RATIOS II
TURNOVER RATIOS

EFFICIENCY RATIOS / ACTIVITY RATIOS

The efficiency or activity ratios are those ratios calculated to measure the operational efficiency of a business concern. Indeed, these ratios are of much useful in measuring the speed with which assets are converted into sales. Therefore, these ratios are also called „**Velocity**" ratios. As efficiency ratios or activity ratios indicate the speed with which assets are turned over into sales, these ratios are also called **turnover ratios**. As these ratios reveal the performance of a business concern, they are also called „**performance ratios**".

The movement of assets in general and the movement of current assets in particular exhibit the efficiency of business concern. For example, if stock is quickly moved into cash it shows that the firm performs well so also when debtors are quickly realized or converted into cash it shows that the firm is so efficient. Thus, the other name of efficiency ratios is "**current assets movement ratios**".

All the ratios coming under this category are calculated with reference to either sales or cost of goods sold (i.e, cost of sales). And, the result is generally expressed in number of times.

The Important Turnover Ratios are:

1) Inventory Turnover Ratio
2) Debtors Turnover Ratio
3) Creditors Turnover Ratio
4) Working capital Turnover Ratio
5) Fixed assets Turnover Ratio

(1) Inventory Turnover Ratio (or) Stock Turnover Ratio (or) Stock Velocity

This ratio indicates whether investment in inventory is efficiently used or not. It indicates the number of times the stock has been turned over during the period and as such it evaluates the efficiency with which a firm is able to manage its inventory.

$$\text{Inventory Turnover Ratio (ITR)} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\text{Inventory Turnover Period} = \frac{\text{Days/months of the year}}{\text{Stock Turnover Ratio}}$$

Cost of goods sold = Sales – Gross profit

Or

Cost of goods sold = Opening stock + Purchases – Purchase returns + All direct expenses like wages minus – Closing stock

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

Illustration: 12

Following is the Trading account of Skyline Ltd. Calculate the Stock Turnover Ratio.

Trading Account

	Rs.		**Rs.**
To Opening Stock	80,000	By Sales	4,00,000
To Purchase	2,00,000	By Closing Stock	40,000
To Carriage inwards	20,000		
To Wages	20,000		
To gross profit	1,20,000		
	4,40,000		4,40,000

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\begin{aligned}\text{Cost of goods sold} &= \text{Sales - Gross profit}\\ &= \text{Rs. } 4{,}00{,}000 - 1{,}20{,}000\\ &= \text{Rs. } 2{,}80{,}000\end{aligned}$$

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

$$\begin{aligned}&= \frac{\text{Rs.}80{,}000 + 40{,}000}{2}\\ &= \frac{\text{Rs.}1{,}20{,}000}{2}\\ &= \text{Rs.}60{,}000\end{aligned}$$

$$\therefore \text{STR} = \frac{\text{Rs.}2{,}80{,}000}{60{,}000} = 4.67\text{times.}$$

Significance and Interpretation of Stock Turnover Ratio:

A high inventory turnover ratio indicates brisk sales. A low inventory turnover ratio results in blocking of funds in inventory which may ultimately result in heavy loss due to inventory becoming obsolete.

There is no standard norm or ideal ITR because it will differ from industry to industry. However, higher the ITR better the efficiency.

Inventory Conversion Period

The stock velocity may also be calculated in terms of period. This is done to know the time taken to clear the stock.

$$\text{Inventory Conversion Period (ICP)} = \frac{\text{No. of Days in a year/Months in a year}}{\text{Stock turnover ratio}}$$

Illustration: 13

The following information relating to M/s. Sasidharan & Co. is given.

	Rs.
Cost of goods sold	4,50,000
Opening stock	1,75,000
Closing Stock	1,25,000

No. of days in the year 365. Calculate:

(a) Inventory Turnover Ratio

(b) Inventory Conversion Period / Stock turnover period

Solution:

(a) $$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\text{Average Inventory} = \frac{\text{Rs. } 1{,}75{,}000 + 1{,}25{,}000}{2}$$

$$= \text{Rs. } 1{,}50{,}000$$

$$\therefore \text{ ITR} = \frac{4{,}50{,}000}{1{,}50{,}000} = 3 \text{ times}$$

(b) $$\text{Inventory Conversion Period} = \frac{\text{No. of Days in a year}}{\text{ITR}}$$

$$= \frac{365}{3} = 122 \text{ days (Approximately)}$$

Direct Method:

$$= \frac{\text{Average Stock}}{\text{Cost of Goods Sold}} \times \text{No of days/Months in a year}$$

$$= \frac{1{,}50{,}000}{4{,}50{,}000} \times 365$$

$$= 121.6 \text{ days (or)}$$

$$= 122 \text{ days}$$

Illustration: 14

M/s. Rakesh & Co., supplies you the following information for the year ending 31st Dec. 2004: Credit sales: Rs.1,50,000; Cash sales : Rs. 2,50,000; Returns inward: Rs. 25,000;

Opening stock; Rs. 25,000; Closing stock Rs. 35,000.

Find out (i) Inventory Turnover when Gross Profit Ratio is 20% (ii) Inventory Conversion Period or Stock turn over period.

Solution:

(i) $$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average stock}}$$

First of all, cost of goods sold will be calculated. (Net sales –GP)

Net Sales = Rs. 1,50,000 + Rs.2,50,000 – Rs. 25,000

= Rs. 3,75,000

$$\text{Gross Profit on Sales} = \frac{3,75,000 \times 20}{100}$$

= Rs.75,000

Cost of Goods Sold = Net sales – Gross Profit

= Rs. 3,75,000 – Rs. 75,000

= Rs. 3,00,000

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

$$= \frac{\text{Rs. } 25,000 + \text{Rs. } 35,000}{2} = \text{Rs. } 30,000$$

$$\text{Inventory Turnover} = \frac{\text{Rs. } 3,00,000}{\text{Rs. } 30,000}$$

Inventory Turnover Ratio = 10 times

(ii) $$\text{Inventory Conversion Period} = \frac{\text{Days/ Months of a year}}{\text{Inventory Turnover Ratio}}$$

$$= \frac{365}{10} = 36.5 \text{ or } 37 \text{ days.}$$

(2) Debtors Turnover Ratio or Debtors velocity or Receivable Turnover Ratio:

Debtors turnover indicates the velocity of debt collection of firm. In other words, it indicates the number of times average debtors (receivables) are turned over during a year.

$$\text{Debtors Turnover Ratio (DTR)} = \frac{\text{Net annual credit sales}}{\text{Average Debtors}}$$

Note: Trade Debtors or Accounts Receivables include "Sundry Debtors" and "Bills Receivables"

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

Note: Debtors should always be taken at gross value. Hence, no provision for bad and doubtful debts be deducted from them.

Illustration: 15

Calculate the Debtors Turnover Ratio from the following figures:

	Rs.
Total sales for the year 2012	1,00,000
Cash sales for the year 2012	20,000
Debtors as on 1.1.2012	10,000
Debtors as on 31.12.2012	15,000
Bills Receivable as on 1.1.2012	7,500
Bills Receivable as on 31.12.2012	12,500

Solution:

$$\text{Debtors Turnover Ratio (DTR)} = \frac{\text{Net annual credit sales}}{\text{Average Trade Debtors}}$$

Net Annual Credit sales = Total sales of the year – Cash sales during the year

= Rs. 1,00,000 – Rs. 20,000

= Rs. 80,000

$$\text{Average Trade Debtors} = \frac{\text{Opening Trade Debtors + Closing Trade Debtors}}{2}$$

$$= \frac{\text{Rs.10,000+15,000+7,500+12,500}}{2}$$

$$= \frac{45,000}{2}$$

=Rs.22,500

$$\therefore \text{Debtors Turnover Ratio} = \frac{\text{Rs. 80,000}}{\text{Rs. 22,500}} = 3.56 \text{ Times}$$

Significance and interpretation of DTR

Debtors constitute an important constituent of current assets and therefore the quality of debtors to a great extent determines a firm‟s liquidity. This ratio indicates the efficiency of the staff that are entrusted with collection of book debts.

There is no standard norm. Yet, the higher the ratio, the better the quality of debtors and the efficiency.

Average collection period (or) Debt Collection period Ratio

As the name signifies, average collection period indicates the average number of days for which the firm has to wait to collect amount from its debtors.

$$\text{Average Collection Period (ACP)} = \frac{\text{Months or Days in a year}}{\text{DTR}}$$

Or

$$= \frac{\text{Average Trade Debtors} \times \text{Months (or days) in a year}}{\text{Net Annual credit sales}}$$

Illustration: 16

	Rs.
Net Annual Credit Sales	75,000
Total Debtors	18,000
Bills Receivable	6,000

Find out (1) Debtors turnover ratio and (2) Average Collection Period.

Solution:

(a) $\text{Debtors' turnover} = \frac{\text{Net Annual credit sales}}{\text{Average Trade Debtors}}$

$$= \frac{75,000}{18,000 + 6,000} = 3.12 \text{ times}$$

(b) $\text{Average Collection Period} = \frac{\text{Average Trade Debtors} \times \text{No. of days in a year}}{\text{Net annual credit sales}}$

$$= \frac{18,000 + 6,000 \times 365}{75,000} = 117 \text{ days (Approx)}$$

Direct Method of Debtors Collection Period

$$= \frac{\text{Debtors + BR}}{\text{Cr. sales}} \times \text{ Days/ Months in a year}$$

$$= \frac{18,000 + 6000}{75,000} \times 365$$

$$= \frac{24,000}{75,000} \times 365$$

= 116.8 days (Or)

Dr Collection Period = 117 days

Illustration: 17

Wise Ltd provides you the following information:

	Rs.
Debtors on 1.1.2009	30,000
Debtors on 31.12.2009	40,000
Provision for Bad debts	1,500
Sales Return	5,000
Total Sales	3,50,000
Cash sales	1,00,000
No. of working days in a year	360

Compute: (a) Debtors‟ Turnover ratio and (b) Average collection period

Solution:

$$\text{Debtos' turnover} = \frac{\text{Net Annual credit sales}}{\text{Average Trade Debtors}} = \frac{3,50,000 - 1,00,000 - 50,000}{\frac{30,000 + 40,000}{2}}$$

$$= \frac{\text{No of working days}}{\text{D.T.O}} = \frac{2,45,000}{35,000} = 7 \text{ times}$$

$$= \frac{360}{7} = 51.4 \text{ days (Approx)}$$

Interpretation of Average Collection Period:

Average collection period reveals the quality of debtors since it measures the rapidity or slowness with which amount is collected from debtors. A shorter collection period implies prompt payment by debtors and it reduces the chances of debt becoming bad. A longer collection period implies inefficient credit collection performance.

Creditors Turnover Ratio / Payable Turnover Ratio (or) Creditors Velocity

Generally firms buy goods or raw materials on credit. By making credit purchases, firms create short-term liabilities. How efficiently or quickly firms make payments to creditors matters a lot as regards liquidity is concerned.

$$\text{Creditors Turnover Ratio (CTR)} = \frac{\text{Net Annual Credit Purchase}}{\text{Average Trade Creditors}}$$

Note: Trade creditors or Accounts payables include both sundry credits and bills payable

$$\text{Average Trade Creditors} = \frac{\text{Opening Trade Creditors + Closing Trade Creditors}}{2}$$

Illustration: 18

From the following figures, calculate the creditors Turnover Ratio:

	Rs.		Rs.
Credit Purchases during 2012	1,00,000	Bills Payable on 1.1.12	4,000
Creditors on 1.1.12	20,000	Bills Payable on 31.12.12	6,000
Creditors on 31.12.12	10,000		

Solution:

$$\text{Creditors Turnover Ratio (CTR)} = \frac{\text{Net Annual Credit Purchase}}{\text{Average Trade Creditors}}$$

$$\text{Average Trade Creditors} = \frac{20,000 + 10,000 + 4,000 + 6,000}{2}$$

$$= \frac{Rs.40,000}{2} = Rs.20,000$$

$$\text{Average Trade Creditors} = \frac{1,00,000}{2}$$

$\therefore$ CTR = 5 times.

Interpretation of Creditors Turnover Ratio

In general, higher the CTR, better the efficiency and vice versa. A higher CTR implies that the creditors are being paid promptly. Thus, the firm‟s credit worthiness is eventually enhanced.

Average age of accounts Payable (or) Average Payment Period Ratio (APP)

This ratio indicates the velocity with which the creditors are turned over in relation to purchases. APP is calculated as follows:

$$\text{Average Payment Period} = \frac{\text{No. of months or days in a year}}{\text{CTR}}$$

(Or)

$$\text{APP} = \frac{\text{Average Trade Creditors} \times \text{No. of working days in a year}}{\text{Net Annual Credit Purchases}}$$

Interpretation of Average Payment Period Ratio :

The average payment period ratio represents the average number of days taken by the firm to pay its creditors. Generally, lower the ratio, the better is the efficiency and liquidity position of the firm and vice versa.

Illustration: 19

From the following information, find out (a) Creditors turnover ratio and (b) Average payment period.

Cash purchases during 2009	1,00,000
Credit purchase during 2009	1,50,000
Creditors on 01.01.2009	25,000
Bills payable 01.01.2009	8,000
Creditors on 31.12.2009	20,000
Bills Payable on 31.12.2009	7,000

Solution:

(a) Creditors turnover $= \frac{\text{Net Annual Credit Purchase}}{\text{Average Trade Creditors}}$

$$= \frac{1,50,000}{\frac{(25,000+8,000)+(20,000+7,000)}{2}}$$

$$= \frac{1,50,000}{30,000} = 5 \text{ times}$$

(a) Average Payment Period $= \frac{\text{Average Trade Creditors} \times \text{No. of working days in a year}}{\text{Net annual Creditor Purchases}}$

$$= \frac{30,000 \times 365}{1,50,000} = 73 \text{ days.}$$

Alternatively,

$$= \frac{\text{No. of working days}}{\text{Creditors turnover ratio}}$$

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

Illustration: 20

From the following information, calculate creditors turnover ratio and average payment period:

	Rs.
Total Purchases	4,00,000
Cash Purchases (included in above)	50,000
Purchase Returns	20,000

Creditors at the end	60,000
Bills Payable at the end	20,000
Reserve for discount on Creditors	5,000
Take 365 days in a year	

Solution:

(a) $\text{Creditors turnover} = \frac{\text{Net Annual Credit Purchase}}{\text{Average Trade Creditors}}$

	Rs
Net Credit Purchases:	
Total Purchase	4,00,000
Less: Cash Purchase	50,000
	3,50,000
Less: Returns	20,000
Net Credit Purchases	**3,30,000**

$$\text{Creditors Turnover Ratio} = \frac{\text{Rs.3,30,000}}{\text{Rs. 60,000+Rs. 20,000}}$$

(Trade creditors include creditors and bills payable)

$$= \frac{\text{Rs.3,30,000}}{\text{Rs. 80,000}} = 4.13 \text{ times}$$

$$\text{Average Payment Period} = \frac{\text{No. of months or days in a year}}{\text{CTR}}$$

$$= \frac{365}{4.13} = 88 \text{ days (approx)}$$

Alternatively:

$$\text{Average Payment Period} = \frac{60,000 + 20,000}{3,30,000} \times 365$$

$$= \frac{80,000}{3,30,000} \times 365 = 88 \text{ days}$$

(4) Working Capital Turnover Ratio

This ratio indicates whether or not working capital has been efficiently and effectively used in making sales. In case a company can achieve higher volume of sales with relatively

small amount of working capital, it is an indication of the high level of operating efficiency of the company.

$$\text{Working Capital Turnover Ratio (WCTR)} = \frac{\text{Cost of goods sold}}{\text{Average Working capital}}$$

Illustration: 21

Find out working capital turnover ratio:

	Rs.
Cash	10,000
Bills Receivable	5,000
Sundry Debtors	25,000
Stocks	20,000
Sundry Creditors	30,000
Cost of Sales	1,50,000

Solution:

$$\text{Working Capital Turnover Ratio (WCTR)} = \frac{\text{Cost of goods sold}}{\text{Average Working capital}}$$

Current assets = Rs.10,000 + 5,000+ 25,000 + 20,000

= Rs. 60,000

Current liabilities = 30,000

Net working capital = CA- CL = Rs. 60,000 – 30,000

= Rs. 30,000

So, Working Capital Turnover Ratio = $\frac{1,50,000}{30,000}$ = 5 times

(5) Fixed Assets Turnover Ratio:

This ratio indicates the extent to which the amount invested in fixed assets contributes towards sales.

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Net Fixed Assets}}$$

Illustration: 22

Sales Rs.10,00,000; Gross Profit ratio = 25%; Fixed Assets Rs.1,50,000

Find out Fixed assets turnover ratio :

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Net Fixed Assets}}$$

Cost of goods sold = Sales – Gross Profit

= Rs. 10,00,000 – 2,50,000

= Rs. 7,50,000

$\therefore$ FATR $= \frac{\text{Rs. 7,50,000}}{\text{Rs. 1,50,000}} = 5$ times

Illustration: 23

The following details have been given to you for Messrs. Redders Ltd. for two years. You are required to find out the Fixed Assets Turnover Ratio and comment on it.

	2007 **Rs.**	**2008** **Rs.**
Fixed assets at written down value	1,50,000	3,00,000
Sales less returns	6,00,000	8,00,000

Solution:

Note: When there is no information about cost of goods sold, net sales can be taken as the numerator.

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Net Fixed Assets}}$$

	2007	***2008***
	$\frac{6,00,000}{1,50,000}$	$\frac{8,00,000}{3,00,000}$
	= 4 times	2.67 times

Comment.

There has been a decline in the FATR though absolute figures of sales have gone up. It means increase in the investment in fixed assets has not brought about commensurate (proportionate) gain.