RATIO ANALYSIS

Ratio analysis

Profitability (%)Ratio | **Turnover Ratio** | **Solvency ratio** | **capital structure ratio**

1. **Profitability ratio**:

Calculate the profit of the firm's business operation. It may be related to sales.

Types:

- Gross profit ratio
- Net profit ratio
- Operating ratio
- Operating profit ratio
- Expenses ratio
- ROI or Return on investment ratio

2. **Turnover ratio**: it also called performance ratio/ activity ratio.

Types :

- Stock turnover ratio
- Debtors turnover ratio
  a) Average collection period
- Creditors turnover ratio
  b) Average payment period
- Fixed assets turnover ratio
- Working capital turnover ratio

3. **Solvency ratio**: it also called financial ratio (or) stability ratio. Calculate the financial position and ability to meet its obligation.

Types :

- **Short term solvency ratio**
  a. Current ratio
  b. Liquidity ratio(or) quick ratio(or) acid test ratio
  c. Super quick ratio (or) absolute liquid ratio.
- **Long term solvency ratio:**
  a. Debt equity ratio
  B.proprietory ratio
  C.Fixed asset ratio

4. Capital structure ratio: types :

a. Capital gearing ratio

Information (or) Hints:

1. Net Sales = Total Sales – Sales return.
2. Net purchase = Total purchase – Purchase return.
3. Cost of goods sold (CGS) = Opening stock + (Purchase- - Purchase return)– Closing stock.

4. Operating Expenses:

(a) Administration Expenses.
(b) Selling Expenses.
(c) Distribution Expenses.

5. **Non-operating Expenses:**

(a) Loss on sale of fixed assets.
(b) Goodwill returns off.
(c) Interest paid on long term loans/ debentures.
(d) Income tax.
(e) Financial Expenses.

6.Non-operating income:

(a) Profit on sale of fixed assets/ investment.
(b) Revaluation of sale of fixed assets/ investment.
(c) Income from investment.
(d) Refund from income tax.
(e) Interest/ dividend/ rent received.

PROFITABILITY RATIO

(1) **GP Ratio** = $\frac{\text{GP}}{\text{Net sales}} \times 100$

GP = Sales – Cost of goods sold

(2) NP ratio = $\frac{\text{NP}}{\text{Net sales}} \times 100$

(a) NP = GP + Non-operating income – operating expenses – Non-operating Expenses.

(b) GP = Sales- Cost of goods sold (CGS).

(3) Operating Ratio = $\frac{\text{CGS + Operating expenses}}{\text{Net sales}} \times 100$

(4) Operating profit ratio = $\frac{\text{Operating profit}}{\text{Net Sales}} \times 100$

Operating profit ratio = 100 - Operating Ratio

(a) Operating Profit = GP – Operating expenses.

(Or)

(b) Operating profit = NP + Non-operating expenses – Non-operating income.

(5) Expenses ratio = $\frac{\text{(Particular) Expenses}}{\text{Net sales}} \times 100$

(6) ROI = ROI (Or) Return on investment (Or) Return on capital employed

ROI = $\frac{\textbf{Operating profit}}{\textbf{Capital Employed}} \times 100$

Operating Profit = See Operating profit ratio

Capital Employed = Share capital + Reserve/Surplus + Long term Liabilities – Non-business assets + fictitious assets.

(Or)

= Shareholders fund + Long term liabilities

(Or)

= Net Working capital + fixed assets

Net Working capital = Current assets – Current liabilities

(Or)

ROI = $\frac{\textbf{Profit after tax + interest + tax}}{\textbf{Capital employed}} \times 100$

TURN OVER RATIO

(1) Stock turnover ratio = $\frac{\text{Cost goods sold}}{\text{Average stock}}$

CGS = Opening stock + purchase – closing stock.

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

(a) Stock turnover period = Days/ Month

Stock turnover ratio

(b) Direct method = $\frac{\text{Average stock}}{\text{Cost of goods sold}}$ ×No of days/month in a year.

(2) Debtors turnover ratio = $\frac{\text{Credit sales}}{\text{Average A/C receivable.}}$

Credit sales = Total sales – cash sales

Average A/C Receivable = $\frac{\text{Opening (Debtors + Bills Receivable) + Closing (Debtors + Bills Receivable)}}{2}$

(a) Debtors Collection period = $\frac{\text{Days/ month}}{\text{Debtor's turnover ratio}}$

(b) Direct method = Debtors turnover ratio & Average collection period.

= $\frac{\text{Debtors + Bills Receivable}}{\text{Credit Sales}}$ ×No of Working days/ month in a year.

(3) **Creditors turnover ratio** = $\frac{\text{Credit purchase}}{\text{Average A/C payable}}$

(a) Average A/C payable = Opening (Creditors + Bills payable) + Closing (Creditors Bills payable)/2

(b) Creditors payment period = $\frac{\text{Days / month}}{\text{Creditor's turnover ratio}}$

(c) Direct method = Creditors turnover ratio + Average payment period

= $\frac{\text{Creditors + Bills payable}}{\text{Credit purchase}}$ × No. of Working days in a year.

(**4) Fixed assets turnover ratio** = $\frac{\text{Cost of goods sold / Sales}}{\text{Net fixed assets}}$

(5) Working capital turnover ratio = $\frac{\text{Cost of Sales}}{\text{Net working capital}}$

LIQUIDTY RATIO (Financial ratio)

- **Short term solvency ratio:**
    - Current ratio.
    - Liquid ratio.
    - Absolute liquid ratio.

- **Long term solvency ratio:**
    - Debt equity ratio.
    - Proprietary ratio.

(a) Current ratio:

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

(b) Liquid ratio:

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

Liquid Assets = Current Asset – (Stock + Prepaid Expenses)

(c) Absolute liquid ratio:

$$\text{Absolute liquid ratio} = \frac{\text{Absolute liquid asset}}{\text{Liquid liabilities}}$$

Absolute Liquid asset = Cash + bank + Short term investment

Liquid liabilities = Current liabilities – Bank overdraft

(d) Debt equity ratio:

$$\text{Debt equity ratio} = \frac{\text{External equities}}{\text{Internal equities}}$$

(Or)

$$= \frac{\text{Total long term debt}}{\text{Shareholders fund}}$$

Total long term debt = Debentures + loans from bank.

Shareholders fund = preference share capital + equity capital + reserves surplus.

(e) Proprietary ratio:

$$\text{Proprietary ratio} = \frac{\text{Shareholders fund + proprietary fund}}{\text{Total tangible assets}}$$

Total tangible assets = Assets – goodwill + preliminary expenses.

3.1 PROFITABILITY RATIOS

Profitability is different from profit. Profit is the excess of revenue earned over the cost incurred and as such it is an abstract term. Profitability is the ability of a firm in earning profit. it is a relative term. A firm‟s profitability is related with both its sales and investments.

Let us deal with both profitability ratios in relation to sales as well profitability ratios in relation to investment in the following passages:

3.9.1 Profitability Ratios in Relation to Sales

(i) Gross Profit Ratio

Gross profit ratio measures the relationship of gross profit to net sales and is usually represented as a percentage.

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

$$\text{Gross profit} = \text{Sales} - \text{Cost of Goods sold}$$

Illustration: 31

Calculate Gross profit ratio from the following:

Sales	6,00,000	Purchases	4,00,000
Sales returns	50,000	Purchases returns	20,000
Opening stock	40,000	Closing stock	1,00,000

Solution

Trading Account

To Opening stock		40,000	By sales	6,00,000
To Purchases	4,00,000		**Less :** returns	50,000
Less : returns	20,000		By Closing stock	1,00,000
		3,80,000		
To Gross profit		2,30,000		
		6,50,000		**6,50,000**

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

$$\text{Gross profit ratio} = \frac{2,30,000}{5,50,00} \times 100$$

$$= 41.82\%$$

(ii) Operating Ratio

Operating ratio establishes the relationship between cost of goods sold and other operating expenses on the one hand and the sales on the other.

$$\text{Operating ratio} = \frac{\text{Cost of Goods sold} + \text{Operating expences}}{\text{Net sales}} \times 100$$

Illustration: 32

Find out Operating ratio from the following :

	Rs.
Cost of goods sold	2, 50,000
Selling & distribution expenses	25,000
Office & administrative expenses	37,500
Net sales	**3,75,000**

Solution:

$$\text{Operating ratio} = \frac{\text{Cost of Goods sold} + \text{Operating expences}}{\text{Net sales}} \times 100$$

$$\text{Operating ratio} = \frac{2,50,000 + 25,000 + 37,5000}{3,75,000} \times 100$$

$$= \frac{3,12,500}{3,75,000} \times 100$$

$$= 83.33\%$$

(iii) Operating Profit Ratio

This ratio establishes the relationship between the operating profit and sales. The operating profit is calculated as follows:

$$\text{Opearting profit ratio} = \frac{\text{Operating Profit}}{\text{Net sales}} \times 100$$

(or)

Operating profit ratio = 100 - Operating Ratio

Operating profit = Net profit + Non-operating expenses •- Non-operating income

(or)

= Sales •- (Cost of goods sold + Administrative expenses + Selling & distribution expenses)

Illustration: 33

From the information given below, calculate Operating profit ratio:

Cost of goods sold	Rs. 4,00,000
Office & administrative expenses	Rs. 40,000
Selling & distribution expenses	Rs. 50,000
Net sales	Rs. 7,00,000

Solution

$$\text{Opearting profit ratio} = \frac{\text{Operating Profit}}{\text{Net sales}} \times 100$$

Operating profit = Sales – (Cost of goods sold + Administrative expenses + Selling & distribution expenses)

Operating profit ratio =2,10,000/7,00,000×100= 30%

(iv) Expenses Ratios

Expenses ratios indicate the relationship of various expenses to net sales. Lower the ratio, the greater is the profitability and higher the ratio, lower is the profitability. Individual or specific expense ratio may also be calculated as follows :

(a) Cost of goods sold ratio

(b) Office & administration expences ratio

(c) Selling & Distribution expenses ratio

(v) The net profit ratio

This net profit ratio establishes a relationship between net profit (after taxes) and net sales. This ratio is the overall measure of a firm's profitability and is calculated as follows:

$$\text{Net Profit Ratio} = \frac{\text{Net Profit after Tax}}{\text{Net sales}} \times 100$$

3.9.2 Profitability in Relation to Investment

(Overall profitability ratios)

The profitability ratios in relation to investment are given below:

a) Return on shareholders‟ investment or Net worth or

b) Earnings Per Share (EPS)

c) Price Earnings Ratio

d) Dividend yield Ratio

e) Dividend payout Ratio

Let us deal with each of the above profitability ratios in the ensuing passages:

3.9.2 (a) Return on Shareholders' investment or Net worth:

This ratio is also known as „Overall Profitability Ratio‟. It is popularly called "Return on investment" (ROI). This ratio reveals the relationship between return i.e., net profit after interest and tax and the proprietors‟ funds. It is expressed as:

$$\text{ROI} = \frac{\text{Netprofit}}{\text{Shareholders' Funds}} \times 100$$

This ratio is also called „Return On shareholders‟ Equity‟ (ROSE)

Note: Shareholders‟ Funds = Equity share capital + Preference share Capital + Reserves and Surplus – (Accumulated losses, if any)

Significance and interpretation of ROI

This ratio is one of the most important ratios used to measure the overall profitability of a firm. This ratio is of great importance to the present and potential shareholders as well as to the management of the company.

In general, higher the ratio, better the results/profitability.

Illustration: 34

Calculate Return on Investments from the following information:

	Rs.
Subscribed & paid up capital 25,000 Equity shares of Rs. 10 each	2, 50,000
10,000 5% preference shares of Rs. 10 each	1, 00,000
Reserve Fund	25,000
Share Premium	10,000
Capital Reserve	15,000
Net profit before tax	1, 50,000
Tax rate	50%

$$\text{ROI} = \frac{\text{Netprofit}}{\text{Shareholders' Funds}} \times 100$$

		Rs.
Shareholders‟ Funds:	Equity Share Capital	2, 50,000
	5% preference share capital	1, 00,000
	Accumulated profits	50,000
	(25,000+10,000+15,000)	4,00,000

Net Profit after tax $= 1,50,000 - 50\%$

$= \text{Rs. } 75,000$

$$\therefore \text{ROI} = \frac{75,000}{4,00,000} \times 100 = 18.75\%$$