# 32

# ACCOUNTING RATIOS - II

## 32.1 INTRODUCTION

You have learnt in the previous lesson that Accounting Ratios can be classified into three major groups, viz., Liquidity Ratios, Activity or Turnover Ratios and Profitability Ratios. You have already learnt the meaning and significance of different Liquidity Ratios and Activity or Turnover Ratios. In this lesson, you will learn about the various Profitability Ratios and Debt - equity ratio and their significance.

## 32.2 OBJECTIVES

After studying this lesson, you will be able to:

- list various types of Profitability Ratios;
- explain the meaning and significance of :-
  a) Gross Profit Ratio,
  b) Net Profit Ratio,
  c) Return on Investment Ratio (ROI),
  d) Debt-Equity Ratio.
- Calculate the above ratios on the basis of given information;
- differentiate between Gross Profit and Net Profit Ratios;
- describe the limitations of Accounting Ratios.

## 32.3 PROFITABILITY RATIOS

The primary objective of an enterprise is to earn profits which is necessary for the survival and growth of the business enterprise. It is the part of sales and it is earned with the help of amount invested in business. It is useful to know how much profit has been earned with the help of the amount invested in the business.

The profitability ratios are computed to throw light on the current operating performance and efficiency of the business concern. Net profit and gross profit are absolute figures and do not give any impression about the performance of the business unless they are related with the volume of sales and capital invested in the business. These ratios are helpful for the management to take remedial measures if there is a reducing trend. They also help the management to strengthen their approach if the ratios are showing a favourable trend. Important profitability ratios are :

### 1. Gross Profit Ratio

It expresses the relationship of gross profit to net sales and is expressed in percentage. It is computed as :

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

where,

Net Sales = Total Sales - Sales Returns, and

Gross Profit = Net Sales - Cost of Goods sold.

**Significance**

Gross profit ratio reflects the margin of profit that a concern is able to earn on its trading or manufacturing activities. A high gross profit ratio is a great satisfaction to the management. It represents the low cost of goods sold. Higher the rate of gross profit, lower the cost of goods sold. It indicates the extent to which the trader can reduce the selling price of his goods without incurring loss on operations for the firm.

**Example 1**

From the following figures, calculate Gross Profit Ratio:

| | |
|---|---|
| Gross Profit | Rs. 50,000 |
| Sales | Rs. 5,50,000 |
| Sales Returns | Rs. 50,000 |

**Solution**

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

Net Sales = Sales - Sales Returns

= Rs.5,50,000 - Rs.50,000

= Rs.5,00,000

$$\text{Gross Profit Ratio} = \frac{\text{Rs.50,000}}{\text{Rs.5,00,000}} \times 100$$

= 10%

**Example 2**

Calculate Gross Profit Ratio:

| | |
|---|---|
| Sales | Rs.6,50,000 |
| Sales Returns | Rs. 50,000 |
| Cost of Goods Sold | Rs.4,80,000 |

**Solution**

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

Gross Profit = Net Sales - Cost of Goods sold

= (Rs.6,50,000 - Rs.50,000) - Rs.4,80,000

= Rs.1,20,000

Net Sales = Sales - Sales Returns

= Rs.6,50,000 - Rs.50,000

= Rs.6,00,000

$$\text{Gross Profit Ratio} = \frac{\text{Rs.1,20,000}}{\text{Rs.6,00,000}} \times 100$$

= 20%

**Example 3**

Calculate Gross Profit Ratio:

| | |
|---|---|
| Sales | Rs.2,00,000 |
| Rate of gross profit on cost | 25% |

**Solution**

Let cost be = Rs.100

and profit = 25% on cost, i.e., Rs.100 = 25

hence, sales = cost + profit

= Rs.100 + Rs.25 = Rs.125.

If sales be 125, cost be 100

when sales are 2,00,000 then cost would be 100/125×2,00,000

= Rs.1,60,000

Gross Profit = Net Sales - Cost of Goods sold

= Rs.2,00,000 - Rs.1,60,000

= Rs.40,000

$$\text{Gross Profit Ratio} = \frac{\text{Rs.40,000}}{\text{Rs.2,00,000}} \times 100$$

= 20%

## 2. Net Profit Ratio

This ratio relates net profit to sales and indicates sales margin on sales. This is expressed as percentages and is also known as 'Net Profit Margin' or 'Net Profit Margin on Sales'. The main objective of computing this ratio is to determine the overall profitability due to various factors such as operational efficiency, etc. This ratio is calculated as :

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

**Significance**

Net Profit Ratio represents the operational efficiency of the business. It indicates the extent to which management has been able to reduce the operational expenses. This ratio indicates margin earned on Sales, what portion of sales is left to pay dividend and to create reserves, and firm's capacity to withstand adverse economic conditions. Higher the Net Profit ratio, better it is.

**Example 4**

Calculate Net Profit Ratio from the following -

| | |
|---|---|
| Net Profit | Rs. 40,000 |
| Sales | Rs.6,40,000 |
| Sales Returns | Rs. 40,000 |

**Solution**

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

Net Sales = Sales - Sales Returns

= Rs.6,40,000 - Rs.40,000 = Rs.6,00,000

$$\text{Net Profit Ratio} = \frac{\text{Rs.40,000}}{\text{Rs.6,00,000}} \times 100 = 6.67\%$$

**Example 5**

Calculate Gross Profit Ratio and Net Profit Ratio from the following figures :

| | |
|---|---|
| Sales | Rs.1,50,000 |
| Cost of Goods sold | Rs.1,20,000 |
| Operating expenses | Rs. 16,000 |

**Solution**

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

Gross Profit = Sales - Cost of Goods sold

= Rs.1,50,000 - Rs.1,20,000

= Rs.30,000

$$\text{Gross Profit Ratio} = \frac{\text{Rs.30,000}}{\text{Rs.1,50,000}} \times 100$$

= 20%

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

Net Profit = Gross Profit – Operating Expenses

Net Profit = Rs.30,000 - Rs.16,000

= Rs.14,000

$$\text{Net Profit Ratio} = \frac{\text{Rs.14,000}}{\text{Rs.1,50,000}} \times 100$$

= 9.33%

### 3. Return on Investment Ratio (ROI)

Return on investment is the basic profitability ratio. This ratio relates

profit to investment in the enterprise and reflects the overall profitability of the business in relation to investment made. This ratio measures the profitability or productivity of investment. It is expressed as a percentage on investment.

The term investment here refers to long-term funds invested in business. This investment is called "Capital Employed" and this ratio is also known as "Return on Capital Employed" or "Return on Investment". It is calculated as under -

$$\text{Return on Investment} = \frac{\text{Net Profit before Interest, Tax \& Dividend}}{\text{Capital Employed}} \times 100$$

where,

Capital Employed = Equity Share Capital + Preference Share Capital + Undistributed profits + Reserves and Surpluses + Long-term liabilities - Fictitious Assets - Non-trading Investment.

Or,

Capital Employed = Net Fixed Assets + Net Working Capital.

Or,

Capital Employed = Net Fixed Assets + (Current Assets - Current Liabilities).

If net profit after interest, tax and dividend is given, the amount of interest, tax and dividend should be added back to calculate the net profit for the purpose of calculation of this ratio.

**Significance**

Return on Investment reflects the overall efficiency with which capital employed is used. It measures how efficiently the funds entrusted to the business are being used. In other words, it tells what is the earning capacity of the net assets of the business. It is a helpful tool for making capital budgeting decisions. Higher the ratio, the more efficient is the management and utilisation of capital employed.

**Example 6**

Given below is the Balance Sheet of M/s. XY Ltd., Calculate Return on Investment Ratio.

| Liabilities | Rs. | Assets | Rs. |
|---|---|---|---|
| Equity Share Capital | 10,00,000 | Net Fixed Assets | 15,00,000 |
| Reserves | 2,50,000 | Current Assets | 12,50,000 |
| Profit for the year | 2,50,000 | Discount on issue of Debentures | 50,000 |
| 10% Debentures | 5,00,000 | | |
| Current Liabilities | 8,00,000 | | |
| | 28,00,000 | | 28,00,000 |

**Solution**

$$\text{Return on Investment} = \frac{\text{*NPBITD}}{\text{Capital Employed}} \times 100$$

* NPBITD refers to Net Profit before Interest, Tax and Dividend

NPBITD = Profit + Interest on Debentures

= Rs.2,50,000 + Rs.50,000

= Rs.3,00,000

Capital Employed = Equity Share capital + Reserves & Surplus + Debentures - Discount on Debentures

= Rs.10,00,000 + Rs.2,50,000 + Rs.2,50,000 + Rs.5,00,000 - Rs.50,000

= Rs.19,50,000

or Capital Employed = Net Fixed Assets + Net Working Capital

= Net Fixed Assets + (Current Assets– Current liabilities)

$$= \text{Rs.}15,00,000 + (\text{Rs.}12,50,000 - \text{Rs.}8,00,000)$$

$$= \text{Rs.}15,00,000 + \text{Rs.}4,50,000$$

$$= \text{Rs.}19,50,000$$

$$\text{Return on Investment} = \frac{\text{Rs.}3,00,000}{\text{Rs.}19,50,000} \times 100 = 15.4\%$$

## 4. Debt-Equity Ratio

This ratio is calculated by matching the fixed interest bearing funds with the shareholders' funds invested in the company. The objective of computing the ratio is to measure the relative proportion of debt and equity in financing the assets of a firm. It is calculated as ;

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

where,

Debt = Fixed Interest bearing funds or securities.

and,

Equity or Equity Shareholders' funds = Equity Share Capital + Reserves and Surplus - Fictitious Assets to the extent not written off or adjusted.

**Significance**

It indicates the extent of fixed interest bearing funds being used in the business. A low Debt-Equity ratio implies the use of more equity than debt. This means that business runs at low gear and is likely to earn less profits as compared to the situation when debt is more than the equity in which case the business is likely to earn a higher return on the equity after paying the interest. The ideal Debt-Equity ratio is 1:1.

**Example 7**

From the following figures, calculate Debt-Equity Ratio:

| | |
|---|---|
| Equity Share Capital | Rs. 2,00,000 |
| General Reserve | Rs. 1,60,000 |
| 10% Debentures | Rs. 1,50,000 |
| Current Liabilities | Rs. 1,00,000 |
| Preliminary Expenses | Rs. 10,000 |

**Solution**

$$\text{Debt-Equity Ratio} = \frac{\text{Debt}}{\text{Equity Shareholders' Funds}}$$

Equity Shareholders' Funds = Equity Share Capital + General Reserve - Preliminary Expenses.

= Rs.2,00,000 + Rs.1,60,000 - Rs.10,000

= Rs.3,50,000

$$\text{Debt-Equity Ratio} = \frac{\text{Rs.1,50,000}}{\text{Rs.3,50,000}}$$

= 3:7

**Example 8**

From the following figures, calculate Debt-Equity Ratio :

| | |
|---|---|
| Equity Shares of Rs.10/- each | Rs.1,00,000 |
| Retained Earnings | Rs. 40,000 |
| Reserves for contingencies | Rs. 10,000 |
| Sinking Fund | Rs. 8,000 |
| Loan on Mortgage | Rs. 50,000 |
| 5% Debentures | Rs. 60,000 |
| Creditors | Rs. 34,000 |
| Provision for Tax | Rs. 30,000 |
| Proposed Dividend | Rs. 10,000 |

**Solution**

$$\text{Debt-Equity Ratio} = \frac{\text{Debt}}{\text{Equity Shareholders' funds}}$$

Debts = Loan on Mortgage + 5% Debentures

= Rs.50,000 + Rs.60,000

= Rs.1,10,000

Equity Shareholders' funds = Equity Share Capital + Retained Earnings + Sinking Fund

= Rs.1,00,000 + Rs.40,000 + Rs.8,000

= Rs.1,48,000

$$\text{Debt-Equity Ratio} = \frac{\text{Rs.1,10,000}}{\text{Rs.1,48,000}}$$

= 55 : 74

## INTEXT QUESTIONS 32.1

A. Name the ratios that relate to the profitability of a business concern.

i) _____.

ii _____.

B. Fill in the blanks with suitable word or words :

i) Return on Investment is a _____ ratio.

ii) Debt-Equity Ratio = _____

iii) Gross Profit Ratio = _____ × 100

iv) Return on Capital Employed = $\frac{\text{\_\_\_\_\_}}{\text{Capital Employed}}$ × 100

v) Capital Employed = _____

C. Following is the Trading and Profit & Loss A/c of M/s. RK Ltd., for the year ended on 31st March, 1997:

| Particulars | Amount Rs. | Particulars | Rs. |
|---|---|---|---|
| To opening stock | 80,000 | By sales | 6,00,000 |
| To purchases | 4,60,000 | By closing stock | 1,00,000 |
| To wages | 40,000 | | |
| To gross profit | 1,20,000 | | |
| | 7,00,000 | | 7,00,000 |
| To selling expenses | 20,000 | By gross profit | 1,20,000 |
| To Administrative expenses | 28,000 | | |
| To non-operating expenses | 12,000 | | |
| To net profit | 60,000 | | |
| | 1,20,000 | | 1,20,000 |

Calculate the following ratios -

i) Gross Profit Ratio = $\frac{1,20,000}{?} \times 100$

ii) Net Profit Ratio = $\frac{?}{6,00,000} \times 100$

## Difference between Gross Profit Ratio and Net Profit Ratio :

On the basis of the ongoing discussion, we can distinguish between Gross Profit Ratio and Net Profit Ratio in the following manner :

| Basis | Gross Profit Ratio | Net Profit Ratio |
|---|---|---|
| i) Meaning | It expresses the relationship between Gross Profit and Net Sales. | It expresses the relationship between Net Profit and Net Sales. |
| ii) Purpose | It measures productive efficiency. | It measure overall Profitability. |
| iii) Effect of Abnormal losses | It is not affected by any abnormal loss. | It is affected by an abnormal loss. |
| iv) Return on Investment (ROI) | ROI cannot be computed with the help of it. | ROI is calculated with the help of it. |

## Limitations of Accounting Ratios

Accounting Ratios are very significant in revealing the financial position and soundness of a business concern. But in spite of their advantages, they have some limitations which restrict their use. These limitations should be kept in mind while making use of ratio analysis for interpretation of financial statements. The following are the main limitations of Accounting Ratios :

**i) To Ignore qualitative factors**

The ratio analysis, being of quantitative in nature, ignore the qualitative factors which in certain cases may be more important than quantitative factors. As such, the conclusions derived from the ratio analysis under these circumstances may be misleading.

**ii) To Ignore price level changes**

Price level changes make the comparison of figures difficult over a period of time. Before any comparison is made, proper adjustments for price level changes must be made.

**iii) Different meanings to different terms**

In order to calculate any ratio, different firms may take profit before charging interest and tax or profit before tax but after interest or profit after interest and tax. This may lead to different ratios. Thus, the results of different firms cannot be compared.

**iv) False results if based on incorrect accounting data**

Ratios are based on accounting data. They can be useful only when they are based on reliable data. If the data are not reliable, the ratio will be unreliable.

**v) Different accounting policies**

Different firms follow different accounting policies. For example, there are different methods of providing depreciation and valuation of stock. Such differences will make some of the accounting ratios incomparable unless adjustment for differences is made.

vi) **Difficulty in forecasting**

Ratios are worked out on the basis of past results. As such they do not reflect the present and future position, it may not be desirable to use them for forecasting future events.

vii) **No single standard ratio for comparison**

There is no single standard ratio which is universally accepted and against which a comparison can be made. Standards may differ from industry to industry.

viii) **Unrelated and insignificant ratio**

Accounting ratios may be worked for any two significant and unrelated figures as ratio of sales and investment in government securities. Such ratios may be misleading.

## INTEXT QUESTIONS 32.2

A. Give any two points of difference between gross profit ratio and net profit ratio:

i) _____.

ii) _____.

B. Give any two limitations of Accounting Ratios :

i) _____

ii) _____

## 32.5 WHAT YOU HAVE LEARNT

- Profitability ratios — assess the overall efficiency of a business concern.
- Gross Profit Ratio — assesses the efficiency of manufacturing activities.
- Gross Profit Ratio — $\frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$

- Net Profit Ratio — assesses the overall efficiency or profitability of business activities.

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

- Return on Investment — helps in knowing the rate of return on capital employed.

  Return on Investment (ROI) $= \frac{\text{Net Profit before Interest, tax and dividend}}{\text{Capital Employed}} \times 100$

- Debt-Equity Ratio — measures the relative proportion of Debt and Equity in financing the assets of firm.

  Debt-Equity Ratio $= \frac{\text{Debt}}{\text{Equity Shareholders' funds}}$

  Equity Shareholders' funds — Equity share capital+Reserves and Surplus - Fictitious Assets.

- Limitations of Accounting Ratios are
  - to ignore qualitative factors;
  - to ignore price level changes,
  - different meanings to different terms;
  - false results if based on incorrect accounting data;
  - different accounting policies;
  - difficulty in forecasting;
  - no single standard ratio for comparison;
  - unrelated and insignificant ratio.

## 32.6 TERMINAL QUESTIONS

1. List the ratios which assesses profitability of a business concern. Give their meanings, formulas and significance.

2. From the following figures, calculate -
   (a) Gross Profit Ratio.
   (b) Net Profit Ratio
   (c) Return on Investment (ROI)
   (d) Debt-Equity Ratio.

| | Rs. |
|---|---|
| Purchases | 2,50,000 |
| Opening stock | 50,000 |
| Closing stock | 75,000 |
| Sales | 4,00,000 |
| Sales Returns | 5,000 |
| Purchases Returns | 2,500 |
| 12% Debentures | 1,50,000 |
| Equity Share Capital | 5,00,000 |
| 12% Preference Share Capital | 2,00,000 |
| General Reserve | 50,000 |
| Total Current Assets | 1,50,000 |
| Total Current Liabilities | 90,000 |
| Debtors | 40,000 |
| Bills Receivable | 30,000 |
| Net Profit | 45,000 |

3. Given below is the Trading, Profit & Loss A/c and the Balance Sheet of a business concern -

Trading, Profit & Loss A/c for the year ending on 31-03-97

| Particulars | Amount Rs. | Particulars | Amount Rs. |
|---|---|---|---|
| To Opening Stock | 40,000 | By Sales | 3,20,000 |
| To Purchases | 2,60,000 | By Closing Stock | 80,000 |
| To Gross Profit | 1,00,000 | | |
| | 4,00,000 | | 4,00,000 |
| To Selling Expenses | 12,000 | By Gross Profit | 1,00,000 |
| To Office Expenses | 8,000 | | |
| To Depreciation | 6,000 | | |
| To Interest on Debentures | 14,000 | | |
| To Income Tax | 20,000 | | |
| To Net Profit | 40,000 | | |
| | 1,00,000 | | 1,00,000 |

Balance Sheet as at 31st March, 1997

| Liabilities | Amount Rs. | Assets | Amount Rs. |
|---|---|---|---|
| Equity Share Capital | 2,00,000 | Cash and Bank | 20,000 |
| 14% Debentures | 1,00,000 | Debtors | 30,000 |
| Bills Payable | 10,000 | Closing Stock | 80,000 |
| Creditors | 40,000 | Fixed Assets | 2,20,000 |
| | 3,50,000 | | 3,50,000 |

Calculate the following ratios:

(i) Gross Profit Ratio,

(ii) Net Profit Ratio,

(iii) Return on Investment (ROI)

(iv) Debt-Equity Ratio.

4. Calculate the gross profit ratio and net profit ratio from the following figures :

   Sales Rs.5,00,000

   Rate of profit on cost 25%

   Operating expenses 10% of sales

5. Give any two points of difference between gross profit ratio and net profit ratio.

6. Describe the limitations of accounting ratio.

## 32.7 ANSWERS TO INTEXT QUESTIONS

**32.1** A. Gross Profit Ratio, Net Profit Ratio, ROI (any two)

B. (i) profitability

(ii) $\frac{\text{Debt}}{\text{Equity}}$

(iii) $\frac{\text{Gross Profit}}{\text{Net Sales}}$

(iv) Net Profit before Interest, Tax and Dividend

(v) Net Fixed Assets + (Total Current Assets - Total current Liabilities), or Share Capital + Reserves and Surplus + Long-term liabilities - Fictitious assets.

C. (i) 20%; (ii) 10%

**32.2** A. (i) Purpose (ii) Meaning

(iii) Effect of abnormal losses (iv) ROI

B. Any two of the following :

(i) to ignore qualitative factors

(ii) to ignore Price level changes

(iii) Different accounting Policies