares outstanding)
(f) Dividend yield <sup>φ</sup>	$\frac{\text{Nominal value of share}}{\text{Market price of the share}} \times \text{Dividend per share (\%)}$
(g) Price/earnings ratio (P/E ratio) <sup>φ</sup>	(Market price /Earnings per share)
(i) Earning power <sup>φ</sup>	Net profit margin × Investment turnover

<sup>φ</sup> Should be as high as possible

<sup>♦</sup> Should be as low as possible

alarm. Even the debtors who borrow the loans from the corporation mortgage their fixed assets as against the loans. In other words, all the debts of the corporation are secured.

**Return on Investment Ratio** (ROI) refers to the ratio between the net profits after taxes and the capital invested. This is showing a marginal decline in the returns over time. Between the years 2016–17 and 2017–18 and 2014–15 and 2015–16, there is significant fall in the ROI as much as 7 percent and 13 percent

respectively. There could be two reasons for this: this could be because of increased competition or slump in the housing finance activity. However, this rate of decline is marginal. Still the percentage of ROI significant.

**Interest Coverage Ratio** indicates the number of times the net profit is earned to the volume of fixed commitment charges. This ratio has been showing a marginal decline which shows fall in the net profits over a period of time. Net profit ratio and ROI ratios endorse this view.

## CHAPTER SUMMARY

- Ratio analysis is the process of determining and interpreting numerical relationships based on financial statements to understand the financial position of the firm. Ratio analysis is used to focus on financial issues such as liquidity, profitability and solvency of a given firm.
- Liquidity ratios can be classified into two types: (a) current ratio and (b) quick ratio.
- Activity ratios are of three types: (a) inventory turnover ratio, (b) debtors turnover ratio, (c) creditors turnover ratio.
- Capital structure ratios (leverage ratios) are: (a) Debt-equity ratio, (b) Interest coverage ratio, (c) Ratio of proprietors' funds to total assets. Ratio of proprietors' funds to total assets are further of two types: (i) Ratio of fixed assets to proprietors' funds and (ii) Ratio of current assets to proprietors' funds.
- Profitability ratios are: (a) Gross profit ratio, (b) Net profit ratio, (c) Operating ratio, (d) Return on Investment (ROI)—further of two types (i) Return on Capital Employed (ROCE) and (Ii) Return on Equity (ROE), (e) Earnings per Share (EPS), (f) Dividend yield, (g) Price/Earnings Ratio (P/E ratio), (h) Earning power.

## SELF-ASSESSMENT QUESTIONS

### I. Multiple Choice Questions

- Which would a business be most likely to use its solvency?
    - Gross profit ratio
    - Debtors collection period
    - Current ratio
    - Debt-equity ratio
  - Which of the following is useful to see if fixed assets are used efficiently in the business?
    - Gross profit ratio
    - Debtors collection period
    - Current ratio
    - Asset turnover ratio
  - A company's return on investment indicates its
    - Solvency
    - Stock turnover
    - Profitability
    - Debt collection
- Questions 4–6 are based on the following:

Text 1	Year to 31 March 2000	Year to 31 March 1999
Gross profit %	55%	40%
Current ratio	2.8:1	1.9:1
Overheads/Sales %	30%	22%

- Refer to Text 1. What could have caused the gross profit % to increase?
  - Increased sales volume
  - Reduced selling prices
  - Increased overheads
  - Reduced purchase prices
- Refer to Text 1. What could have caused the current ratio to increase?
  - Increased cash sales
  - Increased stock levels
  - Increased profitability
  - Increased fixed assets
- Refer to Text 1. The change in the overheads/sales % indicates that the business has
  - Increased overheads proportionately more than sales
  - Reduced overheads proportionately more than sales
  - Increased its trade credit period for debtors
  - Reduced its trade credit period for debtors

**II. Write Short Notes on the Following**

1. Current ratio
2. Debt-equity ratio
3. Operating ratio
4. EPS
5. Limitations of Ratio Analysis

**III. Essay-type Questions**

The current ratio of a company 3:1. Which of the following suggestions would improve the ratio, which would reduce it and which would not change it?

- (a) To pay a current liability
- (b) To sell a car for cash for little loss
- (c) To borrow money for interest
- (d) To purchase stocks for cash
- (e) To give a promissory note to a creditor to whom money was owed

**IV. Answer the Following**

1. From the following balance sheet of ABC Co. Ltd., calculate the following ratios: (a) Current ratio (b) Quick ratio (c) Debt-equity ratio. Interpret the ratios.

Balance Sheet of ABC Co. Ltd.  
as on 31.12.200X

(in '000')

<i>Liabilities</i>	₹	<i>Assets</i>	₹
Equity share capital	1500	Plant and machinery	975
Debentures	400	Stock	550
Creditors	200	Debtors	550
Outstanding expenses	100	Cash in hand	375
Profit and loss Account	100	Prepaid expenses	50
Bank loan (Long-term)	200		
	2500		2500

Ans. Current ratio = 5.08:1; Quick ratio 3.2:1; Debt equity ratio = 0.375

2. (a) A firm sold goods worth ₹1,00,000 and its gross profit is 20% of sales value. The inventory at the beginning of the year was ₹32,000 and at end of the year was 14,000. Compute inventory turnover ratio and also the inventory holding period.
  - (b) A firm's sales during the year was ₹400,000 of which 60% were on credit basis. The balance of debtors at the beginning and end of the year were 25,000 and 15,000 respectively. Calculate debtors' turnover ratio of the firm. The industry shows a debtor's turnover ratio of 10 times.
  - (c) The earnings before interest and taxes (EBIT) of a company is ₹5,60,000. Its fixed commitments include payment of 10% on 7000 debentures of ₹100 each. Calculate Interest coverage ratio.
- Also interpret the ratios.

Ans. (a) Inventory turnover ratio 3.47 times; Inventory holding period 105 days

- (b) Debtors turnover ratio = 20 times
- (c) Interest coverage ratio = 8 times

3. (a) Suppose the net sales is 50,000 for a firm and cost of goods sold is ₹20,000. Calculate gross profit ratio.
- (b) Given that the number of shares is 10,000 and the net profit after taxes for a given accounting period is ₹4,50,000. Calculate EPS.
- (c) Given that current market price of a share ₹300; face value of the share is ₹100; percentage of dividend declared is 20%. Calculate yield.
- (d) Given that market price of a share is ₹340 and EPS is 10. Calculate P/E ratio.

- Ans. (a) gross profit ratio = 60%  
 (b) EPS = ₹45  
 (c) 6.6%  
 (d) 3.4 times

4. The following is an extract of a balance sheet of a company during the last year. Compute current ratio and quick ratio. Also interpret the ratios.

Land and buildings	₹1,50,000
Plant and machinery	₹3,00,000
Furniture and fixtures	₹1,25,000
Closing stock	₹25,000
Sundry debtors	₹62,500
Wages prepaid	₹7,500
Sundry creditors	₹18,000
Rent outstanding	₹12,000

Ans. Current ratio = 3.1:1; Quick ratio = 2.3:1

5. The following data is extracted from the financial statements of a firm dealing in fertilisers. The fertiliser business, in general, has an inventory ratio of six times.

Determine and interpret the following ratios:

- (a) Inventory turnover ratio  
 (b) Average period of holding the stocks.

Sales	₹800,000
Sales returns	₹90,000
Stock as on 1.1.2017	₹1,40,000
Stock as on 31.12.2017	₹80,000

Ans. (a) Inventory turnover ratio 6.45 times

(b) Average period of holding stocks 56.5 days

6. Given the following data relating to Firm A and Firm B in the hotel business, calculate which firm is handling its debtors and creditors' position efficiently? Substantiate your answer.

	<i>Firm A</i>	<i>Firm B</i>
Debtors (1.1.2017)	18,000	32,000
Debtors (31.12.2017)	26,000	24,000
Creditors (1.1.2017)	12,000	18,000
Sales (60% credit)	370,000	480,000
Purchases (50% credit)	180,000	215,000
Furniture and fixtures	45,000	65,000
Cash	25,000	18,000
Creditors (31.12.2017)	32,000	22,000

Ans.

<i>Ratio</i>	<i>Firm A</i>	<i>Firm B</i>
DTR	10.09 times	10.28 times
Debt collection period	36.17 days	35.5 days
Creditors' turnover ratio	4.09 times	5.625 times
Credit payment period	89 days	64 days

### Answers to Question I

1. (d)    2. (d)    3. (c)    4. (d)    5. (b)    6. (a)

### Answers to Question III

- (a) improves    (b) improve    (c) improves    (d) no change    (e) no change