

# **CHAPTER- 4**

## **RATIO ANALYSIS**

### **Meaning of Ratio Analysis**

Ratio Analysis is the relationship between two terms of financial data expressed in the form of ratios and then interpreted with a view to evaluating the financial condition and performance of a firm.

Ratio Analysis can also help us to check whether a business is doing better this year than it was last year; and it can tell us if our business is doing better or worse than similar type of business.

**Example:** Firm A earns a profit of Rs. 50,000 while Firm B earns a profit of Rs. 1,00,000. Which of them is more efficient? We could tend to believe that firm B is more efficient than firm A.

But in order to understand correctly, we need to find out their sales figure. Say firm A's sales are Rs. 5,00,000 while firm B's sales are Rs. 50,00,000. Now let's compare the percentage of profit earned by them on sales.

**For A:**  $\frac{50,000}{5,00,000} \times 100 = 10\%$

**For B:**  $\frac{1,00,000}{50,00,000} \times 100 = 2\%$

This clearly shows that firm A is doing better than Firm B.

This example shows that figure assumes significance only when expressed in relation to other related figures.

### **Objective of Ratio Analysis**

The main objective of analyzing financial statement with the help of ratios are:

1. The analysis would enable the calculation of not only the present earning capacity of the business but would also help in the estimation of the future earning capacity.
2. The analysis would help the management to find out the overall as well as the department – wise efficiency of the firm on the basis of the available financial information.
3. The short term as well as the long term solvency of the firm can be determined with the help of ratio analysis.
4. Inter – firm comparison becomes easy with the help of ratios.

### **Advantages of Ratio Analysis**

1. **Help in Financial statement analysis:** It is easy to understand the financial position of a business enterprise in respect of short term solvency, liquidity and profitability with the help of ratio. It tells us the changes taking place in the financial condition of the business.

2. **Simplified accounting figures:** Absolute figures are not of much use. They become important when relationships are established say between gross profit and sales.
3. **Helps in calculating operation efficiency of the business enterprise:** Ratio enable the user of financial information to determine operating efficiency of a firm by relating the profit figure to the capital employed for a given period.
4. **Facilities inter- firm comparison:** Ratio analysis provides data for inter- firm comparison. It reveals strong and weak firms, overvalues and undervalues firms as well as successful and unsuccessful firms.
5. **Makes inter- firms comparison possible:** Ratio Analysis helps the firm to compare its own performance over a period of time as well as the performance of different divisions of the firm. It helps in deciding which division is more efficient than other.
6. **Helps in forecasting:** Ratio Analysis helps in planning and forecasting. Ratios provide clues on trends and futures problems. e.g if the sales of a firm during the year are Rs. 10 lakhs and the average stock kept during the year Rs. 2 lakhs, it must be ready to keep a stock of Rs. 3 lakhs which is 20 % of the Rs. 15 lakhs.

#### **Limitations of Ratio Analysis**

1. **Historical Analysis:** Ratio Analysis is historical in nature the financial statement on the basis of which ratios are calculated are historical in nature.
2. **Price Level Change:** Changes in price level often make comparison of figures of the previous years difficult. E.g ratio of sales to fixed assets in 2006 would be much higher than in 2000 due to rising prices, fixed assets being expressed on cost.
3. **Not Free from bias:** In many situations, the accountant has to make a choice out of the various alternatives available . e.g choice of the method depreciation, choice in the method of inventory valuation etc. Since there is a subjectivity inherent in the choice , ratio analysis cannot be said to be free from bias.
4. **Window dressing:** Window dressing is showing the position better than what it is. Some companies , in order to cover up their bad financial position resort to window dressing. By hiding important facts, they try to depict a better financial position.
5. **Qualitative factors ignored:** Ratio Analysis is a quantitative analysis. It ignores qualitative factors like debtors character, honesty, past record etc.
6. **Different accounting practices render ratios incomparable:** The result of two firms are comparable with the help of accounting ratios only if they follow the same accounting methods . e.g. if one firm changes depreciation on straight line method while another is charging on diminishing balance method, accounting ratios will not be strictly comparable.

## Classification/Types of Ratios

There is a two way classification of ratios: **(1) Traditional classification**, and **(2) Functional classification**.

**On the basis of Tradition the ratios are classified as follows:**

1. **Income Statement Ratios:** A ratio of two variables from the income statement is known as Income Statement Ratio. For example, ratio of gross profit to sales known as gross profit ratio is calculated using both figures from the income statement.
2. **Balance Sheet Ratios:** In case both variables are from balance sheet, it is classified as Balance Sheet Ratios. For example, ratio of current assets to current liabilities known as current ratio is calculated using both figures from balance sheet.
3. **Composite Ratios:** If a ratio is computed with one variable from income statement and another variable from balance sheet, it is called Composite Ratio. For example, ratio of credit sales to debtors and bills receivable known as debtor turnover ratio is calculated using one figure from income statement (credit sales) and another figure from balance sheet (debtors and bills receivable).

The alternative classification (**functional classification**) based on the purpose for which a ratio is computed, is the most commonly used classification which reach as follows:

1. **Liquidity Ratios:** To meet its commitments, business needs liquid funds. The ability of the business to pay the amount due to stakeholders as and when it is due is known as liquidity, and the ratios calculated to measure it are known as 'Liquidity Ratios'. They are essentially short-term in nature.
2. **Profitability Ratios:** It refers to the analysis of profits in relation to sales or funds (or assets) employed in the business and the ratios calculated to meet this objective are known as 'Profitability Ratios'.
3. **Turnover or Activity Ratios:** This refers to the ratios that are calculated for measuring the efficiency of operation of business based on effective utilisation of resources. Hence, these are also known as 'efficiency ratios'.
4. **Leverage or Solvency Ratios:** Solvency of business is determined by its ability to meet its contractual obligations towards stakeholders, particularly towards external stakeholders, and the ratios calculated to measure solvency position are known as 'Solvency Ratios'. They are essentially long-term in nature, and

<b>Classification of Ratio</b>			
<b>Liquidity Ratios</b>	<b>Profitability</b>	<b>Turnover or Activity Ratios</b>	<b>Leverage or Solvency Ratios</b>
<b>Current Ratio</b>	<b>Gross Profit Ratio</b>	<b>Stock Turnover Ratio</b>	<b>Debt Equality Ratio</b>
<b>Liquid Ratio</b>	<b>Net Profit Ratio</b>	<b>Debtors Turnover Ratio</b>	<b>Proprietary Ratio</b>
<b>Quick Ratio.</b>	<b>Operating Ratio</b>	<b>Creditors Turnover Ratio</b>	<b>Long Term Funds To Fixed Assets Ratio</b>
	<b>Return On Capital Employed</b>	<b>Fixed Assets Turnover Ratio</b>	Interest Coverage Ratio
	<b>Return On Shareholders' Funds Or Earnings Per Share</b>	Working Capital Turnover Ratio	Total Assets To Debt Ratio
	Price Earnings Ratio		
	Dividend payout ratio		

**(A) LIQUIDITY RATIOS:** Liquidity is the short term solvency of the enterprise. I.e. the ability of the business enterprise to meet its short term obligation as and when they are due. The liquidity ratios, therefore, are also called the short- term solvency ratios.

The most common ratios which measures the extent of liquidity or the lack of it are:

- a) Current ratio
- b) Liquid /Quick ratio/ Acid test ratio

1. **Current Ratio:** Current ratio establishes the relationship between current assets and Current liability. It measures the ability of the firm to meet its short term obligation as and when they become due. It is calculated as:

Generally, a current ratio of 2:1 is considered satisfactory.

**Interpretation:** It provides a measure of degree to which current assets cover current liabilities. The higher the ratio, the greater the margin of safety for the short term creditors. However, the ratio should neither be very high nor very low. A very high current ratio indicates idle funds, piled up stocks, locked amount in debtors while a low ratio puts the business in a situation where it will not be able to pay its short- term debt on time.

2. **Liquid /Quick Ratio or Acid test ratio :** Quick ratio establishes the relationship between quick/ liquid assets and current liabilities. It measures the ability of the firm to meet its short term obligations as and when they become due without relying upon the realization of stock. It is calculated as:

$$\text{Quick ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Generally, a liquid ratio of 1:1 is considered satisfactory.

**Interpretation:** Quick ratio is considered better than current ratio as a measure of liquidity position of the business because of exclusion of inventories. The idea behind this ratio is that stock is sometimes a problem because they can be difficult to sell or use. It is a more penetrating test of liquidity than current ratio yet it should be used cautiously as all debtors may not be liquid or cash may be required immediately for certain expenses.

**(B) PROFITABILITY RATIOS:** Every business must earn sufficient profits to sustain the operations of the business and to fund expansion and growth.

Profitability ratios are calculated to analyse the earning capacity of the business which is the outcome of utilisation of resources employed in the business. There is a close relationship between the profit and the efficiency with which the resources employed in the business are utilised. There are two major types of Profitability Ratios.: Profitability in relation to sales and Profitability in relation to investment.

Following are the important Profitability ratio

1. Gross Profit Ratio
2. Net profit Ratio
3. Operating Profit Ratio
4. Return on Investment (ROI) or Return on Capital Employed (ROCE)
5. Return on Shareholders Fund or Earnings per Share

1. **Gross Profit Ratio or Gross margin:** Gross profit ratio establishes relationship between Gross Profit and net sale. It determines the efficiency with which production, purchase and selling operations are being carried on. It is calculated as percentage of sales. It is computed as follows:

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

**Interpretation:** Gross Profit is the difference between sale and cost of goods sold. Gross Profit margin reflects the efficiency with which the management produces each unit of output. It also includes the margin available to cover operating expenses and non-operating expenses. A high Gross Profit margin relative to the industry average employees that the firm is able to produce at comparatively at lower cost.

2. **Net Profit Ratio or Net Margin:** This ratio establishes the relationship between net profit and net sale . It indicates managements' efficiency in manufacturing, administering and selling the product. It calculates as a percentage of sale. it is computed as under:

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

**Generally, net profit refers to Profit after Tax (PAT)**

**Interpretation:** This ratio measures the firms' ability to turn each rupee sales into net profit. A firm with high net profit margin would be in an advantageous position to survive in the face of falling selling prices, rising cost of production or declining demand for the product.

3. **Operating Profit Ratio:** Operating Profit Ratio establishes the relationship between Operating Profit and net sales. It can be computed directly or as a residual of operating ratio.

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

**Where Operating Profit = Sales – Cost of Operation**

**Interpretation:** Operating Ratio determine the operational efficiency of the management. It helps in knowing the amount of profit earned from regular business transactions on a sale of Rs. 100. It is very useful for inter firm as well as intra firm comparisons. Higher operating ratio indicates that the firm has got enough margins to meet its non-operating expenses well as to create reserve and pay dividends.

4. **Return on Capital Employed or Return on Investment (ROCE or ROI):** This ratio establishes the relationship between net profit before Interest and Tax and capital employees. It measures how efficiently the long-term funds supplied by the long-term creditors and shareholders are being used. It is expressed as a percentage.

$$\text{Return on Investment} = \text{Profit before Interest and Tax/Capital Employed} \times 100$$

**Where capital employed = Debt + equity**

**Or**

$$\text{Capital Employed} = \text{Fixed Assets} + \text{Working Capital}$$

**Interpretation:** It explains the overall utilization of fund by a business. It reveals the efficiency of the business in utilization of funds entrusted to it by, shareholders, debenture-holders and long-term liabilities. For inter-firm comparison, it is considered good measure of profitability.

**5. Return on Shareholder's Fund / Earnings per Share:** This ratio measures the earning available to equity shareholders per share. It indicates the profitability of the firm on a per share basis.

$$\text{Earning Per Share} = \text{Profit available for equity shareholders/ No. of Equity Shares}$$

In this context, earnings refer to profit available for equity shareholders which are worked out as Profit after Tax – Dividend on Preference Shares.

**Interpretation:** This ratio is very important from equity shareholders point of view and so also for the share price in the stock market. This also helps comparison with other firm's to ascertain its reasonableness and capacity to pay dividend. But increase in Earnings per share does not have always indicate increase in profitability because sometimes, when bonus shares are issued, earning per share would decrease. In these cases, the earning per share is misleading as the actual earning has not decreased.

**(C) Activity (or Turnover) Ratios:** The Activity (or Turnover) Ratios measures how well the facilities at the disposal of the concern are being utilized. They are known as turnover ratios as they indicate the speed with which the assets are being converted or turned over into sales. A proper balanced between sales and assets generally reflects that assets are being managed well. They are expressed as 'number of times'. Some of the important activity ratios are:

1. Stock Turn-over;
2. Debtors (Receivable) Turnover;
3. Creditors (Payable) Turnover;
4. Fixed Assets Turnover

**1. Stock (or Inventory) Turnover Ratio:** It establishes a relationship between cost of goods and average inventory. It determines the efficiency with which stock is converted into sales during the accounting period under consideration. It is calculated as:

$$\text{Stock Turnover Ratio} = \text{Cost of Goods Sold/ Average Stock}$$

Where - Average stock = (opening + closing stock) / 2 and

Cost of goods sold = Net Sales - gross profit or

Cost of goods sold = opening stock + net purchases + direct expenses – closing stock

**Interpretation:** It indicates the speed with which inventory is converted into sales. A higher ratio indicated that stock is selling quickly. Low stock turnover ratio indicates that stock is not selling quickly and remaining idle resulting in increased storage cost and blocking of funds. High turnover is good but it must be carefully interpreted as it may be due to buying in small lots or selling quickly at low margin to realize cash. Thus , a firm should have neither a very high nor a vet low stock turnover ratio.

**2. Debtors Turnover Ratio or Receivables Turnover Ratio:** It establishes a relationship between net credit sales and average debtors or receivables. It determines the efficiency with which the debtors are converted into cash.

$$\text{Debtors Turnover ratio} = \text{Net Credit sales/ Average Accounts Receivable}$$

Where Average Account Receivable = (Opening Debtors and Bills Receivable + Closing Debtors and Bills Receivable)/2

Note: Debtors should be taken before making any provision for doubtful debts.

**Interpretation** : The ratio indicated the number of times the receivables are turned over and converted into cash in an accounting period. Higher turnover means that the amount from debtors is being collected more quickly. Quick collection from debtors increases the liquidity of the firm. This ratio also helps in working out the average collection period as follows:

**Debt collection period:** This shows the average period for which the credit sales remain outstanding or the average credit period enjoyed by the debtors. It indicates how quickly cash is collected from the debtors.

**Debt collection period = 12 months/52 weeks/365 days / Debtors' turnover ratio**

**3. Creditors Turnover Ratio or Payable Turnover Ratio:** This ratio establishes a relationship between net credit purchases and average creditors or payables. It determines the efficiency with which the Creditors are paid.

**Creditors turnover ratio = Net credit purchase / Average accounts payable.**

Where Average accounts payable =  $(\text{Opening Creditors and Bills Payable} + \text{Closing Creditors and Bills Payable})/2$

**Interpretation:** It indicated the speed with which the creditors are paid. A higher ratio indicates a shorter payment period. In this case, the enterprise needs to have sufficient funds as working capital to meet its creditors. Lower ratio means credit allowed by the supplier is for a long period or it may reflect delayed payment to suppliers which is not a very good policy as it may affect the reputation of the business. Thus, an enterprise should neither have a very high nor a very low ratio.

**Debt payment period/Creditors collection period:** This shows the average period for which the credit purchases remain outstanding or the average credit period availed of. It indicates how quickly cash is paid to the creditors.

**Debt collection period = 12 months/52 weeks/365 days/Debtors' turnover**

**4. Fixed Assets Turnover Ratio:** This ratio establishes a relationship between net sales and net fixed assets. It determined the efficiency with which the firm is utilizing its fixed assets.

**Fixed Assets Turnover= Net sales/ Net Fixed Assets**

**Where Net Fixed Assets =Fixed Assets- Depreciation**

**Interpretation:** This ratio reveals how efficiently the fixed assets are being utilised. It indicates the firms' ability to sales per rupee of investment in fixed assets. A high ratio indicates more efficient utilization of fixed assets.

**(D) LEVERAGE OR SOLVENCY RATIOS:** Solvency ratio are used to judge the long term financial soundness of any business. Long term Solvency means the ability of the Enterprise to meet its long term obligation on the due date. Long term lenders are basically interested in two things: payment of interest periodically and repayment of principal amount at the end of the loan period. Usually the following ratios are calculated to judge the long term financial solvency of the concern.

1. Debt equity ratio;
2. Proprietary ratio;
3. Long Term Funds to Fixed Assets Ratio

1. **Debt-Equity Ratio:** It measures the relationship between long-term debt and shareholders' funds. It measures the relative proportion of debt and equality in financing the assets of a firm.

$$\text{Debt-Equity ratio} = \text{Long-term Debt's/ Shareholder funds}$$

Long- term Debt = Debentures + Long term loans

Shareholders' Funds = Equity Share Capital + Pref. Share Capital + Res. & Surplus– Fictitious Assets

**Interpretation:** A low **debt** equity ratio reflects more security to long term creditors. From security point of view, capital structure with less debt and more equity is considered favourable as it reduces the chances of bankruptcy. A high ratio, on the other hand, is considered risky as it may put the firm into difficulty in meeting its obligations to outsiders. But it is considered risky and so , with the exception of a few business , the prescribed ratio is limited to 2:1.

2. **Proprietary Ratio:** Proprietary ratio establishes a relationship between shareholders funds to total assets. It measures the proportion of assets financed by equity. It is calculated as follows :

$$\text{Proprietary Ratio} = \text{Shareholders Funds/ Total assets}$$

**Interpretation:** A higher proprietary ratio indicated a larger safety margin for creditors. It tests the ability of the shareholders' funds to meet the outside liabilities. A low Proprietary Ratio, on the other hand , indicated a greater risk to the creditors. To judge whether a ratio is satisfactory or not, the firm should compare it with its own past ratios or with the ratio of similar enterprises or with the industry average.

3. Long Term Funds to Fixed Assets Ratio/ **Total Assets to Debt Ratio:** This Ratio established a relationship between total assets and long debts. It measures the extent to which debt is being covered by assets. It is calculated as

$$\text{Total Assets to Debt Ratio} = \text{Total assets/Long-term Debt}$$

**Interpretation:** This ratio primarily indicated the use of external funds in financing the assets and the margin of safety to long-term creditors. The higher ratio indicated that assets have been mainly financed by owners' funds, and the long- term debt is adequately covered by assets. A low ratio indicated a greater risk to creditors as it means insufficient assets for long term obligations.



Ex. 4

Calculate Quick Ratio from the information given below :

	<i>Rs.</i>
Current Assets	4,00,000
Current Liabilities	2,00,000
Inventories (stock)	25,000
Prepaid Expenses	25,000
Land and Building	4,00,000
Share Capital	3,00,000
Good Will	2,00,000

ANS. 4

$$\begin{aligned} \text{Quick Ratio} &= \frac{\text{Quick Assets}}{\text{Current Liabilities}} \\ &= \frac{\text{Current Assets} - (\text{Inventories} + \text{Prepaid Expenses})}{\text{Current Liabilities}} \\ &= \frac{\text{Rs. } 4,00,000 - (25,000 + 25,000)}{\text{Rs. } 2,00,000} \\ &= \frac{\text{Rs. } 4,00,000 - 50,000}{\text{Rs. } 2,00,000} \\ &= \frac{\text{Rs. } 3,50,000}{2,00,000} \\ &= 1.75 \text{ (or) } 1.75 : 1 \end{aligned}$$

Ex. 5

Calculate 'Liquidity Ratio' from the following information:

Current liabilities	=	Rs. 50,000
Current assets	=	Rs. 80,000
Inventories	=	Rs. 20,000
Advance tax	=	Rs. 5,000
Prepaid expenses	=	Rs. 5,000

ANS. 5

$$\begin{aligned} \text{Liquidity Ratio} &= \frac{\text{Liquid Assets}}{\text{Current Liabilities}} \\ \text{Liquidity Assets} &= \text{Current assets} - (\text{Inventories} + \text{Prepaid expenses} + \text{Advance tax}) \\ &= \text{Rs. } 80,000 - (\text{Rs. } 20,000 + \text{Rs. } 5,000 + \text{Rs. } 5,000) \\ &= \text{Rs. } 50,000 \\ \text{Liquidity Ratio} &= \frac{\text{Rs. } 50,000}{\text{Rs. } 50,000} = 1 : 1 \end{aligned}$$

EX. 6 Following information is available for the year 2006, calculate gross profit ratio:

Sales	Rs. 1,20,000
Gross Profit	Rs. 60,000
Return inwards	Rs. 20,000

ANS. 6 Net Sales = Sales - Return inwards

$$= \text{Rs. } 1,20,000 - 20,000$$

$$= \text{Rs. } 1,00,000$$

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

$$= \text{Rs. } 60,000 / \text{Rs. } 1,00,000 \times 100 = 60\%$$

**EX. 7** Calculate Gross Profit ratio from the following information:

Opening stock Rs. 50,000; closing stock Rs. 75,000; cash sale Rs. 1,00,000; credits sales Rs 1,70,000;

Returns outwards Rs. 15,000; purchased Rs. 2,90,000; advertisement exp. Rs. 30,000; carriage inwards Rs. 10,000.

**ANS. 7** Cost of goods sold = Opening stock + net purchases + direct expenses – closing stock

$$= \text{Rs. } 50,000 + (\text{Rs. } 2,90,000 - \text{Rs. } 15,000) + \text{Rs. } 10,000 - \text{Rs. } 75,000$$

$$= \text{Rs. } 2,60,000$$

Total Sales = Cash Sales + Credits Sales

$$= \text{Rs. } 1,00,000 + \text{Rs. } 1,70,000$$

$$= \text{Rs. } 2,70,000$$

Gross profit = Total Sales - Cost of goods sold

$$= \text{Rs. } 2,70,000 - \text{Rs. } 2,60,000$$

$$= \text{Rs. } 10,000$$

$$\text{Gross profit Ratio} = \frac{10,000}{2,70,000} \times 100 = 3.704 \%$$

**EX. 8** Sales Rs. 6,30,000; sales Returns Rs. 30,000; Indirect expenses Rs. 50,000; cost of goods sold Rs.2,50,000

Calculate Net Profit Ratio.

**ANS. 8** Net Sales = Total Sales – sales Returns

$$= \text{Rs. } 6,30,000 - \text{Rs. } 30,000$$

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

Gross Profit = Net Sales – Cost of goods sold

$$= \text{Rs. } 6,30,000 - \text{Rs. } 2,50,000$$

$$= \text{Rs. } 3,50,000$$

Net Profit = Gross Profit - Indirect expenses

$$= \text{Rs. } 3,50,000 - \text{Rs. } 50,000$$

$$= \text{Rs. } 3,00,000$$

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

Net sale

$$= \frac{\text{Rs. } 3,00,000}{\text{Rs. } 6,00,000} \times 100$$

$$= 50 \%$$

**EX. 9** Calculate the Gross profit Ratio, Net Profit Ratio and Operating Ratio from the given the following information:

Sales Rs. 4,00,000

Cost of Goods Sold Rs. 2,20,000

Selling expenses Rs. 20,000

Administrative Expenses Rs. 60,000

**ANS. 9** Gross Profit = Sales – Cost of goods sold

$$= \text{Rs. } 4,00,000 - \text{Rs. } 2,20,000$$

$$= \text{Rs. } 1,80,000$$

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

Sales

$$= \frac{\text{Rs. } 1,80,000}{\text{Rs. } 4,00,000} \times 100$$

$$= 45 \%$$

Net Profit = Gross Profit – Indirect expenses

$$= \text{Rs. } 1,80,000 - (\text{Rs. } 20,000 + \text{Rs. } 60,000)$$

$$= \text{Rs. } 1,00,000$$

$$\begin{aligned} \text{Net Profit Ratio} &= \text{Net profit} / \text{Sales} \times 100 \\ &= \text{Rs.}(1,00,000/ 4,00,000) \times 100 = 25 \% \\ \text{Operating Expenses} &= \text{Selling Expenses} + \text{Administrative Expenses} \\ &= \text{Rs. } 20,000 + 60,000 = \text{Rs. } 80,000 \\ \text{Operating Ratio} &= \frac{\text{Cost of goods} + \text{Operating Expenses}}{\text{Net Sales}} \times 100 \\ &= \frac{\text{Rs. } 2,20,000 + \text{Rs. } 80,000}{\text{Rs. } 4,00,000} \times 100 \\ &= 75 \% \end{aligned}$$

### Ex. 10

You are required to calculate (i) Gross profit ratio and (ii) Operating profit ratio with the help of following information:

	₹
Sales	6,80,000
Cost of goods sold	2,40,000
Selling Expenses	1,60,000
Administrative Expenses	80,000

### ANS . 10

$$\begin{aligned} \text{(i) Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Sales}} \times 100 \\ &= \frac{\text{₹ } 4,40,000}{\text{₹ } 6,80,000} \times 100 \\ &= 64.71\% \\ \text{(ii) Operating Profit Ratio} &= \frac{\text{Operating Profit}}{\text{Sales}} \times 100 \\ &= \frac{(6,80,000 - 4,80,000)}{6,80,000} \times 100 \\ &= 29.41\% \end{aligned}$$

#### Working Notes:

$$\begin{aligned} 1. \text{ Gross Profit} &= \text{Sales} - \text{Cost of goods sold} \\ &= \text{₹ } 6,80,000 - \text{₹ } 2,40,000 \\ &= \text{₹ } 4,40,000 \\ 2. \text{ Operating Cost} &= \text{Cost of goods sold} + \text{Selling Expenses} + \text{Administrative Expenses} \\ &= \text{₹ } 2,40,000 + 1,60,000 + 80,000 \\ &= \text{₹ } 4,80,000 \end{aligned}$$

(d) **Expenses Ratio:** Based on different concepts of expenses it can be expressed in different ways below:

$$\text{(i) Cost of Goods Sold (COGS) Ratio} = \frac{\text{COGS}}{\text{Sales}} \times 100$$

### EX. 11 Calculate Return on Capital employed

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (1,00,000 equity share of Rs. 10 each)	10,00,000	Fixed assets (Net)	14,00,000
Reserves	2,50,000	Current Assets	12,50,000
10 % Debentures	5,00,000	Preliminary Expenses	1,00,000
Current Liability	7,50,000		
Profit for the year	2,50,000		
	27,50,000		27,50,000

### ANS. 11

$$\text{Return on Investment} = \frac{\text{Profit before Interest and Tax}}{\text{Capital Employed}} \times 100$$

Profit before Interest and Tax:

$$\text{Profit for the year} = \text{Rs. } 2,50,000$$

$$\text{Add interest (10 \% of 5,00,000)} = \text{Rs. } 50,000$$

$$\text{Profit before interest and tax} = \text{Rs. } 3,00,000$$

$$\begin{aligned} \text{Capital Employed} &= \text{Net Assets} + \text{working Capital} \\ &= \text{Rs. } 14,00,000 + \text{Rs. } (12,50,000 - \text{Rs. } 7,50,000) \\ &= \text{Rs. } 19,00,000 \end{aligned}$$

**EX. 12** Calculate earnings per share from the following information:

50,000 equity shares of Rs. 10 each	Rs 5,00,000
10 % Preference share capital	Rs 1,00,000
9 % Debentures	Rs. 2,00,000
Net Profit after tax	Rs. 2,00,000

**ANS . 12** Earning per share = Profit available for equity shareholders/ No. of Equity Share  
 = Rs( 1,10,000 – 10,000) / 50,000  
 = Rs. 2 per share

**EX. 13**

	₹
Share Capital	10,00,000
Reserves	2,00,000
Surplus	(50,000)
Current assets	5,00,000
Non current assets	6,00,000
Trade payables	1,20,000

You are required to compute Equity Ratio.

**ANS. 13**

$$\begin{aligned} \text{Equity Ratio} &= \frac{\text{Shareholders' Equity}}{\text{Capital Employed}} \\ &= \frac{\text{₹ 11,50,000}}{\text{₹ 9,80,000}} \\ &= \text{₹ 1.17:1} \end{aligned}$$

W.N. 1:

$$\begin{aligned} \text{Shareholders Funds} &= \text{Share Capital} + \text{Reserves} - \text{Losses carried forward} \\ &= \text{₹ 10,00,000} + \text{₹ 2,00,000} - \text{₹ 50,000} \\ &= \text{₹ 11,50,000} \\ \text{Capital Employed} &= \text{Current Assets} + \text{Non Current Assets} - \text{Trade Payables} \\ &= \text{₹ 5,00,000} + \text{₹ 6,00,000} - \text{₹ 1,20,000} \\ &= \text{₹ 9,80,000} \end{aligned}$$

**EX.14** From the following information, calculate stock turnover ratio :

Opening Stock Rs.20,000;Closing Stock Rs.10,000;Purchases Rs. 50,000 Wages Rs. 13,000; sales Rs. 80,000 ; Carriage Inwards Rs. 2,000 ; Carriage outwards Rs. 6,000

**ANS.14**

$$\begin{aligned} \text{Stock Turnover Ratio} &= \text{Cost of Goods Sold/ Average Stock} \\ \text{Cost of Goods Sold} &= \text{Opening Stock} + \text{Purchases} - \text{Closing Stock} + \text{Direct Expenses} \\ &= \text{Rs. 20,000} + \text{Rs.50,000} + \text{Rs.15,000} - \text{Rs.10,000} = \text{Rs. 75,000} \\ \text{Average Stock} &= (\text{Opening Stock} + \text{Closing Stock}) / 2 \\ &= (\text{Rs. 20,000} + \text{Rs. 10,000}) / 2 = \text{Rs. 15,000} \\ \text{Stock Turnover Ratio} &= \text{Rs. 75,000/ Rs. 15,000} = \text{5 Times.} \end{aligned}$$

**EX.15** From the following information, calculate stock turnover ratio. Opening stock Rs 58,000; Excess of Closing stock opening stock Rs. 4,000; sales Rs. 6,40,000; Gross Profit @ 25% on cost

**ANS.15**

$$\begin{aligned} \text{Cost of goods Sold} &= \text{Sales} - \text{Gross Loss} \\ &= \text{Rs. 6,40,000} - 25/125(6,40,000) = \text{Rs. 5,12,000} \\ \text{Closing stock} &= \text{Opening stock} + \text{Rs. 4000} \\ &= \text{Rs. 58,000} + \text{Rs 4,000} = \text{Rs. 62,000} \\ \text{Average stock} &= (\text{Opening stock} + \text{Closing Stock}) / 2 \\ &= (58,000 + 62,000) / 2 = \text{Rs. 60,000} \\ \text{Stock Turnover Ratio} &= \text{Cost of Goods Sold/ Average Stock} \\ &= \text{Rs.5,12,000/ Rs. 60,000} = \text{8.53 times.} \end{aligned}$$

**EX.16** Calculate the Debtors Turnover Ratio and debt collection period (in months) from the following information:

Total sales = Rs. 2,00,000

Cash sales = Rs. 40,000

Debtors at the beginning of the year = Rs. 20,000

Debtors at the end of the year = Rs. 60,000

**ANS. 16**

Average Debtors = (Rs. 20,000 + Rs. 60,000)/2 = Rs. 40,000

Net credit sales = Total sales - Cash sales

= Rs.2,00,000 - Rs.40,000 = **Rs. 1,60,000**

Debtors Turnover Ratio = Net Credit sales/Average Debtors

= Rs. 1,60,000/Rs. 40,000 = **4 Times.**

Debt collection period = 12 months/52 weeks/365 days

Debtors' turnover

= 12/4 = **3 months**

**EX.17** From the following information, calculate Fixed Assets Turnover Ratio: Gross fixed asset Rs. 4,00,000; Accumulated Depreciation Rs. 1,00,000; Marketable securities Rs. 20,000; Current Assets Rs. 1,30,000; Miscellaneous expenditure Rs. 20,000; Current Liabilities Rs. 50,000; Gross sales Rs. 18,30,000; sale return Rs. 30,000

**ANS.17** Net fixed asset = Gross fixed asset- Depreciation = Rs. 4,00,000 - Rs. 1,00,000 = **Rs.3,00,000**

Net Sale = Gross sale – Sale Returns = Rs. 18, 30,000 - Rs. 30,000 = **Rs. 18,000**

Fixed Asset Turnover Ratio= Net Sale/ net Fixed assets = Rs. 18,30,000/ Rs.3,00,000 = **6 times.**

**EX.18** Calculate Debt Equity , from the following information:

10,000 preference share of Rs. 10 each Rs. 1,00,000

5,000 equity shares of Rs. 20 each Rs. 1,00,000

Creditors Rs. 45,000

Debentures Rs. 2,20,000

Profit and Loss accounts(Cr.) Rs. 70,000

**ANS. 18**

Debt = Debentures = Rs. 2,20,000

Equity = Equity share capital + Preferences Share Capital + profit and Loss accounts

= Rs. 1,00,000 + Rs. 1,00,000 + Rs. 70,000 = **Rs. 2,70,000**

**Debt Equity Ratio** = Long term debt/ shareholders' funds = Rs. 2,20,000 / Rs. 2,70,000 = **0.81:1**

**EX. 19** From the following information, calculate Debt Equity Ratio, Debt Ratio, Proprietary Ratio and Ratio of Total Assets to Debt.

**Balance Sheet as on December 31, 2006**

Equity share Capital	3,00,000	Fixed Assets	4,50,000
Preference Share Capital	1,00,000	Current Assets	3,50,000
Reserves	50,000	Preliminary Expenses	15,000
Profit & loss A/C	65,000		
11 % Mortgage Loan	1,80,000		
Current liabilities	1,20,000		
	8,15,000		8,15,000

**ANS.19 Shareholders Funds** = Equity Shares capital + Pref. Shar. Capital + Res. + P & L A/c (-) Prel. Exp.

= Rs. 3,00,000 + Rs. 1,00,000 + Rs.50,000 + Rs. 65,000- Rs. 15,000

= **Rs. 5,00,000**

**Debt Equity Ratio** = Debt / Equity = Rs. 1,80,000/Rs. 5,00,000 = **0.36: 1**

**Proprietary Ratio** = Proprietary funds / Total Assets = Rs. 5,00,000/Rs. 8,00,000 = **0.625:1**

**Total Assets to Debt Ratio** = Total Assets / Debt = Rs. 8,00,000/Rs. 1,80,000 = **4.44:1**

**EX. 20** The debt equity ratio of X Ltd. is 1:2.

Which of the following would increase/ decrease or not change the debt equity ratio?

- (i) Issue of new equity shares
- (ii) Cash received from debtors
- (iii) Sale of fixed assets at a profit
- (iv) Redemption of debentures
- (v) Purchase of goods on credit.

**ANS. 20**

- a) **The ratio will decrease.** This is because the debt remains the same, equity increases.
- b) **The ratio will not change.** This is because neither the debt nor equality is affected.
- c) **The ratio will decrease.** This is because the debt remains unchanged while equity increases by the amount of profit.
- d) **The ratio will decrease.** This is because debt decreases while equity remains same .
- e) **The ratio will not change.** This is because neither the debt nor equity is affected.

**EX. 21** Shareholders' funds Rs. 80,000; Total debts Rs. 1,60,000; Current liabilities Rs. 20,000.

Calculate Total assets to debt ratio.

**ANS. 21**

$$\begin{aligned} \text{Long term debt} &= \text{Total Debt} - \text{Current liabilities} \\ &= \text{Rs. } 1,60,000 - \text{Rs. } 20,000 = \text{Rs. } 1,40,000 \\ \text{Total Assets} &= \text{Shareholders' funds} + \text{Total debt} \\ &= \text{Rs. } 80,000 + \text{Rs. } 1,60,000 = \text{Rs. } 2,40,000 \\ \text{Total Assets to debt ratio} &= \text{Total Assets/ Debt} \\ &= \text{Rs. } 2,40,000 / \text{Rs. } 1,40,000 = 12:7 = 1.7:1 \end{aligned}$$

**EX. 22** From the following Balance Sheet and additional information, you are required to calculate:

- (i) Return on Total Resources
- (ii) Return on Capital Employed
- (iii) Return on Shareholders' Fund

**BALANCE SHEET as on 31st Dec.**

	Rs.		Rs.
Share Capital (Rs. 10)	8,00,000	Fixed Assets	10,00,000
Reserves	2,00,000	Current Assets	3,60,000
8% Debentures	2,00,000		
Creditors	1,60,000		
	13,60,000		13,60,000

Net operating profit before tax is Rs. 2,80,000. Assume tax rate at 50%. Dividend declared amounts to Rs.1,20,000. (B.Com. MS.)

**ANS. 22**

**SOLUTION:**

$$\begin{aligned} \text{(i) Return on Total Resources} &= \frac{\text{Profit after Tax}}{\text{Total Assets}} \times 100 \\ &= \frac{\text{Rs. } 1,40,000}{\text{Rs. } 13,60,000} \times 100 = 10.29\% \\ \text{(ii) Return on Capital Employed} &= \frac{\text{Profit before Tax \& Interest}}{\text{Capital Employed}} \times 100 \\ &= \frac{\text{Rs. } 2,96,000}{\text{Rs. } 12,00,000} \times 100 = 24.7\% \\ \text{(iii) Return on Shareholders' Fund} &= \frac{\text{Profit after Tax}}{\text{Shareholders Fund}} \times 100 \\ &= \frac{\text{Rs. } 1,40,000}{\text{Rs. } 10,00,000} \times 100 = 14\% \end{aligned}$$

## EX. 23

Extract from financial accounts of X, Y, Z Ltd. are:

	Year I		Year II	
	Assets Rs.	Liabilities Rs.	Assets Rs.	Liabilities Rs.
Stock	10,000		20,000	
Debtors	30,000		30,000	
Payment in Advance	2,000		—	
Cash in hand	20,000		15,000	
Sundry Creditors		25,000		30,000
Acceptances		15,000		12,000
Bank Overdraft		—		5,000
	62,000	40,000	65,000	47,000

Sales amounted to Rs.3,50,000 in the first year and Rs.3,00,000 in the second year.

You are required to comment on the solvency position of the concern with the help of accounting ratios.

(C.A. Final ;M. Com. Madras)

ANS. 23

### Short-term Solvency Analysis

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

$$\text{Year I : } \frac{10,000 + 30,000 + 2,000 + 20,000}{25,000 + 15,000} = \frac{62,000}{40,000} = 1.55 : 1$$

$$\text{Year II : } \frac{20,000 + 30,000 + 15,000}{30,000 + 12,000 + 5,000} = \frac{65,000}{47,000} = 1.38 : 1$$

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

$$\text{Year I : } \frac{30,000 + 20,000 + 2,000}{25,000 + 15,000} = \frac{52,000}{40,000} = 1.30 : 1$$

$$\text{Year II : } \frac{30,000 + 15,000}{30,000 + 12,000 + 5,000} = \frac{45,000}{47,000} = 0.96 : 1$$

(3) Inventory Turnover Ratio =  $\frac{\text{Net Sales}}{\text{Average Inventory}}$

$$\text{Year I : } \frac{3,50,000}{10,000} = 35 : 1$$

$$\text{Year II : } \frac{3,00,000}{15,000} = 20 : 1$$

(4) Inventory Current Assets Ratio =  $\frac{\text{Inventory}}{\text{Total Current Assets}} \times 100$

$$\text{Year I : } \frac{10,000}{62,000} \times 100 = 16\%$$

$$\text{Year II : } \frac{20,000}{65,000} \times 100 = 31\%$$

(5) Average Collection Period =  $\frac{\text{Trade Receivables}}{\text{Net Credit Sales}} \times \text{No. of Working Days}$

$$\text{Year I : } \frac{30,000}{3,50,000} \times 365 = 31.3 \text{ days}$$

$$\text{Year II : } \frac{30,000}{3,00,000} \times 365 = 36.5 \text{ days}$$

### Long-Term Solvency Analysis

(1) Debt Equity Ratio =  $\frac{\text{External Equities}}{\text{Internal Equities}}$

$$\text{Year I : } \frac{25,000 + 15,000}{62,000 - 40,000} = \frac{40,000}{22,000} = 1.82 : 1$$

$$\text{Year II : } \frac{30,000 + 12,000 + 5,000}{65,000 - 47,000} = \frac{47,000}{18,000} = 2.61 : 1$$

(2) Proprietary Ratio is =  $\frac{\text{Shareholder's Equities}}{\text{Total Equities}}$

$$\text{Year I : } \frac{22,000}{62,000} = 0.35 : 1$$

$$\text{Year II : } \frac{18,000}{65,000} = 0.28 : 1$$

## EX. 24

Following is the summarised Balance Sheet of a concern as at 31st December:

**BALANCE SHEET as on 31st December**

<i>Liabilities</i>	<i>Rs.</i>	<i>Assets</i>	<i>Rs.</i>
6% Preference Share Capital	1,50,000	Goodwill	20,000
Equity Share Capital	2,50,000	Land & Buildings	2,50,000
General Reserve	20,000	Machinery	1,75,000
Profit and Loss	15,000	Furniture	10,000
5% Debentures	1,00,000	Stock	90,000
Sundry Creditors	28,000	Sundry Debtors	21,000
Bills Payable	12,000	Cash at Bank	5,000
	5,75,000	Preliminary Expenses	4,000
			5,75,000

**Other information :**

Total sales Rs. 4,00,000 : 20% of which is made on credit. Gross Profit and Net Profit (after tax) for the year ended amounted to Rs. 80,000 and Rs. 20,000 respectively.  
Comment on the Financial condition of the concern.

ANS. 24

**SOLUTION :**

(1) *Current Ratio :*

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\text{Rs. 1,16,000}}{\text{Rs. 40,000}} = 2.9 : 1$$

(2) *Liquid Ratio :*

$$\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}} = \frac{\text{Rs. 26,000}}{\text{Rs. 40,000}} = 0.65 : 1$$

(3) *Proprietary Ratio :*

$$\frac{\text{Proprietors's Equity}}{\text{Total Assets}} = \frac{\text{Rs. 4,11,000}}{\text{Rs. 5,51,000}} = 0.75 : 1$$

(4) *Fixed Assets Proprietorship Ratio :*

$$\frac{\text{Fixed Assets}}{\text{Proprietors Equity}} = \frac{\text{Rs. 4,35,000}}{\text{Rs. 4,11,000}} = 1.06 : 1$$

(5) *Debt-Equity Ratio :*

$$\frac{\text{Total Debt}}{\text{Proprietors Equity}} = \frac{\text{Rs. 1,40,000}}{\text{Rs. 4,11,000}} = 0.34 : 1$$

(6) *Capital Gearing Ratio :*

$$\frac{\text{Equity Share Capital}}{\text{Pref. Share Capital + Debentures}} = \frac{\text{Rs. 2,50,000}}{\text{Rs. 2,50,000}} = 1 : 1$$

(7) *Gross Profit Ratio :*

$$\frac{\text{Gross Profit}}{\text{Sales}} \times 100 = \frac{\text{Rs. 80,000} \times 100}{\text{Rs. 4,00,000}} = 20\%$$

(8) *Net Profit Ratio :*

$$\frac{\text{Net Profit}}{\text{Sales}} \times 100 = \frac{\text{Rs. 20,000}}{\text{Rs. 4,00,000}} \times 100 = 5\%$$

(9) *Stock-Turnover Ratio:*

$$\frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{\text{Rs. 3,20,000}}{\text{Rs. 90,000}} = 3.6 \text{ Times}$$

(10) *Debtors' Turnover Ratio :*

$$\frac{\text{Debtors}}{\text{Credit Sale}} \times 365 = \frac{\text{Rs. 21,000}}{\text{Rs. 80,000}} \times 365 = 96 \text{ Days}$$

(11) *Return on Proprietors' Fund :*

$$\frac{\text{Net Profit (after Tax)}}{\text{Proprietors - Fund}} = \frac{\text{Rs. 20,000}}{\text{Rs. 4,11,000}} = 0.05 : 1$$

(12) *Turnover to Fixed Assets Ratio :*

$$\frac{\text{Turnover}}{\text{Fixed Assets}} = \frac{\text{Rs. 4,00,000}}{\text{Rs. 4,35,000}} = 0.92 : 1$$

**Workings :**

<b>1. Current Assets:</b>		
Stock		Rs. 90,000
Debtors		21,000
Cash at Bank		<u>5,000</u>
		<b>1,16,000</b>
<b>2. Current/Liquid Liabilities :</b>		
Sundry Creditors		Rs. 28,000
Bills Payable		<u>12,000</u>
		<b>40,000</b>
<b>3. Liquid Assets :</b>		
Sundry Debtors		Rs. 21,000
Cash at Bank		<u>5,000</u>
		<b>26,000</b>
<b>4. Fixed Assets :</b>		
Land and Buildings		Rs. 2,50,000
Machinery		1,75,000
Furnitures		<u>10,000</u>
		<b>4,35,000</b>
<b>5. Proprietors' Fund :</b>		
Equity Share Capital		Rs. 2,50,000
Preference Share Capital		1,50,000
General Reserve		20,000
Profit & Loss A/c.		<u>15,000</u>
		<b>4,35,000</b>
<b>Less :</b>		
Goodwill	Rs. 20,000	
Preliminary Expenses	<u>4,000</u>	
		<b>24,000</b>
		<b>4,11,000</b>
<b>6. Total Debts/Outside Liabilities :</b>		
5% Debentures		1,00,000
Current Liabilities		<u>40,000</u>
		<b>1,40,000</b>
<b>7. Shareholders' Equity :</b>		
Proprietors' Equity – Preference Share Capital		
		= Rs. 4,11,000 – Rs. 1,50,000 = <b>Rs. 2,61,000</b>
<b>8. Total Assets :</b>		
Total Fixed Assets + Total Current Assets		
		<b>Rs. 4,35,000 + Rs.1,16,000 = Rs. 5,51,000</b>

**Comments:**

**1. Liquidity and Solvency Position:** Current Ratio is 2.9. It means current assets of Rs.2.90 are available against each rupee of current liability. The position is satisfactory on the basis of current ratio. However, the Liquid Ratio is 0.65: 1. It means greater part of current assets constitute stock; the stock is slow-moving. Therefore, the liquidity position is not satisfactory.

**2. Credit Terms:** The collection system is faulty because debtors enjoy a credit facility for 96 days, which is beyond normal period. The performance of Debt Collection Department is poor.

**3. Profitability:** Gross Profit Ratio is 20% which is a healthy sign. But the Net Profit Ratio is only 5%. It means operating expenses are higher.

**4. Investment Structure:** Debt-Equity Ratio is 0.34: 1. It means the firm is not dependent on outside liabilities. The position is satisfactory. Capital Gearing Ratio is also satisfactory. However, the fixed assets to proprietorship ratio reveals that the entire fixed assets were not purchased by the proprietors' equity. It means the firm depends on outside liabilities. It is not desired.

**5. Return on Proprietors' Fund:** 5% of the sales is net profit and are available for the proprietors. The state of low return is not desirable. Stock Turnover Ratio and Turnover to fixed assets indicate an unhealthy sign. Fixed assets are not used properly. It is a sign of under trading. The economic condition of the firm is not sound. The firm can increase the rate of return on investment by increasing production.