RATIO ANALYSIS

Meaning of Ratio

The term ratio refers to expressing the relationship between two quantities of the same kind. In other words, it expresses one number in terms of another number. It is a measure of the relationship between two magnitudes. It may be defined as the indicated quotient of two mathematical expressions. According to Accountant's Hand book by Wixon Kell and Bedford, A ratio "is an expression of the quantiable relationship between two numbers".

Meaning of ratio analysis

Ratio analysis is a technique of calculation of number of accounting ratios from the data found in the financial statements, the comparison of these accounting ratios with those of the previous years or with those of other concerns engaged in similar line of activities or with those of standard ratios and interpretation of its comparison.

Uses of ratio analysis

1) Ratio analysis simplifies the understanding of financial statements.
2) Ratio analysis establishes the inter-relationship between the various financial figures.
3) Ratio analysis is an instrument for diagnosing the financial health of the business.
4) It facilitates inter-firm and intra-firm comparison.
5) Ratio analysis is invaluable aid to the management in the efficient discharge of its basic functions.
6) Ratios are very helpful in establishing standard costing system and budgetary control system.
7) Ratio analysis is useful not only to the management but also to the outsiders like creditor, investors, banks and other financial institutions.

Limitations of ratio analysis

1) Ratios are calculated from the financial statements. The financial statements are suffering from a number of limitations. The ratios derived from such financial statements are also subject to those limitations.
2) There is no consistency in the meaning of certain accounting ratios.
3) There is a danger of window dressing (i.e., showing the position in a favourable manner than what actually it is) in ratio analysis.
4) Ratios become meaningless if they are detached from the details from which they are derived.
5) Ratios alone are not adequate for judging the financial position of the business.
6) Ratios are tools of quantitative analysis only. Qualitative aspects such as efficiency, honesty etc., are ignored in ratio analysis.
7) Ratios may give misleading impression especially to a layman.

Classification of Ratios:

As there are many ratios, they may be classified into different categories. According to some writers, there are as many as 429 business ratios. But all these ratios need not be calculated at a time. Depending upon the nature of the business, purpose of the analysis, and the particular questions to be answered from ratio analysis, certain ratios are generally selected.

Ratios may be classified on different bases depending on their nature, importance, source and function as discussed below.

1. **On the basis of their nature:** On the basis of the nature of items, the relationships of which are explained by the ratios, they may be classified as financial ratios and operating ratios. Financial ratios deal with items which are financial (or non-operational) in nature. Current ratio, quick ratio, debt-equity ratio etc., are examples of financial ratios. On the other hand, the operating ratios explain the relationships between items of operations of the enterprise. Turnover ratios, earning ratios, expenses ratios, etc. are examples of this ratios.

2. **On the basis of their importance:** Ratios may also be classified on the basis of their importance as primary ratios and secondary ratios. Operating profit to operating capital employed is generally described as Primary Ratio. Other related ratios under this category are net sales to capital employed, operating profit to value of production, etc. On the other hand, some examples of secondary ratios are: ratio of direct materials cost to value of production, ratio of output to factory employees, etc.

3. **On the basis of their function:** Ratios can also be classified on the basis of the purpose served or functions which the ratios are expected to perform. This basis of classification is called functional classification and the ratios are called functional ratios. In fact, this is the most commonly adopted classification of ratios. Examples of functional ratios are liquidity ratios, solvency ratios, turnover ratios and profitability ratios.

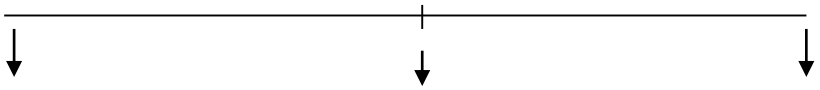
4. **On the basis of source of data:** On the basis of the source from which they are calculated, ratios may also be classified into three categories: (1) Balance sheet ratios, (2) Profit and Loss Account ratios, and (3) Combined ratios.

   Balance sheet ratios deal with the relationship between two items or groups of items contained in Balance sheet and they generally indicate short-term or long-term financial position of the business.

   Profit and loss account ratios deal with the relationships between two items or groups of items contained in the Profit and loss account. They generally indicate the profitability and efficiency of control over expenses of the business.

   Combined ratios deal with the relationship between items or groups of items contained in both Profit and loss account and Balance sheet. They generally indicate the operational efficiency of the business.

RATIOS



Balance Sheet Ratios	Profit and Loss Account Ratios	Combined Ratios
Current Ratio	Gross Profit Ratio	Debtors Turnover Ratio
Liquid Ratio	Net Profit Ratio	Debt Collection Period Ratio
Absolute liquid Ratio	Operating Ratio	Creditors Turnover Ratio
Debt - Equity Ratio	Operating Profit Ratio	Debt Payment Period Ratio
Proprietary Ratio	Expenses Ratios	Total Assets Turnover Ratio
Capital Gearing Ratio	Stock Turnover Ratio	Return on Capital Employed
		Return on Equity
		Return on Total Resources
		Earning per Share
		Price earnings Ratio
		Interest Coverage Ratio
		Dividend Pay out Ratio
		Dividend Yield Ratio

Balance Sheet Ratios

The ratio which is calculated by taking two items or two groups of items appearing in balance sheet alone is known as balance sheet ratio. Some of important balance sheet ratios are:

1. **Current Ratio:**

This ratio establishes the relationship between current assets and current liabilities. The difference between current assets and current liabilities is known as working capital. Therefore, the current ratio is also called working capital ratio. The purpose of this ratio is to find out the extent of current assets available against each rupee of current liability of the firm.

In order to calculate this ratio, the value of current assets and current liabilities must be obtained.

The following formula is used to compute this ratio:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Interpretation:

The current ratio reveals the ability of the firm to meet all the obligations maturing within a year. Conventionally it is said that the current ratio should be 2:1. It means that for every one rupee for current liability the firm must have two rupees worth of current assets. The reason

for this conventional norm is that, all the current assets cannot be converted into cash immediately.

2. **Liquid Ratio:**

This ratio is also called Quick ratio or acid test ratio. It establishes the relationships between Liquid assets liquid liabilities. Liquid assets are those which can be converted into cash without any loss or delay. All current assets, excepting stock and prepaid expenses, are considered to be liquid assets. Liquid liabilities are those liabilities which are payable immediately. All current liabilities, excepting Bank overdraft, are considered to be liquid liabilities.

The following formula is used to calculate this ratio:-

$$\text{Liquid Ratio} = \frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$$

Interpretation:

Generally, a quick ratio of 1:1 is considered to be satisfactory, because it takes into account only liquid assets whose realizable value is almost certain. A firm with 1:1 quick ratio is expected to be able discharge all its current obligations.

3. Absolute Liquid Ratio

This ratio establishes the relationship between absolute liquid assets and liquid liabilities. Absolute liquid assets include Cash in hand, cash at bank and marketable securities.

The following formula is used to calculate this ratio:-

$$\text{Absolute Liquid Ratio} = \frac{\text{Absolute Liquid Assets}}{\text{Liquid Liabilities}}$$

Interpretation:

Generally, an absolute liquid ratio of 0.5: 1 is considered to be satisfactory.

4. Debt-Equity Ratio:

Debt-equity ratio shows the relationship between borrowed funds and owner's funds. The purpose of this ratio is to show the extent of the firm's dependence on external liabilities. In order to calculate its ratio, the required components are external liabilities and owner's equity. External liability includes both long-term as well as short-term borrowings. The term owner's funds includes equity share capital, preference share capital, reserves and surplus, but excludes past accumulated losses such preliminary expenses, discount on issue of share or debentures,

underwriting commission and profit and loss account debit balance etc. Since there are two approaches to work out this ratio, there are two formulas as shown below:

i) Debt - Equity ratio = Long - Term debt / Equity

ii) Debt - Equity ratio = Total debt / Equity

In the first formula, the numerator consists of only long - term debts. It does not include short-term obligations or current liabilities.

In the second formula, both short term and long term debts are counted in the numerator.

Interpretation:
For analysing the capital structure, debt-equity ratio gives an idea about the relative share of funds of outsiders and owners invested in the business. The ratio of long term debt to equity is generally regarded as safe if it is 2: 1.

5. Proprietary Ratio

Proprietary ratio shows the relationship between owner's equity and total assets of the firm. This ratio is also known as Equity ratio or net worth to total assets ratio. The purpose of this ratio is to indicate the extent of owner's contribution towards the total value of assets. In other words, it gives an idea about the extent to which the owners own the firm.

The components required to compute this ratio are proprietor's funds and total assets. The formula of this ratio is as follows:

Proprietary Ratio = Proprietor's Funds / Total Assets

Interpretation:

There is no definite norm for this ratio. Some financial experts hold the view that proprietor's funds should be 33% to 50% of the total capital employed and outsider's fund should from 67% to 50% of the total assets.

6. Capital Gearing Ratio

This ratio establishes the relationship between fixed interest and dividend bearing securities to equity shareholder's funds. Fixed interest and dividend bearing securities include debentures, long-term loans, mortgage loans etc.. The purpose of this ratio is to know whether the concern is highly geared or low geared. The following formula is used to calculate this ratio:

Capital Gearing Ratio = Fixed interest and Dividend Bearing Securities

Profit and Loss Account Ratios

The ratio which is calculated by taking two items or two groups of items appearing in the profit and loss account alone is known as profit and loss account ratio. The important profit and loss account ratios are:

1) Gross Profit Ratio:

Gross profit ratio is the ratio which establishes the relationship between gross profit and net sales. This is also known as gross profit to net sales ratio. This ratio is useful particularly in the case of wholesale and retail trading firms. Its purpose is to show the amount of gross profit generated for each rupee of sales. Gross profit ratio is computed as follows:

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

The amount of gross profit is the difference between net sales and the cost of goods sold which includes direct expenses.

Interpretation:

A high margin enables all operating expenses to be covered and provides a reasonable return to the shareholders. In order to keep the ratio high, management has to minimize cost of goods sold and improve sale performance.

2) Net Profit Ratio

The ratio is also called net profit to net sales ratio and explains the relationship between net profit after taxes and net sales. The following formula is used to calculate this ratio:

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

Interpretation:

It is a measure of overall profitability of the firm. The higher the ratio, the greater would be the returns to the shareholder's and vice versa. A net profit margin of 10% is considered normal. This ratio is very useful to control cost and to increase the sales.

3) **Operating Ratio**

This ratio establishes the relationship between operating cost and net sales. It may be calculated as follows:

Operating Ratio = Operating Cost x 100
Net sales

Operating Cost = Cost of Goods Sold + Operating Expenses

Cost of Goods Sold = Sales - Gross Profit
Or Cost of Goods Sold =Opening Stock + net Purchases + Direct Expenses - Closing Stock

Operating Expenses= Administrative Expenses + Selling & Distribution Expenses.

Interpretation:

The operating ratio shows the overall operating efficiency of the business. High operating ratio is undesirable as it leaves a small portion of income to meet other non-operating expenses like interest on loans. A low ratio is better and reflects the efficiency of the management. The lower the ratio, the higher would be the profitability.

4) Operating Profit Ratio

Operating profit ratio studies the relationship between operating profit (i.e., EBIT - Earnings before Interest and Tax] and net sales. The purpose of this ratio is to find out the amount of operating profit for each rupee of sales. The formula for this ratio is as follows:

Operating profit ratio = Operating Profit x 100
Net sales

Operating Profit = Gross Profit - Operating Expenses
Operating profit = Net sales - operating cost

Interpretation:

A high ratio is an indicator of the operational efficiency and a low ratio stands for operational inefficiency of the firm.

5) Expenses Ratios

a) Factory Expenses Ratio:

This ratio studies the relationship between factory expenses and net sales. This ratio shows the manufacturing efficiency of the organization. The formula for this ratio is as follows:

Factory Expenses Ratio = Factory Expenses x 100
Net sales

b) Administrative Expenses Ratio

This ratio studies the relationship between administrative expenses and net sales. This ratio shows the administrative efficiency of the organization. The formula for computing this ratio is as follows:

$$\text{Administrative Expenses Ratio} = \frac{\text{Administrative Expenses}}{\text{Net sales}} \times 100$$

c) Selling and Distribution Expenses Ratio

This ratio studies the relationship between selling and distribution expenses and net sales. This ratio shows the efficiency of sales of the organization. The formula for computing this ratio is as follows:

$$\text{Selling and Distribution Expenses Ratio} = \frac{\text{Selling and Distribution Expenses}}{\text{Net sales}} \times 100$$

6) Stock Turnover Ratio

This ratio establishes the relationship between cost of goods sold and average value of inventory or stock. The purpose of this ratio is to show the number of times the inventory of a firm is rotated or turned over i.e. sold in a year. It gives an indication of the efficiency of inventory management. The formula for this ratio is as under:

a) Stock Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Average Inventory or Inventory}}$

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

b) Stock Turnover Ratio $= \frac{\text{Net sales}}{\text{Average Inventory or Inventory}}$

of the two version stated above, the first one is more realistic as the two components of the ratios are dependent on cost price.

Interpretation:

A high inventory turnover ratio is an index of efficient inventory management and a low ratio stands for inefficient inventory management. A low ratio also implies that the firm has excess stock in relation to production and sales.

Combined Ratios

The Ratio which is calculated by taking one item or one group of item from Trading Profit & Loss account and another item or the group of another item is taken from Balance Sheet is called mixed ratio .

Some of the important Mixed Ratios are:-

1) **Debtors Turnover Ratio**

Debtors turn over ratio shows the relationship between credit sales and debtors. In other words, it indicates the number of times on an average the debts are collected in year. The formula for this ratio is as follows:

$$\text{Debtors Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Average Debtors or Debtors}}$$

$$\text{Debtors} = \text{Sundry Debtors} + \text{Bills Receivable}$$

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

Interpretation:

A high debtor's turnover ratio reflects short collection period and indicates that debtors are prompt in their payments. On the contrary, a low debtor's turnover ratio or a high collection period implies that debtors pay their dues very slowly.

2) **Debt Collection Period:**

The debt collection period ratio indicates, the average number of days that the firm has to wait for collecting the money after goods is sold on credit. This ratio is also known as 'average collection period ratio' or 'debtor's velocity ratio'. The formula of this ratio is as under.

$$\text{Debt Collection Period Ratio} = \frac{\text{Average Debtors / Debtors}}{\text{Credit Sales}} \times 365 \text{ days}$$

3) **Creditors Turnover Ratio**

It establishes the relationship between credit purchases and average creditors. The purpose of this ratio is to know the speed with which payments are made to the creditors. The formula for this ratio is as follows:

$$\text{Creditors Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Average Creditors / Creditors}}$$

$$\text{Creditors} = \text{Sundry Creditors} + \text{Bills Payable}$$

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

Interpretation:

The shorter the turnover ratio, the longer would be the average payment period and vice versa.

4) **Debt Payment Period Ratio**

This ratio indicates the number of days that the firm can postpone, on an average, its payments to the creditors. This is also known as creditor's velocity ratio. The formula for this ratio is as follows:

$$\text{Debt Payment Period Ratio} = \frac{\text{Average Creditors / Creditors}}{\text{Credit Purchases}} \times 365 \text{ days}$$

5) **Total Assets Turnover Ratio**

This ratio establishes the relationship between net sales and total assets. The purpose is to judge whether the firm is generating adequate sales from the total assets employed. Further, it is also used to determine whether there is adequate investment, or over investment or under investment in assets of the firm. The formula of this ratio is as under:

$$\text{Total Assets Turnover Ratio} = \frac{\text{Net sales}}{\text{Total Assets}}$$

A high ratio is an indication of efficient utilization of assets in generating sales and a low ratio is an index of inefficient utilization of assets.

6) **Return on Capital Employed**

This ratio establishes the relationship between total capital and profit before interest and tax. The purpose of this ratio is to find out whether return on capital employed is reasonable or not. This ratio is also known as return on Investment (ROI)

The term capital employed represents long term funds including owner's capital and borrowed capital. This can be calculated in two ways:

a) **Liability Based:**

Capital Employed = Owner's funds + Long terms debts.

b) Assets based:

Capital Employed =Fixed Assets + Investments + Current Assets - Current Liabilities

$$\text{Return on Capital Employed} = \frac{\text{Net Profit (Before Interest on Tax)}}{\text{Average Capital Employed / Capital Employed}} \times 100$$

7. **Return on Shareholder's Equity:**

This ratio shows the relationship between net profit after taxes and shareholder's equity. It reveals the rate of return on owner's funds. This ratio is also known 'Return on Net worth'. The formula for this ratio is as follows

$$\text{Return on Share Holders Equity} = \frac{\text{Net Profit after Taxes}}{\text{Share holder's Equity}} \times 100$$

8. **Return on Total Resources:**

This ratio shows the relationship between net profit after taxes and total assets. It reveals the rate of return on total assets. This ratio is also known 'Net profit to total assets'. The formula for this ratio is as follows:

$$\text{Return on total resources} = \frac{\text{Net Profit after Taxes}}{\text{Total Assets}} \times 100$$

9. **Earning per share:**

This ratio shows the relationship between net profit after taxes and preference dividend and number of equity shares. This ratio is also known 'earning per equity share'. The formula for this ratio is as follows:

$$\text{Earning per share} = \frac{\text{Net Profit after Taxes - Preference dividend}}{\text{No. of equity shares}}$$

10. **Price earning ratio:**

This ratio shows the relationship between market price per equity share and earning per share. The formula for this ratio is as follows:

$$\text{Price earning ratio} = \frac{\text{Market price per equity share}}{\text{Earning per share}}$$

11. **Interest coverage ratio:**

This ratio shows the relationship between net profit before interest and tax and interest. The formula for this ratio is as follows :

$$\text{Interest coverage ratio} = \frac{\text{Net profit (before interest and tax)}}{\text{Interest}}$$

12. **Dividend pay out ratio:**

This ratio shows the relationship between dividend per equity share and earning per share. The formula for this ratio is as follows:

$$\text{Dividend pay out ratio} = \frac{\text{Dividend per equity share}}{\text{Earning per share}}$$