Government Arts College (Autonomous)

Dept of Commerce (CA)

B.Com (CA) — III year.

Subject: Management Accounting

Subject Code: 18BCA61C

II unit

Ratio Analysis — Analysis of liquidity Solvency and Profitability.

Book References:

1) Management accounting — R.K. Sharma and Shashi K. Gupta.

2) Management accounting — Prof. T.S. Reddy & Dr. Y. Hariprasad Reddy.

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Ratio Analysis

Introduction:

Ratio Analysis is a very powerful and most commonly used tool of analysis and Interpretation of financial Statements. Ratio analysis helps to analysis the past Performance of a Company and to Make future Projections. Ratio analysis is applied to financial Statements to analysis the Success, failure and Progress of a business. It is a fascinating topic.

A Financial ratio shows the Mathematical relationship between two figures which have meaningful relation with each other e.g. gross profit and Sales, net profit and Sales, Current assets and Current liabilities etc.

Advantages of Ratio Analysis :-

* Useful in analysis of financial Statements
* Useful in improving future Performance
* Useful in inter-firm Comparison
* Useful in Judging the efficiency of a business
* Useful in Simplifying accounting figures.

Limitations of Ratio Analysis :-

* Reliability of ratios depends upon the correctness of the basic data.
* Ratios are not always comparable.
* Ratios sometimes give a misleading picture.
* Ratios ignore qualitative factor.
* Change in price levels make ratio analysis ineffective
* Ratio based on past financial statements are no indicators of future.

SUMMARY OF FORMULAE

Liquidity Ratios:

1. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
2. Liquid (or) quick Ratio = $\frac{\text{Liquid Assets}}{\text{Current Liabilities}}$

Capital Structure (or) Solvency (or) Leverage Ratios

1. Debt Equity Ratio = $\frac{\text{Long Term Debts}}{\text{Shareholders equity.}}$

(OR)

$= \frac{\text{External Equity}}{\text{Internal Equity}}$

(2) Proprietory Ratio = $\frac{\text{Shareholders funds}}{\text{Total Assets}}$

(3) Interest Coverage Ratio = $\frac{\text{EBIT}}{\text{Fixed Interest charges}}$

(4) Capital gearing Ratio = $\frac{\text{Fixed Income Securities}}{\text{Equity Shareholders fund}}$

Turnover (or) Activity Ratios:

1. Inventory (or) Stock Turnover Ratio = $\frac{\text{Cost of goods sold}}{\text{Average Inventory}}$

2. Debtors Turnover Ratio = $\frac{\text{Net Credit Sales}}{\text{Average debtors}}$

Average Collection Period (days) = $\frac{\text{Debtors}}{\text{Credit Sales}} \times 365 \text{ days}$

(3) Fixed assets-turnover Ratio = $\frac{\text{Cost of Sales}}{\text{fixed assets after depreciation}}$

(4) Capital turnover Ratio = $\frac{\text{Cost of Sales}}{\text{capital employed}}$

Profitability Ratios:

(1) Gross Profit Ratio = $\frac{\text{Gross profit}}{\text{Net Sales}} \times 100$

$= \frac{\text{Sales} - \text{Cost of Goods sold}}{\text{Sales}} \times 100$

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

(3) Operating Ratio = $\frac{\text{Cost of goods sold} + \text{operating Expenses}}{\text{Net Sales}}$

(4) Operating Profit Ratio = $\frac{\text{Operating Net Profit}}{\text{Net Sales}} \times 100$

(5) Return on Investment- ROI = $\frac{\text{Net profit befor Int \& Tax}}{\text{Total capital employed}} \times 100$

(6) Return on Shareholders funds = $\frac{\text{Net profit After Int \& Tax}}{\text{Shareholders fund}} \times 100$

(7) Return on Equity Capital = $\frac{\text{NP after Int Tax \& Pref div}}{\text{Equity Shareholders fund}} \times 100$

(8) Earning Per Share (EPS) = $\frac{\text{NP after Tax} - \text{Pref. Div}}{\text{No of equity share.}}$

(9) Dividend payout Ratio = $\frac{\text{Dividend Per Share}}{\text{Earnings per Share.}}$

(10) Dividend Yield Ratio = $\frac{\text{Dividend Per equity Share}}{\text{Market Price Per Equity Share}}$

(11) Price Earning Ratio (P/E Ratio) = $\frac{\text{Market Price Per equity Share}}{\text{Earning Per Share.}}$

Problems and Solutions

Problem : 1

From the following information, determine opening and closing Stocks:

Stock Turnover = 5 times
Total Sales = ₹ 200000
Gross Profit = 25% of Sales

The closing stock value was more by ₹ 4,000 than opening Stock.

Solution:

Gross profit $= 200000 \times \frac{25}{100} = 50000$

Cost of Goods sold = Sales − Gross profit

$= 200000 - 50000 = 150000$

Let the opening Stock = x

Closing Stock $= x + 4000$

Stock Turn over Ratio = 5 times

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

$$5 = \frac{150000}{\frac{1}{2}(x + x + 4000)}$$

$$5x + 10000 = 150000$$

$$5x = 150000 - 10000$$

$$x = \frac{140000}{5} = 28000 \text{ (opening Stock)}$$

closing Stock = 28000 + 4000

= 32000

Thus opening Stock = 28000 and closing Stock 32000

Problem : 2

From the Information given below, Calculate the following ratios:

(i) Quick Ratio (ii) Stock Turnover Ratio

(iii) Debt-equity Ratio (iv) Return on Investment.

Information: Current assets 500000; opening Stock 50000; closing Stock 150000; Cost of Goods Sold 1200000; Grossprofit 200000, Indirect Expenses 20000, Equity Share Capital 700000; 10% Pref. Share Capital 300000; 12% Debentures 200000; Current Liabilities 200000; General Reserve 100000.

Solution :

(1) Quick Ratio = $\frac{\text{Quick Assets}}{\text{Current Liability}} = \frac{500000 - 150000}{200000}$

$= \frac{350000}{200000} = 1.75 : 1$

(2) Stock Turn Ratio = $\frac{\text{Cost of goods Sold}}{\text{Average Stock}}$

$$= \frac{1200000}{\frac{1}{2}(50000+150000)} = \frac{1200000}{100000}$$

$$= 12 \text{ times}$$

(iii) Debt-equity Ratio = $\frac{\text{long term debts}}{\text{Shareholders funds}}$

$$= \frac{200000}{700000+300000+100000} = \frac{200000}{1100000}$$

$$= 2:11$$

(iv) Return on Investment = $\frac{\text{Profit before Int \& Tax}}{\text{Capital employed}}$

$$= \frac{GP - \underset{EXP}{\text{Indirect}} + \text{Int on debent}}{\text{Eq. S capital} + \text{Pref. cap} + \text{Debent} + G.R.}$$

$$= \frac{200000 + 20000 + 24000}{700000+300000+200000+100000}$$

$$= \frac{204000}{1300000} \times 100 = 15.69\%$$

Problem: 3

Calculate the following Ratios from the giv

Balance Sheet:

(i) Current Ratio
(ii) Fixed Assets to Net Worth Ratio
(iii) Debt Equity Ratio
(iv) Return on Capital Employed

Balance Sheet

Liabilities		Assets	
600 Shares of ₹ 1000 each	60000	Land	40000
General Reserve	35000	Plant	20000
Dividend Eq. Reserve	5000	Machines	27500
Long Term Loans	20000	Investments	25000
Bills payable	30000	Inventories	30000
Provision for Tax	5000	B/R	13500
P&L A/c:		Cash & Bank	12000
Balance 1000		Preliminary Exp	8000
Current year 20000	21000		
	176000		176000

Solution:

(i) Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

$= \frac{55500}{35000} = 1.56:1$ Ans.

(ii) Fixed Assets to Net Worth Ratio

$= \frac{\text{Fixed Assets}}{\text{Net worth}} = \frac{112500}{113000}$

$= 0.99:1$

(iii) Debt-Equity Ratio

$= \frac{\text{Long Term debts}}{\text{Shareholders funds}} = \frac{20000}{113000}$

$= 0.17:1$

(iv) Return on Capital Employed

$= \frac{\text{Net Profit before Int \& Tax}}{\text{Capital Employed}} \times 100$

$= \frac{25000}{133000} \times 100 = 18.79\%$

Problem: 4

A Company having a net working Capital of 2.8 lakhs as on 30/6/2010, indicate the following financial ratios and Performance figures:

Current Ratio = 2.4

Liquidity Ratio = 1.6

Inventory Turnover (on cost of Sales) = 8

Gross profit on sales = 20 %

Credit allowed (months) = 1.5

The Company's fixed assets is equivalent to 90% of its net-worth (Share Capital Plus reserves) while reserves amounted to 40% of Share Capital.

Prepare the Balance Sheet of the Company as on 30/6/2010 showing Step by Step Calculations:

Solution:

1. Calculation of Current Assets & Current Liabilities

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad \frac{CA}{CL}$$

$$2.4 = \frac{CA}{CL}$$

$$CA = 2.4\,CL$$

Net working Capital = CA − CL = 280000

$$2.4CL - CL = 280000$$

$$1.4CL = 280000$$

$$CL = \frac{280000}{1.4} = 200000$$

Thus Current Liabilities = 200000

Current Assets = 2.4 CL = 2.4 × 200000

= 480000

Calculation of Stock

$$\text{Liquidity Ratio} = \frac{CA - \text{Stock}}{CL}$$

$$1.6 = \frac{480000 - \text{Stock}}{200000}$$

$$200000 \times 1.6 = 480000 - \text{Stock}$$

Stock = 480000 − 320000

= 160000

Calculation of Cost of Sales:

Gross profit on Sales = 20%

Gross profit on Cost of sales = 25%

$$\text{Gross profit} = 1280000 \times \frac{25}{100}$$

= 320000

Calculation of Sales:-

Cost of Sales	= 1280000
Add: Gross profit	= 320000
Sales.	1600000

Calculation of Debtors:

$$\text{Average Collection Period} = \frac{\text{Debtors}}{\text{Credit Sales}} \times 12 \text{ months}$$

$$1.5 \text{ months} = \frac{\text{Debtors}}{1600000} \times 12$$

$$12 \times \text{Debtors} = 1600000 \times 1.5$$

$$\text{Debtors} = \frac{2400000}{12} = 200000$$

Calculation of Cash:

$$\text{Current Assets} = \text{Stock} + \text{Debtors} + \text{Cash}$$

$$480000 = 160000 + 200000 + \text{Cash}$$

$$\text{Cash} = 480000 - 360000$$

$$= 120000$$

Calculation of Fixed Assets:

$$\text{Fixed Assets} = 90\% \text{ of net worth}$$

$$\text{Net worth} = \text{Capital} + \text{Reserves}$$

$$\text{Also net worth} = \text{FA} + \text{NWC}$$

$$= 0.9 \text{ Net worth} + 280000$$

$$0.1 \text{ net worth} = 280000$$

Net worth = $\frac{280000}{0.1}$ = 2800000

Fixed Assets = 2800000 × 90% = 2520000

Calculation of Capital and Reserve

Net worth = 2800000

Reserve = 40% of Capital

Capital + 0.4 Capital = 2800000

1.4 Capital = 2800000

Capital = $\frac{2800000}{1.4}$ = 2000000

Reserves = 2000000 × $\frac{40}{100}$ = 800000

Balance Sheet as on 30/6/2010

Liabilities		Assets	
Share capital	2000000	Fixed Assets	2520000
Reserves	800000	Stock	160000
Current Liabilities	200000	Debtors	200000
		Cash	120000
	3000000		3000000