

Ratio Analysis

Learning Objectives

- ❖ *Meaning and importance of ratio analysis*
- ❖ *Examining profitability performance of a firm*
- ❖ *Evaluating solvency of a firm*
- ❖ *Operating Ratios of a firm*

4.1 Introduction

Financial statements are the end result of accounting process. But a mere reading of financial statements is not helpful in effective decision making. To make decision more effective, there are some financial tools viz., ratio analysis, trend analysis, common-size statement, and fund flow statement. In the present chapter, we will discuss various types of ratios and interpretation of thereto. Ratios are simply a means of highlighting arithmetical relationships of figures drawn from financial statements. According to Accountant's Handbook by Wixon, Kell and Bedford, a ratio is an expression of the quantitative relationship between two numbers. The data used in ratio analysis is taken from financial statements, thus it is based on financial statements.

The scope of ratio analysis is wider than financial statements itself. It is useful for existing shareholders in order to check their proprietary in the company besides earnings per share. A supplier of goods on credit, i.e., creditor, keens to know the

liquidity position of the company, in order to ensure his payments in due time. Similarly, it assists employees, staff, debtors, banking institutions etc. to examine the financial health of the company in detail. The ratios analysis also encompasses short-term and long-term decisions. In a precise, ratio analysis is a system through which financial diagnose of a company is made. The strength, and weakness of the companies may be traced and corrected if these results are interpreted accurately. Therefore, establishing relationship between two data, and correct interpretation are two essentials of ratio analysis.

4.2 Objectives of Ratio Analysis

Besides, the prime objective of the ratio analysis i.e., assistance in decision making, it has also few more sub-objectives.

- 1) To make comparisons between two data, on some rationale, for analysis purposes.
- 2) To examine the causes of changes in results over a period.
- 3) To compare results of two different companies by placing them on equal platform.
- 4) To predict future growth of a company.
- 5) To provide indicators of a firm's past performance in terms of its operational activity and profitability.
- 6) To extract weak points of the company and taking corrective action to improve upon.
- 7) Ratio analysis also assist in effective control of business.

4.3 Limitations of Ratio Analysis

- 1) A single ratio does not convey much of a sense. To make a better interpretation a number of ratios have to be calculated.
- 2) Ratio analysis is based financial statements which itself has some limitations e.g., dependency upon historical data. Thus, ratio analysis is not isolated from inherent limitations of accounting system.
- 3) Ratio analysis reproduces results in a desired manner, but does not signifying future probabilities.
- 4) There is no set standard or rules of thumb for all ratios. Therefore, an investor may have different interpretation from other.
- 5) A change in financial results due to any change in accounting policy may mislead ratio analysis, and amount to incorrect interpretation.
- 6) Ratios do represent financial data in form of relationship between two elements of data. These resultant outcomes do not indicate the causes of difference, if any.
- 7) Personal biasness in accounting policies, window dressing etc. are also reasons of less applicability of ratio analysis.

- 8) While making ratio analysis, no attention is made on the changes in price levels and this makes the interpretation of ratios invalid.
- 9) Ratio analysis does not give comparable results if two firms are from different industries due to variations in managerial procedures.
- 10) Ratio analysis is merely a tool of financial statements. Hence, ratios become useless if it is separated from statements from which they are computed.

Despite various limitations of ratio analysis, it is widely used in financial decision making.

4.4 Classification of Ratio Analysis

The use of ratio analysis is not limited to financial manager only. As discussed above, there are different parties those use ratio analysis for their desired purposes. A variety of ratios are computed to cater the need of different parties. A detailed classification has been shown in figure 4.1 below.

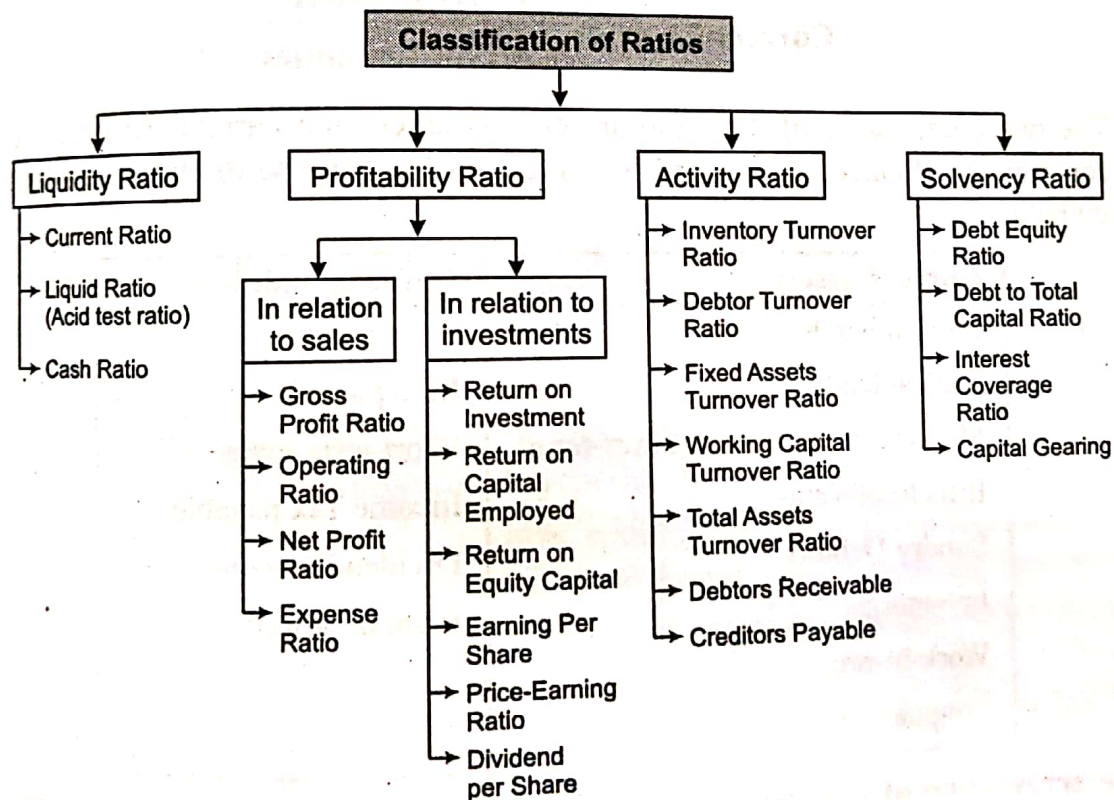


Figure 4.1: Classification of Ratios

4.5 Liquidity Ratios

Liquidity ratios represent short-term solvency ratios. It signifies ability of a firm to meet its current obligations. Potential lenders carefully scrutinize these ratios before making short-term loans to the firm. Liquidity refers to cash or cash equivalents held by firm during that period. Liquid assets include cash, demand deposits with bank, short-term highly liquid investments, marketable securities which can be immediately

converted in cash. The relevance of liquidity ratio is for short-term i.e., less than one year.

Availability of liquid assets is required in order to pay off short-term liabilities and to propel working capital cycle. On the other hand, insufficient liquidity may land company in short-term insolvency. Liquidity is a two sides sword; it is equally worst to have excess liquidity as insufficiency of funds. Three types of ratios are computed under liquidity ratios:

- (i) Current Ratio
- (ii) Quick Ratio (Acid Test Ratio)
- (iii) Absolute or Cash Ratio

Current Ratio: Under this ratio, relationship between current assets and current liabilities is investigated. Current ratio is also known as working capital ratio. The result of current ratio is presented in absolute number, and not in percentage. It is calculated by dividing the total current assets by total of the current liabilities.

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

The two components of this ratio are current assets and current liabilities. A list of components of current assets and liabilities, for the purpose of above said ratio, is given below.

Current Assets	Current Liabilities
Cash in hands	Sundry Creditors
Cash at bank	Bills payable
Marketable Securities (Short-term)	Short-term loans
Bills Receivable	Income Tax payable
Sundry Debtors	Dividend payable
Inventories	Bank overdraft
Work-in-progress	
Pre-paid expenses	

Interpretation of Current Ratio: Current ratio presents the liquidity position of the firm. It shows the ability of the firm to pay short-term liabilities as and when they become due. A high rate of current ratio indicates better solvency of the firm in short-run. On the other hand, current ratio with low rate signifies inability to discharge short-term liabilities. There is no benchmark to determine the optimum level of current ratio, but generally it follows 'banker's rule for lending'. According to this, standard level is 2:1 which means current assets should be twice as compared to current liabilities. The current ratio at 2:1 is considered satisfactory. It is important to notice that current ratio is computed in absolute number rather than percentage.

The current ratio is a quantitative measurement and does not reveal quality of assets owned by the firm. Therefore, current ratio should not be blindly followed while making interpretation. For example, a firm piled up with out-dated inventory will have high amount of current assets, but the realizable value of such obsolete inventory will be lower. Another example of high amount of current assets is of pre-paid expenses. There is no realisable value of pre-paid expenses, rather these are amortised against profits on proportionate basis. Because of above said reasons, current ratio is also called as crude ratio.

To ensure smooth payments through banks, some firms take overdraft facility on permanent basis from their respective banks. Some authors are of the view that in cases where firms have taken bank overdraft facility for a long-term basis then it should not be considered in calculation of current ratio. It is advised that bank overdraft should be taken as current liability unless it is clearly mention in the question that it is a long-term arrangement/liability.

While interpreting current ratio results, following points must be kept into mind.

- 1) A high current ratio is not always good if the quality of assets is poor. Some instances are as follow:
 - a) Slow moving of stock, or obsolete stock.
 - b) A high level of debtors may be because of delayed collection from debtors.
 - c) Current ratio results may also distort the decision, if it is more than the thumb rule of 2:1 due to high amount of cash and bank balance. Because, a high amount of cash and bank balance shows that the operating cycle of the firm is moving in right order, but firm has not sufficient investment opportunities.
- 2) A low current ratio may be due to non-availability of sufficient funds to pay off liabilities, or firm is operating beyond its capacity at higher risk.
- 3) A firm, dealing in service industry, with high investments in fixed assets may be successful even if the ratio is low, on the other hand, a trading firm requires to have high current ratio because there is a need to make payment to supplier quickly.
- 4) The level of current assets is, generally, more in case of manufacturing firms than trading firms.
- 5) Current assets and current liabilities tend to change with season if firm's business is seasonal. In a peak season, current assets will be more and current ratio will be high. On the other hand, this ratio will go down when the season is off.
- 6) The nature of goods in which firm operates also be a deciding factor of current ratio. In case, a firm is dealing in trading of precious metal may have lower current ratio in comparison of a firm engaged in fast moving consumable goods (FMCG).
- 7) A lower current ratio may be considered satisfactory in case of a firm with good reputation.

Illustration 1: Extracts from the Balance Sheet of XYZ Co. Ltd is presented below. Compute current ratio from the following information.

Current Liabilities	Amount	Current Assets	Amount
Bills payable	35000	S. Debtors	78000
S. Creditors	54000	Cash in hand and at Bank	35500
Bank Overdraft	32500	Inventories	153000
Tax Payable	45500	Bills receivable	65800
		Pre-paid expenses	26700

Solution:

$$\text{Current Assets} = 78000 + 35500 + 153000 + 65800 + 26700 = 359000$$

$$\text{Current Liabilities} = 35000 + 54000 + 32500 + 45500 = 170000$$

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

$$\text{Current Ratio} = \frac{359000}{170000}$$

$$= 2.11 \text{ or } 2.11 : 1$$

Interpretation: The current assets are 2.11 times more than current liabilities, assuming that all information is normal and not influenced by any qualitative factor.

Acid Test Ratio or Quick Ratio: We have discussed above that current ratio suffers from some limitations like, inclusion of inventory, and pre-paid expenses. Inventory refers to stock of goods. It is a general practice that firstly, goods will be sold on credit which resultantly create debtors, secondly, these debtors will make payment after a time (collection time) granted to them. Thus, inventory is two steps away from cash or cash equivalent. Similarly, pre-paid expenses have no realisable value, therefore it should not be a part of current assets. To make current ratio more robust, a more rigorous test of liquidity is examined in a ratio called quick ratio or acid test ratio. Inventory and pre-paid expenses are not included in current assets for the purpose of acid test ratio. Thus, quick ratio refers to relationship between quick assets and current liabilities.

$$\text{Quick Assets} = \text{Current Assets} - (\text{Inventory} + \text{Pre-paid Expenses})$$

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

Thumb Rule: 1 : 1

Since, quick ratio is a rigorous test therefore rule of thumb is 1:1 which means quick assets should be equal to current liabilities. In simple words, quick assets must not be less than current liabilities. It is generally thought that if quick assets are equal to current liabilities then the firm may be able to meet its short-term obligations. Being

complementary ratio to the current ratio, it is useful in measuring the liquidity position of the firm.

Illustration 2: From the following Balance Sheet of AB Co. Ltd. compute (i) current ratio, (ii) quick ratio.

Capital and Liabilities	Amount	Assets	Amount
Share Capital	580000	Land and Building	520000
Reserves and Surpluses	165000	Plant and Machinery	310000
Debenture	200000	Inventory	130000
Bank Loan (5 years)	110000	S. Debtors	78000
Bills payable	35000	Cash in hand	55200
S. Creditors	65500	Cash at bank	42300
Short-term loan	33500	Pre-paid Exp.	65800
Provision for Tax	25000	Bills Receivable	12700
Total	1214000	Total	1214000

Solution:

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

$$= \frac{130000 + 78000 + 55200 + 42300 + 65800 + 12700}{35000 + 65500 + 33500 + 25000}$$

$$= \frac{384000}{159000} = 2.41$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - (\text{Inventory} + \text{Pre-paid Expenses})}{\text{Current Liabilities}}$$

$$= \frac{384000 - (130000 + 65800)}{159000}$$

$$= \frac{188200}{159000} = 1.18$$

Illustration 3: The extracts from Swastik Co. Ltd. is given below. You are required to compute current ratio and acid test ratio, give your comment on results.

Current Liabilities	Amount	Current Assets	Amount
Sundry Creditors	40560	Inventories	79280
Bills Payable	1800	Sundry Debtors	52300
Short-term loan	5200	Cash in hand	2860
Provision for tax	12400	Advance payment of tax	16200
Proposed Dividend	8640	Bills receivable	3160
Total	68600	Total	153800

Solution:

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

$$\text{Current Ratio} = \frac{153800}{68600} = 1.24$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - (\text{Inventory} + \text{Pre-paid Expenses})}{\text{Current Liabilities}}$$

$$= \frac{153800 - (79280 + 16200)}{68600}$$

$$= \frac{58320}{68600} = 0.85$$

Note: Advance payment of tax is treated as pre-paid expenses, as there is possibility of recovery of tax unless refund is granted by tax authority.

Interpretation: The current ratio of the Swastik Co. Ltd. is 2.24:1 which is satisfactory as current assets are in position to pay off short-term liabilities. But quick ratio is 0.85:1 which shows that liquid position of the company is not up to the level to pay off its short-term liabilities. The combined analysis of both ratios also highlights that movement of inventories are slow in the company.

Illustration 4: The Balance Sheet of a firm shows current liabilities = 300000, Current Ratio = 2.25:1, and Acid Test Ratio = 0.75:1, Compute Inventories.

Solution:

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

$$\frac{2.25}{1} = \frac{\text{Current Assets}}{300000}$$

$$\text{Current Assets} = 2.25 \times 300000$$

$$= 675000$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

$$\frac{0.75}{1} = \frac{675000 - \text{Inventories}}{300000}$$

$$0.75 \times 300000 = 675000 - \text{Inventories}$$

$$\text{Inventories} = 675000 - 225000$$

$$\text{Inventories} = 450000$$

Cash Ratio or Absolute Liquid Ratio: As we have discussed above that realisation of inventories into cash is two steps away, similarly, there are few more current assets those are either not readily convertible into cash or convertible at losses only. For example, sundry debtors, bills payable can be converted into cash on or after a period of credit allowed to them. Moreover, there may be probability of doubtful / bad debts which may cause lesser amount of recovery of cash from debtors. In order to test a firm at a higher norm of liquidity, cash ratio or absolute liquid ratio is calculated.

For example, you are running a business supplying goods on cash only. But you received a big order to make supply of goods on credit of a one-week. Looking into the quantum of profit that you can earn from this order, you don't want to lose that order. Now, you want to know the ability of the firm to make your payment can be assessed from cash ratio.

$$\text{Absolute Liquid Ratio} = \frac{\text{Cash and Bank Balance} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

The acceptable benchmark of this ratio is 0.5:1 or 1:2. In simple words, if current assets are half or more than half then current liabilities then firm is considered as capable to pay off short-term liabilities immediately especially in cash.

Illustration 5: Balance Sheet of Gourisha Co. Ltd. is given below.

Capital and Liabilities	Amount	Assets	Amount
Equity Share Capital	580000	Land and Building	520000
10% Pref. Share Capital	450000	Plant and Machinery	410000
Reserves and Surpluses	265000	Investment in X Co. Ltd. (Long-term)	310000
Debenture	200000	Inventory	95000
Bank Loan (short-term)	110000	S. Debtors	128000
Bills payable	36000	Cash in hand	95200
S. Creditors	45500	Cash at bank	82300
Outstanding wages	20500	Marketable Securities (short-term)	15800
Provision for Tax	5500	Pre-paid insurance	56200
Total	1712500	Total	1712500

You are required to compute (i) Current Ratio, (ii) Liquidity Ratio, and (iii) Absolute Liquidity Ratio. Comment on liquidity position of the company.

Solution:

$$\text{Current Assets} = 95000 + 128000 + 95200 + 82300 + 15800 + 56200$$

$$= 472500$$

$$\text{Current Liabilities} = 36000 + 45500 + 20500 + 5500 + 110000$$

$$= 217500$$

$$\text{Current Ratio} = \frac{472500}{217500} = 2.172$$

$$\text{Liquid Ratio} = \frac{472500 - (95000 + 15800)}{217500}$$

$$= \frac{361700}{217500} = 1.66$$

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Bank} + \text{Marketable Securities}}{\text{Liabilities}}$$

$$= \frac{95200 + 82300 + 15800}{217500}$$

$$= \frac{193300}{217500} = 0.88$$

From the above results, it can be concluded that Gourisha Company has satisfactory liquidity position as it fulfils all three criterion that are Current Ratio = 2.172, Liquidity Ratio = 1.66:1, and Absolute Liquidity Ratio or Cash Ratio = 0.88:1.

Illustration 6: The current ratio of Megha Co. Ltd. is 2:1. Observe the impact of following activities of the company and explain the impact of current ratio which ratio will improve or not.

- Purchase of fixed assets by making payment through bank.
- Purchase of machinery by taking loan from bank. The term of loan is 5 years.
- Cash collected from debtors.
- Cash payment to creditors.
- Goods purchased on credit.
- Goods sold on credit.
- Purchase goods for cash.
- A bank loan (long-term) of ₹500000 is taken to purchase plant. The purchase cost of plant is ₹450000. The remaining money has been used to make payment to creditors.

Solution: The impact of underlying transactions has been discussed below:

S. No.	Impact on Current Ratio	Justification
(i)	Reduce	Payment for fixed assets through bank will reduce current assets, therefore, current ratio will be declined.
(ii)	No Impact	Loan from bank will increase bank balance but the amount has been paid to purchase machinery, therefore, there will be no change in current ratio.

S. No.	Impact on Current Ratio	Justification
(iii)	No Impact	Since both are current assets, therefore there will be decrease in debtors, and increase in cash will not impact current ratio. But it would certainly impact quick ratio.
(iv)	Improve	From numerator as well as denominator equal amount will be deducted therefore current ratio will be improved.
(v)	Reduce	It will increase stock as well as creditors. Current ratio will be reduced.
(vi)	No Impact	Earlier the amount was reflected as inventory now it will be shown as debtors. Thus, no change in current ratio. But it has impact on liquidity ratio.
(vii)	No Impact	Cash will be reduced and stock will increase, no change in current ratio.
(viii)	Improve	Short-term liability has been met out of cash of ₹50000. Current ratio will be improved

4.6 Activity Ratios / Efficiency Ratio / Current Assets Movement Ratio

A quick assessment of current assets position can be evaluated from current ratio. But current ratios captured a still photograph instead of recording moving video. The funds are not meant to acquire and kept in the business as still photograph, rather the objective is to use them in an efficient manner. The rapidness of operating cycle of business reflects the moving speed of its current assets. In simple words, the funds are put in working capital (current assets) to produce goods and services, and to generate more cash from business operations.

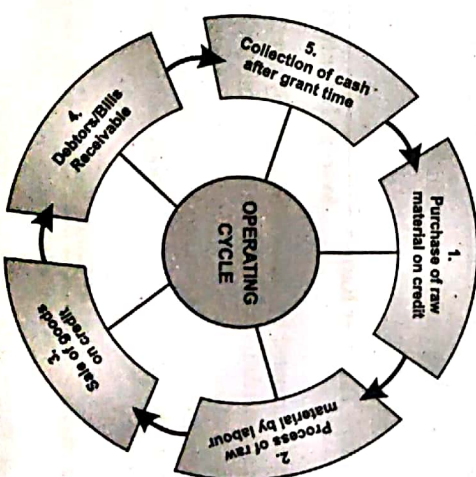


Figure 4.2: Operating Cycle of Business

Starting from the investments in raw material which is processed by labour, are paid to them in cash, or otherwise reflects in outstanding liability), the goods are sold on credit basis and cash is collected from the debtors. From the cash liabilities are paid off like, payment to creditors, or labour etc. If the operating cycle of a firm works at slow speed then the funds will remain ideal and the firm must be rotated at a sufficient speed which can justify the allocation of working capital cycle. The operating cycle of a business is also known as the working capital cycle.

As the number of rotations increases, the amount of profitability goes up. A question arises how to trace the speed of working capital cycle. Following are helpful in examining the speed of working capital cycle.

1. Inventory/Stock Turnover Ratio
2. Debtors /Receivable Turnover Ratio.
3. Creditors / Payable Turnover Ratio.
4. Working Capital Turnover Ratio.

Inventory / Stock Turnover Ratio

Inventory or stock turnover ratio shows the stock velocity into sales. In other words, it measures the how quickly inventory is sold. It indicates the number of times the inventory has been turned into sales during a period and evaluates the efficiency with which the firm is able to manage inventory. It is always desirable that required funds should not be locked up in inventory because piling up of stock has weaknesses, e.g., it requires a substantial amount to purchase goods, storage cost, insurance cost, damage, and unwarranted risk like, theft etc, risk of obsolescence, and probability of turning into fashion. Thus, an optimum level of inventories should be stocked.

Inventory ratio is calculated by establishing relationship between sales and inventory.

$$\text{Inventory Turnover Ratio} = \frac{\text{Sales}}{\text{Average Inventory}}$$

Inventory turnover is computed by dividing the sales by average inventory. This ratio is likely to differ substantially from one business to another. On important factors are the nature of material, and value of stock. For internal management control, it is also computed with 'cost of goods sold' as numerator instead of sales. Because it includes profit element as well, therefore, cost of goods sold is taken into account for the purpose of internal control.

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

$$\text{Cost of Goods Sold} = \text{Sales} - \text{Profit}$$

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

Or $\text{Average inventory} = (\text{Total Monthly Stock}) / 12$

Interpretation: There is no thumb rule for inventory turnover ratio. The analysis can be made by making comparison of two companies or two periods. The result of this ratio is in number, not in percentage. The number reflects the number of times in a year. A high number indicates relatively low level of inventories hold up, or in other words, high turnover of inventory into sales, and vice-versa. The frequency of turning stock into sales can also be computed with the help of inventory conversion period formula as given below.

$$\text{Inventory Conversion Period} = \frac{\text{Days in a Year}}{\text{Stock Turnover Ratio}}$$

A too high turnover of inventory may not necessarily always imply a favourable situation. A high inventory turnover may be the result of a selling lower quality goods, or out-dated goods, or selling goods at low price. Thus, a high turnover ratio opens the room for further inspection so the correct interpretation can be drawn.

Illustration 7: M/s. Shyam & Co. submits you the following information on its stock and sales data for year ended 31/03/2019. Credit Sales = ₹950000, Cash Sales = 750000, Returns Inward = ₹200000, Opening stock = ₹250000, Closing stock = ₹350000.

Find out (i) inventory turnover ratio on the basis of sales and cost of goods sold if profit margin is 25% on sale price, (ii) inventory conversion period.

Solution:

Inventory Turnover Ratio (Sales basis)

$$\begin{aligned} &= \frac{\text{Credit sales} + \text{Cash sales} - \text{Return Inwards}}{\text{Average Inventory}} \\ &= \frac{950000 + 750000 - 200000}{(250000 + 350000)/2} \\ &= \frac{1500000}{300000} = 5 \text{ times} \end{aligned}$$

$$\text{Inventory Conversion Period} = \frac{365}{\text{Inventory Turnover}}$$

$$= \frac{365}{5} = 73 \text{ Days}$$

Inventory Turnover (Cost of goods sold basis)

$$= \frac{\text{Cost of goods sold}^*}{\text{Average Inventory}}$$

$$= \frac{1125000}{300000} = 3.75$$

$$\begin{aligned} \text{Inventory Conversion Period} &= \frac{365}{\text{Inventory Turnover}} \\ &= \frac{365}{3.75} = 97.33 \\ &= 98 \text{ days (approx.)} \end{aligned}$$

$$\begin{aligned} * \text{Cost of goods sold} &= \text{Sales} - \text{Profit} \\ &= 1500000 - 25\% \text{ of sale price} \\ &= 1500000 - \left(\frac{25}{100} \times 1500000 \right) \\ &= 1500000 - 375000 \\ &= 1125000 \end{aligned}$$

It can be said that the inventory is converted into sales five times in a year, 73 days, if sale is taken as numerator. By taking cost of goods sold into account, period goes to 98 days (approx.) to convert inventory into sales, and 3.75 times year inventory gets converted into sales.

Illustration 8: Compute inventory turnover ratio and conversion period from following information.

Annual Sales ₹400000, Gross Profit @ 25% on Cost; Opening Stock = ₹78000, Closing Stock = ₹82000.

Solution:

$$\begin{aligned} \text{Cost of Goods Sold} &= \text{Sales} - \text{Profit} \\ &= 400000 - (25\% \text{ of Cost}) \\ &= 400000 - \left(\frac{25}{100 + 25} \times 400000 \right) \\ &= 400000 - \left(\frac{25}{125} \times 400000 \right) \\ &= 400000 - 80000 \end{aligned}$$

$$\text{Cost of Goods Sold} = 320000$$

$$\begin{aligned} \text{Inventory Turnover Ratio} &= \frac{\text{CoGS}}{\text{Average Inventory}} \\ &= \frac{320000}{(78000 + 82000) / 2} = 4 \end{aligned}$$

$$\begin{aligned} \text{Inventory Conversion Period} &= \frac{365}{\text{Inventory Turnover}} \\ &= \frac{365}{4} = 91.25 \text{ days} \end{aligned}$$

Debtor Turnover Ratio

Debtor turnover ratio indicates the number of times the debtors are turned-over during a year. In simple words, it measures the number of times the debtors are collected. This is the ratio between the credit sales and average debtors plus average bills receivable. If the situation does not warrant then total sales are taken into calculation in place of credit sales. Thus, formula to compute debtor turnover ratio is:

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

$$\text{Trade Debtors} = \text{Sundry Debtors} + \text{Bills Receivable or Accounts Receivables}$$

$$\text{Net Credit Sales} = \text{Total Credit Sales} - \text{Return Inwards (sold on credit basis)}$$

$$\text{Average Trade Debtors} = (\text{Opening Trade Debtors} + \text{Closing Trade Debtors}) / 2$$

Debtors should be taken at gross value. No provision for bad debts or doubtful debts be deducted from them.

In case, credit sales are neither given nor computable then debtor turnover ratio can be computed taking total sales in account.

$$\text{Debtors Turnover Ratio} = \frac{\text{Total Sales}}{\text{Trade Debtors}}$$

Average Collection Period

The average collection period measures the average number of days for which a firm has to wait before its receivables are converted into cash.

$$\text{Debtors Collection Period} = \frac{\text{Days in a Year}}{\text{Debtors Turnover Ratio}}$$

The collection period may be calculated in days or months as the case may be. In case of days, numerator is taken as 365 and in case of months it is taken as 12.

A high turnover ratio signals the velocity of debtor collection, an early collection injects new cash in business vis-à-vis enhance profitability of the firm. New inflows increase the volume of working capital and rotation of the operating cycle of the firm. Since, there is no thumb rule for debtor turnover ratio, therefore, it is analysed in relative term by comparing result of one firm with other, or making comparison over the time of the same firm.

Current Liabilities	(Amount in ₹)
Sundry Creditors	320000
Bills Payable	150000
Provision for taxation	200000
Current Assets	
S. Debtors	400000
Bills Receivable	160000
Cash at bank	340000
Sales during the year	3200000
Sales return during the year	200000

Calculate Working Capital Turnover Ratio.

Solution:

$$\begin{aligned}\text{Current Assets} &= 400000 + 160000 + 340000 \\ &= 900000\end{aligned}$$

$$\begin{aligned}\text{Current Liabilities} &= 320000 + 150000 + 200000 \\ &= 670000\end{aligned}$$

$$\begin{aligned}\text{Net Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= 900000 - 670000 \\ &= 230000\end{aligned}$$

$$\begin{aligned}\text{Net Sales} &= \text{Sales} - \text{Returns} \\ &= 3200000 - 200000 \\ &= 3000000\end{aligned}$$

$$\begin{aligned}\text{Working Capital Turnover Ratio} &= \frac{\text{Net Sales}}{\text{Net Working Capital}} \\ &= \frac{3000000}{230000} = 13.04 \text{ times}\end{aligned}$$

The result shows that the working capital of Mega Co. Pvt. Ltd. is turned into sales at the rate of 13.04 times in a year.

Illustration 12: The following data is submitted by M/S Raj & Sons for the year ending 31/03/2020.

- | | |
|---|----------------|
| (i) Stock turnover ratio | = 6 times |
| (ii) Gross Profit ratio | = 20% on sales |
| (iii) Sales for 2019-20 | = ₹3000000 |
| (iv) Closing stock is ₹100000 more than opening stock | = ₹200000 |
| (v) Opening Creditors | = ₹300000 |
| (vi) Closing creditors | |

66 || Finance for Non-Finance Executives

$$= ₹600000$$

$$= ₹500000$$

- (vii) Trade debtors at the end
(viii) Net Working Capital
(ix) Net Working Capital
(x) Average collection period, (f) Working capital turnover ratio, (d) average payment period, (e) Average credit purchases.

Assume all purchases are credit purchases.

Solution:

$$\text{Cost of goods sold} = \text{Sales} - \text{Gross profit}$$

$$= 3000000 - (20\% \text{ sales})$$

$$= ₹3000000 - ₹600000$$

$$= ₹2400000$$

$$= ₹2400000$$

(a) Average Stock

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

$$6 = \frac{2400000}{\text{Average Stock}}$$

$$\text{Average Stock} = \frac{2400000}{6} = 400000$$

(b) Cost of goods sold = Opening Stock + Purchases - Closing Stock

$$\text{Purchases} = \text{Cost of goods sold} + \text{C. Stock} - \text{O. Stock}$$

$$\text{Average Stock} = \frac{\text{O. Stock} + \text{C. Stock}}{2}$$

Since, closing stock is ₹100000 more than opening stock, therefore,

$$\text{Average Stock} = \frac{\text{O. Stock} + (\text{Opening Stock} + 100000)}{2}$$

$$400000 \times 2 = 2 \text{ Opening Stock} + 100000$$

$$\frac{800000 - 100000}{2} = \text{Opening Stock}$$

$$\text{Opening Stock} = ₹350000$$

$$\text{Closing Stock} = \text{Opening Stock} + 100000$$

$$= 350000 + 100000 = ₹450000$$

$$\text{Purchases} = 2400000 + 450000 - 350000 = 2500000$$

(c) Creditors Turnover Ratio

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

$$= \frac{2500000}{(200000 + 300000)/2}$$

$$= \frac{2500000}{250000} = 10 \text{ Times}$$

(d) Average Payment Period

$$= \frac{365}{10} = 36.5 \text{ days}$$

Or,

$$= 37 \text{ days}$$

(e) Debtors Turnover Ratio

$$= \frac{\text{Average Sales}}{\text{Average Trade Debtors}}$$

$$= \frac{3000000}{600000} = 5 \text{ Times}$$

Average Collection Period

$$= \frac{365}{5} = 73 \text{ days}$$

(f) Working Capital Turnover Ratio

$$= \frac{\text{Cost of goods sold}}{\text{Net working capital}}$$

$$= \frac{2400000}{500000} = 4.8 \text{ times}$$

4.7 Profitability Ratios

Profit is the engine that drives business. The primary focus of each stakeholder, before examining business on other parameter, is profit. Earning profit is essential for every business to keep survive itself. Profitability also shows strength of the company in industry. Profit is the fruit of investments made by owner, and efforts of the management. The importance of profit is nothing if it is not examined from the point of view of investment. In accounting terms, profit is the excess of business revenue over expenses thereof.

The profitability ratios measure the earning power of a firm. These ratios measure management's ability to control expenses in relation to sales and reflect a firm's operating performance, riskiness, and leverage. The profitability ratios, generally, calculated in relation to sales or investment. The profitability ratios are computed in percentage instead of time or rate. This shows earning capacity against ₹100.

(A) Profitability Ratios in Relation to Sales

The key profitability ratios are mentioned below:

(a) Gross Profit Ratio

(b) Net Profit Ratio