Table of Contents

3.0 INTRODUCTION

The stakeholders of a firm viz., shareholders, creditors, suppliers, managers, employees, tax authorities, government and others are interested broadly in knowing what the firm is doing and whether the firm is financially sound or otherwise. The information requirement of each of these stakeholders may be different. Trade creditors and short term lenders are interested knowing the ability of the firm to meet short term liabilities, whereas term lending institution and banks are interested in the long term survival of the firm. Similarly, others stakeholders may have other information requirements.

Before introducing you to the concept of financial analysis let us recaptulate on the various types of financial statements, as all the variables used in ratio analysis are taken from these statements.

Profit & Loss A/C (P&L A/C): The income statement or trading and profit and loss account shows the various variables regarding expenses and revenue and the aggregate difference between these two as either net profit or net loss.

Balance Sheet: Balance sheet is a statement which shows the financial position of a firm on a particular date, it summarises the assets owned by the business and the claim of the owners and creditors against these assets in the form of liabilities as on the date of the statement.

Profit & Loss Appropriation A/C: This statement which is also known as profit and loss appropriation account is a link between P&L A/C and Balance sheet. The net profit shown in the P&L A/C is transferred to the balance sheet after appropriation though this statement. Retained earnings are the accumulated excess of earnings over losses and dividends.

Fund Flow Statement: This statement shows the sources of funds from which additional funds were derived and the use (application) of these funds.

Cash Flow Statement: This statement depicts the change in cash position from one period to another.

Financial statements are the means of providing general information regarding operational results and the financial position of a business firm. These statements do not reveal significant information such as efficiency of management strength and weakness of the firm, potential of further progress etc. In order to extract meaningful information these statements need to be analysed and interpreted for specific purposes. Analysis of financial statements is the systematic numerical calculation of the relationship between one fact with the other to measure the profitability, operational efficiency and the growth potential of the business. The main objectives of financial statement analysis and interpretation are as follows:

Measuring financial soundness
Judging solvency
Measuring profitability
Judging operational efficiency
Indicating trends
Assessing growth potential
Inter firm and intra firm comparison.

A ratio is an arithmetical relation between two figures or variables. Financial ratio analysis is a study of ratios between various items or group of items in financial statements. Financial ratio analysis is an analytical tool for measuring the performance of an organisation. Ratio analysis is primarily used to analyse past performance and based on this make future projections.

Users of Financial Ratios

Financial ratio analysis is the process of establishing relationship between the variables of the balance sheet and profit and loss account, in order to find out the strength and weakness of the firm. Ratio analysis is undertaken by the various stock holders in the firm viz. trade creditors, suppliers of long-term debt, investors and the management itself. Trade Creditors are interested in the firm's ability to meet claims in the short run. Their analysis will therefore, be confined to the firm's liquidity position in the short run.

Suppliers of long-term debt, on the other hand are more concerned with long-term solvency and survival. They analyse the firm's profitability over time, its ability to generate cash, its ability to repay interest and the principle amount. They also analyse the capital structure. Long-term suppliers of credit do analyse the historical financial statements but their main focus is on projected or proforma financial statement to analyse its future solvency and profitability. Investors are interested in the firm's earnings and how these earnings are used. They concentrate on the firm's present and future profitability. They are also interested in the firm's financial structure to the extent that it influences the firm's earnings ability and risk.

The management of the firm would be interested in every aspect of the financial ratio analysis as, this helps them assess how efficiently and effectively the firm's resources are being used.

Nature of Ratio Analysis

Ratios are used as a bench mark for evaluating the financial position and performance of a firm. Accounting figures presented in the financial statements would convey some meaning only if they are seen in relation to the other variables. Ratios help to other summarise large quantities of financial information (data). Through ratio analysis one can make a qualitative judgment. The ratios basically reflect a quantitative relationship among different variables.

Standards of Comparison

A ratio in itself would not provide any useful information, until and unless the ratios are compared with some standard. Standards of comparison may consist of: Past ratios, i.e., ratios calculated from the past financial statements of the same firm. Competitor's ratios, i.e., ratios of some selected firms preferably the firms having similar turnover. Another approach is to compare the firm's ratios with that of the market leader. Industry ratios, i.e., the average ratios of the industry to which the firm belongs Projected ratios, i.e., ratios calculated using the projected or proforma financial statements of the same firm.

3.1 OBJECTIVES

After going through this unit, you should be able to:
provide a broad classification of ratios;
learn how to extract useful information from financial statement through ratio analysis;
recognise the diagnostic role of financial ratios;
highlight the utility of financial ratios in credit analysis and competitive analysis, and
identify ratios which are appropriate for the control of activities.

3.2 CATEGORIES OF RATIOS

The ratios are broadly classified under categories as follows
Solvency ratios
Liquidity ratios
Activity ratios
Profitability ratios
Market test ratios

3.2.1 Long-term Solvency Ratios

These ratios are primarily calculated to predict the ability of the firm to meet all its liabilities including those not currently payable. A set of ratios will give us information on the ability of the firm to meet all its financial obligation in future. Before proceeding further let us make a distinction between long term and short tem financial liabilities. Long-term financial liabilities are those financial liabilities which are to be met in the subsequent financial years whereas short-term liabilities are to be met in the current financial year itself. The ratios which are used to measure solvency are as follows:
Debt Equity Ratio
Shareholders Equity Ratio
Debt to Net Worth Ratio
Capital Gearing Ratio
Fixed Asset to Long-Term Funds Ratio
Proprietary Ratio
Dividend Cover
Interest Cover
Debt Service Coverage Ratio

a) **Debt Equity Ratio**: There are basically two sources of capital − equity and debt. Debts are raised when owners want to increase investment but are

unwilling to dilute the equity or the cost of debt is less than that of equity. There are many ways to calculate this ratio but the most commonly used method is,

$$\text{Debt equity ratio} = \frac{\textit{Long term debt}}{\textit{Shareholder funds}}$$

In other method instead of long term debts all the debts are taken into consideration. This ratio indicates the relationships between loan funds and net worth of the company which is known as **gearing**. It also depicts the relative contribution of owners and creditors. A company with a high components of debt capital relative to it's equity is known as a highly geared company and *vice-versa*. There is no standard debt equity ratio and the same will vary from industry to industry. For capital-intensive industries and industries having a high gestation period this ratio will be high.

Shareholder's Equity Ratio: This ratio is calculated as follows:

$$\frac{\textit{Shareholder equity}}{\textit{Total assets (tangible)}}$$

The financial strength of a firm can be gauged by the proportion of equity capital in it's capital structure, higher the proportion of equity, stronger is the firm's financial strength. This ratio depicts the relationship between the shareholders equity and the total assets. This ratio also indicates the degree to which unsecured creditors are protected against loss in the event of liquidation. Shareholders equity includes equity and preference capital plus reserves and surplus. An increase in this ratio implies that the dependence of the firm on outside sources of funds is decreasing.

Debt to Net Worth Ratio: This ratio is calculated as follows:

$$\frac{\textit{Long term debt}}{\textit{Net worth}}$$

This ratio computes long term debts of the firm to that of net worth. Net worth is calculated as capital and free reserves less fictitious assets like carry forward losses and deferred expenditure. This ratio is a refinement of the debt equity ratio and gives a factual idea of the adequacy of assets to meet long-term liabilities.

Capital Gearing Ratio: It is calculated as follows:

$$\frac{\textit{Fixed interest bearing funds}}{\textit{Equity shareholder funds}}$$

This ratio indicates the degree to which the firm is trading on equity which in turn indicates the volatility of earnings available to shareholders. The fixed interest bearing funds includes debentures, long-term loans and preference share capital. Equity shareholders funds include equity share capital, and reserves and surplus.

Fixed Assets to Long-term Funds Ratio: It is calculated as follows:

$$\frac{\textit{Fixed assets}}{\textit{Long term funds}}$$

This ratio indicates the proportion of long term funds (Share capital reserves and surplus and long term loans) deployed in fixed assets (gross fixed assets minus depreciation). A high ratio indicates the safety of funds in case of liquidation. This ratio also indicates the proportion of long-term funds invested in working capital.

Proprietary Ratio: It is calculated as follows:

$$\frac{\textit{Net worth}}{\textit{Total assets}}$$

Reserves which are created and earmarked for specific purposes should not be included in the calculation of net worth. A high ratio is an indication of a strong financial position.

Interest Cover: It is calculated as follows:

$$\frac{\textit{Profitbeforeinterestdepreciationand tax}}{\textit{Interest}}$$

The interest coverage ratio reflects the number of times interest charges are covered by the funds that are available for payment of interest. Generally a ratio of 2:1 is considered as adequate.

Dividend Cover: It is calculated as follows:

$$\frac{\textit{Net profit aftertax}}{\textit{Dividend}}$$

This ratio indicates the number of times the dividends are covered by net profit. This ratio also highlights the retained earnings.

Debt Service Coverage Ratio: It is calculated as follows:

$$\frac{\textit{Profitbefore interest and taxes}}{\textit{Interest + perodicloaninstalment}}$$

This ratio reflects the ability of the firm to service its obligations on account of interest payment and loan repayments. A high ratio is an indicator of the fact that the firm is less likely to default on payments.

✂ Check Your Progress 1

From the following statement calculate: (1) Current Ratio, (ii) Liquidity Ratio, (iii) Debt-Equity Ratio, (iv) Proprietary Ratio and (v) Solvency Ratio.

Condensed Balance Sheet

Liabilities	**Rs.**	**Assets**	**Rs.**
Paid up Capital	1,00,000	Fixed Assets less Dep.	2,19,810
Reserves and Surplus	84,500	Stock	49,460
Debentures	1,00,000	Trade Debtors	11,710
Bills Payable	6,500	Cash at Bank	26,020
	3,07,000		3,0,000

Balance Sheet of S.K. Ltd. is given below:

	Rs.		Rs.
Equity Capital	50,000	Fixed Assets	1,40,000
12% Pref. Capital	30,000	Stock	20,000

15% Debentures	70,000	Debtors	16,000
Capital Reserve	5,000	Bank	14,000
P and L Account	10,000		
Creditors	12,000		
Bank Overdreaft	8,000		
Proposed Dividend	5,000		
	1,90,000		1,90,000

Calculate the Capital Gearing Ratio, Liquidity Ratio and Fixed Assets Ratio.

From the following information, calculate Interest Coverage Ratio, and Debt to Cash Flow Coverage Ratio:

Net Income After Tax	Rs. 15,630
Depreciation Charges	Rs. 20,000
Tax Rate	50% of net income
5% Mortage Bonds	Rs. 2,50,000
Fixed Interest Charges	Rs. 14,750
Sinking Fund Appropriations	5% of Outstanding Bonds

3.2.2 Liquidity Ratios (Short-term Solvency Ratios)

Current Ratio: It is calculated as follows:

$$\frac{\textit{Current assetsloansand advances}}{\textit{Currentliabilitiesand provisions}}$$

This ratio measures the solvency of the company in the short run (1 year). Current assets are those assets which can be converted into cash within one accounting period (usually 1 year) and current liabilities are those liabilities which are payable within a year. A current ratio of 1:33:1 is the minimum ratio required by banks to finance working capital needs. A very high current ratio implies that the firm has blocked the funds either in inventories, debtors or idle cash.

Quick Ratio or Liquid Ratio: It is calculated as follows:

$$\frac{\textit{Current assets,loans\&advaces} - \textit{Inventories}}{\textit{Currentliabilities\&Provisions} - \textit{Bank Overdraft}}$$

This ratio is a modification of the current ratio. In this ratio inventories are subtracted from current assets and the bank overdraft is subtracted from, current liabilities. The reason for doing so is, that the bank overdraft is secured by inventories. This ratio depicts the ability of the firm to service current liabilities other than the bank overdraft.

Absolute Liquid Ratio (Super Quick Ratio): It is calculated as follows:

$$\frac{\textit{Absoluteliquid Assets}}{\textit{Currentliabilities}}$$

It is a ratio of absolute liquid assets to quick liabilities. However, for calculation purpose current liabilities are taken into consideration. Absolute liquid assets
are cash, bank balances and marketable securities. An ideal absolute liquid ratio is taken as 1:2 or .5.

Bank Finance to Working Capital Gap Ratio: It is calculated as follows:

Shorttermbank borrowings

_____

WorkingCapital gap

This ratio shows the dependence on bank finance for working capital. Working capital gap is equal to current assets minus current liabilities other than bank borrowings.

Interval Measures: A dynamic measure of liquidity, the interval measure is defined as:

Quick assets

_____

Averagedailyexpensesonoperations

Interval measure shows the time interval for which the liquid assets of the firm will suffice to meet its operating expenditure.

✂ Check Your Progress 2

1) Following is the Balance Sheet of Idiot Limited as on 31st March, 2004.

Liabilities	**Rs.**	**Assets**	**Rs.**
Equity Share Capital	72,000	Plant and Machinery	1,35,000
Profit and Loss A/c.	18,000	Stock	36,000
Debentures	45,000	Sundry Debtors	27,000
Sundry Creditors	70,200	Cash at Bank	6,840
Provision for Taxation	1,800	Prepaid Expenses	2,160
	2,07,000		2,07,000

Calculate the following ratios:

1) Current Ratio, 2) Liquidity Ratio.

What conclusions do you draw about the company on the basis of these ratios?

3.2.3 Activity or Turnover Ratios

a) **Inventory:** For manufacturing and trading firms a considerable amount of funds may be tied up in financing of raw material, work in progress and finished goods. A good inventory management practice is to keep inventory level consistent with the need to fulfil customer's order in time.

Cost of goodssold

Inventory turnover ratio = _____ or

Averageinventory

Sales

= _____

AverageInventory

OpeningStock +ClosingStock

Average inventory = _____

2

Higher the inventory turnover ratio or lower the stock turnover period the better it is.

Debtors: The three main debtors ratio are as follows:

Debtor turnover ratio: It is calculated as follows:

$$\frac{Credit\ Sales}{Average Debtors}$$

This ratio measures the efficiency of a firm in converting debtors into cash, higher ratios indicate better efficiency:

Average Collection period: It is calculated as follows:

$$\frac{Average debtors}{Credit\ sales} \times 365$$

This ratio measures the time it takes to collect the amount from debtors.

Bad debts: It is calculated as follows:

$$\frac{Bad\ debts}{Sales}$$

This ratio reflects the efficiency of credit control procedures.

Creditors

Creditors payment period: It is calculated as follows:

$$\frac{Average creditors}{Purchase} \times 365$$

This ratio measures the average time taken to pay for goods and services purchased by the company. In general, longer the period better it is, because the operation of the firms are financed interest free by suppliers. An unduly long period would indicate liquidity problem on one hand and may also impact the credit rating of the firm.

Creditors turnover ratio: It is calculated as follows:

$$\frac{Credit\ purchase}{Average creditors}$$

Assets Turnover Ratio: These ratios measure the firms ability to generate sales revenue in relation to the size of the asset investment.
Fixed assets turnover ratio:

$$\frac{Sales}{Fixed\ assets}$$

This ratio measures sales per rupee of investment. This ratio measures the efficiency with which fixed assets are being employed. When the fixed assets of the firm are old and substantially depreciated the fixed asset turnover ratio tends to the high.

Total assets turnover ratio: It is calculated as follows:

Sales

_____

Total assets

This ratio measures how efficiently assets are employed overall.

Working capital turnover ratio: It is calculated as follows:

Sales

_____

Capital Employed

This ratio indicates the extent of working capital turned over in achieving sales:

Sales to capital employed Ratio: It is calculated as follows:

Sales

_____

Capital employed

This ratio indicates efficiency in utilisation of capital employed in generating revenue.

✂ Check Your Progress 3

Compute the stock turnover ratio with the help of following figures relating to Meenakshi Limited:
Trading Account
For the year ending 31 st March, 2004

	Rs.		Rs.
To Opening Stock	15,920	By Sales	78,000
To Purchases	39,000	By Closing Stock	14,400
To Carriage Inwards	1,000		
To Gross Profit	36,480		
	92,400		92,400

Raj & Co. sells goods on cash as well as on credit. The following particulars are extracted from the books of accounts for the year 2004:

	Rs.
Total Gross Sales	1,50,000
Sales Returns	30,000
Total Debtors for Sales as on 31.12.04	10,500
Bills Receivable as on 31.12.04	13,500
Provision for Doubtful Debts as on 31.12.04	3,000
Total Creditors on 31.12.04	1,000

Calculate the Average Collection period.

Tyagi and Sons Limited purchases goods on cash and credit terms. From the following particulars obtained from the books, calculate the creditors turnover and average payable period.

	Rs.
Total Purchases	8,40,000
Cash Purchases	70,000
Purchases Returns	40,000

Creditors at the end of the year	1,20,000
Bills Payable at the end of the year	20,000
Provision for Discount on Creditors	7,500

The following is the Balance sheet of Sanchit Company Ltd. as on 31st 2004:

Liabilities	Rs.	Assets	Rs.
Share Capital	80,000	Fixed Assets	1,60,000
General Reserve	30,000	Debtors	60,000
Profit and Loss A/c	50,000	Bills Receivable	20,000
Mortgage Loan @ 10%	80,000	Cash at Bank	50,000
Creditors	40,000	Preliminary Expenses	10,000
Bills Payable	20,000		
Total	3,00,000		3,00,000

Other information:
Sales during the year 2003-04 amounted to Rs. 1,60,000.

Calculate:

Capital Turnover Ratio
Fixed Assets Turnover Ratio
Working Capital Turnover Ratio (iv) Current Assets Turnover Ratio (v) Total Assets Turnover Ratio.

3.2.4 Profitability Ratios

The purpose of calculating these ratios is to assess the adequacy of the profits earned by the company and also to estimate the trend of profitability over a period of time. Profitability of a company is the net result of numerous policies and decision. These ratios show the combined effect of capital budgeting, liquidity management, asset management on operating results. Profitability, ratios are measured with reference to sales, capital employed, total assets, shareholders funds etc. The major profitability ratios are as follows:

Return on Capital Employed (ROCE) or Return on Investment (ROI)
Earning Per Share (EPS)
Cash Earning Per Share (cash EPS)
Gross Profit Margin
Net profit Margin
Cash Profit Ratio
Return on Assets
Return on Net Worth (or Return on Shareholders Equity)
Operating Ratios.

a) **Return on Investment:** The aim of any business enterprise is to earn a return on capital employed. ROI is determined by dividing the net profit or income by the capital employed or investment made to achieve the profit.

$$ROI = \frac{\textit{Net Profit}}{\textit{Capital Employed}} \times 100$$

ROI consists of two components (i) Profit Margins (ii) Investment Turnover.

$$ROI = \frac{\textit{Net profit}}{\textit{Sales}} \times \frac{\textit{Sales}}{\textit{Investmentinassets}}$$

(Profit Margin) (Investment Turnover)

ROI can be improved by increasing the profit margin and investment turnover or both. The capital employed is found out by adding the debt and equity components of the balance sheet viz., Share Capital (paid up), Reserves and Surplus and Loans (secured and unsecured), from this total subtract if any, (i) Capital Work in Progress (ii) Investment Outside the Business Activities (iii) Preliminary Expenses (iv) Debit Balance of P&L A/C.

ROI is a measure regarding optimal utilisation of the assets of the company. This measures helps in selecting and disposing of assets as well as in selecting various investment proposals.

(b) **Earnings Per Share (EPS):** One of the objectives of the firm/company is wealth/value maximisation, of the stake of various stakeholders. The value is maximised when the market price of equity shares increases. The market price of equity shares is a function of the present and future earning potential of the firm. An appropriate and operationally feasible way to measure value maximisation is to measure Earning Per Share (EPS).The EPS is one of the important measures of economic performance of an economic entity. A higher EPS among the comparable firms means a better capital productivity.

$$EPS = \frac{\textit{Net profit after tax and preference dividend}}{\textit{No. of equity shares}}$$

1. EPS when debt and equity is used:

$$\frac{(EBIT - I)(I - T)}{N}$$

II. EPS when debt equity and preference shares are used:

$$\frac{(EBIT - I)(I - T) - D_p}{N}$$

Where EBIT = Earning before Interest and Taxes
I = Interest
T = Rate of Corporate Tax
Dp = Preference Dividend
N = Number of Equity Shares

Cash Earning Per Share: The cash earning per share is calculated by dividing the Net Profit + Depreciation by number of Equity Shares.

$$\textit{Cash EPS} = \frac{\textit{Net Profit + Depreciation}}{\textit{No. of Equity Shares}}$$

Gross Profit Margin: The gross profit margin is calculated as follows:

$$= \frac{\textit{Sales} - \text{cost of goods sold}}{\textit{sales}} \times 100$$

or

$$= \frac{\textit{Gross profit}}{\textit{Sales}} \times 100$$

The gross profit measures, the excess of sales proceed over their cost before taking into consideration administration, selling, distribution and financing charges. This ratio measures, the efficiency of the company's operation. Under normal circumstances the gross profit margin should remain unchanged over a period of time irrespective of the level of production and sales, since it is based on the assumption that all cost deducted when computing gross profit are directly variable with sales. Variation in gross profit margin may be due to the following reasons:

price cuts
cost increases
change in product mix
under or over valuation of stocks.

Net Profit Margin: This profit is calculated as follows:

$$\frac{\textit{Net profit before interest and tax}}{\textit{Sales}} \times 100$$

This ratio reflects net profit margin on the total sales after deducting all expenses but before deducting the interest and corporate tax. The non-operating incomes and expenses are ignored in computation of net profit before tax, depreciation and interest. This ratio is used to compare performance with that of the previous year as well as with the competitors.

Cash Profit Ratio: This ratio is computed as follows:

$$\frac{\text{Cash profit}}{\text{Sales}} \times 100$$

where Cash profit= Net profit+Depreciation

This ratio measures the cash generated by the company as a result of the operations expressed in terms of sales. In situations where the profit fluctuates from year to year, due to changes in tax rates and depreciation rates and policies, this ratio is a reliable indicator of performance. This ratio is not affected by the method of depreciation used to charge depreciation.

Return on Assets: This ratio is calculated as follows:

$$\frac{\textit{Net profit after tax}}{\textit{Total assets}} \times 100$$

This ratio establishes the relationships of profits with the total assets of the organisation. This ratio indicates the efficiency of utilisation of assets in generating revenue.

Return on Shareholders Funds or Return on Net Worth:

$$\frac{\textit{Net profit after interest and tax}}{\textit{Net worth}} \times 100$$

Where Net Worth= Equity capital+reserves and surplus. This ratio expresses the net profit in terms of the equity shareholder funds.

Operating Ratios

The ratio of all operating expenses (i.e., materials used, labour, factory overheads, administration and selling expenses), to sales is the operating ratio over a period of time would reveal the behaviour of the particular cost. The operating ratios are classified as follows:

(a) **Material cost ratio** $= \frac{Materials consumed}{Sales} \times 100$

(b) **Labour cost ratio** $= \frac{Labour\ cost}{Sales} \times 100$

(c) **Factory overhead ratio** $= \frac{Factory\ expenses}{Sales} \times 100$

(d) **Administrative Expense Ratio** $= \frac{Administrative\ expenses}{Sales} \times 100$

(e) **Selling and distribution** $= \frac{Sellinganddistributionexperience}{Sales} \times 100$

3.2.5 Market Test Ratios

The market test ratio relates the firm's stock price to its earning and book value per share. These ratios are indicators of the performance of the company and also reflects the likely performance of the company in the near future. If the firm's profitability, solvency and turnover ratios are good then the market test ratios will be high. The market test ratios are as follows:

Divided Payout Ratio
Dividend Yield
Book Value

Dividend Payout Ratio:

$\frac{Dividend\ per\ share}{Earnings\ per\ shares}$

Dividend payout ratio is the dividend per share divided by the earnings per share. Dividend payout ratio indicates the extent of the net profit distributed to the shareholders by way of dividend. A higher dividend payout ratio indicates that the company does not require further funds in the near future or it may also indicate that the cost of borrowing is less than the cost of equity. A low payout ratio is an indicator of the fact that company is in requirement of funds.

Dividend Yield:

$\frac{Dividend\ per\ share}{Market\ price} \times 100$

This ratio reflects the percentage yield earned by investors by investing in company's share at the current market price. This measures is specially useful for those investors who are interest in regular returns rather than capital appreciation.

Book Value:

$$\frac{Equity capital + Reserves - Profite Loss\ A/C\ debit balance}{Total\ number of\ equity\ shares}$$

This ratio indicates the net worth per equity share. Book Value is a function of the past earnings and distribution policy of the company.

✂ Check Your Progress 5

1) The capital of Sun Ltd. is as follows:

	Rs.
9% 30,000 Preference Shares of Rs. 10 each	3,00,000
80,000 Equity Shares of Rs. 10 each	8,00,000
	11,00,000

The following additional information has been obtained form the books of the company.

Profit after tax at 60% Rs. 2,0,000; Depreciation Rs. 60,000; Equity Dividend Paid 20% Market Price of Equity Share Rs. 40.

You are required to calculate (i) Dividend Yield on Equity Share; (ii) Earnings Per Share; (iii) Price Earning Ratio, and (iv) Dividend Pay-out Ratio.

3.3 UTILITY OF RATIO ANALYSIS

The ratio analysis is one of the most widely used tools of financial analysis. The various stakeholders in the firm would be interested in the information relating to operating and financial efficiency. They would also be interested in knowing the growth prospect of the firm. The various stake holders use ratio to determine those financial characteristics of the firm in which they are interested. With the help of ratios, one can determine:

the ability of the firm to service its current obligations;
the effect of borrowings on long term solvency;
the efficiency with which the firm is utilising its assets in generating sales revenue; and
the overall operating efficiency and performance of the firm.

Performance Analysis:

As stated above various stakeholders have different interests in the firm; short term creditors will be interested in the current financial position, while profitability long term creditors will be interested in the solvency of the firm. The equity holders are generally concerned with the returns. It is to be noted here that in every kind of financial analysis short-end long term financial position along with profitability are tested, but the emphasis would differ depending upon the interest of the stakeholder.

3.4 DIAGNOSTIC ROLE OF RATIOS

Profitability Analysis

How profitable is the company? What accounting policies and practices are followed by the company? Are they stable? Is the profitability (RONA) of the company high/low average? What are the underlying reasons for current profitability? Is it due to:

Profit Margins
Asset Utilisation
Non Operating Income
Window Dressing • Changes in Accounting Policy
Inflationary Conditions?

Is the return on equity (ROE) high/low/average? Is it due to:
return on investment
financing mix
capitalisation of reserves?

What is the trend of profitability? Is it improving because of better utilisation of resources or curtailment of expenses of strategic importance?
Will the company be able to sustain high profitability or improve the profitability given the competitive and other environment utilisations.

Asset Utilisation
These types of ratios are basically used to gauge the effective utilisation of assets. Here assets include, both fixed as well as current assets. Through calculating these ratios we try to find out:

How effectively assets are being utilised to generate sales?
Are the level of debtors and inventories relative to sales reasonable in view of the firm's competitive and operating characteristics?
What are the trends in collection periods, inventory turnover and fixed assets turnover?
3. Is the improvement in the fixed assets turnover due to

depreciated book value of fixed assets?
disposal of some fixed assets.

Liquidity Analysis
As already discussed these ratios are used to predict short term and long-term solvency of the firm. In addition to this these ratios are also used to analyse the following:
What is the level of current assets and liabilities? Is it reasonable in the context of the firm's business?
What is the frequency and duration of payment to the creditors? If it is high or low what is the effect of it?
How efficiently and frequently does the company convert it's current assets into cash?
Given the company's riskiness and future financial needs, what is the pattern of financing :
What is the mix of debt and equity?
What is the maturity structure of debt and is the company faced with large debt repayment in the near future?
What are the lease commitments of the firms and the quantum of contingent liabilities?

3.5 APPLICATION OF FORMULAS

Example 3.1: The following is the Trading and Profit and Loss A/C and Balance Sheet of a firm:

Trading and Profit and Loss Account

Particular	Rs.	Particular	Rs.

To Opening Stock	10,000	By Sales	1,00,000
To Purchases	55,000	By Closing Stock	15,000
To Gross Profit c/d	50,000		
	1,15,000		
		By Gross Profit b/d	1,15,000
To Administration Expenses	15,000		50,000
To Interest	3,000		
To Selling Expenses	12,000		
To Net Profit	20,000		
	50,000		
			50,000

Balance Sheet

Liabilities	Rs.	Assets	Rs.
Capital	1,00,000	Land and Buildings	50,000
Profit and Loss A/C	20,000	Plant and Machinery	30,000
Creditors	25,000	Stock	15,000
Bills Payable	15,000	Debtors	15,000
		Bills Receivable	12,500
		Cash at Bank	17,500
		Furniture	20,000
	1,60,000		1,60,000

Calculate the following ratios: (1) Inventory turnover ratio (2) Current ratio (3) Gross profit ratio (4) Net Profit (5) Operating ratio (6) Liquidity ratio (7) Proprietary ratio

Solution:

$$\textbf{Inventory Turnover Ratio} = \frac{\textit{Cost of Goods Sold}}{\textit{AverageStock}}$$

Cost of Goods Sold =

Opening Stock	10,000
Purchase	55,000
	65,000
Less: Closing Stock	15,000
	50,000

$$\frac{\textit{Opening Stock} + \textit{ClosingStock}}{2}$$

$$\frac{10,000 + 15,000}{2} = 12,500$$

$$\text{Inventory Turnover Ratio} = \frac{50,000}{12,500} = 4 \text{times.}$$

Current Ratio:

Current Assets
Current Ratio= _____
Current Liabilities

Current Assets	Rs.	Current Liabilities	Rs.
Stock	15,000	Creditors	25,000
Debtors	15,000	Bills Payable	15,000
B/R	12,500		
Cash in Bank	17,500		
	60,000		40,000

Current Ratio = $\frac{60,000}{40,000}$ =1.5:1

Gross Profit Ratio:

Gross Profit 50,000
Gross Profit Ratio = _____×100= _____×100=50% *Net Sales* 1,00,000

Net Profit Ratio:

Net Profit 20,000
Net Profit Ratio = _____×100= _____×100=20%
Net Sales 1,00,000

Operating Profit: _____*Cost of Goodssold + Operating expenses* ×100
Net Sales
Cost of Goods Sold = 50,000

Operating Expenses (Rs.)

Administration Expenses	15,000
Selling Expenses	12,000
	27,000

Operating Ratio $\frac{50,000+27,000}{1,00,000}$ ×100=77%

Liquid Assets
Liquidity ratio = _____
Current Liabilities

Liquid Assets	Rs.	Current Liabilities	Rs.

Cash in Bank	17,500	Creditors	25,000
Bills Receivable	12,500	Bills Payable	15,000
Debtors	15,000		40,000
	45,000		

$$\text{Liquidity Ratio} = \frac{45,000}{40,000} = 1.125:1$$

Proprietary Ratio

$$\text{Proprietary Ratio} = \frac{\textit{Shareholder's funds}}{\textit{Total Assets}} \times 100$$

Capital	1,00,000
Profit and Loss A/C	20,000
	1,20,000

Total Assets = Rs. 1,60,000

$$\text{Proprietary ratio} = \frac{1,20,000}{1,60,000} \times 100 = 75\%$$

Example 3.2: There are three companies in the country manufacturing a particular chemical. Following data are available for the year 2003-04.

Company	Net Sales	Operating Cost	Operating Assets
A Ltd. B Ltd.	300 1,500	255 1,200	125
C Ltd.	1,400	1,050	750 1,250

Which is the best performer as per your assessment and why?

Solution:

Comparative statement of performance (Rs. Lakhs)

Particular	A Ltd.	B Ltd.	C Ltd.
Sales	300	1500	1,400
Less: Operating Cost	255	1200 300	1,050
Operating Profit (A)	45		350
		750	
Operating Assets (B)	125	40%	1,250
Return on Capital Employed (A)/(B)×100	36%		28%

Analysis: Basing on the return on capital employed, B Ltd. is the best performer in comparison to A Ltd. and C Ltd.

Example 3.3: Calculate the P/E ratio from the following:

Equity Share Capital (Rs.20 each)	50,00,000
Reserve and surplus	5,00,000 25,00,000
Secured Loans at 15%	10,00,000
Insured Loans at 12.5%	30,00,000
Fixed Assets	5,00,000 25,00,000
Investments	
Operating Profit	

Income tax Rate 50%. Market Price/Share Rs.50.

Solution:

(Rs.)

Operating Profit		**25,00,000**
Less: Interest on		
Secured Loans @ 15%	3,75,000	
Unsecured Loans @ 12.5%	1,25,000	5,00,000
Profit Before Tax (PBT)		20,00,000
Less: Income-Tax @ 50%		10,00,000
Profit After Tax (PAT)		10,00,000

Number of equity shares = $\frac{50,00,000}{20}$ = 2,50,000

*Profit aftertax Rs.*10,00000

Earning as per share (EPS) = = =*Rs.*4

*No.of equity Shares Rs.*2,50,000

Price per share = Rs.50.

P/E ratio = Market price per share/EPS = Rs.50/Rs.4

= 12.50

Example 3.4: Profit and Loss Account of Happy Ltd.for the year ended 31st March 2004.

	Rs.		Rs.
To Opening stock	90,000	By Sales	9,00,000
To Purchases	5,60,000	By Closing Stock	90,000
To Wages	2,14,000		
To Gross Profit	1,26,000		9,90,000
	9,90,000		
To Salaries	16,000	By Gross Profit	1,26,000
To Electricity	10,000		
To Miscellaneous Expenses	10,000		
To Depreciation	30,000		
To Net profit	60,000		
	1,26,000		1,26,000

Balance Sheet of Happy Ltd. As on 31st March, 2004

Liabilities		Rs
		1,80,000
Equity Share Capital		1,20,000
Reserves and Surplus Secured Loans		2,10,000
Creditors	Total:	90,000
		6,00,000

Assets			
Fixed Assets		5,40,000 Less:	
Depreciation	1,50,000		3,90,000
Stock			
Debtors			90,000
Cash			1,05,000
			15,000
			6,00,000

Discuss under the following important functional grouping the usual ratios and comment on the financial strength and weakness: (i) Liquidity and solvency ratios; and (ii) Profitability test ratios.

Solution:

Liquidity ratios

$$\text{CurrentRatio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{2,10,000}{90,000} = 2.3$$

$$\text{AcidtestRatio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}} = \frac{1,20,000}{90,000} = 1.3$$

Solvency ratios

$$\text{Debt} - \text{EquityRatio} = \frac{\text{Debt}}{\text{Equity}} = \frac{2,10,000}{3,00,000} = 0.7$$

$$\text{FixedAssetsRatio} = \frac{\text{Fixed Assets}}{\text{Long term funds}} = \frac{3,90,000}{5,10,000} = 0.76$$

Profitability test ratios 1. $\text{GrossProfit Ratio} = \left[\frac{\text{GrossSalesProfit}}{19,,2600,,000000} \times 100\right] = 14\%$

2. $\text{NetProfit Ratio} = \left[\frac{\text{NetsalesProfit}}{960,00,000,000} \times 100\right] = 6.7\%$

$$\text{ReturnonCapitalemployed} = \left[\frac{\text{Net Profit}}{\text{Capital Employed}} \times 100\right] = \frac{60,000}{5,10,000} \times 100 = 11.7\%$$

Analysis

The current and acid test ratios are satisfactory. Since they are above the ideal standards of 2:1 and 1:1 respectively. The debt equity ratio is marginally higher than the ideal standard of 2:1. However, the debt-equity ratio fixed assets ratios reflect a satisfactory position of the company.

The Gross Profit Ratio and Net Profit Ratio and Return on Capital Employed is not impressive and effort needs to be made to improve the profitability of the Company.

Example 3.5: The summarised Balance Sheet of M/s Ram Shyam. Traders Ltd. for the year 31.3.2005 is given below:

(Rs. in Lakh)

Capital and Liabilities		Assets	

Equity Share Capital (fully paid-up)	140	Fixed Asset (at cost)	210	
		Less: Depreciation	25	185
Reserves and Surplus	45	Current Assets:		
Profit and Loss Account	20	Stock	25	
Provision for Taxation	10	Debtors	30	70
Sundry Creditors	40	Cash	15	
Total:	255	Total:		
				255

The following further particulars are also given for the year:

(Rs. in lakhs)

Sales	120
Earnings before interest and tax (EBIT)	30
Net Profit After Tax (PAT)	20

Calculate the following for the company and explain the significance of each in one or two sentences:

(i) Current ratio; (ii) Liquidity ratio; (iii) Profitability ratio; (iv) Profitability on funds employed; (v) Debtors' turnover; (vi) Stock turnover; (vii) Average collection period; (viii) Return on equity.

Solution:

(i) Current Ratio

(Rs. Lakhs)

Current Assets	
Stock	25
Debtors	30
Cash	15
Total	70
Current Liabilities	40

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{70}{40} = 1.75:1$$

This ratio indicates the financial position of firm in meeting current liabilities out of current assets. The prudential norm is 2:1.

(ii)

$$\text{Liquidity Ratio} = \frac{\text{Current assets} - \text{Stocks}}{\text{Current liabilities}} = \frac{70 - 25}{40} = 1.125:1$$

Ratio Analysis

Liquidity ratio indicates the liquidity position of the company in meeting its current liabilities out of the liquid assets. The prudential norm is 1:1

(iii)

$$\text{ProfitablitiyRatio} = \left[\frac{EBIT}{Sales} \times 100\right] = \frac{120}{30} \times 100 = 25\%$$

This ratio indicates the margin of profit made on sales.

Profitability on funds employed:

$$= \left[\frac{EBIT}{\text{Share capital and longtermloan}} \times 100\right] = \frac{205}{} \times 100 = 14.64\%$$

This ratio indicates the margin of profit made on sales.

$$\text{Debtor'sturnover} = \left[\frac{Sales}{AverageDebtors}\right] = \frac{120}{30} = 4 \text{ times}$$

It indicates the speed in conversion of debtors into cash.

$$\text{Stock turnover} = \left[\frac{Sales}{AverageStock}\right] = \frac{120}{25} = 4.8 \text{times}$$

It indicates the number of times the stock is converted into sales.

$$\text{Averagecollection period} = \left[\frac{\text{Average Debtors}}{\text{Credit sales}} \times 12\right] = \frac{120}{} \times 12 = 3 \text{months}$$

This ratio indicates the average credit period allowed to the customers.

$$\text{Returnonequity} = \left[\frac{PAT}{\text{Shareholder's funds}} \times 100\right] = \frac{20}{205} \times 100 = 9.76\% .$$

This ratio indicates the percentage profit after tax earned on shareholders funds.

Example 3.6: The Profit and loss Account and Balance Sheet of XYZ Ltd. are as under:

Profit and Loss Account for the year ended 31st December, 2004.

Net Sales		3,00,000
Less: Cost of Production		2,58,000
Less: Operating Expenses:		42,000
Selling	2,200	
General Administration	4,000	
Rent of Office	2,800	
		9,000
Gross Operating Profit		
Less: Depreciation		33,000
Net-Operating Profit		10,000
Other Income (Interest on Government Securities)		23,000
		1,500
Gross Income (before tax) Less: Other Expenses:		
Interest on Bank Overdraft	300	
Interest on Debentures	4,200	24,500
Net Income (before Tax)		
Tax 50% on net income		4,500
Net Income (after Tax)		20,000
		10,000
		10,000

Balance Sheet as at 31st December, 2004

(Rs.)

Liabilities		
Equity Share Capital		50,000
7% Preference Share Capital		10,000
Reserves and Surplus		40,000
6% Mortgage Debentures		70,000
Creditors		6,000
Bills Payable		10,000
Outstanding Expenses		1,000
Provision for Taxation		13,000
		2,00,000
Assets		
Fixed Assets	1,80,000	1,30,000
Less: Depreciation	50,000	
		15,000
Investment in Government securities		
Debtors		20,000
Stock		30,000
Cash		5,000
		2,00,000

You are required to calculate the following ratios: (i) Return on Investment; (ii) Net Profit Ratio; (iii) Current Ratio; (iv) Net Worth to Capital Employed; (v) Cost of Production to Capital Employed. **Solution:**

(i) Return on Investment

$$\frac{\textit{NetOperating Profit} \times 100}{\textit{Capital employed}} = \frac{\textit{Rs.}22{,}700 \times 100}{\textit{Rs.}1{,}55{,}000} = 14.65\%$$

Operating Profit = Net profit before non-operating income but after Interest on bank overdrafts

Capital employed = Net fixed assets+Current assets-Current liabilities

Alternatively,

Return on Investment =

$$\frac{\textit{Net Profit(beforeinterest and tax)} \times 100}{\textit{Capital employed}} = \frac{\textit{Rs.}24{,}200 \times 100}{\textit{Rs.}1{,}70{,}000} = 14.24\%$$

Tax and profit includes income from interest on Government Securities (less interest on bank overdrafts) and capital employed covers investment n government securities also.

Net Profit Ratio:

$$\frac{\textit{Net Profit(aftertax)} \times 100}{\textit{Net Sales}} = \frac{\text{Rs.}10{,}000 \times 100}{\text{Rs.}3{,}00{,}000} = 3.33\%$$

Alternatively, NetOperating Profit $\times 100 = \frac{\text{Rs.}23{,}000 \times 100}{\textit{Net Sales}} = 7.67\%$

Current Ratio:

$$\frac{\textit{Current Assets}}{\textit{Current Liabilities}} = \frac{\text{Rs.}55{,}000}{\text{Rs.}30{,}000} = 1.83:1$$

Rs.70,000

or = $\frac{}{\text{Rs.}30{,}000} = 2.33:1$

(Current Assets inclusive of Investment in Government Securities)

Net Worth to Capital employed:

$$\frac{\textit{NetWorth}}{\textit{Capital Employed}} = \frac{\text{Rs.}1{,}00{,}000}{\text{Rs.}1{,}70{,}000} = 58.32\%$$

or = $\frac{\text{Rs.}1{,}00{,}000}{\text{Rs.}1{,}55{,}000} \times 100 = 64.52\%$

Cost of Production to Capital Employed

$$\frac{\textit{Current of Production} \times 100}{\textit{Capital Employed}} = \frac{\text{Rs.}2{,}58{,}000 \times 100}{\text{Rs.}1{,}70{,}000} = 151.76\%$$

$$\text{or} = \frac{\text{Rs.2,58,000}}{\text{Rs.1,55,000}} \times 100 = 166.45\%$$

Example 3.7: From the Final Accounts of Product Ltd. Given below, calculate the following:

(i) Gross profit ratio (ii) Current ratio, (iii) Liquid ratio; and (iv) Return on investment ratio.

Trading and Profit and Loss Account for the year ended 31st March, 2004

		Rs.		Rs.
To Material Consumed			By Sales	85,000
Opening Stock	9,050		By Profit	600
Purchase	54,525		By Interest on Investment	300
	63,575			
Less: Closing stock	14,000			
		49,575		
To Carriage Inwards		1,425		
To Office Expenses		15,000		
To Sales Expenses		3,000		
To Financial Expenses		1,500		
To Loss on Sales of Tired Assets		400		
To Net Profit		15,000		
		85,900		85,900

Balance Sheet as on 31st March, 2004

Liabilities		Rs.	Assets		Rs.
Share Capital 2,000 Equity Shares of Rs. 10 each, fully paid		20,000	Fixed Assets:		
			Buildings	15,000	
General Reserve		9,000	Plant	8,000	23,000
Profit and Loss Account		6,000	Current Assets:		
Bank Overdraft		3,000	Stock-in-trade	14,000	
Sundry Creditors			Debtors	7,000	
			Bills Receivable	1,000	25,000
For Expenses	2,000		Bank Balance	3,000	
For Others	8,000	10,000			48,000
		48,000			

Solution:

Gross Profit

Gross Profit Ratio = $\frac{}{} \times 100$

Sales

Rs.

Sales		85,000
Less: Material Consumption	49,575	
Carriage Inwards	1,425	51,000

	34,000

Rs.34,000
Gross Profit Ratio = ——— × 100 = 40%
Rs.85,000

Stock	14,000	7,000
Debtors	1,000	
Bills Receivable	3,000	
Bank		
Current Assets		25,000

Current Assets
Current Ratio = ———
Current Liabilities

	Rs.	
Sundry Creditors	10,000	3,000
Bank Overdraft		
Current Liabilities		13,000

Rs.25,000
Current Ratio = ——— = 1.92:1 Rs.13,000

Calculation of Liquid Ratio

Liquid ratio =

$$\frac{\text{Liquid Assets}}{\text{Current Liabilities}} \quad \frac{\textit{Current Assets} - \textit{Stock}}{\textit{Current Liabilities}} \quad \frac{\text{Rs.25,000} - \text{Rs.14,000}}{\text{Rs.13,000}} = = = 0.84:1$$

Operating Profit
Return on investment = ——— × 100
Capital Employed

	Rs.	Rs.
Net Profit		15,000
Add: Loss on Sale of Fixed Assets		400
Financial Charges		1,500
Less: Interest on Investment	300	16,900
Profit (non-operating)	600	
Operating Profit		900
		16,000

Share Capital	20,000
General Reserve	9,000
Profit & Loss A/c	6,000
Capital Employed	35,000

Return on investment = $\frac{\text{Rs.16,000}}{\text{Rs.35,000}} \times 100 = 45.71\%$

Example 3.8: The following data has been extracted from the annual accounts of a company:

(Rs. in lakhs)

Share Capital Divided into 20,00,000 Equity Shares of Rs. 10 each	200.00
General Reserve	
Investment Allowance Reserve	150.00
15% Long Term Loan	50.00
Profit Before Tax	300.00
Provision for Taxation	140.00
Proposed Dividends	84.00
	10.00

From the details given above calculate the following: (i) Return on capital employed; (ii) Return on net worth.

Solution:

Calculation of Capital Employed

Share Capital	200
General Reserve	150
Investment Allowance Reserve	50 300
15% Long Term Loan	
Capital Employed	700

Calculation of Return

Profit before Tax	140
Add: 15% Interest on Long Term Loan Return	45
	185

(c) Calculation of Net Worth

Share Capital	200
General Reserve	150
Investment Allowance	50
Reserve	
	400

(d) Return on Shareholders' Fund

Profit before Taxation	140
Less: Provision for Taxation	84
Return	56

On the basis of the above the following ratios have been calculated:

Return on Capital Employed =

$$\frac{\textit{Return}}{\textit{Capital Employed}} \times 100 = \frac{185}{700} \times 100 = 26.4\%$$

Return on net worth =

$$\frac{\textit{Return on shareholders funds}}{\textit{Net worth}} \times 100 = \frac{56}{400} \times 100 = 14\%$$

Example 3.9: From the following final accounts of XYZ Ltd. For the year ended 31st March 2004, you are required to calculate the following: (i) Acid test ratio; (ii) Stock Turnover ratio; (iii) Operating Ratio;

Balance sheet as on 31st March 2004

Liabilities	Rs.	Assets	Rs.
Share Capital (in shares of Rs. 10 each General Reserve	5,00,000 4,00,000	Land and Buildings Plant and Machinery	5,00,000 2,00,000
Profit and Loss A/c	1,50,000	Stock	1,50,000
Sundry Creditors	2,00,000	Sundry Debtors	2,50,000
	12,50,000	Cash and Bank Balance	1,50,000
			12,50,000

Profit and Loss account for the year ended 31st March, 2004

Opening Stock	2,50,000		
Purchases	10,50,000	Sales	18,00000
Gross Profit c/d	6,50,000	Closing Stock	1,50,000
	19,50,000		19,50,000
Admn. Expenses	2,30,000		6,50,000
Selling and Distribution Expenses	1,00,000		50,000 7,00,000
Expenses of Financing	20,000	Gross Profit b/d	
	3,50,000	Other Income (misc.)	
Net Profit	7,00,000		

Solution:

Working Notes:

Cost of Goods Sold = (Opening Stock + Purchases − Closing Stock)

= Rs. 2,50,000+10,50,000 − Rs. 1,50,000 = Rs. 11,50,000

or

= Sales-Gross profit = Rs. 18,00,000-Rs 6,50,000 = Rs.11,50,000

Operating Expenses = Administrative Exp. + Selling and Distribution Exp.

= Rs. 2,30,000+Rs. 1,00,000 = 2,30,000

Statement of Capital Employed

Share Capital	5,00,000
General Reserve	4,00,000
Profit and Loss A/c	1,50,000
Shareholders' Funds	10,50,000

Average Stock =

$$= \frac{\textit{Opening Stock} + \textit{Closing Stock}}{2} = \frac{Rs.2,50,000 + Rs.1,50,000}{2} = Rs.2,00,000$$

Calculation of Ratios

$$\text{Acid Test Ratio} = \frac{\textit{Liquid Assets}}{\textit{Current Liabilities}} = \frac{Rs.4,00,000}{Rs.2,00,000} = 2:1$$

Stock Turnover Ratio =

$$= \frac{\textit{Cost of GoodsSold}}{\textit{Average Stock at Cost}} = \frac{Rs.11,50,000}{Rs.2,00,000} = 5.75 \textit{ times}$$

(iv) Operating Ratios $= \frac{\textit{Cost of Goods Sold} + \textit{Operating Express} \times 100}{\textit{Net Sales}}$

$$\frac{(Rs.11,50,000 + Rs.3,30,000) \times 100}{Rs.18,00,000}$$

$$\text{Fixed Assets to Net Worth Ratio} = \frac{1,40,000}{90,000} = 1.55:1$$

Example 3.10: From the following data: (a) Current ratio (b) Quick ratio (c) Stock Turnover ratio (d) Operating ratio (e) Rate of return on equity capital.

Balance Sheet as on December 31, 2004

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (Rs. 10 shares)	10,00,000	Plant and Machinery	6,40,000
		Land and Buildings	80,000
Profit and Loss Account	3,68,000	Cash	1,60,000
Creditors	1,04,000	Debtors	
Bills Payable	2,00,000	Less: Provision for Bad Debts	3,20,000
			4,80,000
Other Current Liabilities	20,000	Stock Prepaid Insurance	12,000
			16,92,000
	16,92,000		

Income Statement for the year ending 31st December 2004

(Rs.)

Sales	40,00,000
Less: Cost of good	30,80,000
	9,20,000
Less: Operating expenses	6,80,000
Net Profit	2,40,000
Less: Income tax paid 50%	1,20,000
Net profit after tax	1,20,000

Solution:

Balance at the beginning of the year:

Debtors Rs. 3,00,000 Stock Rs. 4,00,000

Current Assets
Current Ratio _____
Current Liabilities

Current Assets	Rs.	Current Liabilities	Rs.
Cash	1,60,000	Creditors	1,04,000
Debtors	3,20,000	Bills Payable	2,00,000
Stock	4,80,000 12,000	Other Current	20,000
Prepaid		Liabilities	
Insurance	9,72,000		3,24,000

Current Ratio = $\frac{9,72,000}{3,24,000}$ = 3:1

Quick Ratio

Liquid Assets
Quick Ratio = _____
Current Liabilities
Liquid assets

	Rs.
Cash	1,60,000
Debtors	3,20,000
	4,80,000

Liquid Ratio = $\frac{4,80,000}{3,24,000}$ = 1.48:1
Cost of goods sold
Stock Turnover Ratio = _____
Average stock
cost of good sold = 30,80,000

Average stock =

$$\frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{4,00,000 + 4,80,000}{2} = 4,40,000$$

$$\text{Stock Turnover ratio} = \frac{30,80,000}{4,40,000} = 7 \text{ times}$$

Operating ratio =

$$\frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net Sales}} \times 100 = \frac{30,80,000 + 6,80,000}{40,00,000} \times 100 = 94\%$$

Rate of Return on equity capital

$$\frac{\text{Net Profit after Tax}}{\text{Equity Share Capital}} \times 100 = \frac{1,20,000}{10,00,000} \times 100 = 12\%$$

Example 3.11 The capital of Growfast Co. Ltd. is as follows:

Preference shares of Rs.10 each	50,00,000
Equity share Rs. 100 each	70,00,000
	1,20,00,000

Additional Information:

Profit after tax at 50% Rs. 15,00,000 Equity dividend paid 10%
Depreciation Rs. 6,00,000 Market price per equity share Rs.200

Calculation the following: (i) The cover for the preference and equity dividends; (ii) The earnings per share; (iii) The price earnings ratio; (iv) The net funds flow.

Solution:

(1) Cover for the Preference and Equity dividends

$$\frac{\text{Profit after tax}}{\text{Preference dividend} + \text{Equity dividend}} = \frac{\text{Rs.}15,00,000}{\text{Rs.}5,00,000 + \text{Rs.}7,00,000} = 1.25 \text{ Times}$$

Earning Per Share

$$\frac{\text{Net Profit after Preference dividend}}{\text{Number of equity shares}} = \frac{\text{Rs.}15,00,000 - \text{Rs.}5,00,000}{70,000} = \text{Rs.}14.29$$

Price Earnings Ratio

$$\frac{\text{Market Price per share}}{\text{Earning per share}} = \frac{\text{Rs.}200}{\text{Rs.}14.29} = 14 \text{ Times}$$

The net funds flow:

Profit after tax 15,00,000
Add: Depreciation
6,00,000
15,00,000+6,00,000 21,00,000

3.6 SUMMARY

A large number of ratios are used to measure performance and exercise control. The ratios are used by all the stakeholders of the business viz., owners, managers, creditors, bankers, suppliers, government etc. The ratios are basically divided into five categories. The short and long term solvency ratios are used to judge the ability of the firm to meet it's financial obligations. Activity or turnover ratios are used to find out how effectively and efficiently the firm's resources are being used. Profitability ratios are used to gauge the profitability of the firm with reference to sales and assets. The market test ratios are used to gauge the firm performance in terms of share prices and dividends.

Liquidity Ratios:

Current Ratio	$\frac{\textit{Current Assets}}{\textit{Current Liabilities}}$
Quick Ratio	$\frac{\textit{Current Assets} - \textit{Inventory}}{\textit{Current Liabilities}}$
Interval measure	$\frac{\textit{Current Assets} - \textit{Inventory}}{\textit{Averagedailycashoperating expenses}}$

Leverage Ratios:

Total debt ratio	$\frac{\textit{Total debt}}{\textit{Capital employed}}$
Debt-equity ratio	$\frac{\textit{Net worth}}{\textit{Total debt}}$
Capital-equity ratio	$\frac{\textit{Capital employed or net assets}}{\textit{NetWorth}}$
Interest Coverage	$\frac{\textit{EBIDTA}}{\textit{Interest}}$

Activity Ratios:

Inventory turnover	$\frac{\textit{Cost of goods sold or sales}}{\textit{Inventory}}$

s of Financial Statements

No. of days, inventory	$\frac{360}{Inventoryturnover}$
Debtors turnover	$\frac{Credits\ salesor\ Sales}{Debtors}$
Collection period	$\frac{360}{Debtorsturnover}$
Assets turnover	$\frac{Sales}{Net\ assets\ or\ capital\ employd}$
Working capital turnover	$\frac{Sales}{Net\ working\ capital}$

Profitability Ratios:

Gross margin	$\frac{Gross\ profit}{Sales}$ $\frac{EBIT}{Sales}$ or
Net margin	$\frac{Profit\ aftertax}{Sales}$ $\frac{EBIT}{Sales}(1-)$ or
PAT to EBIT ratio	$\frac{PAT}{EBIT}$
Return on Investment (ROI) before tax	$\frac{EBIT}{Net\ assetsor\ capital\ employed}$
Return on Investment (ROI) after tax	$\frac{EBIT\ (1-Tax\ rate)}{Net\ assets\ or\ capital\ employd}$
Return on Investment (ROI) before tax	$\frac{EBIDTA}{Total\ assets\ or\ Net\ assets}$
Return on equity (ROE)	$\frac{Profit\ aftertax}{Net\ worth}$

There exists a relationship between various ratios. For example, ROE can be expressed as follows:

ROE	$\frac{Sales}{Netassets} \times \frac{EBIT}{Sales} \times \frac{PAT}{EBIT}$ $Netassets \times \frac{}{NetWorth}$

In practice companies calculate many other ratios. Most important ratios include:

EPS	PAT _____ No.of shares
DPS	Profitdistributed _____ No.of shares
Payout	DPS ____ EPS
Price-earnings ratio	Marketvalueof share _____ EPS
Market value-book value ratio	Marketvalueof share _____ Bookvalueof share

3.7 SELF-ASSESSMENT QUESTIONS/EXERCISES

What are the different types of financial ratios?

Discuss the importance of liquidity ratios?

Define and evaluate various leverage ratios?

Discuss the important turnover ratios.

Explain the important profit margin ratios?

Compare the following: rate of return ratios, return on total assets ratios, and returns on equity?

Discuss key valuation ratios?

If the market price per share is equal to the book value per share, the following are equal, return on equity, price earning ratio, and total yield. Prove.

Write short notes on ‘Debt Service Coverage Ratio’.

Explain proprietary ratio.

'Ratios are indicators − sometimes pointers but not in themselves powerful tools of management'. Explain.

Ratio analysis is only a technique for making judgments and not a substitute for judgments. Examine.

Write short notes on (i) Return on investments
(ii) Pay-out Ratio.

Explain the limitations of ratio analysis for evaluating investment proposals and liquidity analysis.

Ratios are symptoms like blood pressures, the, pulse or the temperature of an individual'. Explain, also name and explain in brief the ratios made use to judge the long-term solvency of a concern.

Write short notes on 'Earnings per share'.

Distinguish between Operating Ratios and Turnover Ratio.

Ratio analysis is an important tool for judgement of the health of any organisation. Elaborate.

Write notes on uses and limitations of 'Ratio Analysis'.

PROBLEMS

Premier Company's net margin is 5 per cent. The total return assets turnover ratio is 1.5 times, debt to total assets ratios is 0.7. What is the return on equity for premier?

McGill Inc. has a profit before tax of Rs.40 ml. If the company's times interest covered ratio is 6? What is the total interest charge?

The following data applies to a firm.

Interest Charges	Rs. 150,000
Sales	Rs. 7,000,000
Tax Rate	60 per cent
Net Profit Margin	6 per cent

What is the firm's times covered ratio?

A firm's current assets and current liabilities are 600 and 1,500 respectively. How much can it borrow from a bank without reducing the current ratio given below 1.5? Justify.

A firm has a total annual sales of 1,000,000 and accounts receivable is collected if management want to reducing the accounts receivable to 120,0000?

Determine the sales of a firm with the following financial data:

Current Ratio	1.5
Acid-test Ratio	1.2
Current Liabilities	800,000
Inventory Turn Over Ratio	times

Complete the balance sheet and sales data (fill in the blanks) using the following financial data:

Debt/Equity Ratio	0.60
Acid-Test Ratio	12
Total Assets Turnover Ratio	15
Day's Sales Outstanding in Account Receivable	40 days
Gross Profit Margin	20 per cent
Inventory Turnover	5

Balance sheet

Equity Capital	50,000	Plant and Equipment
Retained Earning	60,000	Inventories
		Account Receivable Cash

The 19X0-balance sheet and income statement for Omex limited is given below. Compute the financial ratios for Omex. Evaluate Omex performance with reference to the standards.

Omex limited balance sheet 31 December 2005
Liabilities and Equity

	Rs.
Equity Capital	10,000, 000
Reserves and Surplus	22,500,000
Long Term Debt	12,500,000
Short Term Bank Borrowing	15,000,000
Trade Creditors	10,000,000
Provision	5,000,000
Total	**75,000,000**

	Rs.
Assets Fixed Assets (net)	30, 000,000
Current Assets	
Cash in bank	5,000,000
Receivable	15,000,000
Inventories	20,000,000
Pre Paid Expenses	2,500,000
Other	2,500,000
Total	**75,000,000**

Omex limited income statement for the year Ended. December 31, 2005

	Rs.
Net Sales	95,000,000
Cost of Goods Sold	72,000,000
Gross Profit	23,000,000
Operating Expenses	10,000,000
Operating Profit	12,500,000
Non- Operating Surplus	2,600,000
Profit Before Interest and Tax	15,100,000
Interest	5,000,000
Profit before Tax	10,100,000
Tax	5,000,000
Profit After Tax	5,100,000
Dividends	1,600,000

Retained Earnings	3,300,000

Omex **Standard**

Current Ratio	1.5
Acid-test Ratio	0.80
Debt-Equity Ratio	1.5
Times Interested Covered Ratio	3.5
Inventory Turnover Ratio	4.0
Average Collection Period	60 days
Total Assets Turnover Ratio	1.0
Net Profit Margin Ratio	6%
Earning Power	10%
Return on Equity	12%

3.8 SOLUTIONS/ANSWERS

Check Your Progress 1

1)

Current Assets

Current Ratio = _____

Current Liabilities

Rs.87,190

= _____= 3.88:1

Rs.22,500

Current Assets = Cash at Bank + Trade Debtors +Stock

= Rs. 26,020 + Rs. 11,710 + Rs. 49,460

= Rs. 87,190

Current Liabilities = Creditors + Bills Payable

= Rs. 16,000 + Rs. 6,500 = Rs. 22, 500

Current Assets

Liquidity Ratio = _____

Current Liabilities

= _____Rs.37,730(Rs.26,020 +11,710) =1.68:1 Rs.22,500

Total Debts

Debt-Equity Ratio = _____

Shareholders'Funds

Rs.1,22,500

_____= 0.66:1 Rs.1,84,500

Total Debts = Debentures +Current Liabilities

= Rs. 1,00,000+Rs. 22,500 = Rs. 1,22,500

Shareholders' Funds = Rs. 1,00,000+Rs. 84,500 = Rs. 1,84,500

Proprietory Funds

Proprietary Ratio = _____

Total Assets
Rs.1,84,500
_____= 0.6:1 Rs.13,07,000

Total Debts
Solvency Ratio = _____
Total Assets
Rs.1,22,500
= _____= 0.4:1
Rs.3,07,000

VariableCostbearingCapital
2) i) Capital Gearing Ratio = _____
Fixed CostbearingCapital

Rs.65,000
= _____ = 65:1 It is High Gearing
Rs.1,00,000

Variable Cost Bearing Capital
= Equity Capital + Capital Reserve + P. & L. A/c.
= Rs. 50,000 + Rs. 10, 000 + Rs. 5,000 = Rs. 65,000
Fixed Cost Bearing Capital
= 2% Pref. Capital + 15% Debentures
= Rs. 30,000 + Rs. 70,000 = Rs. 1,00,000

Liquid Assets
ii) Liquidity Ratio = _____
Current Liabilities
Rs.30,000
= _____=1.2:1
Rs.25,000
Liquid Assets = Debtors + Bank

= Rs. 16,000 + Rs. 14,000 = Rs. 30,000
Current Liabilities = Creditors + Overdraft + Proposed Dividend
= Rs. 12,000 + Rs. 8,000 + Rs. 5000
= Rs. 25,000

Long termFunds
(iii) Fixed Assets Ratio = _____
Fixed Assets
Rs.1,65,500
= _____=1.18:1
Rs.1,40,000

3)

Interest Coverage Ratio or Debt Service Ratio

Net ProfitbeforeInterest andTax
= _____

Fixed InterestCharges

Rs.1,56,370+ Rs.1,56,370 +14,750

_____

Rs.14,750

Rs.3,27,490

_____=22times(Approx.) Rs.14,750

Debt to Cash Flow Coverage Ratio

AnnualCash FlowBeforeInterest andTax

_____

Sinking Fund Appropriations

Interest +

1−*Tax Rate*

Rs.1,56,370+ Rs.1,56,370 + Rs.14,750 + Rs.20,000

=_____

_____

$$\frac{12{,}500}{1.50}$$

Rs.14,750 +_____

Rs.3,47,490

= _____ =8.times(Approx) Rs.37,750

Check Your Progress 2

1)

Current Assets

Current Ratio = _____

Current Liabilities

Rs.36,000+ 27,000+ 6,840+ 2,160

_____

Rs.70,200+1,800

=

Rs.72,000

= _____=1:1

Rs.72,000

Liquid or Quick Assets

Liquidity = _____

Current Liabilities

Or

Quick Ratio or

Current Assets −(Stock + Prepaid Exp)

_____

Current Liabilities

$$\frac{\text{Rs.72,000} - (\text{Rs.36,000} + \text{Rs.2,160})}{\text{Rs.72,000}} = \frac{\text{Rs.33,840}}{\text{Rs.72,000}} = 0.47:1$$

Check Your Progress 3

1)

$$\text{Stock Turnover Ratio} = \frac{\textit{Cost of Goods Sold}}{\textit{Average Inventory at Cost}}$$

$$= \frac{\text{Rs.41,520}}{\text{Rs.15,160}} = 2.74 \text{ times}$$

Cost Goods Sold = Opening Stock + Purchases + Carriage Inward − Closing Stock
= Rs. 15,920 + 39,000 + 4,000-14,400
= Rs. 44,520

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

$$= \frac{\text{Rs.15,920} + \text{Rs.14,400}}{2} = \frac{\text{Rs.30,320}}{2} = \text{Rs. 15,160}$$

$$\text{Average Number of days to Turnover} = \frac{\textit{Day in ayear}}{\textit{Inventory Turnover}}$$

Or

$$\text{Stock Velocity} = \frac{365}{2.74} = 133.21 \text{ or } 133 \text{ days}$$

2)

$$\text{Average Collection Period} = \frac{\textit{Account Collection Periods}}{\textit{Net Credit Sales}} \times 365$$

$$= \frac{\textit{Rs.}16{,}500 \text{X} 365}{\textit{Rs.}1{,}09{,}500}$$

= 55 days or

$$\text{Average Collection Period} = \frac{365}{\textit{Debtors Turnover}}$$

$$= \frac{365}{6.64} = 55 \text{ days}$$

Net Credit Sales

s of Financial Statements

Debtors Turnover = $\frac{\textit{Accounts Receivables}}{}$

$\textit{Rs.}1{,}09{,}500$

$= \frac{}{16{,}500} = 6.64$ times

Calculation of Accounts Receivables:

= Debtors + Bills Receivable
= Rs. 13,500 + 3,000= Rs. 16,500

Calculation of Net Credit Sales:

= Total Gross Sales − Cash Sales- Sales Returns Rs. 1,50,000- 30,000-10,500= Rs. 1,09,500

3)

Creditors Turnover = $\frac{\textit{Net Credit Purchases}}{\textit{Total Payable (Crs.+ B/ P)}}$

$\textit{Rs.}7{,}30{,}000$

$= \frac{}{\textit{Rs.}1{,}40{,}000}$

$= \frac{73}{14} = 5.21$ times

Average Payable Period= $\frac{\textit{Total Payables}}{\textit{Net Credit Purchases}} \times 365$

$\textit{Rs.}1{,}40{,}000$

$= \frac{}{\textit{Rs.}7{,}30{,}000} \times 365 = 70$ days

or

$= \frac{\textit{Days in a Year}}{\textit{Creditors Turnover}}$

$= \frac{365}{5.21} = 70$ days

Total Payables = Creditors + Bills Payable
= Rs. 1,20,000 + 20,000 Rs. 1,40,000

Net Credit Purchases = Total Purchases − Cash Purchases- Returns
= Rs. 8,40,000 − 70,000 − 40,000
= 7,30,000

The amount of provision for discount on creditors will not be deducted from the creditors.

4)

(i) Capital Turnover Ratio = $\frac{\textit{Sales}}{\textit{Capital Employed}}$

Rs.1,60,000

= _____ = 0.69 times Rs.2,30,000

(ii) Capital Employed:		1,60,000	
Fixed Assets Add: Current Assets:			
Debtors		60,000	
Bills Receivables		20,000	
Cash in Bank		50,000	
Less: Current Liabilities:		30,000	
Creditors + B/P			
	(40,000 + 20,000)	60,000	70,000
	Capital Employed	2,30,000	

Or

Share Capital	80,000
Add: General Reserve	30,000
Profit and Loss A/c	50,000
Mortgage Loan	80,000
	2,40,000
Less: Preliminary Expenses	10,000
	2,30,000

Sales

Fixed Assets Turnover Ratio = _____

Fixed Assets

Rs.1,60,000

= _____ = 1 time Rs.1,60,000

Sales

Working Capital Turnover Ratio = _____

WorkingCapital

Rs.1,60,000

= _____ = 2.28 times Rs.70,000

Sales

Current Asset Turnover Ratio = _____

Current Assets

Rs.1,60,000

= _____ = 1.23 times

Rs.1,30,000

Sales

Total Assets Turnover Ratio = _____

Total Assets

Rs.1,60,000

= _____ = 0.55 Rs.2,90,000

Check Your Progress 4

s of Financial Statements

1)

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

$$= \frac{\text{Rs.3,84,000}}{\text{Rs.8,00,000}} \times 100 = 48\%$$

$$\text{Operating Profit Ratio} = \frac{\textit{Operating Profit}}{\textit{Net Sales}} \times 100$$

$$= \frac{\textit{Rs}.2,80,000}{\textit{Rs}.8,00,000} \times 100 = 35\%$$

Operating Profit :

Net Profit + Non-operating Expenses − Non-operating Income
= Rs. 2,81,200+Rs.3,400 − Rs.4, 600 = Rs. 2,80,000

$$\text{Operating Ratio} = \frac{\textit{Cost of GoodsSold} + \textit{Operating Expenses}}{\textit{Net Sales}} \times 100$$

$$= \frac{\text{Rs.4,16,000} + \text{Rs.1,04,000}}{\textit{Rs}.8,00,000} \times 100$$

$$= \frac{\text{Rs.5,20,000}}{\text{Rs. 8,00,000}} \times 100 = 65\%$$

Cost of Goods Sold:

Operating Stock +Purchase + Direct Exp − Closing Stock
= Rs. 60,000+Rs.4, 20,000+Rs. (28,000+8,000) – 1,00,000 = Rs. 4,16,000

Operating Expenses

Office Expenses + Selling and Distribution Expenses
= Rs. 48,000+Rs. 56,000
= Rs. 1,04,000

a) Office Expenses Ratio $= \frac{\textit{OfficeExpenses}}{\textit{Net Sales}} \times 100$

$$= \frac{\text{Rs.48,000}}{\text{Rs.8,00,000}} \times 100 = 6\%$$

Selling and Distribution Expenses Ratio:

$$\frac{\textit{Selling and DistributionExpenses}}{\textit{Net Sales}} \times 100$$

$$= \frac{\text{Rs.56,000}}{\text{Rs.8,00,000}} \times 100 = 7\%$$

$$\text{Non-Operating Expenses Ratio} = \frac{\text{Non-operating Exp}}{\text{Net Sales}} \times 100$$

$$= \frac{\text{Rs.3,400}}{\text{Rs.8,00,000}} \times 100 = 0.425\%$$

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

$$= \frac{\text{Rs.2,81,200}}{\text{Rs.8,00,000}} \times 100 = 35.15\%$$

2)

$$\text{Return on Capital Employed} = \frac{\textit{Net Profit After Tax}}{\textit{Capital Employed}} \times 100$$

$$= \frac{\text{Rs.1,50,000}}{\text{Rs.11,00,000}} \times 100 = 13.63\%$$

Return on Equity Shareholders' Funds:

$$\frac{\textit{Net Profit after tax} - \textit{Pref. Share Dividend Operating Profit}}{\textit{Equity Shareholders, Funds}} \times 100$$

$$= \frac{\text{Rs.1,50,000} - \text{Rs.16,000}}{\text{Rs.7,50,000}} \times 100 = 35\%$$

$$\text{Return on Total Assets} = \frac{\textit{Net Profit after tax}}{\textit{Total Assets}} \times 100$$

$$= \frac{\text{Rs.1,50,000}}{\text{Rs.11,25,000}} \times 100 = 13.33\%$$

$$\frac{\textit{Net Profit after tax} + \textit{Interest}}{\textit{Total Assets}} \times 100$$

$$= \frac{\text{Rs.1,50,000} + \text{Rs.23,500}}{\text{Rs.11,25,000}} \times 100$$

Rs.1,73,500

$= \frac{}{\text{Rs.11,25,000}} \times 100 = 15.42\%$

Check Your Progress 5

$\text{Dividend Yield on Equity Shares} = \frac{\textit{Dividend Per Share}}{\textit{Marked Price Per Share}} \times 100$

Net Profit after tax − Pref. Dividend

Rs.2(20% of Rs.10)

$= \frac{}{\text{Rs.40}} \times 100 = 5\%$

$\frac{\textit{Net Profit after tax} - \textit{Pref. Dividend}}{\textit{No. of Equity Shares}} \times 100$

$\text{Earnings per Equity Share} = \frac{\text{Rs.2,70,000} - \text{Rs.27,000}}{\text{Rs.80,000}}$

$= \frac{\text{Rs.2,43,000}}{\text{Rs.80,000}} = \text{Rs.3.04}$

$\text{Price Earning Ratio} = \frac{\textit{Market Price Per Share}}{\textit{Earning Per Share}} \times 100$

$= \frac{\text{Rs.40}}{\text{Rs.3.04}} \times 13.16:1$

$\text{Dividend Pay-out Ratio} = \frac{\textit{Dividend per share}}{\textit{Earning Per Share}} \times 100$

$= \frac{2}{\text{Rs.3.04}} \times 100 = 66\%$