CHAPTER - 5
Accounting Ratios

❖ **Meaning of Accounting Ratios-** It refers to the ratio that expresses relationship between two or more variables. The expression can be either in pure form, or in percentage terms, or in times or in fractions.

❖ **Meaning of Ratio Analysis-** Ratio Analysis is one of the tools of analysis of financial data. It used to know how and to what extent one accounting variable is affected by a change in the other accounting variable.

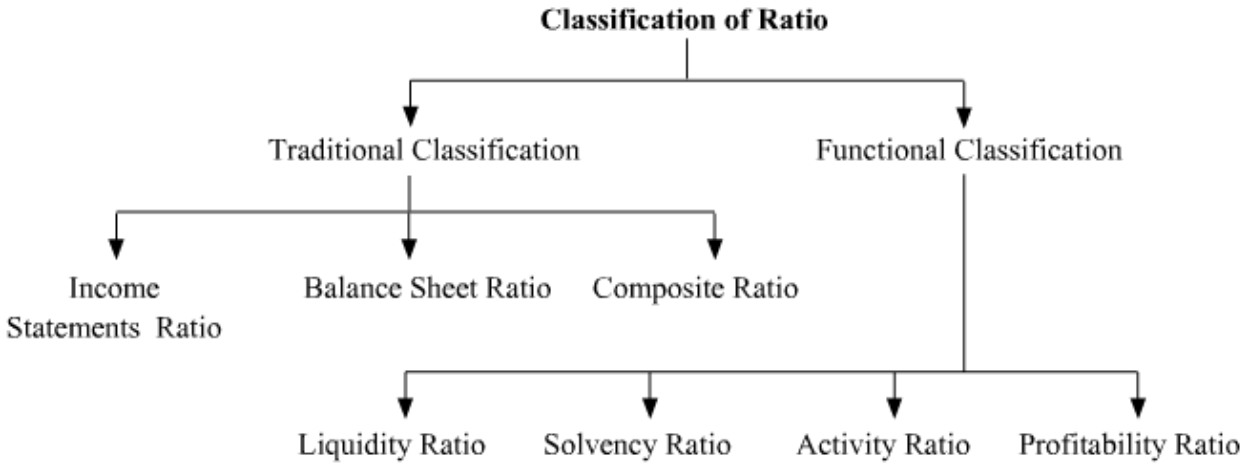
❖ **Advantages/Objectives of Ratio Analysis**

- It describes the relationship between various items of Balance Sheet and Income Statements. It helps us in ascertaining profitability, operational efficiency, solvency, etc. of an organization.
- It enables budgetary controls by assessing qualitative relationship among different financial variables.
- Ratio Analysis provides vital information to various accounting users regarding the financial position and viability and performance of a firm.
- It facilitates in conducting comparisons- inter-firm and intra-firm comparisons.It also lays down the basic framework for decision making and policy designing by management.

❖ **Classification/Types of Accounting Ratios**

The Accounting Ratios can be broadly classified in the following two categories.

- Traditional Classification
- Functional Classification



❖ **Traditional Classification-** This classification is based on the financial statements, i.e. Profit and Loss Account and Balance Sheet.

- **Income Statements Ratio-** These are those ratios whose all the elements belong only to the Trading and Profit and Loss Account, like Gross Profit Ratio, etc.

- **Balance Sheet Ratio-** These are those ratios whose all the elements belong only to the Balance Sheet, like Current Ratio, Debt Equity Ratio, etc.
- **Composite Ratio-** These are those ratios whose elements belong both to the Trading and Profit and Loss Account as well as to the Balance Sheet, like Debtors Turnover Ratio, etc.

❖ **Functional Classification-** This classification reflects the functional need and the purpose of calculating ratio. The basic rationale to compute ratio is to ascertain liquidity, solvency, financial performance and profitability of a business.

- **Liquidity Ratios-** These ratios are calculated to determine short-term solvency. These ratios involve Current Ratio and Quick Ratio.
- **Solvency Ratios-** These ratios are calculated to determine long-term solvency. These ratios are long-term in nature and helps in analysing how a firm is able to meet its long-term obligations using its long-term assets.
- **Activity Ratios-** There are calculated for measuring the operating efficiency (such as, Sales or Cost of goods sold) and efficacy of the operations of a business. It provides a better understanding about firm's strategy to utilise its resources effectively.
- **Profitability-** These used to make comparison of profit at different stages (Gross Profit, Operating Profit and Net Profit) to the variables such as, Sales, Capital Employed, etc. These ratios are calculated to assess the financial performance and the financial viability of the business.

❖ **Advantages**

- It expresses accounting data in a meaningful manner.
- It helps in establishing a cause and effect relationship between two or more interdependent financial variables.
- It helps in drafting future plans analysing the past performances.It facilitates in conducting inter-firm and intra-firm comparisons.

❖ **Limitations**

- The results of accounting ratios depend on the recorded financial data. If the data is false, then there is no guarantee that it will provide true analysis.
- Ignorance of price change results in false interpretation of Ratio Analysis.
- Ratio Analysis fails to reveal meaningful comparisons when different accounting policies and methods are followed.
- It ignores the qualitative aspects such as, market position of the business, employees' qualifications and efficiencies.
- It can be calculated for unrelated variables.
- Result of accounting ratios may be affected by window dressing of the financial statements.

❖ **List of Accounting Ratios and Formula**

LIQUIDITY RATIOS		
Ratio	**Components**	**Significance**
1. ***Current Ratio*** $\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$ **Result:** Expressed in ***Fraction***	Current Assets = Cash in Hand + Cash at Bank + Marketable Securities + Stock-in-trade + Prepaid Expenses + Accrued Incomes + Sundry Debtors + Bills Receivable + Other Current Assets. Current Liabilities = Sundry Creditors + Bills Payable + Outstanding Expenses + Advance Incomes + Bank Overdraft + Provision for Taxation + Proposed Dividend + Other Current Liabilities Or, Current Liabilities = Total Debts – Long-term Debts Or, Current Liabilities = Current Assets – Working Capital	It helps in understanding whether current assets are sufficient to meet current liabilities. Ideal Ratio: 2 : 1 Current Assets are more than twice the Current Liabilities indicates a sound short-term financial position of an enterprise.
2. ***Liquidity Ratio/Acid Test Ratio/ Quick Ratio*** $\text{Liquidity Ratio} = \frac{\text{Qucik Assets}}{\text{Current Liabilities}}$ **Result:** Expressed in ***Fraction***	Quick Assets = Current Assets – (Stock + Prepaid Expenses) Current Liabilities = Sundry Creditors + Bills Payable + Outstanding Expenses + Advance Incomes + Bank Overdraft + Provision for Taxation + Proposed Dividend + Other Current Liabilities	It helps in understanding whether the liquid assets are sufficient to be able to repay the Current Liabilities without any delay. Ideal Ratio: 1 : 1 Quick Assets more than 1 is an indicator of strong liquid financial position

SOLVENCY RATIOS		
Ratio	**Components**	**Significance**
1. ***Leverage Ratio/Debt-Equity Ratio*** **(DER)** $\text{DER} = \frac{\text{Long-term Loans}}{\text{Shareholders' Funds}}$ **Result:** Expressed in ***Fraction***	Long-term Loans = Debentures + Fixed Deposits + Loan from banks and other financial institutions + Other long-term borrowings Or, Long-term Loans = Total Debts – Current Liabilities. Shareholders' Fund = Equity Share Capital + Preference Share Capital + General Reserve + Capital Reserve + Profit and Loss (Cr.) + Securities Premium + Other Reserves – Miscellaneous Expenditures – Profit and loss (Dr.) Or, Shareholders' Funds = Total Assets – (Long-term Loans + Current Liabilities)	It shows the proportion of long-term debts in comparison of the owner's fund in the capital employed. It indicates how strong the long-term financial position of the enterprise is. Ideal Ratio = 2:1
2. ***Debt Ratio*** $\text{DR} = \frac{\text{Long-term Loans}}{\text{Capital Employed (Net Assets)}}$ Or, $\text{DR} = \frac{\text{Total Debts}}{\text{Total Assets}}$ **Result:** Expressed in ***Fraction***	Capital Employed = Share Capital + Reserve and Surplus + Long-term Loans – Miscellaneous Expenditures – Profit and Loss (Dr.) – Non-Operating Assets. Or, Capital Employed = Net Fixed Assets + Working Capital Net Assets = Non-fictitious Assets – Current Liabilities	It shows the proportion of long-term debt in the capital employed in the business. Low Debt Ratio provides security to creditors and high ratio helps management in trading on equity. Low Debt Ratio implies good conditions for the creditors to lend money to the business as the credit is backed with adequate security.

3. ***Total Assets to Debt Ratio*** **(TADR)** $TADR = \frac{\text{Total Assets}}{\text{Long-term Loans}}$ **Result:** Expressed in ***Fraction***	Total Assets = All Fixed Assets + Investment + Current Assets + Loan and Advances Or, Total Assets = Total Liabilities Or, Total Assets = Shareholders' Funds + Long-term Liabilities + Current Liabilities Long-term Loans = Debentures + Fixed Deposits + Loan from banks and other financial institutions + Other long-term borrowings	It represents how sufficient are the available assets in order to meet the long-term borrowings. In other words, to what extent total assets are available to meet the claims of long-term borrowers.
4. ***Proprietary Ratio*** **(PR)** $PR = \frac{\text{Shareholders' Funds}}{\text{Total Assets}}$ **Result:** Expressed in ***Fraction***	Shareholders' Fund = Equity Share Capital + Preference Share Capital + General Reserve + Capital Reserve + Profit and Loss (Cr.) + Securities Premium + Other Reserves – Miscellaneous Expenditures – Profit and loss (Dr.) Or, Shareholders' Funds = Total Assets – (Long-term Loans + Current Liabilities) Total Assets = All Fixed Assets + Investment + Current Assets + Loan and Advances Or, Total Assets = Total Liabilities Or, Total Assets = Shareholders' Funds + Long-term Liabilities + Current Liabilities	It represents the portion of total assets that is financed by the owner's equity. In other words, it determines the proportion of total assets financed by proprietors' (Shareholders') funds. Ratio close to one is an indicator of strong holding of equity.

5. ***Interest Coverage Ratio*** **(ICR)** $\text{ICR} = \frac{\text{Net Profit Before Interest and Tax}}{\text{Interest on Long-term Debts}}$ **Result:** Expressed in ***Times***		It depicts the security of interest payments on the long-term debts. It reveals the number of times the interest on long-term debt can be paid out of the profits available for interest. High Interest Coverage Ratio ensures safety of interest payment on the long-term debts.

ACTIVITY RATIOS or TURNOVER RATIOS		
Ratio	**Components**	**Significance**
1. ***Stock Turnover Ratio*** **(STR)** $\text{STR} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$ **Result:** Expressed in ***Times or Percentage***	Cost of Goods Sold = Sales – Gross Profit Or, Cost of Goods Sold = Opening Stock + Net Purchases + Direct Expenses – Closing Stock $\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$	It represents how many times the given level of stock is sold in comparison of Cost of Goods Sold. High stock turnover indicates the efficient utilisation of the working capital.
2. ***Average Sales Period*** **(ASP)** $\text{ASP (in months)} = \frac{12}{\text{Stock Turnover Ratio}}$ $\text{ASP (in days)} = \frac{365 \text{ or } 366}{\text{Stock Turnover Ratio}}$ **Result:** Expressed in ***Months or Days***	$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$ $\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$	It indicates how many months are required to sell the given level of stock.

3. ***Debtors or Receivables Turnover Ratio*** **(DTR)** $\text{DTR} = \frac{\text{Net Credit Sales}}{\text{Average Receivables}}$ **Result:** Expressed in ***Times***	Net Credit Sales = Total Net Sales – Cash Sales Total Net Sales = Gross Sales – Sales Return Average Receivables $= \frac{\text{O/p Debtors} + \text{O/p B/ R} + \text{C/o Debtors} + \text{C/o B/R}}{2}$	It ascertains how often amount is received from the debtors and bills receivable (arising from goods sold on credit) in comparison of total credit sales. This ratio indicates the debt collection ability of the enterprise. Higher Debtors Turnover Ratio indicates efficient collection of collection of cash from the debtors.
4. ***Average Collection Period*** **(ACP)** $\text{ACP (in months)} = \frac{12}{\text{Debtors Turnover Ratio}}$ $\text{ACP (in days)} = \frac{365 \text{ or } 366}{\text{Debtors Turnover Ratio}}$ **Result:** Expressed in ***Months or Days***	$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Receivables}}$ Average Receivables $= \frac{\text{O/p Debtors} + \text{O/p B/ R} + \text{C/o Debtors} + \text{C/o B/R}}{2}$ Net Credit Sales = Total Net Sales – Cash Sales Total Net Sales = Gross Sales – Sales Return	It represents the average time (months /days) taken by the debtors to make the payment from the date of credit sales.

5. ***Creditors or Payable Turnover Ratio*** **(CTR)** $\text{CTR} = \frac{\text{Net Credit Purchases}}{\text{Average Payables}}$ **Result:** Expressed in ***Times***	Net Credit Purchases = Total Net Purchases – Net Cash Purchases Total Net Purchases = Gross Purchases – Purchase Returns Average Payables $= \frac{\text{O/p Creditors} + \text{O/p B/P} + \text{C/o Creditors} + \text{C/o B/P}}{2}$	To know how many times payment is made to the creditors and bills payable (arising from credit purchase of goods) in comparison of net credit purchases. This ratio provides information especially to the suppliers or the creditors about the debt payment tendency (frequency) of an enterprise. This also helps the creditors to permit time to the enterprise to repay their debts. High Creditor's Turnover Ratio indicates quicker repayment to the creditors and more need of working capital in the form of cash.
6. ***Average Payment Period*** **(APP)** $\text{APP}\ (\text{in months}) = \frac{12}{\text{Creditors Turnover Ratio}}$ $\text{APP}(\text{in days}) = \frac{365 \text{ or } 366}{\text{Creditors Turnover Ratio}}$ **Result:** Expressed in ***Months or Days***	$\text{Creditors Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Payables}}$ Average Payables $= \frac{\text{O/p Creditors} + \text{O/p B/P} + \text{C/o Creditors} + \text{C/o B/P}}{2}$	It indicates the average time-gap (in months or days) from date of purchase to the date of payment.

7. ***Working Capital Turnover Ratio*** **(WCTR)** $WCTR = \frac{\text{Net Sales or Cost of Good Sold}}{\text{Working Capital}}$ **Result:** Expressed in ***Times***	Net Sales = Net Credit Sales + Net Cash Sales Net Working Capital = Current Assets – Current Liabilities	It indicates how many times sales (i.e. revenue) generated from a given level of working capital. Higher Working Capital Turnover Ratio indicators more efficient utilisation of working capital.
8. ***Fixed Assets Turnover Ratio*** **(FATR)** $FATR = \frac{\text{Net Sales}}{\text{Net Fixed Assets}}$ **Result:** Expressed in ***Times***	Net Sales = Gross Sales – Sales Return Net Fixed Assets = Gross Fixed Assets – Depreciation	It determines how many sales have been generated in comparison of the net fixed assets. It ensures the extent to which the sales of goods depend on the utilisation of the fixed assets. High Fixed Assets Turnover indicates efficient utilisation of the Fixed Assets.
9.***Current Assets Turnover Ratio*** **(CATR)** $CATR = \frac{\text{Net Sales}}{\text{Current Assets}}$ **Result**: Expressed in ***Times***	Net Sales = Gross Sales – Sales Return	It ensures the extent to which the sales of goods depend on the utilisation of the fixed assets. High Current Assets Turnover Ratio indicates efficient utilisation of the Current Assets.

10. ***Investment (Net Assets) Turnover Ratio*** **(ITR)** $\text{ITR} = \frac{\text{Net Sales}}{\text{Capital Employed}}$ **Result**: Expressed in ***Times***	Capital Employed = Share Capital + Reserve and Surplus + Long-term Loans – Miscellaneous Expenditures – Profit and Loss (Dr.) – Non-Operating Assets. Or, Capital Employed = Net Fixed Assets + Working Capital Net Assets = Non-fictitious Assets – Current Liabilities Net Sales = Gross Sales – Sales Return	High Investment Turnover Ratio implies efficient utilisation of resources by the enterprise. Therefore, high ITR leads to higher liquidity and profitability of the enterprise.

PROFITABILITY RATIOS		
Ratio	**Components**	**Significance**
1. ***Gross Profit Ratio*** $\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$ **Result**: Expressed in ***Percentage***	Gross Profit = Net Sales – Cost of Goods Sold Net Sales = Gross Sales – Sales Return	It helps in ascertaining the rate of earning of Gross Profit on Net sales. High Gross Profit Ratio indicates efficient in production and reduced cost of production.
2. ***Operating Ratio*** $\text{Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$ **Result**: Expressed in ***Percentage***	Operating Cost = Cost of Goods sold + Operating Expenses Operating Expenses = Office and Administrative Expenses + Selling and Distribution Expenses Net Sales = Gross Sales – Sales Return	It helps to determine the percentage rate of operating cost in comparison of the Net Sales High Operating Ratio indicates higher operating cost and lesser reduction in rate of operating profit.

3. ***Operating Profit Ratio*** **(OPR)** $\text{OPR} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$ **Result**: Expressed in ***Percentage***	Operating Profit = Net Sales – Operating Cost Net Sales = Gross Sales – Sales Return	It helps to determine the percentage rate of operating profit in comparison of the Net Sales. High Operation Profit Ratio indicates efficient utilisation of amount incurred on the cost of production and operating expenses.
4. ***Net Profit Ratio*** $\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$ **Result**: Expressed in ***Percentage***	Net Profit = Gross Profit + Indirect Incomes – All Indirect Expenses	It helps to know the percentage rate of net profit in comparison of Net Sales. High net profit indicates improvement in the earning capacity of the enterprise.
5. ***Return on Investment/ Return on Capital Employed*** **(ROI)** $\text{ROI} = \frac{\text{Net Profit before Interest and Tax}}{\text{Capital Employed}} \times 100$ **Result**: Expressed in ***Percentage***	Net Profit before Interest and Tax = Net Profit (excluding interest and provision for taxation) Capital Employed = Share Capital + Reserve and Surplus + Long-term Loans – Miscellaneous Expenditures – Profit and Loss (Dr.) – Non-Operating Assets.	It helps to know the percentage rate of earnings from the amount invested in the business. High rate of returns indicates efficient utilisation of capital employed in the business.
6. ***Return on Net Worth*** **(RONW)/ *Return on Shareholders' Funds*** **(RSF)** $\text{RONW} = \frac{\text{Profit after Tax}}{\text{Shareholders' Fund}}$ **Result**: Expressed in ***Percentage***	Shareholders' Fund = Equity Share Capital + Preference Share Capital + General Reserve + Capital Reserve + Profit and Loss (Cr.) + Securities Premium + Other Reserves – Miscellaneous Expenditures – Profit and loss (Dr.) Or, Shareholders' Funds = Total Assets – (Long-term Loans + Current Liabilities)	It helps in determining the amount invested by the shareholders in the business is fetching them sufficient returns or not. It should be higher than the Return on Investment; else it would imply the failure of the enterprise to employ the funds efficiently.

7. ***Earnings per Share*** **(EPS)** $EPS = \frac{\text{N/P after Interest, Tax \& Pref. Dividend}}{\text{Number of Equity Shares}}$ **Result**: Expressed in ***Rs per Share***	Net Profit after Interest and Tax = Net Profit + (excluding interest and provision for taxation)	This ratio determines the amount of profit available to each equity shares. It helps in comparing the dividend to that of the last years.
8. ***Book Value per Share*** **(BVPS)** $BVPS = \frac{\text{Equity Shareholders' Funds}}{\text{Number of Equity Shares}}$ **Result**: Expressed in ***Rs per Share***	Equity Shareholders' Funds = Shareholders' Funds – Preference Share Capital	It helps to the shareholders to know the value of the shareholdings. This ratio also affects the market value of the shares.
9. ***Dividend per Share*** **(DPS)** $DPS = \frac{\text{Dividend paid to Equity Shareholders}}{\text{Number of Equity Shares}}$ **Result**: Expressed in ***Rs per Share***		It helps to calculate the dividend paid on each share. It helps in comparing dividend per share in the current year to that of in the previous years.
10. ***Price Earnings Ratio*** **(PER)** $PER = \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$ **Result**: Expressed in ***Rs per Share***		High Price Earnings Ratio indicates the increase in the wealth of the shareholders and high demand for the shares.

❖ **Some Special Problems for Gross Profit Ratio and Net Sales**

- ***Example*:**
  Cost of Goods Sold is Rs 2,00,000, Gross Profit is 20% on cost. Calculate the Gross Profit Ratio.

  ***Solution*:**

  $$\text{Gross Profit} = \text{Cost of Goods Sold} \times \frac{20}{100}$$

  $$= 2{,}00{,}000 \times \frac{20}{100} = \text{Rs } 40{,}000$$

  Sales = Cost of Goods Sold + Gross Profit

  = 2,00,000 + 40,000

  = Rs 2,40,000

  $$\text{Gross Profit} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{40{,}000}{2{,}40{,}000} \times 100 = 16.67\%$$

- ***Example*:**
  Net Sales is Rs 2,00,000, Gross Profit is 25% on (or above) cost. Calculate the Gross Profit Ratio.

  ***Solution*:**

  Let Cost be = x

  $$\text{Gross Profit} = x \times \frac{25}{100} = \frac{25x}{100}$$

  Sales = Cost of Goods Sold + Gross Profit

  $$\text{or, } 2{,}00{,}000 = x + \frac{25x}{100}$$

  $$\text{or, } 2{,}00{,}000 = \frac{125x}{100}$$

  so, x = Rs 1,60,000

  Gross Profit = Sales − Cost of Goods Sold

  = 2,00,000 − 1,60,000

  = Rs 40,000

  $$\text{Gross Profit} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{40{,}000}{2{,}00{,}000} \times 100 = 20\%$$

- ***Example*:**
  Cost of Goods Sold Rs 2,00,000 and Gross Profit Ratio is 20%. Calculate sales and gross profit.

Solution:

Let Sales be = x

Gross Profit = $x \times \frac{20}{100} = \frac{20x}{100}$

Sales = Cost of Goods Sold + Gross Profit

or, $x = 2{,}00{,}000 + \frac{20x}{100}$

or, $\frac{80x}{100} = 2{,}00{,}000$

so, x = Rs 2,50,000

Hence, Sales is Rs 2,50,000

Goss Profit = Sales – Cost of Goods Sold

= 2,50,000 – 2,00,000

= Rs 50,000

Gross Profit = $2{,}50{,}000 \times \frac{20}{100}$ = Rs 50,000

- ***Example*:**
Cash Sales is Rs 30,000, Credit Sales is 80% of Net Sales and Cost of Goods Sold is Rs 1,20,000. Calculate the Gross Profit Ratio.

***Solution*:**

Let Sales be = x

Credit Sales = $x \times \frac{80}{100} = \frac{80x}{100}$

Net Sales = Cash Sales + Credit Sales

or, $x = 30{,}000 + \frac{80x}{100}$

or, $\frac{20x}{100}$ = Rs 30,000

x = Rs 1,50,000

Hence, Net Sales = Rs 1,50,000

Gross Profit = Net Sales + Cost of Goods Sold

= 1,50,000 – 1,20,000 = Rs 30,000

Gross Profit Ratio = $\frac{30{,}000}{1{,}50{,}000} \times 100$ = 20%