# UNIT 9

# RATIO ANALYSIS

## Contents



## Points to recall

The following points are to be recalled before learning ratio analysis:

- Statement of profit and loss
- Balance sheet
- Gross profit
- Net profit
- Cost of goods sold

## Learning objectives

To enable the students to

- Understand the meaning and classification of accounting ratios
- Calculate various ratios

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## Key terms to know

- Ratio
- Ratio analysis
- Liquidity ratios
- Long term solvency ratios
- Profitability ratios
- Turnover ratios
- Shareholders' funds

## 9.1 Introduction

**Student activity 9.1**

**Read the following statement.**

A sole trader earns ₹ 1,00,000 per annum from business.

- Is this a high profit? State the reasons.
- Do you think the above information is enough to say that it is high profit or not?
- What more information, do you need to decide that the trader's business' performance is good?

Think on the above points and discuss in the class.

The financial status and operational performance of business entities can be assessed through financial analysis. Analysis of financial statements involves study of items in the financial statements and making a logical conclusion. There are various tools available for financial analysis such as common size statement, comparative statement, ratio analysis, cash flow analysis, etc. Ratio analysis is one of the important tools of financial analysis. Ratio analysis involves computation of various ratios for analysing the financial statements. It is the most important and powerful tool for measuring performance of a business enterprise.

### 9.2. Meaning of accounting ratios

Ratio is a mathematical expression of relationship between two related or interdependent items. It is the numerical or quantitative relationship between two items. It is calculated by dividing one item by the other related item. When ratios are calculated on the basis of accounting information, these are called 'accounting ratios'.

Accounting ratios can be expressed in any of the following forms:

(i) **Pure**: It is expressed as a quotient. Example: 2 or 2:1.

(ii) **Percentage**: It is expressed in percentage. Example: 25%.

(iii) **Times**: It is expressed as certain number of times of a particular figure. Example: 4 times.

### 9.3. Meaning and definition of ratio analysis

Ratio analysis is a tool which involves analysing the financial statements by calculating various ratios. It is a tool of financial statement analysis, in which, inferences are drawn based on the computation and analysis of different ratios.

According to Myers, "Ratio analysis is a study of relationship among various financial factors in a business".

## 9.4. Objectives of ratio analysis

Following are the objectives of ratio analysis:

(i) To simplify accounting figures

(ii) To facilitate analysis of financial statements

(iii) To analyse the operational efficiency of a business

(iv) To help in budgeting and forecasting

(v) To facilitate intra firm and inter firm comparison of performance

## 9.5. Classification of ratios

Ratios may be classified in the following two ways:

(i) Traditional classification

(ii) Functional classification

### 9.5.1. Traditional classification

Traditional classification of ratios is done on the basis of the financial statements from which the ratios are calculated. Under the traditional classification, the ratios are classified as: (i) Balance sheet ratios, (ii) Income statement ratios and (iii) Inter-statement ratios.

Figure 9.1 shows some of the examples of ratios as per traditional classification:

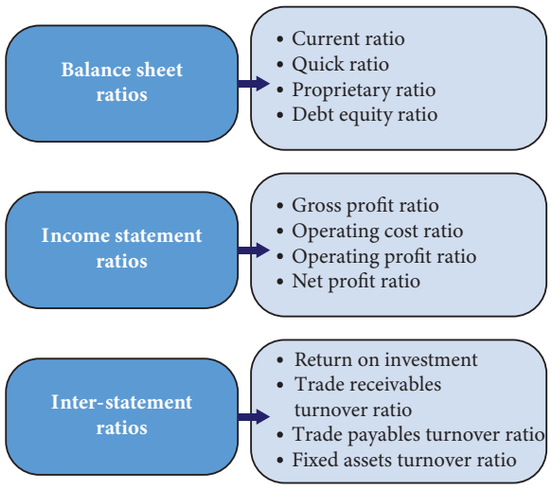


Figure 9.1 Traditional classification of ratios

**(i) Balance sheet ratio**

If both items in a ratio are from balance sheet, it is classified as balance sheet ratio.

**(ii) Income statement ratio**

If the two items in a ratio are from income statement, it is classified as income statement ratio.

**(iii) Inter-statement ratio**

If a ratio is computed with one item from income statement and another item from balance sheet, it is called inter-statement ratio.

### 9.5.2. Functional classification

Functional classification of ratios is based on the purpose for which ratios are computed and it is the most commonly used classification. Under the functional classification, the ratios are classified as follows:

(i) Liquidity ratios

(ii) Long term solvency ratios

(iii) Turnover ratios

(iv) Profitability ratios

Figure 9.2 shows some of the examples of ratios as per functional classification:

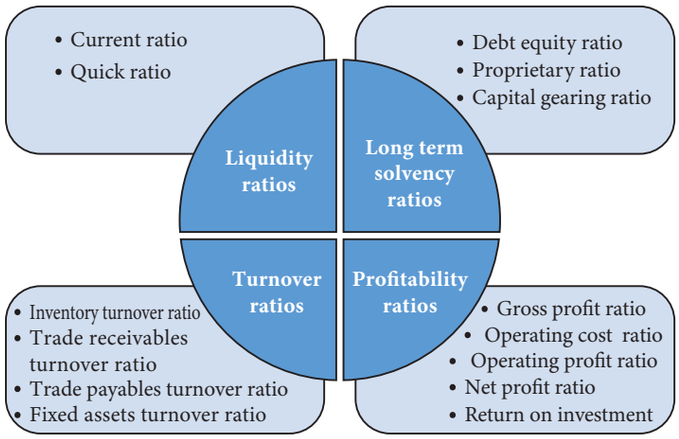


**Figure 9.2 Functional classification of ratios**

## 9.6 Computation of ratios

### 9.6.1 Liquidity ratios

Liquidity means capability of being converted into cash with ease. Liquidity ratios help to assess the ability of a business concern to meet its short term financial obligations. Short term assets (current assets) are more liquid as compared to long term assets (fixed assets). Liquidity ratios are also called as short term solvency ratios.

Liquidity ratios include: (i) Current ratio and (ii) Quick ratio.

#### (i) Current ratio

Current ratio gives the proportion of current assets to current liabilities of a business concern. It is computed by dividing current assets by current liabilities. Current ratio indicates the ability of an entity to meet its current liabilities as and when they are due for payment. It is calculated as follows:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

| Current assets | Current liabilities |
|---|---|
| Current assets are those assets that are either in the form of cash or cash equivalents or can be converted into cash or cash equivalents in a short time, that is, within a year or within the period of an operating cycle. | Current liabilities are those liabilities which are repayable in short time, that is, within a year or within the period of an operating cycle. |
| **Current assets include**<br>(i) Current investments<br>(ii) Inventories (stock)<br>(iii) Trade receivables (Bills receivable and sundry debtors less provision for doubtful debts)<br>(iv) Cash and cash equivalents (Cash in hand, cash at bank, etc.)<br>(v) Short-term loans and advances given<br>(vi) Other current assets (Prepaid expenses, accrued income, etc) | **Current liabilities include**<br>(i) Short-term borrowings<br>(ii) Trade payables (Bills payable and sundry creditors)<br>(iii) Other current liabilities (Expenses payable, income received in advance, etc.)<br>(iv) Short-term provisions |

Higher the current ratio, the better is the liquidity position, as the firm will be in a better position to pay its current liabilities. However, a much higher ratio may indicate inefficient investment policies of the management.


Operating cycle is the time between the acquisition of an asset for processing and its realisation into cash and cash equivalents.

## Illustration 1

Calculate current ratio from the following information:

| Particulars | ₹ | Particulars | ₹ |
|---|---|---|---|
| Current investments | 80,000 | Trade creditors | 1,60,000 |
| Inventories | 1,60,000 | Bills payable | 1,00,000 |
| Trade receivables | 4,00,000 | Expenses payable | 1,40,000 |
| Cash and cash equivalents | 1,20,000 | | |
| Prepaid expenses | 40,000 | | |

### Solution

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{8,00,000}{4,00,000} = 2:1$$

Current assets = Current investments + Inventories + Trade receivables + Cash and cash equivalents + Prepaid expenses
= 80,000 + 1,60,000 + 4,00,000 + 1,20,000 + 40,000 = ₹ 8,00,000

Current liabilities = Trade creditors +Bills payable + Expenses payable
= 1,60,000 + 1,00,000 + 1,40,000 = ₹ 4,00,000

### (ii) Quick ratio

Quick ratio gives the proportion of quick assets to current liabilities. It indicates whether the business concern is in a position to pay its current liabilities as and when they become due, out of its quick assets. Quick assets are current assets excluding inventories and prepaid expenses. It is otherwise called liquid ratio or acid test ratio. It is calculated as follows:

$$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

Quick assets = Current assets – Inventories – Prepaid expenses

Higher the quick ratio, better is the short-term financial position of an enterprise.


Inventory is not considered as liquid asset because it takes some time to sell the inventory and to convert into cash. Similarly, prepaid expenses are not considered as liquid assets because these are expenses paid in advance. These cannot be converted into cash and only the benefit can be derived and are thus excluded from liquid assets.


Normally, 2:1 is considered as ideal current ratio; 1:1 is considered as ideal quick ratio. However, it is subject to change from business to business and industry to industry.

## Illustration 2

Calculate quick ratio of Ananth Constructions Ltd from the information given below.

| Particulars | ₹ |
|---|---|
| Total current liabilities | 1,00,000 |
| Total current assets | 2,50,000 |
| Inventories | 50,000 |
| Prepaid expenses | 15,000 |

### Solution

$$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{1,85,000}{1,00,000} = 1.85:1$$

Quick assets = Current assets – Inventories – Prepaid expenses
= 2,50,000 – 50,000 – 15,000
= ₹ 1,85,000

## Illustration 3

Following is the balance sheet of Magesh Ltd. as on 31st March, 2019:

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| 1. Shareholders' funds | |
| Equity share capital | 2,00,000 |
| 2. Non-current liabilities | |
| Long term borrowings | 50,000 |
| 3. Current liabilities | |
| (a) Short-term borrowings | 17,000 |
| (b) Trade payables | 25,000 |
| (c) Other current liabilities | |
| Expenses payable | 3,000 |
| (d) Short-term provisions | 5,000 |
| **Total** | **3,00,000** |

| II ASSETS | ₹ |
|---|---|
| 1. Non-current assets | |
| Fixed assets | |
| (a) Tangible assets | 1,50,000 |
| 2. Current assets | |
| (a) Inventories | 45,000 |
| (b) Trade receivables | 70,000 |
| (c) Cash and cash equivalents | 30,000 |
| (d) Other current assets | |
| Prepaid expenses | 5,000 |
| **Total** | **3,00,000** |

Calculate: (i) Current ratio (ii) Quick ratio

**Solution**

$$\text{(i) Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{1,50,000}{50,000} = 3:1$$

Current assets = Inventories + Trade receivables + Cash and cash equivalents + Prepaid expenses

= 45,000 + 70,000 + 30,000 + 5,000 = ₹ 1,50,000

Current liabilities = Short term borrowings + Trade payables + Expenses payable + Short term provisions

= 17,000 + 25,000 + 3,000 + 5,000 = ₹ 50,000

$$\text{(ii) Quick ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{1,00,000}{50,000} = 2:1$$

Quick assets = Total current assets − Inventories − Prepaid expenses

= 1,50,000 − 45,000 − 5,000 = ₹ 1,00,000

**Student activity 9.2**

Collect data, from five similar sole trading businesses, on current assets and current liabilities as on a particular date. Calculate liquidity ratios and compare their liquidity position.

### 9.6.2. Long term solvency ratios

Long term solvency means the firm's ability to meet its liabilities in the long run. Long term solvency ratios help to determine the ability of the business to repay its debts in the long run. The following ratios are normally computed for evaluating long term solvency of the business:

(i) Debt equity ratio
(ii) Proprietary ratio
(iii) Capital gearing ratio

### (i) Debt equity ratio

Debt equity ratio is calculated to assess the long term solvency position of a business concern. Debt equity ratio expresses the relationship between long term debt and shareholders' funds. It is computed as follows:

$$\text{Debt equity ratio} = \frac{\text{Long term debt}}{\text{Shareholders' funds}}$$

| Long term debt | Shareholders' funds |
|---|---|
| Long term debt includes debentures, bonds, long term loans and other long term borrowings. | Shareholders' funds = Equity share capital + Preference share capital + Reserves and surplus |


- Debit balance in the statement of profit and loss is shown as a negative figure under the head Reserves and surplus.
- Shareholders' funds can also be computed as follows:

Shareholders' funds = Total assets – Non current liabilities – Current liabilities

In general, lower the debt equity ratio, lower is the risk to the long-term lenders. A high ratio indicates high risk as it may be difficult for the business concern to meet the obligation to outsiders.


In general, a debt equity ratio of 1:1 may be considered satisfactory. However, it is subject to change from business to business and industry to industry.

## Illustration 4

From the following information, calculate debt equity ratio:

**Balance sheet (Extract) as on 31.03.2018**

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| Equity share capital | 1,00,000 |
| (b) Reserves and surplus | 60,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings (Debentures) | 80,000 |
| **3. Current liabilities** | |
| (a) Trade payables | 50,000 |
| (b) Other current liabilities | |
| Outstanding expenses | 30,000 |
| **Total** | **3,20,000** |

### Solution

$$\text{Debt equity ratio} = \frac{\text{Long term debt}}{\text{Shareholders' funds}} = \frac{80{,}000}{1{,}60{,}000} = 0.5:1$$

Long term debt = Debentures = ₹ 80,000
Shareholders' funds = Equity share capital + Reserves and surplus
= 1,00,000 + 60,000 = ₹ 1,60,000

### (ii) Proprietary ratio

Proprietary ratio gives the proportion of shareholders' funds to total assets. Proprietary ratio shows the extent to which the total assets have been financed by the shareholders' funds. It is calculated as follows:

$$\text{Proprietary ratio} = \frac{\text{Shareholders' funds}}{\text{Total assets}}$$

Higher the proprietary ratio, greater is the satisfaction for lenders and creditors, as the firm is less dependent on external sources of finance.

## Illustration 5

From the following Balance Sheet of Pioneer Ltd. calculate proprietary ratio:

**Balance sheet of Pioneer Ltd. as on 31.3.2019**

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| (i) Equity share capital | 1,00,000 |
| (ii) Preference share capital | 75,000 |
| (b) Reserves and surplus | 25,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings | - |
| **3. Current liabilities** | |
| Trade payables | 2,00,000 |
| **Total** | **4,00,000** |
| **II ASSETS** | |
| **1. Non-current assets** | |
| (a) Fixed assets | 2,75,000 |
| (b) Non-current investments | 50,000 |
| **2. Current assets** | |
| Cash and Cash equivalents | 75,000 |
| **Total** | **4,00,000** |

### Solution

$$\text{Proprietary ratio} = \frac{\text{Shareholders' funds}}{\text{Total assets}} = \frac{2{,}00{,}000}{4{,}00{,}000} = 0.5:1$$

Shareholders' funds = Equity share capital + Preference share capital + Reserves and surplus
= 1,00,000 + 75,000 + 25,000
= ₹ 2,00,000

### (iii) Capital gearing ratio

Capital gearing ratio is the proportion of fixed income bearing funds to equity shareholders' funds. Fixed income bearing funds include fixed interest and fixed dividend bearing funds. It is calculated as follows:

$$\text{Capital gearing ratio} = \frac{\text{Funds bearing fixed interest and fixed dividend}}{\text{Equity shareholders' funds}}$$

| Funds bearing fixed interest or fixed dividend | Equity shareholders' funds |
|---|---|
| Preference share capital<br>Debentures<br>Bonds<br>Long term borrowings carrying fixed interest | Equity shareholders' funds<br>= Equity share capital + Reserves and surplus |

Capital gearing ratio is a measure of long term solvency as well as capital structure. When the capital gearing ratio is greater than one, the firm is said to be high geared.

### Illustration 6

From the following information calculate capital gearing ratio:

**Balance Sheet (Extract) as on 31.03.2018**

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| Equity share capital | 2,00,000 |
| 6% Preference share capital | 1,00,000 |
| (b) Reserves and surplus | |
| General reserve | 1,25,000 |
| Surplus | 75,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings (8% Debentures) | 2,00,000 |
| **3. Current liabilities** | |
| Trade payables | 1,50,000 |
| Provision for tax | 50,000 |
| **Total** | **9,00,000** |

$$\text{Capital gearing ratio} = \frac{\text{Funds bearing fixed interest and fixed dividend}}{\text{Equity shareholders' funds}}$$

$$= \frac{3,00,000}{4,00,000} = 0.75:1$$

Funds bearing fixed interest and dividend = 6% Preference share capital + 8% Debentures
= 1,00,000 + 2,00,000 = ₹ 3,00,000

Equity shareholder's funds = Equity share capital + General reserve + Surplus
= 2,00,000 + 1,25,000 + 75,000 = ₹ 4,00,000

## Illustration 7

From the following Balance Sheet of Arunan Ltd. as on 31.03.2019 calculate
(i) Debt-equity ratio (ii) Proprietary ratio and (iii) Capital gearing ratio.

**Balance Sheet of Arunan Ltd. as on 31.03.2019**

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| Equity share capital | 1,50,000 |
| 8% Preference share capital | 2,00,000 |
| (b) Reserves and surplus | 1,50,000 |
| **2. Non current liabilities** | |
| Long term borrowings (9% Debentures) | 4,00,000 |
| **3. Current liabilities** | |
| Short-term borrowings from banks | 25,000 |
| Trade payables | 75,000 |
| **Total** | **10,00,000** |
| **II ASSETS** | |
| **1. Non-current assets** | |
| Fixed assets | 7,50,000 |
| **2. Current assets** | |
| (a) Inventories | 1,20,000 |
| (b) Trade receivables | 1,00,000 |
| (c) Cash and cash equivalents | 27,500 |
| (d) Other current assets | |
| Expenses paid in advance | 2,500 |
| **Total** | **10,00,000** |

## Solution

(i) Debt equity ratio $= \frac{\text{Long term debt}}{\text{Shareholders' funds}} = \frac{4,00,000}{5,00,000} = 0.8:1$

Long term debt = 9% Debentures = ₹ 4,00,000

Shareholders' funds = Equity share capital + Preference share capital + Reserves and surplus
= 1,50,000 + 2,00,000 + 1,50,000 = ₹ 5,00,000

(ii) Proprietary ratio $= \frac{\text{Shareholders' funds}}{\text{Total assets}} = \frac{5,00,000}{10,00,000} = 0.5:1$

(iii) Capital gearing ratio $= \frac{\text{Funds bearing fixed interest and dividend}}{\text{Equity Shareholders' funds}} = \frac{6,00,000}{3,00,000} = 2:1$

Funds bearing fixed interest or dividend = 8% Preference share capital + 9% Debentures
= 2,00,000 + 4,00,000 = ₹ 6,00,000

Equity shareholders' funds = Equity share capital + Reserves and surplus
= 1,50,000 + 1,50,000 = ₹ 3,00,000

### 9.6.3. Turnover ratios

Turnover ratios show how efficiently assets or other items have been used to generate revenue from operations. They are also called as activity ratios or efficiency ratios. They show the speed of movement of various items. They are expressed as number of times in relation to the item compared.

The important turnover ratios are:

(i) Inventory turnover ratio
(ii) Trade receivables turnover ratio
(iii) Trade payables turnover ratio
(iv) Fixed assets turnover ratio

### (i) Inventory turnover ratio

It indicates the number of times inventory is turned over to make revenue from operations (sales) during a particular accounting period. It is a comparison of cost of revenue from operations (cost of goods sold) with average amount of inventory during a given period. It is calculated as under:

$$\text{Inventory turnover ratio} = \frac{\text{Cost of revenue from operations}}{\text{Average inventory}}$$

Cost of revenue from operations = Purchases of stock in trade + Changes in inventories of finished goods + Direct expenses

(or)

= Revenue from operations – Gross profit

**Tutorial note**

Revenue from operations is the net sales.

Changes in inventory = Opening inventory – Closing inventory

Direct expenses = Wages + Carriage inwards + Freight inwards + Dock charges + Octroi + Import duty + Coal, gas, fuel and power + Other direct expenses

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

Cost of revenue from operations is taken because the inventory is always valued at cost except when net realisable value is lower than cost, it is valued at net realisable value. Greater the inventory turnover ratio, greater is the efficiency in the movement of stock. However, high inventory turnover ratio may also be due to insufficient inventory, buying in small quantities, etc. Similarly, a low inventory turnover ratio may be due to inclusion of obsolete items in inventory, etc. Hence, inventory turnover ratio must be analysed together with the related items.

### Tutorial note

In the absence of opening inventory, closing inventory can be taken instead of average inventory.

### Inventory conversion period

Inventory conversion period is the time taken to sell the inventory. A shorter inventory conversion period indicates more efficiency in the management of inventory. It is computed as follows:

$$\text{Inventory conversion period (in days)} = \frac{\text{Number of days in a year}}{\text{Inventory turnover ratio}}$$

$$\text{Inventory conversion period (in months)} = \frac{\text{Number of months in a year}}{\text{Inventory turnover ratio}}$$

## Illustration 8

From the given information calculate the inventory turnover ratio and inventory conversion period (in months) of Sania Ltd.

| Particulars | ₹ |
|---|---|
| Revenue from operations | 1,90,000 |
| Inventory at the beginning of the year | 40,000 |
| Inventory at the end of the year | 20,000 |
| Purchases made during the year | 90,000 |
| Carriage inwards | 10,000 |

### Solution

$$\text{Inventory turnover ratio} = \frac{\text{Cost of revenue from operations}}{\text{Average inventory}} = \frac{1,20,000}{30,000} = 4 \text{ times}$$

Cost of revenue from operations

= Opening inventory + Net Purchases + Direct expenses (carriage inwards) – Closing inventory

= 40,000 + 90,000 + 10,000 – 20,000

= ₹ 1,20,000

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

$$= \frac{40,000 + 20,000}{2} = ₹\ 30,000$$

$$\text{Inventory conversion period (in months)} = \frac{\text{Number of months in a year}}{\text{Inventory turnover ratio}} = \frac{12}{4} = 3 \text{ months}$$

### (ii) Trade receivables turnover ratio

Trade receivables turnover ratio is the comparison of credit revenue from operations with average trade receivables during an accounting period. It gives the velocity of collection of cash from trade receivables. It is calculated as follows:

$$\text{Trade receivables turnover ratio} = \frac{\text{Credit revenue from operations}}{\text{Average trade receivables}}$$

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

Trade receivables = Trade debtors + Bills receivable

Credit revenue from operations (net credit sales) is taken for trade receivables turnover ratio as trade receivables arise only from credit sales. Greater the trade receivables turnover ratio, greater is the efficiency of management in collection of receivables.

#### Tutorial note

In the absence of opening trade receivables, closing trade receivables can be taken instead of average trade receivables to calculate the ratio.

#### Debt collection period

Debt collection period is the average time taken to collect the amount due from trade receivables. Lesser the debt collection period, greater is the efficiency of management in collection of cash from trade receivables. It is calculated as follows:

$$\text{Debt collection period (in days)} = \frac{\text{Number of days in a year}}{\text{Trade receivables turnover ratio}}$$

$$\text{Debt collection period (in months)} = \frac{\text{Number of months in a year}}{\text{Trade receivables turnover ratio}}$$

### Illustration 9

The credit revenue from operations of Harini Ltd. amounted to ₹ 9,60,000. Its debtors and bills receivable at the end of the accounting period amounted to ₹ 1,00,000 and ₹ 60,000 respectively. Calculate trade receivable turnover ratio and also collection period in months.

#### Solution

$$\text{Trade receivables turnover ratio} = \frac{\text{Credit revenue from operations}}{\text{Average trade receivables}} = \frac{9,60,000}{1,60,000} = 6 \text{ times.}$$

Trade receivables = Debtors + Bills receivable = 1,00,000 + 60,000 = ₹ 1,60,000

#### Tutorial note

Closing trade receivables are taken instead of average trade receivables as the opening trade receivables are not given.

$$\text{Debt collection period} = \frac{\text{Number of months in a year}}{\text{Trade receivables turnover ratio}} = \frac{12}{6} = 2 \text{ months}$$

### (iii) Trade payables turnover ratio

Trade payables turnover ratio is the comparison of net credit purchases with average trade paybles during an accounting period. It gives the velocity of payment of cash towards trade payables. It is calculated as follows:

$$\text{Trade payables turnover ratio} = \frac{\text{Net credit purchases}}{\text{Average trade payables}}$$

$$\text{Net credit purchases} = \text{Total credit purchases} - \text{Purchases returns}$$

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

$$\text{Trade payables} = \text{Trade creditors} + \text{Bills payable}$$

Greater the trade payable turnover ratio, better is the efficiency of the management in managing trade payable as it indicates that amount due to suppliers are settled quicker.

#### Tutorial note

In the absence of opening trade payables, closing trade payables can be taken instead of average trade payables.

#### Credit payment period

It is the average time taken by the business for payment of accounts payable. Lesser the credit payment period, greater is the efficiency of the management in managing accounts payable as it indicates quicker settlement of trade payables. It is calculated as follows:

$$\text{Credit payment period (in days)} = \frac{\text{Number of days in a year}}{\text{Trade payables turnover ratio}}$$

$$\text{Credit payment period (in months)} = \frac{\text{Number of months in a year}}{\text{Trade payables turnover ratio}}$$

### Illustration 10

From the following figures obtained from Kalpana Ltd, calculate the trade payables turnover ratio and credit payment period (in days).

| Particulars | ₹ |
|---|---|
| Credit purchases during 2018 – 2019 | 1,00,000 |
| Trade creditors as on 1.4.2018 | 20,000 |
| Trade creditors as on 31.3.2019 | 10,000 |
| Bills payable as on 1.4.2018 | 4,000 |
| Bills payable as on 31.3.2019 | 6,000 |

**Solution**

$$\text{Trade payables turnover ratio} = \frac{\text{Net credit purchases}}{\text{Average trade payables}} = \frac{1,00,000}{20,000} = 5 \text{ times}$$

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

$$= \frac{(20,000 + 4,000) + (10,000 + 6,000)}{2} = \frac{40,000}{2} = ₹\ 20,000$$

$$\text{payment period (in days)} = \frac{\text{Number of days in a year}}{\text{Trade payables turnover ratio}} = \frac{365}{5} = 73 \text{ days.}$$

### (iv) Fixed assets turnover ratio

Fixed assets turnover ratio gives the number of times the fixed assets are turned over during the year in relation to the revenue from operations. This ratio indicates the efficiency of utilisation of fixed assets.

$$\text{Fixed assets turnover ratio} = \frac{\text{Revenue from operations}}{\text{Average fixed assets}}$$

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

Greater the fixed assets turnover ratio better is the efficiency of management in utilisation of fixed assets.

**Tutorial note**

In the absence of opening fixed assets, closing fixed assets can be taken instead of average fixed assets.


Fixed assets turnover ratio can also be calculated by substituting cost of revenue from operations instead of revenue from operations.

### Illustration 11

From the following information of Ashika Ltd., calculate fixed assets turnover ratio:

(i) Revenue from operations during the year were ₹ 60,00,000.

(ii) Fixed assets at the end of the year was ₹ 6,00,000.

**Solution**

$$\text{Fixed assets turnover ratio} = \frac{\text{Revenue from operations}}{\text{Average fixed assets}} = \frac{60,00,000}{6,00,000} = 10 \text{ times}$$

**Tutorial note**

As opening fixed assets are not given, fixed assets at the end are taken instead of average fixed assets.

## Illustration 12

Calculate (i) Inventory turnover ratio (ii) Trade receivable turnover ratio (iii) Trade payable turnover ratio and (iv) Fixed assets turnover ratio from the following information obtained from Delphi Ltd.

| Particulars | As on 31st March, 2018 ₹ | As on 31st March, 2019 ₹ |
|---|---|---|
| Inventory | 1,40,000 | 1,00,000 |
| Trade receivables | 80,000 | 60,000 |
| Trade payables | 40,000 | 50,000 |
| Fixed assets | 5,50,000 | 5,00,000 |

Additional information:

(i) Revenue from operations for the year ₹ 10,50,000

(ii) Purchases for the year ₹ 4,50,000

(iii) Cost of revenue from operations ₹ 6,00,000.

Assume that sales and purchases are for credit.

### Solution

$$\text{(i) Inventory turnover ratio} = \frac{\text{Cost of revenue from operations}}{\text{Average inventory}} = \frac{6,00,000}{1,20,000} = 5 \text{ times}$$

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

$$= \frac{1,40,000 + 1,00,000}{2} = \frac{2,40,000}{2} = ₹\ 1,20,000$$

$$\text{(ii) Trade receivables turnover ratio} = \frac{\text{Credit revenue from operations}}{\text{Average trade receivables}}$$

$$= \frac{10,50,000}{70,000} = 15 \text{ times}$$

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

$$= \frac{80,000 + 60,000}{2} = \frac{1,40,000}{2} = ₹\ 70,000$$

$$\text{(iii) Trade payables turnover ratio} = \frac{\text{Net credit purchases}}{\text{Average trade payables}} = \frac{4,50,000}{45,000} = 10 \text{ times}$$

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

$$= \frac{40,000 + 50,000}{2} = \frac{90,000}{2} = ₹\ 45,000$$

$$\text{(iv) Fixed assets turnover ratio} = \frac{\text{Revenue from operations}}{\text{Average fixed assets}} = \frac{10,50,000}{5,25,000} = 2 \text{ times}$$

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

$$= \frac{5,50,000 + 5,00,000}{2} = \frac{10,50,000}{2} = ₹\ 5,25,000$$

### 9.6.4. Profitability ratios

Profitability ratios help to assess the profitability of a business concern. These ratios also help to analyse the earning capacity of the business in terms of utilisation of resources employed in the business. Generally these ratios are expressed as a percentage.

The profitability ratios commonly used are

(i) Gross profit ratio
(ii) Operating cost ratio
(iii) Operating profit ratio
(iv) Net profit ratio
(v) Return on investment

### (i) Gross profit ratio

Gross profit ratio is the proportion of gross profit to net revenue from operations. Gross profit ratio shows the margin of profit available out of revenue from operations. It is computed as below:

$$\text{Gross profit ratio} = \frac{\text{Gross profit}}{\text{Revenue from operations}} \times 100$$

Gross profit = Revenue from operations – Cost of revenue from operations
A higher gross profit ratio indicates high profitability. It should be sufficiently high to provide for indirect expenses to be paid by a business.

### Illustration 13

Calculate gross profit ratio from the following:
Revenue from operations ₹ 1,00,000, Cost of revenue from operations ₹ 80,000 and purchases ₹ 62,500.

**Solution**

$$\text{Gross profit ratio} = \frac{\text{Gross profit}}{\text{Revenue from operations}} \times 100$$

$$= \frac{20,000}{1,00,000} = x\ 100 = 20\%$$

Gross profit = Revenue from operations – Cost of revenue from operations
= 1,00,000 – 80,000 = ₹ 20,000

### (ii) Operating cost ratio

Operating cost ratio is the proportion of operating cost to revenue from operations. This ratio is a test of the operational efficiency of the business. It is calculated as under.

$$\text{Operating cost ratio} = \frac{\text{Operating cost}}{\text{Revenue from operations}} \times 100$$

Operating cost is the cost which is associated with the operating activities of the business.
Operating cost = Cost of revenue from operations + Operating expenses
Operating expenses = Employee benefit expenses + Depreciation + Other expenses related to office and administration, selling and distribution
A lower operating ratio indicates better profitability. Lesser the operating cost ratio, higher is the margin available for payment of non operating expenses such as interest on loans, loss on sale of fixed assets, etc.

### Illustration 14

Following is the statement of profit and loss of Maria Ltd. for the year ended 31st March, 2018. Calculate the operating cost ratio.

**Statement of Profit and Loss**

| Particulars | Note No. | Amount ₹ |
|---|---|---|
| I. Revenue from operations | | 8,00,000 |
| II. Other Income | | 20,000 |
| **III. Total revenue (I +II)** | | **8,20,000** |
| IV. Expenses: | | |
| Purchases of stock-in-trade | | 4,50,000 |
| Changes in inventories | | -40,000 |
| Employee benefits expenses | 1 | 22,000 |
| Other expenses | 2 | 68,000 |
| Total expenses | | 5,00,000 |
| **V. Profit before tax (III-IV)** | | **3,20,000** |

**Notes to Accounts**

| Particulars | Amount ₹ |
|---|---|
| **1. Employee benefits expenses** | |
| Wages (direct) | 10,000 |
| Salaries | 12,000 |
| Total | 22,000 |
| **2. Other expenses** | |
| Administrative expenses | 20,000 |
| Selling and distribution expenses | 28,000 |
| Loss on sale of fixed asset | 20,000 |
| Total | 68,000 |

**Solution**

$$\text{Operating cost ratio} = \frac{\text{Operating cost}}{\text{Revenue from operations}} \times 100 = \frac{4,80,000}{8,00,000} = \times 100 = 60\%$$

Cost of revenue from operations = Purchases of stock-in-trade + Change in inventories of stock in trade + Direct expenses (wages)

= 4,50,000 + (40,000) + 10,000 = ₹ 4,20,000

Operating expenses = Administrative expenses + Selling and distribution expenses + Employee benefits expenses (salaries)

= 20,000 + 28,000 + 12,000 = ₹ 60,000

Operating cost = Cost of revenue from operations + Operating expenses

= 4,20,000 + 60,000= ₹ 4,80,000

**Tutorial Note**

Loss on sale of fixed assets is a non-operating item, hence it is ignored.

### (iii) Operating profit ratio

Operating profit ratio gives the proportion of operating profit to revenue from operations. Operating profit ratio is an indicator of operational efficiency of an organisation. It may be computed as follows:

$$\text{Operating profit ratio} = \frac{\text{Operating profit}}{\text{Revenue from operations}} \times 100$$

Alternatively, it is calculated as under.

Operating profit ratio = 100 – Operating cost ratio

Operating profit = Revenue from operations – Operating cost

A higher ratio indicates better profitability. Greater the operating ratio, higher is the margin available for paying non-operating expenses.

### Tutorial note

Operating cost ratio + Operating profit ratio = 100%

### Illustration 15

Calculate operating profit ratio under the following cases.

Case 1: Revenue from operations ₹ 10,00,000, Operating profit ₹ 1,50,000.

Case 2: Revenue from operations ₹ 15,00,000, Operating cost ₹ 12,00,000.

Case 3: Revenue from operations ₹ 20,00,000, Gross profit 30% on revenue from operations, Operating expenses ₹ 4,00,000

### Solution

$$\text{Case 1: Operating profit ratio} = \frac{\text{Operating profit}}{\text{Revenue from operations}} \times 100$$

$$= \frac{1,50,000}{10,00,000} \text{ x } 100 = 15\%$$

$$\text{Case 2: Operating profit ratio} = \frac{\text{Operating profit}}{\text{Revenue from operations}} \times 100$$

$$= \frac{3,00,000}{15,00,000} \times 100 = 20\%$$

Operating profit = Revenue from operations – Operating Cost
= 15,00,000 – 12,00,000 = ₹ 3,00,000

$$\text{Case 3: Operating profit ratio} = \frac{\text{Operating profit}}{\text{Revenue from operations}} \times 100$$

$$= \frac{2,00,000}{20,00,000} \times 100 = 10\%$$

Gross profit $= 20,00,000 \times \frac{30}{100} =$ ₹ 6,00,000

Operating profit = Gross profit – Operating expenses

Operating profit = 6,00,000 – 4,00,000 = ₹ 2,00,000

### (iv) Net profit ratio

Net profit ratio is the percentage of net profit on revenue from operations. It is calculated as under:

$$\text{Net profit ratio} = \frac{\text{Net profit after tax}}{\text{Revenue from operations}} \times 100$$

Net profit after tax = Gross profit + Indirect income – Indirect expenses – Tax

(OR)

Net profit after tax = Revenue from operations – Cost of revenue from operations – Operating expenses –Non operating expenses + Non-operating income - Tax

Net profit ratio is an indicator of the overall profitability of the business. A higher net profit ratio indicates high profitability.

### Illustration 16

From the following details of a business concern calculate net profit ratio.

| Particulars | ₹ |
|---|---|
| Revenue from operations | 3,50,000 |
| Cost of revenue from operations | 1,50,000 |
| Administration expenses | 50,000 |
| Selling expenses | 10,000 |

### Solution

$$\text{Net profit ratio} = \frac{\text{Net profit after tax}}{\text{Revenue from operations}} \times 100 = \frac{1,40,000}{3,50,000} \times 100 = 40\%$$

Net profit = Revenue from operations – Cost of revenue from operations – Administration expenses – Selling expenses

= 3,50,000 – 1,50,000 – 50,000 – 10,000 = ₹ 1,40,000

### Tutorial note

It is assumed that there is no tax payable.

### Illustration 17

From the following statement of profit and loss of Mukesh Ltd. calculate

(i) Gross profit ratio (ii) Net profit ratio.

**Statement of Profit and Loss**

| Particulars | Amount ₹ |
|---|---|
| I. Revenue from operations | 5,00,000 |
| II. Other income: | |
| Income from investment | 40,000 |
| **III. Total revenues (I+II)** | **5,40,000** |
| IV. Expenses: | |
| Purchase of stock in trade | 1,80,000 |
| Changes in inventories | 20,000 |
| Employee benefits expense | 30,000 |
| Other expenses | 1,10,000 |
| Provision for tax | 50,000 |
| Total expenses | 3,90,000 |
| **V. Profit for the year** | **1,50,000** |

## Solution

(i) Gross profit ratio $= \frac{\text{Gross profit}}{\text{Revenue from operations}} \times 100 = \frac{3,00,000}{5,00,000} \times 100 = 60\%$

Gross profit = Revenue from operations – Cost of revenue from operations
= 5,00,000 – 2,00,000 = ₹ 3,00,000

Cost of revenue from operations = Purchase of stock in trade + Changes in inventories
= 1,80,000 + 20,000 = ₹ 2,00,000

(ii) Net profit ratio $= \frac{\text{Net profit after tax}}{\text{Revenue from operations}} \times 100 = \frac{1,50,000}{5,00,000} \times 100 = 30\%$

## Illustration 18

From the following trading activities of Naveen Ltd. calculate
(i) Gross profit ratio (ii) Net profit ratio (iii) Operating cost ratio (iv) Operating profit ratio

**Statement of Profit and loss**

| Particulars | ₹ |
|---|---|
| I. Revenue from operations | 20,000 |
| II. Other income: | |
| Income from investments | 200 |
| **III. Total revenues (I+II)** | **20,200** |
| IV. Expenses: | |
| Purchases of stock-in-trade | 17,000 |
| Changes in inventories | -1,000 |
| Finance costs | 300 |
| Other expenses (administration and selling) | 2,400 |
| Total expenses | 18,700 |
| **V. Profit before tax (III - IV)** | **1,500** |

## Solution

(i) Gross profit ratio $= \frac{\text{Gross profit}}{\text{Revenue from operations}} \times 100 = \frac{4,000}{20,000} \times 100 = 20\%$

Cost of revenue from operations = Purchase of stock-in-trade + Changes in inventory + Direct expenses
= 17,000 – 1,000 + 0 = ₹ 16,000

Gross profit = Revenue from operations – Cost of revenue from operations
= 20,000 – 16,000 = ₹ 4,000

(ii) Net profit ratio $= \frac{\text{Net profit after tax}}{\text{Revenue from operations}} \times 100 = \frac{1,500}{20,000} \times 100 = 7.5\%$

## Tutorial note

It is assumed that there is no tax payable.

(iii) Operating cost ratio $= \frac{\text{Operating cost}}{\text{Revenue from operations}} \times 100 = \frac{18,400}{20,000} \times 100 = 92\%$

Operating cost = Cost of revenue from operations + Operating expenses
Operating expenses = Other expenses = ₹ 2,400
Operating cost = 16,000 + 2,400 = ₹ 18,400

(iv) Operating profit ratio $= \frac{\text{Operating profit}}{\text{Revenue from operations}} \times 100 = \frac{1,600}{20,000} \times 100 = 8\%$

Operating profit = Revenue from operations – Operating cost
= 20,000 – 18,400 = ₹ 1,600

### (v) Return on Investment (ROI)

Return on investment shows the proportion of net profit before interest and tax to capital employed (shareholders' funds and long term debts). This ratio measures how efficiently the capital employed is used in the business. It is an overall measure of profitability of a business concern. It is computed as below:

$$\text{Return on Investment (ROI)} = \frac{\text{Net profit before interest and tax}}{\text{Capital employed}} \times 100$$

Capital employed = Shareholders' funds + Non current liabilities
Greater the return on investment better is the profitability of a business and vice versa.

### Illustration 19

Following is the extract of the balance sheet of Babu Ltd., as on 31st March, 2018:

| Particulars | Amount ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | 70,000 |
| (b) Reserves and surplus | 25,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings | 30,000 |
| **3. Current liabilities** | |
| (a) Trade payables | 20,000 |
| (b) Other current liabilities | 15,000 |
| (c) Short-term provisions | 42,000 |
| **Total** | **2,02,000** |

Net profit before interest and tax for the year was ₹ 25,000. Calculate the return on capital employed for the year.

**Solution**

$$\text{Return on Investment} = \frac{\text{Net profit before interest and tax}}{\text{Capital employed}} \times 100$$

$$= \frac{25,000}{1,25,000} = \times 100 = 20\%$$

Capital employed = Share capital + Reserves and surplus + Long term borrowings
= 70,000 + 25,000 +30,000 = ₹ 1,25,000

**Student activity 9.3**

Whole class activity: Discuss the possible causes and consequences for the following situations:

- A departmental store's net profit margin has decreased compared to last year's margin.
- A trader has been allowed 30 days to pay to his suppliers, but he takes 45 days.
- Debt collection period has been increasing.

## 9.7. Advantages of ratio analysis

Following are the advantages of ratio analysis:

**(i) Measuring operational efficiency:** Ratio analysis helps to know operational efficiency of a business by finding the relationship between operating cost and revenues and also by comparison of present ratios with those of the past ratios.

**(ii) Measuring financial solvency:** Ratio analysis helps to ascertain the liquidity or short term solvency and long term solvency of a business concern.

**(iii) Facilitating investment decisions:** Ratio analysis helps the management in making effective decisions regarding profitable avenues of investment.

**(iv) Analysing the profitability:** Ratio analysis helps to analyse the profitability of a business in terms of sales and investments.

**(v) Intra firm comparison:** Comparison of efficiency of different divisions of an organisation is possible by comparing the relevant ratios.

**(vi) Inter firm comparison:** Ratio analysis helps the firm to compare its performance with other firms.

## 9.8. Limitations of ratio analysis

Following are the limitations of ratio analysis:

**(i) Ratios are only means:** Ratios are not end in themselves but they are only means to achieve a particular purpose. Analysis of related items must be done by the management or experts with the help of ratios.

(ii) **Accuracy of financial information:** The accuracy of a ratio depends on the accuracy of information taken from financial statements. If the statements are inaccurate, ratios computed based on that will also be inaccurate.

(iii) **Consistency in preparation of financial statements:** Inter firm comparisons with the help of ratio analysis will be meaningful only if the firms follow uniform accounting procedures consistently.

(iv) **Non-availability of standards or norms:** Ratios will be meaningful only if they are compared with accepted standards or norms. Only few financial ratios have universally recognised standards. For other ratios, comparison with standards is not possible.

(v) **Change in price level:** Ratio analysis may not reflect price level changes and current values as they are calculated based on historical data given in financial statements.

### Points to remember

- An accounting ratio is a mathematical expression of the relationship between two items or group of items shown in the financial statements.
- Under the functional classification, the ratios are classified as liquidity ratios, solvency ratios, profitability ratios and turnover ratios.
- Liquidity ratios help to assess the ability of a business concern to meet its short term financial obligations.
- Long term solvency ratios help to determine the ability of the business to repay its debts in the long run.
- Profitability ratios are calculated to analyse the earning capacity of the business and is generally expressed as a percentage.
- Turnover ratios show how efficiently assets or other items have been used to generate revenue from operations.

## Self-examination questions

97MRBP

### I Multiple choice questions

**Choose the correct answer**

**1.** The mathematical expression that provides a measure of the relationship between two figures is called

(a) Conclusion (b) Ratio (c) Model (d) Decision

**2.** Current ratio indicates

(a) Ability to meet short term obligations (b) Efficiency of management

(c) Profitability (d) Long term solvency

**3.** Current assets excluding inventory and prepaid expenses is called

(a) Reserves (b) Tangible assets (c) Funds (d) Quick assets

**4.** Debt equity ratio is a measure of

(a) Short term solvency (b) Long term solvency

(c) Profitability (d) Efficiency

**5.** Match List I with List II and select the correct answer using the codes given below:

| List I | List II |
|---|---|
| (i) Current ratio | 1. Liquidity |
| (ii) Net profit ratio | 2. Efficiency |
| (iii) Debt-equity ratio | 3. Long term solvency |
| (iv) Inventory turnover ratio | 4. Profitability |

Codes:

| | (i) | (ii) | (iii) | (iv) |
|---|---|---|---|---|
| (a) | 1 | 4 | 3 | 2 |
| (b) | 3 | 2 | 4 | 1 |
| (c) | 4 | 3 | 2 | 1 |
| (d) | 1 | 2 | 3 | 4 |

**6.** To test the liquidity of a concern, which of the following ratios are useful?

(i) Quick ratio

(ii) Net profit ratio

(iii) Debt-equity ratio

(iv) Current ratio

Select the correct answer using the codes given below:

(a) (i) and (ii) (b) (i) and (iv) (c) (ii) and (iii) (d) (ii) and (iv)

**7.** Proportion of share holders' funds to total assets is called

(a) Proprietary ratio (b) Capital gearing ratio

(c) Debt equity ratio (d) Current ratio

**8.** Which one of the following is not correctly matched?

(a) Liquid ratio – Proportion

(b) Gross profit ratio – Percentage

(c) Fixed assets turnover ratio – Percentage

(d) Debt-equity ratio – Proportion

**9.** Current liabilities ₹ 40,000; Current assets ₹ 1,00,000 ; Inventory ₹ 20,000 . Quick ratio is

(a) 1:1 (b) 2.5:1 (c) 2:1 (d) 1:2

**10.** Cost of revenue from operations ₹ 3,00,000; Inventory in the beginning of the year ₹ 60,000; Inventory at the close of the year ₹ 40,000. Inventory turnover ratio is

(a) 2 times (b) 3 times (c) 6 times (d) 8 times

| **Answers:** | **1. (b)** | **2. (a)** | **3. (d)** | **4. (b)** | **5. (a)** | **6. (b)** | **7.(a)** | **8. (c)** | **9. (c)** | **10.(c)** |
|---|---|---|---|---|---|---|---|---|---|---|

## II Very short answer questions

**1.** What is meant by accounting ratios?

**2.** What is quick ratio?

3. What is meant by debt equity ratio?
4. What does return on investment ratio indicate?
5. State any two limitations of ratio analysis.

## III Short answer questions

1. Explain the objectives of ratio analysis.
2. What is inventory conversion period? How is it calculated?
3. How is operating profit ascertained?
4. State any three advantages of ratio analysis.
5. Bring out the limitations of ratio analysis.

## IV Exercises

### Liquidity ratios

**1.** Calculate the current ratio from the following information.

| Particulars | ₹ | Particulars | ₹ |
|---|---|---|---|
| Current investments | 40,000 | Fixed assets | 5,00,000 |
| Inventories | 2,00,000 | Trade creditors | 80,000 |
| Trade debtors | 1,20,000 | Bills payable | 50,000 |
| Bills receivable | 80,000 | Expenses payable | 20,000 |
| Cash and cash equivalents | 10,000 | Non-current liability | 3,00,000 |

**(Answer: Current ratio: 3:1)**

**2.** Calculate quick ratio: Total current liabilities ₹ 2,40,000; Total current assets ₹ 4,50,000; Inventories ₹ 70,000; Prepaid expenses ₹ 20,000

**(Answer: Quick ratio: 1.5:1)**

**3.** Following is the balance sheet of Lakshmi Ltd. as on 31st March, 2019:

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| Equity share capital | 4,00,000 |
| **2. Non-current liabilities** | 2,00,000 |
| Long term borrowings | |
| **3. Current liabilities** | |
| (a) Short-term borrowings | 50,000 |
| (b) Trade payables | 3,10,000 |
| (c) Other current liabilities | |
| Expenses payable | 15,000 |
| (d) Short-term provisions | 25,000 |
| **Total** | **10,00,000** |
| **II ASSETS** | |
| **1. Non-current assets** | |
| (a) Fixed assets | 4,00,000 |
| Tangible assets | |

| | |
|---|---|
| **2. Current assets** | |
| (a) Inventories | 1,60,000 |
| (b) Trade debtors | 3,20,000 |
| (c) Cash and cash equivalents | 80,000 |
| (d) Other current assets | |
| Prepaid expenses | 40,000 |
| **Total** | **10,00,000** |

Calculate:

(i) Current ratio (ii) Quick ratio

**(Answer: (i) Current ratio: 1.5:1; (ii) Quick ratio: 1:1)**

**Long term solvency ratios**

**4.** From the following information calculate debt equity ratio.

**Balance Sheet (Extract) as on 31st March, 2019**

| Particulars | Amount ₹ |
|---|---|
| **I. EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| Equity share capital | 6,00,000 |
| (b) Reserves and surplus | 2,00,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings (Debentures) | 6,00,000 |
| **3. Current liabilities** | |
| (a) Trade payables | 1,60,000 |
| (b) Other current liabilities | |
| Outstanding expenses | 40,000 |
| **Total** | **16,00,000** |

**(Answer: Debt equity ratio: 0.75:1)**

**5.** From the following Balance Sheet of Sundaram Ltd. calculate proprietary ratio:

**Balance sheet of Sundaram Ltd. as on 31.3.2019**

| Particulars | Amount ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| (i) Equity share capital | 2,50,000 |
| (ii) Preference share capital | 1,50,000 |
| (b) Reserves and surplus | 50,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings | - |
| **3. Current liabilities** | |
| Trade payables | 1,50,000 |
| **Total** | **6,00,000** |

| | |
|---|---|
| **II ASSETS** | |
| **1. Non-current assets** | |
| (a) Fixed assets | 4,60,000 |
| (b) Non-current investments | 1,00,000 |
| **2. Current assets** | |
| Cash and Cash equivalents | 40,000 |
| **Total** | **6,00,000** |

**(Answer: Proprietary ratio: 0.75:1)**

**6.** From the following information calculate capital gearing ratio:

**Balance Sheet (Extract) as on 31.03.2018**

| Particulars | Amount ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| Equity share capital | 4,00,000 |
| 5% Preference share capital | 1,00,000 |
| (b) Reserves and surplus | |
| General reserve | 2,50,000 |
| Surplus | 1,50,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings (6% Debentures) | 3,00,000 |
| **3. Current liabilities** | |
| Trade payables | 1,20,000 |
| Provision for tax | 30,000 |
| **Total** | **13,50,000** |

**(Answer: Capital gearing ratio: 0.5:1)**

**7.** From the following Balance Sheet of James Ltd. as on 31.03.2019 calculate

(i) Debt-equity ratio (ii) Proprietary ratio (iii) Capital gearing ratio

**Balance Sheet of James Ltd. as on 31.03.2019**

| Particulars | Amount ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | |
| Equity share capital | 2,50,000 |
| 6% Preference share capital | 2,00,000 |
| (b) Reserves and surplus | 1,50,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings (8% Debentures) | 3,00,000 |
| **3. Current liabilities** | |
| Short-term borrowings from banks | 2,00,000 |
| Trade payables | 1,00,000 |
| **Total** | **12,00,000** |

| | |
|---|---|
| **II ASSETS** | |
| **1. Non-current assets** | |
| Fixed assets | 8,00,000 |
| **2. Current assets** | |
| (a) Inventories | 1,20,000 |
| (b) Trade receivables | 2,65,000 |
| (c) Cash and cash equivalents | 10,000 |
| (d) Other current assets | |
| Expenses paid in advance | 5,000 |
| **Total** | **12,00,000** |

**(Answer: (i) Debt-equity ratio: 0.5:1; (ii) Proprietary ratio:0.5:1; (iii) Capital gearing ratio: 1.25:1)**

**Turnover ratios**

**8.** From the given information calculate the inventory turnover ratio and inventory conversion period (in months) of Devi Ltd.

| Particulars | ₹ |
|---|---|
| Revenue from operations | 12,00,000 |
| Inventory at the beginning of the year | 1,70,000 |
| Inventory at the end of the year | 1,30,000 |
| Purchases made during the year | 6,90,000 |
| Carriage inwards | 20,000 |

**(Answer: Inventory turnover ratio: 5 times; Inventory conversion period: 2.4 months)**

**9.** The credit revenue from operations of Velavan Ltd, amounted to ₹ 10,00,000. Its debtors and bills receivables at the end of the accounting period amounted to ₹ 1,10,000 and ₹ 1,40,000 respectively. Calculate trade receivables turnover ratio and also collection period in months.

**(Answer: Trade receivables turnover ratio: 4 times; Debt collection period: 3 months)**

**10.** From the following figures obtained from Arjun Ltd, calculate the trade payables turnover ratio and credit payment period (in days).

| Particulars | ₹ |
|---|---|
| Credit purchases during 2018 – 2019 | 9,50,000 |
| Trade creditors as on 1.4.2018 | 60,000 |
| Trade creditors as on 31.3.2019 | 50,000 |
| Bills payable as on 1.4.2018 | 45,000 |
| Bills payable as on 31.3.2019 | 35,000 |

**(Answer: Trade payables turnover ratio: 10 times; Credit payment period: 36.5 days)**

**11.** From the following information of Geetha Ltd., calculate fixed assets turnover ratio
(i) Revenue from operations during the year were ₹ 55,00,000.
(ii) Fixed assets at the end of the year ₹ 5,00,000.

**(Answer: Fixed assets turnover ratio: 11 times)**

**12.** Calculate (i) Inventory turnover ratio (ii) Trade receivables turnover ratio (iii) Trade payables turnover ratio and (iv) Fixed assets turnover ratio from the following information obtained from Aruna Ltd.

| Particulars | As on 31st March, 2018 ₹ | As on 31st March, 2019 ₹ |
|---|---|---|
| Inventory | 3,60,000 | 4,40,000 |
| Trade receivables | 7,40,000 | 6,60,000 |
| Trade payables | 1,90,000 | 2,30,000 |
| Fixed assets | 6,00,000 | 8,00,000 |

Additional information:

(i) Revenue from operations for the year ₹ 35,00,000

(ii) Purchases for the year ₹ 21,00,000

(iii) Cost of revenue from operations ₹ 16,00,000.

Assume that sales and purchases are for credit.

**(Answer: (i) Inventory turnover ratio: 4 times; (ii) Trade receivables turnover ratio: 5 times; (iii) Trade payables turnover ratio: 10 times; (iv) Fixed assets turnover ratio: 5 times)**

**Profitability ratios**

**13.** Calculate gross profit ratio from the following:

Revenue from operations ₹ 2,50,000, Cost of revenue from operations ₹ 2,10,000 and Purchases ₹ 1,80,000.

**(Answer: Gross profit ratio 16%)**

**14.** Following is the statement of profit and loss of Padma Ltd. for the year ended 31st March, 2018. Calculate the operating cost ratio.

**Statement of Profit and Loss**

| Particulars | Note No. | Amount ₹ |
|---|---|---|
| I. Revenue from operations | | 15,00,000 |
| II. Other Income | | 40,000 |
| **III. Total revenue (I +II)** | | **15,40,000** |
| IV. Expenses: | | |
| Purchases of Stock-in-trade | | 8,60,000 |
| Changes in inventories | | 40,000 |
| Employee benefits expense (Salaries) | | 1,60,000 |
| Other expenses | 1 | 1,70,000 |
| Total expenses | | 12,30,000 |
| **V. Profit before tax (III-IV)** | | **3,10,000** |

**Notes to Accounts**

| Particulars | Amount ₹ |
|---|---|
| 1. Other expenses | |
| Office and administrative expenses | 50,000 |
| Selling and distribution expenses | 90,000 |
| Loss on sale of furniture | 30,000 |
| | 1,70,000 |

**(Answer: Operating cost ratio 80%)**

**15.** Calculate operating profit ratio under the following cases.
Case 1: Revenue from operations ₹ 8,00,000, Operating profit ₹ 2,00,000.
Case 2: Revenue from operations ₹ 20,00,000, Operating cost ₹ 14,00,000.
Case 3: Revenue from operations ₹ 10,00,000, Gross profit 25% on revenue from operations, Operating expenses ₹ 1,00,000

**(Answer: Operating profit ratio – Case 1: 25%; Case 2: 30%; Case 3: 15% )**

**16.** From the following details of a business concern calculate net profit ratio.

| Particulars | ₹ |
|---|---|
| Revenue from operations | 9,60,000 |
| Cost of revenue from operations | 5,50,000 |
| Office and administration expenses | 1,45,000 |
| Selling and distribution expenses | 25,000 |

**(Answer: Net profit ratio 25%)**

**17.** From the following statement of profit and loss of Dericston Ltd. calculate
Gross profit ratio (ii) Net profit ratio.

**Statement of Profit and Loss**

| Particulars | ₹ |
|---|---|
| I. Revenue from operations | 24,00,000 |
| II. Other income: | |
| Income from investment | 70,000 |
| **III. Total revenues (I+II)** | **24,70,000** |
| IV. Expenses: | |
| Purchase of stock-in-trade | 18,80,000 |
| Changes in inventories | - 80,000 |
| Employee benefits expense | 2,90,000 |
| Other expenses | 1,10,000 |
| Provision for tax | 30,000 |
| Total expenses | 22,30,000 |
| **V. Profit for the year** | **2,40,000** |

**(Answer: (i) Gross profit ratio 25% (ii) Net profit ratio 10%)**

**18.** From the following trading activities of Rovina Ltd. calculate
(i) Gross profit ratio (ii) Net profit ratio (iii) Operating cost ratio (iv) Operating profit ratio

**Statement of Profit and loss**

| Particulars | ₹ |
|---|---|
| I. Revenue from operations | 4,00,000 |
| II. Other income: | |
| Income from investments | 4,000 |
| III. Total revenues (I+II) | 4,04,000 |
| IV Expenses: | |
| Purchases of stock-in-trade | 2,10,000 |
| Changes in inventories | 30,000 |
| Finance costs | 24,000 |
| Other expenses (Administration and selling) | 60,000 |
| Total expenses | 3,24,000 |
| V Profit before tax (III - IV) | 80,000 |

**(Answer: (i) Gross profit ratio 40% (ii) Net profit ratio 20%**
**(iii) Operating cost ratio 75% (iv) Operating profit ratio 25%)**

**19.** Following is the extract of balance sheet of Abdul Ltd., as on 31st March, 2019:

| Particulars | ₹ |
|---|---|
| **I EQUITY AND LIABILITIES** | |
| **1. Shareholders' funds** | |
| (a) Share capital | 2,00,000 |
| (b) Reserves and surplus | 50,000 |
| **2. Non-current liabilities** | |
| Long-term borrowings | 1,50,000 |
| **3. Current liabilities** | |
| (a) Trade payables | 1,30,000 |
| (b) Other current liabilities | 5,000 |
| (c) Short-term provisions | 20,000 |
| **Total** | **5,55,000** |

Net profit before interest and tax for the year was ₹ 60,000. Calculate the return on capital employed for the year.

**(Answer: Return on capital employed: 15%)**

CASE STUDY

Five friends each have ₹ 50,000 to invest. However, all five have different criteria for their investment decision. Fatima wants a high return on her investment. Thenmozhi wishes to invest in a company which performs well. Nivetha wishes to invest in a company which has good control over expenditure. Supraja is an ethical investor. She is concerned that the company's suppliers get their payment on time. Divya wishes to invest in a company with good liquidity position.

They wanted to compare three different companies' financial statements and calculate ratios.

Suggest each one the suitable ratios for their investment decision.

**To explore further**

Calculation of ratios may become difficult when more data are to be used. Is there any solution available for this?

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