7. RATIO ANALYSIS

This chapter covers the following topics:

- Ratio analysis and its usage
- Advantages and limitations of ratio analysis
- Limitations
- Types of Ratio
- Working capital cycle
- Formulas of useful accounting ratios

Accounting Ratio

Ratio is an expression of relationship between two or more items in mathematical terms. Exhibition of meaningful and useful relation between different accounting data is called Accounting Ratio. Ratio may be expressed as a:b (a is to b), in terms of simple fraction, integer, or percentage.

If the current assets of a concern is Rs 4,00,000 and the current liabilities is Rs 2,00,000, then the ratio of current assets to current liabilities is given as 4,00,000 / 2,00,000 = 2. This is called simple ratio. Multiply a ratio by 100 to express it in terms of percentage.

We can express the ratio between 200 and 100 in any of the following ways:

(a) 2 : 1 (b) 2/1 (c) 200% (d) 2 to 1 (e) 2

Ratios are extremely useful in drawing the financial position of a concern.

Accounting Analysis

Comparative analysis and interpretation of accounting data is called Accounting Analysis. When accounting data is expressed in relation to some other data, it conveys some significant information to the users of data.

Ratio Analysis and its Applications

Ratio analysis is a medium to understand the financial weakness and soundness of an organization. Keeping in mind the objective of analysis, the analyst has to select appropriate data to calculate appropriate ratios. Interpretation depends upon the caliber of the analyst.

Ratio analysis is useful in many ways to different concerned parties according to their respective requirements. Ratio analysis can be used in the following ways:

- To know the financial strength and weakness of an organization.
- To measure operative efficiency of a concern.
- For the management to review past year's activity.
- To assess level of efficiency.
- To predict the future plans of a business.
- To optimize capital structure.
- In inter and intra company comparisons.
- To measure liquidity, solvency, profitability and managerial efficiency of a concern.
- In proper utilization of assets of a company.
- In budget preparation.
- In assessing solvency of a firm, bankruptcy position of a firm, and chances of corporate sickness.

Advantages of Ratio Analysis

- It is powerful tool to measure short and long-term solvency of a company.
- It is a tool to measure profitability and managerial efficiency of a company.
- It is an important tool to measure operating activities of a business.
- It helps in analyzing the capital structure of a company.
- Large quantitative data may be summarized using ratio analysis.
- It relates past accounting performances with the current.
- It is useful in coordinating the different functional machineries of a company.
- It helps the management in future decision-making.
- It helps in maintaining a reasonable balance between sales and purchase and estimating working capital requirements.

Limitations of Ratio Analysis

Although Ratio Analysis is a very useful accounting tools to analyze and interpret different accounting equations, it comes with its own set of limitations:

- If the data received from financial accounting is incorrect, then the information derived from ratio analysis could not be reliable.

- Unauthenticated data may lead to misinterpretation of ratio analysis.
- Future prediction may not be always dependable, as ratio analysis is based on the past performance.
- To get a conclusive idea about the business, a series of ratios is to be calculated. A single ratio cannot serve the purpose.
- It is not necessary that a ratio can give the real present situation of a business, as the result is based on historical data.
- Trend analysis is done with the help of various calculated ratios that can be distorted due to the changes in the price level.
- Ratio analysis is effective only where same accounting principles and policies are adopted by other concerns too, otherwise inter-company comparison will not exhibit a real picture at all.
- Through ratio analysis, special events cannot be identified. For example, maturity of debentures cannot be identified with ratio analysis.
- For effective ratio analysis, practical experience and knowledge about particular industry is essential. Otherwise, it may prove worthless.
- Ratio analysis is a useful tool only in the hands of an expert.

Types of Ratio

Ratios can be classified on the basis of financial statements or on the basis of functional aspects.

Classification on the Basis of Financial Statement

Balance Sheet Ratios: Ratios calculated from taking various data from the balance sheet are called balance sheet ratio. For example, current ratio, liquid ratio, capital gearing ratio, debt equity ratio, and proprietary ratio, etc.

Revenue Statement Ratio: Ratios calculated on the basis of data appearing in the trading account or the profit and loss account are called revenue statement ratios. For example, operating ratio, net profit ratio, gross profit ratio, stock turnover ratio.

Mixed or Composite Ratio: When the data from both balance sheet and revenue statements are used, it is called mixed or composite ratio. For example, working capital turnover ratio, inventory turnover ratio, accounts payable turnover ratio, fixed assets turnover ratio, return of net worth ratio, return on investment ratio.

Classification of Ratios on the Basis of Financial Statements		
Balance Sheet Ratios	**Profit and Loss A/c Ratios**	**Composite or Mixed Ratios**
• Current Ratio • Liquid Ratio • Absolute Liquidity • Ratios • Debt Equity Ratio • Proprietorship Ratio • Capita Gearing Ratio • Assets Proprietorship • Ratio • Capital Inventory to • Working Capital Ratio • Ratio of Current Assets to Fixed Assets	• Gross Profit Ratio • Operating Ratio • Operating Profit Ratio • Net Profit Ratio • Cash Profit Ratio • Expenses Ratio • Interest Coverage Ratio	• Stock Turnover Ratio • Receivable Turnover Ratio • Payable Turnover Ratio • Fixed Assets Turnover Ratio • Total Assets Turnover Ratio • Working Capital turnover Ratio • Capital Turnover Ratio • Return on Capital Employed • Return on Equity Ratio • Return on Shareholders Fund • Capital Turnover Ratio

Functional Classification of Ratios

Ratios can be further classified based on their functional aspects as discussed below.

Liquidity Ratios

Liquidity ratios are used to find out the short-term paying capacity of a firm, to comment short term solvency of the firm, or to meet its current liabilities. Similarly, turnover ratios are calculated to know the efficiency of liquid resources of the firm, Accounts Receivable (Debtors) Turnover Ratio and Accounts Payable (Creditors).

Long-Term Solvency and Leverage Ratios

Debt equity ratio and interest coverage ratio are calculated to know the efficiency of a firm to pay long-term debts and to meet interest costs. Leverage ratios are calculated to know the proportion of debt and equity in the financing of a firm.

Activity Ratios

Activity ratios are also called turnover ratios. Activity ratios measure the efficiency with which the resources of a firm are employed.

Profitability Ratios

The results of business operations can be calculated through profitability ratios. These ratios can also be used to know the overall performance and effectiveness of a firm. Two types of profitability ratios are calculated in relation to sales and investments.

FUNCTIONAL CLASSIFICATION OF RATIOS			
Liquidity Ratios	**Long-term Solvency and Leverage Ratios**	**Activity Ratios Asset management Ratios**	**Profit abilities Ratios**
(A) • Current Ratio • Liquid Ratio • Absolute Liquid or Cash Ratios • Interval Measure (B) • Debtors Turnover Ratio • Creditor Turnover Ratio • Inventory Turnover Ratio	• Debt/ Equity Ratio • Debt to total Capital Ratio • Interest Coverage Ratio • Cash Flow/ Debt • Capital Gearing	• Inventory Turnover Ratio • Debtors Turnover Ratio • Fixed Assets Turn over Ratio • Total Assets Turnover Ratio • Working Capital Turnover Ratio • Payable Turnover Ratio • Capital Employed Turnover Ratio	**(A) In relation to Sales** • Gross Profit Ratio • Operating Ratio • Operative Profit Ratio • Net Profit Ratio • Expenses Ratio **B) In relation to Investments** • Return on Investment • Return on Capital • Return on Equity • Return on Total

			• Resources • Earnings per Share • Price Earnings Ratio

Chart of Useful Ratios

OBJECTIVES	RATIOS TO BE COMPUTED
Short–term Financial Position or Test of Liquidity:	
(a) Current Ratios	$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$
(b) Quick or Acid Test or Liquid Ratio	$\text{Liquid Ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}}$
(c) Absolute Liquid Ratio	$\text{Absolute Liquid Ratio} = \frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}}$
(d) Interval Measure	$\text{Interval Measure} = \frac{\text{Liquid Assets}}{\text{Avg. Daily Operating Expenses}}$

Current Assets Movement (Asset Management Ratios):	
(a) Inventory /Stock Turnover Ratio	$= \frac{\text{Cost of Goods Sold}}{\text{Avg. Inventory at Cost}}$
(b) Debtors or receivables Turnover Ratio/Velocity	$= \frac{\text{Net Credit Annual Sale}}{\text{Avg. Trade Debtors}}$
(c) Average Collection Period	$= \frac{\text{Total Trade Debtors}}{\text{Sale per Day}}$
(d) Creditors / Payable Turnover Ratio / Velocity	$= \frac{\text{Net Credit Annual Purchase}}{\text{Avg. Trade Creditors}}$
(e) Average Payment Period	$= \frac{\text{Total Trade Creditos / Payable}}{\text{Avg. Daily Purchase}}$
(f) Working Capital Turnover Ratio	$= \frac{\text{Sales or Cost of Sales}}{\text{Net Working Capital}}$
Analysis of Long-term Financial Position or Test of Solvency:	
(a) Debt Equity Ratio	$= \frac{\text{Outsiders Funds}}{\text{Shareholders' Funds}}$ or $\frac{\text{Outsiders' Equities}}{\text{Internal Equities}}$
(b) Funded Debt to Total Capitalization Ratio	$= \frac{\text{Funded Debts}}{\text{Total Capitalization}} \times 100$
(c) Ratio of Long term Debt to Shareholders, Funds (Debt Equity)	$= \frac{\text{Long term Debts}}{\text{Shareholders' Funds}}$

(d) Proprietary or Equity Ratio	$= \frac{\text{Shareholders Funds}}{\text{Total Assets}}$
(e) Solvency Ratio	$= \frac{\text{Total Liabilities to Outsiders}}{\text{Total Assets}}$
(f) Fixed Assets Net Worth Ratio	$= \frac{\text{Fixed Assets after Depreciation}}{\text{Shareholders' Funds}}$
(g) Fixed Assets Ratio or Fixed Assets to Long Term Funds	$= \frac{\text{Fixed Assets after Depreciation}}{\text{Total long term Fund}}$
(h) Ratio of Current Assets to Proprietary funds	$= \frac{\text{Current Assets}}{\text{Shareholders' Funds}}$
(i) Debt-Service or Interest Coverage	$= \frac{\text{Net Profit (before Int. \& Taxes)}}{\text{Fixed Interest Charges}}$
(j) Total Coverage or Fixed Charge Coverage	$= \frac{\text{EBIT}}{\text{Total Fixed Charges}}$
(k) Preference Dividend Coverage Ratio	$= \frac{\text{Net Profit (before Int. \& Tax)}}{\text{Preference Dividend}}$
(l) Cash to debt-Service Ratio or Debt Cash Flow Coverage	$= \frac{\text{CF}}{1 + \frac{\text{SFD}}{1 - \text{Tax Rate}}}$ CF = Annual cash flow before Int. & Tax SFD = Sinking fund appropriation on debt

Analysis of Profitability:	
(i) General Profitability:	
(a) Gross Profit Ratio	$= \frac{\text{Gross Profit}}{\text{Net Sale}} \times 100$
(b) Operating Ratio	$= \frac{\text{Operating Cost}}{\text{Net Sale}} \times 100$
(c) Expenses Ratio	$= \frac{\text{Particular Expense}}{\text{Net Sale}} \times 100$
(d) Net Profit Ratio	$= \frac{\text{Net Profit after Tax}}{\text{Net Sale}} \times 100$
(e) Operating Profit Ratio	$= \frac{\text{Operating Profit}}{\text{Net Sale}} \times 100$

Overall Profitability:	
(a) Return on Shareholders' Investment (RoI)	$= \frac{\text{Net Profiti after Tax \& Interest}}{\text{Shareholders' Fund}} \times 100$
(b) Return on Equity Capital	$= \frac{\text{Net Profit after Tax} - \text{Pref. Dividend}}{\text{Paid up Equity Capital}} \times 100$
(c) Earnings per Share (EPS)	$= \frac{\text{Net Profit after Tax} - \text{Pref. Dividend}}{\text{Number of Equity Share}}$
(d) Return on Gross Capital Employed	$= \frac{\text{Adjusted Net Profit}}{\text{Gross Capital Employed}} \times 100$
(e) Return on Net Capital Employed	$= \frac{\text{Adjusted Net Profit}}{\text{Net Capital Employed}} \times 100$
(f) Return on Assets	$= \frac{\text{Net Profit after Tax}}{\text{Avg. Total Assets}}$
(g) Capital Turnover Ratio	$= \frac{\text{Sale or Cost of Sale}}{\text{Capital Employed}}$
(h) Fixed Assets Turnover Ratio	$= \frac{\text{Sale or Cost of Goods Sold}}{\text{Fixed Assets}}$
(i) Working Capital Turnover Ratio	$= \frac{\text{Sales or Cost of Goods Sold}}{\text{Net Working Capital}}$
Market Test or Valuation Ratio:	
(a) Dividend Yield Ratio	$= \frac{\text{Dividend per Share}}{\text{Market Value per Share}}$
(b) Dividend Payout Ratio	$= \frac{\text{Dividend per Equity Share}}{\text{Earnings per Share}}$

(c) Price/Earnings (P/E) Ratio	$= \frac{\text{Market Price per Equity Share}}{\text{Earnings per Share}}$
(d) Earning Yield Ratio	$= \frac{\text{Earnings per Share}}{\text{Market price per share}}$
(e) Market Value Book Value Ratio	$= \frac{\text{Market value per share}}{\text{Book value per share}}$
(f) Market Price to Cash Flow Ratio	$= \frac{\text{Market price per share}}{\text{Cash flow per share}}$

Market Test or Valuation Ratio:	
(a) Dividend Yield Ratio	$= \frac{\text{Dividend per Share}}{\text{Market Value per Share}}$
(b) Dividend Payout Ratio	$= \frac{\text{Divident per Equity Share}}{\text{Earnings per Share}}$
(c) Price Earnings Ratio (P/E Ratio)	$= \frac{\text{Market Price per Equity Share}}{\text{Earnings per Share}}$
(d) Earning Yield Ratio	$= \frac{\text{Earnings per Share}}{\text{Market Price per Share}}$
(e) Market Value Book Value Ratio	$= \frac{\text{Market Value per Share}}{\text{Book Value per Share}}$
(f) Market Price to Cash Flow Ratio	$= \frac{\text{Market Price per Share}}{\text{Cash Flow per Share}}$

Market Test or Valuation Ratio:	
(a) Capital Gearing Ratio	$= \frac{\text{Equity Share Capital + Reserve \& Surplus}}{\text{Pref. Capital + Long term Debt bearing Fixed Interest}}$
(b) Total Investment to Long Term Liabilities	$= \frac{\text{Shareholders Fund + Long term Liabilities}}{\text{Long term Liabilities}}$
(c) Debt Equity Ratio	$= \frac{\text{Outsiders Funds}}{\text{Shareholders Funds}}$
(d) Ratio to Fixed Assets to Funded Debt	$= \frac{\text{Fixed Assets}}{\text{Funded Debts}}$
(e) Ratio of Current Liabilities to Proprietors fund	$= \frac{\text{Current Liabilities}}{\text{Shareholders' Funds}}$
(f) Ratio of Reserve to Equity Capital	$= \frac{\text{Reserves}}{\text{Equity Share Capital}} \times 100$
(g) Financial Leverage	$= \frac{\text{EBIT}}{\text{EBIT} - \text{Interest \& Pref. Dividend}}$
(h) Operating Leverage	$= \frac{\text{Contribution}}{\text{EBIT}}$

Working Capital

As per the definitions phrased by experts,

"Working capital is the amount of funds necessary to cover the cost of operating the enterprises."

---Shubin

"Circulating capital means current assets of a company that are changed in the ordinary course of business from one form to another, as for example, from cash to inventories, inventories to receivables, receivables in to cash."

---Genestenberg

Broadly, there are two types of capital required for a business:

- Fixed Capital
- Working Capital

Fixed capital requires investing in long term investments of business to create production facility through purchase of fixed assets such as building, plant, machinery, furniture etc. Investment in these assets means permanent blockage of capital or for a long term fixed term blockage of funds.

Capital is required for short term purposes to purchase raw material, payment of day to day needs of organization, routine business expenditure, payment of salaries, wages, taxes etc. These funds are called working capital. Working capital refers to capital to finance short term or current assets such as cash, securities, debtors and inventories.

Gross Working Capital and Net Working Capital

Gross working capital means the investment in current assets, whereas the Net working capital means the difference of current assets and current liabilities. Net working capital can be positive or negative.

NET WORKING CAPITAL		
A) Current Assets:		
		XXX
Cash in hand		XXX
Cash at Bank		XXX
Sundry Debtors		XXX
Bills receivables		XXX
Inventories of Stock		
----Raw Material	XXX	
----Work–in-Process	XXX	
--- Finished Goods	XXX	
Short Term Investments		XXX
Prepaid Expenses		XXX
Accrued Incomes		XXX
Total Current Assets		**XXXXX**
B) Less: Current Liabilities		
Sundry Creditors		XXX
Short term Loans, advances and deposits		XXX
Bank Overdraft		XXX
Bills payable		XXX
Provisions		XXX
Expenses Payable		XXX
Total Current Liabilities		XXXX

Working Capital (A - B)	XX

Working Capital Cycle

Generation and disbursement of cash is carried out in the manner depicted by the following diagram: