### Problems and Solutions – Ratio Analysis

#### Type 1: Final Account to Ratio

**Problem 1.** From the data calculate:

(i) Gross Profit Ratio

(ii) Net Profit Ratio

(iii) Return on Total Assets

(iv) Inventory Turnover

(v) Working Capital Turnover

(vi) Net worth to Debt

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>25,20,000</td>
</tr>
<tr>
<td>Cost of sale</td>
<td>19,20,000</td>
</tr>
<tr>
<td>Net profit</td>
<td>3,60,000</td>
</tr>
<tr>
<td>Inventory</td>
<td>8,00,000</td>
</tr>
<tr>
<td>Other Current Assets</td>
<td>7,60,000</td>
</tr>
<tr>
<td>Fixed Assets</td>
<td>14,40,000</td>
</tr>
<tr>
<td>Net worth</td>
<td>15,00,000</td>
</tr>
<tr>
<td>Debt</td>
<td>9,00,000</td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>6,00,000</td>
</tr>
</tbody>
</table>

**Solution:**

1. **Gross Profit Ratio = (GP/ Sales) * 100 = 6**

Sales – Cost of Sales Gross Profit

25,20,000 – 19,20,000 = 6,00,000

2. **Net Profit Ratio = (NP / Sales)* 100 = 3**

3. **Inventory Turnover Ratio = Turnover / Total Assets) * 100= 1920000/800000= 2.4 times**

Turnover Refers Cost of Sales

4. **Return on Total Assets = NP/ Total Assets = (3600000/3000000)*100 = 12%**

FA+ CA +inventory [14,40,000 + 7,60,000 + 8,00,000] = 30,00,000

5. **Net worth to Debt = Net worth/ Debt= (1500000/900000)* 100 = 1.66 times**

6. **Working Capital Turnover = Turnover/Working capital**

Working Capital = Current Assets – Current Liabilities
= 8,00,000 + 7,60,000 - 6,00,000
= 15,60,000 - 6,00,000 = 9,60,000

Working Capital Turnover Ratio = 19,20,000 = 2 times.

**Problem 2.** Perfect Ltd. gives the following Balance sheet. You are required to compute the following ratios.

(a) Liquid Ratio

(b) Solvency Ratio

(c) Debt-Equity Ratio

(d) Stock of Working Capital Ratio

<table>
<thead>
<tr>
<th>Balance Sheet</th>
<th>$</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity share capital</td>
<td>1500000</td>
<td>Fixed Assets</td>
</tr>
<tr>
<td>Reserve fund</td>
<td>100000</td>
<td>Stock</td>
</tr>
<tr>
<td>6% Debentures</td>
<td>300000</td>
<td>Debtors</td>
</tr>
<tr>
<td>Overdraft</td>
<td>100000</td>
<td>Cash</td>
</tr>
<tr>
<td>Creditors</td>
<td>200000</td>
<td>2200000</td>
</tr>
</tbody>
</table>

**Solution :**

(a) Liquid Ratio = Liquid Assets / Liquid Liabilities

(or )

Liquid Assets / Current Liabilities

LA Debtors = 2,00,000 i.e., 3,00,000 / 200000 = 1.5

Cash = 1,00,000

= 3,00,000

Liquid Liabilities : Creditors = 2,00,000

(b) Debt – Equity Ratio = External Equities / Internal Equities

External Equities:

All outsiders loan Including current liabilities

3,00,000 + 1,00,000 + 2,00,000 = 6,00,000

Internal Equities :

It Includes share holders fund + Reserves

15,00,000 + 1,00,000 = 16,00,000

Debt – Equity Ratio = 600000/ 1600000 = 0.375

Outside Liabilities = Debenture + Overdraft + Creditors
= 3,00,000 + 1,00,000 + 2,00,000 = 6,00,000

Solvency Ratio = (600000 / 2200000) * 100
= 27.27%

(d) Stock of Working Capital Ratio = Stock / Working Capital

The sales for the year were $ 5,60,000.

Solution:

Debt – Equity = Long – Term Debt / Shareholders Fund

Ratio = Secured loan $. 80,000

Shareholder’s Fund= Equity Share Capital + Reserves + P.L.A/c
= 1,00,000 + 20,000 + 30,000 = 1,50,000

Debt-Equity Ratio = 80,000 / 1,50,000 = .53

Liquidity Ratio = Liquid Assets / Liquid Liabilities

Liquid Assets = Sundry Debtors + Advances + Cash Balance
30,000 + 10,000 + 30,000 = 70,000

Liquid Liabilities = Provision for Taxation + sundry creditors
= 20,000 + 50,000 = 70,000

Liquid Ratio = 70,000 / 70,000 = 1

Fixed Assets to Current Assets
= Fixed Assets / Current Assets = 1,40,000 / 100,000
= 1.4

Fixed Assets Turnover = Turnover / Fixed Assets = 5,60,000 / 1,40,000
= 4

**Problem 4.** The Balance sheet of Naronath & Co. as on 31.12.2000 shows as follows:

<table>
<thead>
<tr>
<th>Liabilities</th>
<th>$</th>
<th>Assets</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity capital</td>
<td>1,00,000</td>
<td>Fixed Assets</td>
<td>1,80,000</td>
</tr>
<tr>
<td>15% Preference shares</td>
<td>50,000</td>
<td>Stores</td>
<td>25,000</td>
</tr>
<tr>
<td>12% Debentures</td>
<td>50,000</td>
<td>Debtors</td>
<td>55,000</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>20,000</td>
<td>Bills Receivable</td>
<td>3,000</td>
</tr>
<tr>
<td>Creditors</td>
<td>45,000</td>
<td>Bank</td>
<td>2,000</td>
</tr>
<tr>
<td></td>
<td>2,65,000</td>
<td></td>
<td>2,65,000</td>
</tr>
</tbody>
</table>

Comment on the financial position of the Company i.e., Debt – Equity Ratio, Fixed Assets Ratio, Current Ratio, and Liquidity.

**Solution:**

Debt – Equity Ratio = Debt – Equity Ratio / Long – Term Debt

Long-term Debt = Debentures
= 50,000

Shareholder’s Fund = Equity + Preference + Retained Earnings
= 1,00,000 + 50,000 + 20,000
= 50,000
= 1,70,000
= .29

Fixed Assets Ratio = Fixed Assets / Proprietor’s Fund = 1,80,000

Proprietor’s Fund = Equity Share Capital + Preference Share Capital + Retained Earnings
= 1,00,000 + 50,000 + 20,000 = 1,70,000
Fixed Assets Ratio = 1,80,000 / 1,70,000 = 1.05

Current Ratio = Current Assets / Current Liabilities

Current Assets = Stores + Debtors + BR + Bank = 25,000 + 55,000 + 3,000 + 2,000 = 85,000

Liquid Ratio = 45,000 / 85,000 = 1.88

Liquid Assets = 45,000

Liquid Liabilities = Debtors + Bill Receivable + Cash = 55,000 + 3,000 + 2,000 = 60,000

Liquid Ratio = 60,000 / 45,000 = 1.33

**Problem 5:** From the following particulars pertaining to Assets and Liabilities of a company calculate:

(a) Current Ratio
(b) Liquidity Ratio
(c) Proprietary Ratio
(d) Debt-equity Ratio
(e) Capital Gearing Ratio

<table>
<thead>
<tr>
<th>Liabilities</th>
<th>$</th>
<th>Assets</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000 equity shares $ 10 each</td>
<td>500000</td>
<td>Land &amp; Building</td>
<td>500000</td>
</tr>
<tr>
<td>8% 2000 pre shares $ 100 Each</td>
<td>600000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9% 4000 Debentures of $ 100 each</td>
<td>240000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserves</td>
<td>300000</td>
<td>Cash and Bank</td>
<td>55000</td>
</tr>
<tr>
<td>Creditors</td>
<td>150000</td>
<td>Prepaid expenses</td>
<td>5000</td>
</tr>
<tr>
<td>Bank overdraft</td>
<td>50000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1600000</strong></td>
<td><strong>1600000</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Solution:**

Current Ratio = Current Assets / Current Liabilities

Current Assets = Stock + Cash + Prepaid Expenses + Debtors

= 2,40,000 + 55,000 + 5,000 + 2,00,000 = 5,00,000

Current Liabilities = Creditors + Bank Overdraft

= 1,50,000 + 50,000 = 2,00,000

= 5,00,000 / 2,00,000

= 2.5 : 1
Liquid Ratio = Liquid Assets / Liquid Liabilities

Liquid Assets = Cash and Bank + Debtors
= 55,000 + 2,00,000 = 2,55,000

Liquid Liabilities : Creditors = 1,50,000

Liquid Ratio = 2,55,000 / 1,50,000
= 1.7 : 1

Proprietor’s Ratio = Proprietor’s Fund / Total Tangible Assets

Proprietor’s Fund = Equity Share Capital + Preference
Share Capital + Reserves and Surplus

= 5,00,000 + 2,00,000 + 3,00,000

Proprietary Ratio = 10,00,000 / 16,00,000
= 0.625 : 1

Debt – Equity Ratio = External Equities / Internal Equities

External Equities = Long-term Liabilities + Short-term Liabilities
= 4,00,000 + 2,00,000 = 6,00,000

Internal Equities = Proprietor’s funds

= 6,00,000 / 10,00,000
= 0.6 : 1

Capital Gearing Ratio = Fixed Interest Bearing Securities / Equity Share Capital + Reserves

Fixed Interest Bearing Securities = Preference Shares 2,00,000
Debentures 4,00,000
6,00,000

= 6,00,000 / 8,00,000

= 0.75 : 1

Problem 6. From the following details of a trader you are required to calculate:
(i) Purchase for the year.
(ii) Rate of stock turnover
(iii) Percentage of Gross profit to turnover

Sales $ 33,984 Stock at the close at cost price 1814
Sales Returns 380 G.P. for the year 8068

Stock at the beginning
at cost price 1378

Solution:

Trading Account

To Opening stock 1378 By Sales 33984
To Purchase (BD) 25972 Sales Return 380
To gross profit 8068 33604
By closing Stock 1814

35418 35418

(i) Purchase for the year $ 25,972
(ii) Stock Turnover = Cost of Goods Sold

Cost of Goods Sold = Cost of Goods Sold / Average Stock

Average Stock = (Opening Stock + Closing Stock)/ 2

= (1372 + 1814 )/2
= 25916/1596
=16.23 times

(iii) Percentage of Gross Profit to Turnover = Gross Profit / Sales *100

= 8068 / 33,984 * 100
= 23.74%.

Problem 7. Calculate stock turnover ratio from the following information :

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening stock</td>
<td>5</td>
</tr>
<tr>
<td>Purchases</td>
<td>4,84,000</td>
</tr>
<tr>
<td>Sales</td>
<td>6,40,000</td>
</tr>
<tr>
<td>Gross Profit Rate</td>
<td>25% of Sales</td>
</tr>
</tbody>
</table>

Solution :

Stock Turnover Ratio = Cost of Goods Sold / Average Stock

Cost of Goods Sold = Sales - G.P

= 6,40,000 - 1,60,000 = 4,80,000

Stock Turnover Ratio = 4,80,000 / 58000
= 8.27 times
Here, there is no closing stock. So there is no need to calculate the average stock.

**Problem 8.** Calculate the operating Ratio from the following figures.

<table>
<thead>
<tr>
<th>Items</th>
<th>($ in Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>17874</td>
</tr>
<tr>
<td>Sales Returns</td>
<td>4</td>
</tr>
<tr>
<td>Other Incomes</td>
<td>53</td>
</tr>
<tr>
<td>Cost of Sales</td>
<td>15440</td>
</tr>
<tr>
<td>Administration and Selling Exp.</td>
<td>1843</td>
</tr>
<tr>
<td>Depreciation</td>
<td>63</td>
</tr>
<tr>
<td>Interest Expenses (Non-operating)</td>
<td>456</td>
</tr>
</tbody>
</table>

**Solution:**

Operating Ratio = \( \frac{(\text{Cost of Goods Sold} + \text{Operating Expenses} \times 100)}{\text{Sales}} \)

\[= \frac{(15,440 + 1,843)}{17,870} \times 100\]

\[= 97\%\]

**Problem 9.** The following is the Trading and Profit and Loss account of Mathan Bros Private Limited for the year ended June 30, 2001.

<table>
<thead>
<tr>
<th>$</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Stock in hand</td>
<td>76250</td>
</tr>
<tr>
<td>By Sales</td>
<td>500000</td>
</tr>
<tr>
<td>To Purchases</td>
<td>315250</td>
</tr>
<tr>
<td>By Stock in hand</td>
<td>98500</td>
</tr>
<tr>
<td>To Carriage and Freight</td>
<td>2000</td>
</tr>
<tr>
<td>To Wages</td>
<td>5000</td>
</tr>
<tr>
<td>To Gross Profit</td>
<td>200000</td>
</tr>
</tbody>
</table>

\[598500\]

\[598500\]

To Administration
Expenses | 1,01,000 | By Gross profit | 2,00,000
---|---|---|---
To Finance Expenses. : | | By Non-operating Incomes | 
Interest | 1200 | Interest on Securities 1,500 | 
Discount | 2400 | Dividend on Shares 3, 750 | 
Bad Debts | 3400 7000 | Profit on Sale of Shares 750 6,000 | 
To Selling Distribution Expenses | 12000 | 
To Non-operating expenses | 
Loss on sale of securities 350 | 
Provision for legal suit 1,650 2000 | 
To Net profit | 84000 | 
---|---|---|---
206000 | 206000 | 

You are required to calculate:

(i) Gross profit Ratio
(ii) Expenses Ratio (individual)
(iii) Net profit Ratio
(iv) Operating profit Ratio
(v) Operating Ratio
(vi) Stock turnover Ratio

Gross Profit Ratio = Gross Profit/ Sales * 100 = 2,00,000 / 500000 * 100

Expenses Ratio = Individual Expenses / Sales
Administration Expenses / Sales *100 =101000/500000 *100= 2.02%
Finance Expenses/ Sales *100 = 7000/ 500000 * 100=1.04 %
Selling and Distribution Expenses / Sales* 100= 12 000/ 500000 *100= 2.40%
Non-Operating Expenses / Sales * 100 = 2000/ 500000 * 100= 0.4%

Net Profit Ratio :

Net Profit/ Sales *100 = 84000/ 500000 *100= 16.8%

Operating Profit Ratio = Operating Profit / Sales *100

Operating Profit = Net Profit + Non-Operating Expenses – Non Operating Incomes
= 84,000 + 2,000 – 6,000 = 80,000
= 80•000 / 5000000 * 100 = 16%

Operating Ratio = ( Cost of Goods Sold + Operating Expenses)/Sales* 100

Cost of Goods Sold = Sales – Gross profit
5,00,000 – 2,00,000 = 3,00,000

*Operating Expenses*

All Expenses Debited in the Profit & Loss A/c Except Non-Operating Expenses

[including Finance expense]

1,01,000 + 7,000 + 12,000 = 1,20,000

Operating Ratio = \( \frac{3,00,000 + 1,20,000}{500000} \) * 84%

Stock Turnover Ratio = Cost of Goods Sold / Average Stock

Costs of Goods Sold = 3,00,000

Average Stock = (Opening Stock + Closing Stock)/2

= \( \frac{76,250 + 95,500}{2} \)

= 85,875