

UNIT – 8

FINANCIAL ANALYSIS THROUGH RATIOS

Ratio Analysis: Ratio analysis is the process of determining and interpreting numerical relationships based on financial statements. By computing ratios, it is easy to understand the financial position of the firm. Ratio analysis is used to focus on financial issues such as liquidity, profitability and solvency of a given firm. There are classified into four types

Liquidity Ratio: These ratios refer to the ability of the firm to meet the short term obligations out of its short term resources. Those ratios helps to determines the solvency of the firm. Again it classified into two types

Current Ratio: Current ratio is the ratio of current assets and current liabilities. Current ratio is also called as working ratio. Current ratio measures a company's ability to meet the claims of short-term creditors by using only current assets

This firm is said to be comfortable in its liquidity position when current ration is 2:1. But the industry norm for current ratio is 2:6

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

Quick Ratio: Quick ratio measures the firm's ability to convert its current assets quickly into cash to meet its current liabilities. It is also called as acid-test ratio

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

Quick assets = Current asset – (Stock + Prepaid expenses)

Quick ratio indicates the ability of a firm to meet its short term obligations with short-term assets. The standard fro this ratio is 1:1

Solvency Ratio: It is also called as leverage ratio. The solvency ratios are financial ratios that asses the extent to which an organization uses debt to finance investments an the degree to which it is able to meet long term obligation.

It is classified into 1) Debt-Equity ratio 2) Interest coverage Ratio

Debt-Equity Ratio: Debt equity ratio is the ratio of outsider's fund (debt) and insider's fund (Equity). It reflects the proportion of borrowed capital an owners capital in financing the assets of a firm. The debt-equity ratio is calculated as

$$\text{Debt – Equity Raio} = \frac{\text{Debt}}{\text{Equity}}$$

Debt : Debentures, Long-term loans and public deposits

Equity: Equity share capital , Preference share capital and Reserves

A debt-equity ratio means less risk to the creditors. It shows that the owners of business have invested more and borrowed funds are less. This is an advantageous situation from creditor's point of view since it reduces risk of creditors. Ideal value of D/E ratio is 1:1

Interest Coverage Ratio: Interest coverage ratio indicates the firm's capacity to pay the interest on debt it borrows. The interest coverage ratio is calculated as.

$$\text{Interest Coverage Raio} = \frac{\text{Net Profit before Interest and Taxes}}{\text{Interest}}$$

Interest coverage ratio helps in determining the extent to which the net profit before interest and taxes can drop but meet the claims of long-term creditors. High ratio indicates that the firm has ability to take care of its creditors promptly i.e. no problem in paying the interest.

Profitability Ratios: Profitability ratio are financial ratios that help measure managements ability to control expenses and each profits through the use of organizational resources. These are classified as follows

Gross Profit ratio: The ratio expresses relationship between gross profit and net sales during a given period. It is expressed in terms of percentage. Gross profit is the difference between the net sales and the cost of goods sold.

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

Net Profit: Net profit ratio is the ratio between net profits after taxes and net sales. It indicates what portion of sales is left to the owners after operating expenses.

$$\text{Net Profit Raio} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

It net profit is high, it means tht the owners will get enough returns on their investment and firm can sustain in adverse economic conditions.

Operating Ratio: Operating ratio is the ratio between costs of goods sold plus operating expenses and the net sales. This is expressed as a percentage to net sales. The higher the operating ratio, the lower is the profitability and vice versa.

$$\text{Operating Raio} = \frac{\text{Operating Expenses}}{\text{Net Sales}} \times 100$$

Operating expenses = (Cost of goods sold + Administrative expenses + Selling and distribution expenses)

In interpreting operating ratio, the possibility of variations in expenses from year to year or company to company due to change in policies should be considered

$$\text{Profitability (\%)} = (100 - \text{Operating (\%)})$$

Earnings Per Share (EPS): Earnings per share given, better understanding of profitability of a firm. EPS gives a measure of profit on equity share holder gets on each share held by them

$$\text{EPS} = \frac{\text{Net Profit after Tax}}{\text{Number of shares outs tan ding}}$$

Generally, higher EPS is better for an organization and vice-versa.

Price/Earning Ratio: This is the share price divided by the earnings per share.

$$\text{Price/Earning Ratio} = \frac{\text{Market Value per Share}}{\text{EPS}}$$

P/E ratio reflects the current price in the market for each rupee of EPS,

Activity Ratio: Activity ratios express how active the firm is in terms of selling its stocks, collecting its receivables and paying its creditors. These are three types.

Inventory or Stock Turnover Ratio: Inventory turnover ratio indicates the number of times the average inventory is sold during any given accounting period. This ratio is used to test the effectiveness of inventory management.

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

Cost of goods sold = Sale – Gross Profit

Or

Opening Stock + Selling expenses + Administration
expense – Closing Stock

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

A high inventory turnover ratio implies the efficiency of the firm whereas a low inventory turnover ratio indicates the firm is not in a position to clear its stocks.

Example: A firm sold worth RS.5,00,000 and its gross profit is 20 percent of sales value. The inventory at the beginning of the year was Rs.16,000 and at end of the year was 14,000. Compute inventory turnover ratio and also the inventory holding period.

Cost of goods sold = Sale – Gross Profit

Gross Profit = 20% of sales value, i.e., Rs.1, 00,000

Cost of goods sold = 5, 00,000 – 1, 00,000
= 4, 00,000

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

= (16,000 + 14,000)/2

= 15,000

Inventory turnover ratio = 4, 00,000/15,000
= 26.66 times

$$\begin{aligned}\text{Inventory holding period} &= 365 \text{ days/Inventory turnover ratio} \\ &= 365/26.66 \\ &= 13.69 \text{ days}\end{aligned}$$

Debtors Turnover Ratio: This ratio is also called as receivable turnover ratio. The debtor's turnover ratio measures how quickly receivable or debtor's are converted into cash i.e liquidity of receivables.

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

$$\text{Average Debtors} = \frac{\text{Debtors at the beginning of year} + \text{Debtors at the end of year}}{2}$$

When debtors turnover ratio is low, it means that the trade credit management is poor. It indicates long collection period or the debtor's are not prompt. Hence, moderate ratio is desirable.

Debt collection period: Debt collection period refers to the time taken to collect the debts.

$$\text{Debt collection period} = \frac{365 \text{ days}}{\text{Debtor's turnover ratio}}$$

Creditors Turnover Ratio: Creditors turnover ratio reveals the number of times the average creditors are paid during a given accounting period. In other words, it shows how promptly the firm is in a position to pay its creditors.

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

Creditors payment period: Creditors collection period refers to the time taken to pay the debts to creditors.

$$\text{Creditors collection period} = \frac{365 \text{ days}}{\text{Creditor's turnover ratio}}$$

Capital Turnover Ratio: This ratio relates sales to capital employed and is a measure of efficiency of the capital employed in the enterprise.

$$\text{Capital Turnover Ratio} = \frac{\text{Sales}}{\text{Capital Employed}}$$

$$\text{Capital Employed} = \text{Equity} + \text{Debt}$$

Fixed Asset Turnover Ratio: The ratio of sales to fixed assets measures the turnover of fixed assets. This ratio is a measure of efficiency or use of fixed assets.

$$\text{Fixed Turnover Ratio} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

Net fixed asset = Fixed asset – Depreciation

Working Capital Turnover Ratio: It measures how efficiently the working capital is utilized. Net working capital is the excess of current assets over current liabilities. This ratio indicates number of times the net working capital is converted into sales. The higher ratio reflects the efficiency in the management of working capital.

$$\text{Working Turnover Ratio} = \frac{\text{Sales}}{\text{Net Working Capital}}$$

Problems:

1) From the given summarized accounts of Ashok Ltd. For the year ended 31-12-1978.

Balance Sheet:

Liabilities	Amount	Assets	Amount
Share Capital	250	Fixed Asset	500
General Reserve	100	Less: Accumulated Loss	<u>80</u>
Debentures	180	Cash	55
Term Loan	30	Debtors	65
Creditors	70	Inventory	90
	630		630

Income Statement:

Net Sales		350
Less: Cost of Material	70	
Wages	<u>90</u>	
Cost of goods sold	<u>160</u>	<u>160</u>
Gross Profit		190
Less: Administrative, Selling & General expenses		<u>50</u>
Earning before depreciation, interest and tax		140
Less: Depreciation		<u>30</u>
Operating Profit		110
Less: Interest		<u>25</u>
Earning before tax		85
Less: Tax		<u>15</u>
Earning after tax		70
Less: Dividends		<u>25</u>
Retaining Earning		<u>45</u>

Compute Liquidity, Solvency, Activity and profitability ratios

Solution:

Liquidity Ratios:

1) Current Ratio :

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

$$\begin{aligned}\text{Current Assets} &= \text{Cash} + \text{Debtors} + \text{Inventory} \\ &= 55 + 65 + 90 = 210\end{aligned}$$

$$\text{Current liabilities} = \text{Creditors} = 70$$

$$\text{Current Ratio} = \frac{210}{70} = 3:1$$

2) Quick Ratio :

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liability}}$$

$$\text{Quick Assets} = \text{CA} - (\text{Stock} + \text{Prepaid expenses}) = 210 - 90 = 120$$

$$\text{Current Liabilities} = 70$$

$$\begin{aligned}\text{Quick Ratio} &= \frac{120}{70} \\ &= 1.7:1\end{aligned}$$

Solvency Ratios:

1) Debt – Equity Ratio:

$$\text{Debt – Equity Ratio} = \frac{\text{Debt}}{\text{Equity}}$$

$$\begin{aligned}\text{Equity} &= \text{Share capital} + \text{General Reserves} \\ &= 250 + 100\end{aligned}$$

$$\begin{aligned}\text{Debt} &= \text{Debentures} + \text{Long term loans} \\ &= 180 + 30 = 210\end{aligned}$$

$$\text{Debt – Equity Ratio} = \frac{210}{350} = 0.6:1$$

2) Interest Coverage Ratio:

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profit before Interest and Taxes}}{\text{Interest}}$$

$$= \frac{110}{25} = 4.4 \text{ times}$$

Activity Ratio:

1) Capital Turnover Ratio:

$$\text{Capital Turnover Ratio} = \frac{\text{Sales}}{\text{Capital Employed}}$$

$$\text{Capital Turnover Ratio} = \frac{350}{560} = 0.625 \text{ times}$$

$$\text{Capital Employed} = \text{Equity} + \text{Debt} = 210 + 350 = 560$$

2) Fixed Assets Turnover Ratio:

$$\begin{aligned}\text{Fixed Turnover Ratio} &= \frac{\text{Sales}}{\text{Net Fixed Assets}} \\ &= \frac{350}{420} = 0.833 \text{ times}\end{aligned}$$

3) Working Capital Turnover Ratio :

$$\begin{aligned}\text{Working Turnover Ratio} &= \frac{\text{Sales}}{\text{Net Working Capital}} \\ &= \frac{350}{140} = 2.5 \\ \text{Net Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= 210 - 70 = 140\end{aligned}$$

4) Inventory Turnover Ratio:

$$\begin{aligned}\text{Inventory Turnover Ratio} &= \frac{\text{Cost of goods sold}}{\text{Average inventory}} \\ &= \frac{160}{90} = 1.8 \text{ times}\end{aligned}$$

$$\begin{aligned}\text{Cost of goods sold} &= \text{Sales} - \text{Gross Profit} \\ &= 350 - 190 = 160\end{aligned}$$

5) Debtors Turnover Ratio:

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

$$= \frac{350}{65} = 5.33 \text{ times}$$

6) Debtors Collection Period:

$$\begin{aligned} \text{Debt collection period} &= \frac{365 \text{ days}}{\text{Debtor's turnover ratio}} \\ &= \frac{365}{5.33} \\ &= 68 \text{ days} \end{aligned}$$

Profitability Ratio:

1) Gross Profit Ratio:

$$\begin{aligned} \text{Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Sales}} \times 100 \\ &= \frac{190}{350} \times 100 = 54.29\% \end{aligned}$$

2) Operating Profit Ratio:

$$\begin{aligned} \text{Operating Profit Ratio} &= \frac{\text{Operating Profit}}{\text{Sales}} \times 100 \\ &= \frac{110}{350} \times 100 = 31.43\% \end{aligned}$$

3) Return on Investment:

$$\begin{aligned} \text{Return on Investment} &= \frac{\text{Earning before Interest and Tax}}{\text{Capital Employed}} \times 100 \\ &= \frac{100}{560} \times 100 = 19.64\% \end{aligned}$$

2) (a) From the following information calculate

i) Debt Equity ratio

ii) Current ratio

Particulars	Rs.	Particulars	Rs.
Debentures	1,40,000	Bank balance	30,000
Long term loans	70,000	Sundry Debtors	70,000
General reserve	40,000		
Creditors	66,000		
Bills payable	14,000		
Share capital	1,20,000		

(b) Calculate Interest Coverage ratio from the following information

Particulars	Rs.
Net profit after deducting interest and taxes	6,00,000
12% Debentures of the face value of	15,00,000
Amount provided towards taxation	1,20,000

Solution:

(a) i) Debt Equity ratio

$$\begin{aligned}\text{Debt – Equity Raio} &= \frac{\text{Debt}}{\text{Equity}} \\ &= \frac{2,10,000}{1,60,000} = 1.31 \text{ times}\end{aligned}$$

Debt = Debentures + Long term Loans = 1, 40,000 + 70,000 = 2, 10,000

Equity = Share capital + Reserves = 1, 20,000 + 40,000 = 1, 60,000

ii) Current Assets:

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

$$= \frac{1,00,000}{80,000} = 1.25 \text{ times} \quad \text{Current}$$

Assets = Bank balance + Sundry Debtors = 30,000 + 70,000 = 1, 00,000

Current Liabilities = Creditors + Bills payable = 66,000 + 14,000 = 80,000

(b) Interest Coverage Ratio:

$$\begin{aligned} \text{Interest Coverage Ratio} &= \frac{\text{Net Profit before Interest and Taxes}}{\text{Interest}} \\ &= \frac{9,00,000}{1,80,000} = 5 \text{ times} \end{aligned}$$

Net profit after Interest and Tax	= 6, 00,000
Add: Interest	= 1, 80,000
(15,00,000 x 0.12 = 1,80,000)	
Add: Tax	= 1, 20,000
	<u>= 9, 00,000</u>
Interest	= 1, 80,000

3) From the following information find out:

- a) Gross Profit Ratio
- b) Operating Profit Ratio
- c) Net Profit Ratio

Particulars	Rs.	Rs.
Sale		56,00,000
Less: Cost of Goods sold:		
Raw Materials	22,00,000	
Wages	12,00,000	
Other production expenses	8,00,000	42,00,000
Gross Profit		14,00,000
Less: Administration Expenses:		
Selling expenses	50,000	
Distribution expenses	1,00,000	
Administrative expenses	3,00,000	
Loss on sale of Fixed assets	18,000	
Loss on sale of Investments	10,000	
Interests (on long-term debts)	1,30,000	
Provision for taxation (Inclusive of advance tax paid)	2,60,000	8,68,000
Net Profit		5,32,000

a) Gross Profit Ratio:

$$\begin{aligned}\text{Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Sales}} \times 100 \\ &= \frac{14,00,000}{56,00,000} \times 100 = 25\%\end{aligned}$$

b) Operating Profit Ratio:

$$\begin{aligned}\text{Operating Profit Ratio} &= \frac{\text{Operating Profit}}{\text{Sales}} \times 100 \\ &= \frac{9,50,000}{56,00,000} \times 100 = 16.96\%\end{aligned}$$

Operating profit ratio = Gross profit – (Selling expenses + Distribution expenses + Administration expenses)

$$\begin{aligned} &= 14,00,000 - (50,000 + 1,00,000 + 3,00,000) \\ &= 9,50,000/- \end{aligned}$$

C) Net Profit Ratio:

$$\begin{aligned} \text{Net Profit Ratio} &= \frac{\text{Net Profit}}{\text{Net Sales}} \times 100 \\ &= \frac{8,68,000}{56,00,000} \times 100 \\ &= 15.5 \% \end{aligned}$$