Subject	COMMERCE
Paper No and Title	6. Accounting for Managerial Decisions
Module No and Title	30.INTRODUCTION TO RATIO ANALYSIS
Module Tag	COM_P6_M30

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TABLE OF CONTENTS

1. Learning Outcomes

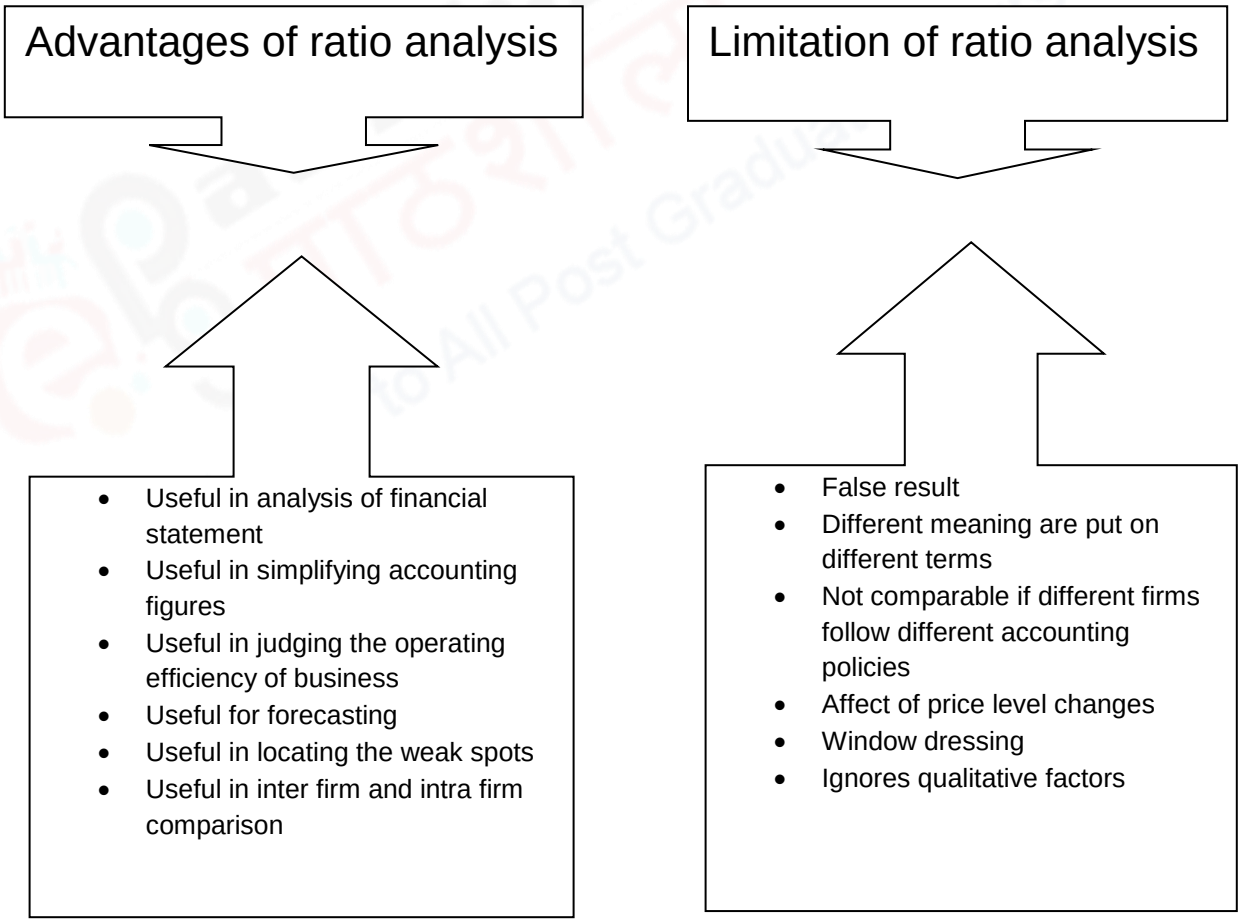
After studying this module, you shall be able to

1) Meaning and concept of Ratio.
2) Identifying the advantages and disadvantages of Ratio Analysis.
3) Classifying the different ratios.

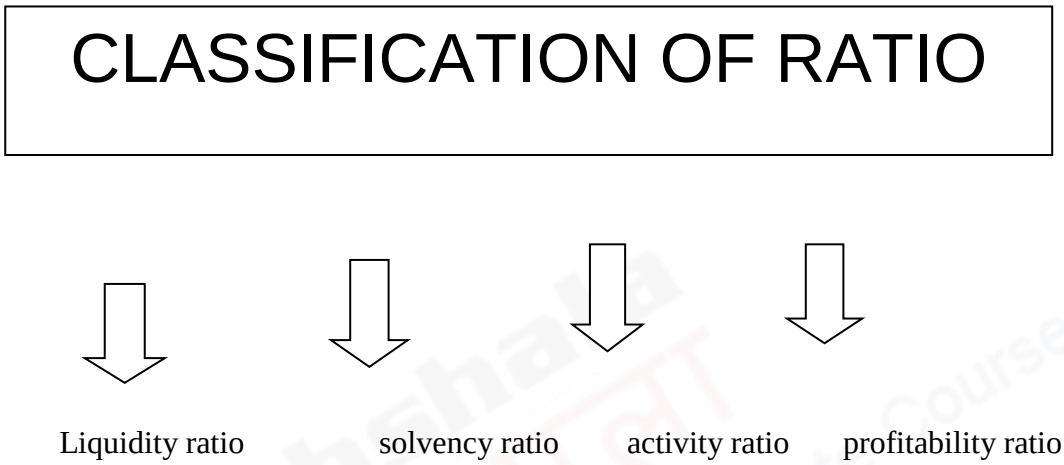
2. Introduction

- A Ratio is an arithmetical expression of relationship two related or interdependent items
- Ratio analysis is a technique of analyzing the financial statements by computations ratio.
- Ratio analysis provides a meaningful understanding of the performance and financial position of an enterprise.
- It helps the management to know the profitability financial position (liquidity and solvency) and operating efficiency of an enterprise

3. Advantages and disadvantages of Ratio Analysis:



4. Classification of Ratio



Liquidity ratio: it measures the short term solvency i.e., the firm's ability to pay its current dues.

1. Current ratio or working capital ratio

Current ratio= current assets/ current liabilities

- It is a relationship of current assets to current liabilities
- It help to assess the short term financial position of the enterprise
- Current assets that are either in the form of cash or cash equivalent or can be converted into cash and cash equivalent in a short term
- Current liabilities are liabilities repayable in the short time
- Current ratio of 2:1 is considered satisfactory

2. Liquidity ratio or Liquid ratio or Quick ratio or Acid test ratio

Liquidity ratio= liquid assets or quick assets/ current liabilities

- It is a relationship of liquid assets to current liabilities
- Quick assets= current assets – (stock + prepaid expense)
- Quick ratio 1:1 is usually considered favourable
- Stocks is excluded from liquid assets because it may take some time before it is converted into cash
- Prepaid expenses do not provide cash and, excluded from liquid assets

Q1. XYZ Ltd. has furnished the following information regarding its current assets and current liabilities.

CURRENT ASSETS:		
	Rs.	.
Cash		5000
Debtors		29000
Bills receivable		5000
Marketable securities		15000
Stock		52000
Prepaid expenses		2000
Total		108000
CURRENT LIABILITIES:		
Sundry liabilities		30000
Bills payable		16000
Outstanding expenses	8000	
Total		54000

Calculate current ratio and liquid ratio and comment on liquidity of the company
Solution:-
(i) Current ratio = current assets/ current liabilities= Rs.108000/Rs.54000=2:1
(ii) Liquid ratio= liquid assets/ current liabilities= Rs.54000/Rs.54000=1:1
Current ratio is 2:1 and liquid ratio is 1:1 which are considered as satisfactory and are ideal ratio.
Q2. Current liabilities of a company are Rs.300000. Its current ratio is 3:1 and liquid ratio is 1:1. Calculate the value of stock assuming that the only other current asset is stock.
Solution
Current ratio= current assets/ current liability
3=current assets/300000, Current assets= 900000
Liquid ratio= liquid assets/ current liability
1=liquid assets/300000, liquid assets=300000
Stock= current assets – liquid assets, 900000 – 300000 = 600000.
Solvency ratio- The term 'solvency' implies ability of an enterprise to meet its long term indebtedness and it conveys an enterprise ability to meet its long term obligations.
1. Debt- Equity ratio

Debt –Equity ratio= Debt (long-term loans) / Equity (Shareholders' Funds)

- It ascertains soundness of the long term financial position of the firm.
- It is relationship between debt and equity
- Debt means long term loans, i.e., debenture, loans (long term) from financial institution
- Equity means shareholders' funds, i.e., preference share capital, equity capital, reserves less losses and fictitious assets like preliminary expenses
- Debt equity ratio 2:1 usually considered favourable
- It portrays the proportion of total funds acquired by a firm by way of loans.

2. Total assets to Debt ratio

Total assets to debt ratio = Total assets / long term Debts

- It establishes relationship between total assets and total long term debts

- Total assets include fixed as well as current assets. However, it does not include fictitious assets and debit balance of profit and loss account
- Long term debts refer to debts that will mature after one year. It includes debentures, bonds, and loans from financial institutions.
- Total assets to Debt ratio 2:1 usually considered favourable.

3. Proprietary ratio

Proprietary ratio = proprietor's funds or shareholders' funds / total assets (excluding fictitious assets)

- It establishes relationship between proprietor's funds and total assets
- Proprietor's fund means share capital plus reserves and surplus both of capital and revenue nature.
- This ratio shows the extent to which shareholders own the business.
- A high ratio indicates adequate safety for creditors.

4. Capital gearing ratio

Capital gearing ratio = (preference share capital + debenture + other borrowed fund) / equity fund or net worth

- It is the relationship of long-term debt and loans to net worth.
- High gearing mean higher risk and higher return for equity holder.
- Low gearing means less risk and less return for equity holder.
- Higher proportion of fixed interest and dividend sources of capital means higher risk to meet fixed bearing capital.

5. Interest coverage ratio

Interest coverage ratio = EBIT / Interest

- It determines the debt servicing capacity of a business enterprise.
- If a business enterprise is able to earn a return on the assets higher than the rate of interest on long-term debt, the enterprise makes an overall profit.
- If the enterprise runs the risk of not earning a return on assets equal to the interest cost of the long-term loan, the enterprise makes an overall loss.
- It measures the degree of protection creditors have from default on the payment of interest by the company.

Q3.from the following, calculate Debt- Equity Ratio:-

10000 equity shares of Rs. 10 each		100000
General reserves		45000
Accumulated profits		30000
Debentures		75000
Sundry trade creditors	40000	
Outstanding expenses	10000	

Solution

Debt equity ratio= debt/ equity, Rs.75000/ Rs. 175000= 3:7 or .43:1

Equity = equity + general reserves+ accumulated profits
100000+45000+30000 = 175000

Q4. From the following Balance sheet of xyz Ltd. for the year ended 31st march 2014; calculate total assets to debt ratio and proprietary ratio

Liabilities	Rs.	Assets	Rs.
Equity share capital	200000	Cash at bank	20000
10% debentures	100000	Debtors	30000
Bills payable	10000	Closing stock	80000
Creditors	40000	Fixed assets	220000
	350000		350000

Solution: Total Assets to Debt ratio = Total assets/ long term debt
Rs. 350000/ Rs. 100000= 3.5:1

Proprietary ratio = proprietor's funds / total assets
Rs.200000/ Rs. 350000= 4:7 or .571:1

Q5. The balance sheet of XYZ Company is given below:

Liabilities	Amount (lacs)	Assets	Amount (lacs)
Equity share capital	250	Fixed assets	400
General reserve	280	Investment	50
P & L A/c (current year)	30	Stock	460
Secured loans- long term	300	Debtors	460
Secured loans- short term	360	Cash in hand	10
Creditors	150	Misc. expenditure (not written off)	20
Other liabilities	30		
	1400		1400

Additional information:
(a) From the profit and loss account Rs. 90 lacs was transferred to general reserve during the year.
(b) Interest cost amounted to Rs. 120 lacs
(c) Taxation @ 40%
You are required to calculate (i) Debt equity ratio (ii) current ratio (iii) interest coverage ratio.
Solution
Current ratio = current assets / current liabilities = Rs. 930 lacs / Rs. 540 lacs = 1.73
Debt equity ratio = Debt / Equity = Rs. 300 lacs / Rs. 560 lacs = .54
Interest coverage ratio = EBIT / Interest = Rs. 320 lacs / Rs. 120 lacs = 2.66
Working Notes:

EBIT:	Rs.
Profit for the year (30 + 90)	120 lacs
Interest	120 lacs
Tax @ 40% 120 *40 / 60	80 lacs

Total 320 lacs

Activity ratio: it measures the effectiveness with which a concern uses resources at its disposal. The result is expressed in integers rather than as a percentage. Turnover ratios for each type of assets should be calculated separately. Higher turnover ratio means, better use of capital or resources, which in turn, mean better profitability ratio.

1. Inventory turnover ratio

Inventory (stock) turnover ratio= cost of goods sold/ Average stock or inventory

- It establishes relationship between the cost of goods sold during a given period and the average amount of inventory carried during that period.
- It indicates whether the investment in stock has been efficiently used or not.
- Higher ratio indicates that more sales are being produced by a unit of investment in stock.
- A low inventory turnover may reflect inefficient use of investment.

2. Debtor turnover ratio or Receivable turnover ratio

Debtors turnover ratio = Net Credit Sales / Average accounts receivable

- It establishes the relationship between net credit sales and average debtors of the year.
- The term accounts receivable includes Trade Debtors and Bills Receivable.
- It indicates the number of times the receivable are turned over in a year in relation to sales.
- It shows how quickly debtors are converted into cash.
- A high ratio is better since it would indicate that debts are being collected more promptly.

3. Creditors or payable turnover ratio

Creditors or payable turnover ratio = Net credit purchase / average payables

- It shows the relationship between net credit purchases and total or average payable
- Payable include both creditors and bill payables.
- A high ratio indicates that the enterprise is not availing the full credit period.
- A low ratio indicates longer payment period or delayed payment.

4. Working capital turnover ratio

Working capital turnover ratio = sales / working capital

- It establishes relationship between working capital and sales
- It indicates whether the working capital has been effectively utilised or not.
- It better than stock turnover ratio since it shows the efficiency or inefficiency in the use of entire working capital and not merely a part of it.
- Higher ratio indicates higher the sales.

5. Fixed assets turnover ratio

Fixed assets turnover ratio = Net assets / Net fixed assets

- It establishes relationship between fixed assets and net sales
- It indicates whether the investment in fixed assets has been judicious or not.

- A high ratio indicates efficient utilisation of fixed assets.
- If there is fall in the ratio it indicates that fixed assets remained idle and therefore, the management should investigate the reason for decline.
- Net sale means gross sales minus sales return.

6. Current assets turnover ratio

Current assets turnover ratio = Net sales / current assets

- It establishes relationship between net sales and current assets.
- It indicates how efficiently current assets have been used in achieving the sales.
- Net sale means gross sales minus sales return.
- It indicates whether the current assets have been utilised efficiently or not
- The ratio is useful the concern where the use of fixed assets is negligible.

Q6. Opening stock Rs. 29000, closing stock Rs.31000; sales Rs. 300000; Gross profit 25% on cost. Calculate inventory turnover ratio

Answer: inventory turnover ratio = cost of goods sold / avg. stock
Let cost of goods sold be x
Gross profit will be 25% of X, i.e., x/4
Cost of goods sold + gross profit = sales
X + X/4 = 300000, X = 2,40,000
Avg. stock = op. stock + cl. Stock / 2
Rs.29000+ Rs. 31000 / 2 = 30000
Inventory turnover ratio = Rs. 240000 / Rs. 30000 = 8 Times

Q7. From the following detail, calculate the Debtors turnover ratio

Total sales of the year	Rs. 175000
Cash sales	20% of Total sales
Sales return out of credit sales	Rs. 10000
Sundry debtor	
Opening balance	Rs.8000
Closing balance	Rs.12000

Solution: Debtor turnover ratio = net credit sales / avg. debtor
Net credit sales = Total sales – Cash sales – Sales return
Rs.175000- Rs.35000 (20% of Rs. 175000) – Rs.10000
Rs. 130000
Avg. debtor = op. debtors + cl. Debtors / 2
Rs.8000+ Rs. 12000 / 2 = Rs. 10000
Debtor turnover ratio = Rs. 130000/ Rs. 10000 = 13 times

Q8.opening sundry creditors Rs. 80,000, opening payable Rs. 3,000, closing sundry creditors Rs. 1,00,000, closing bills payable Rs. 17,000, purchases Rs. 14,00,000, cash purchases Rs. 14,00,000, cash purchases Rs. 5,00,000, purchases returns Rs. 1,00,000. Calculate Creditors turnover ratio.

Answer: creditors turnover ratio = net credit purchases / avg. creditors
Net credit purchases = purchases – cash purchases – purchases return
Rs. 14, 00,000 – Rs.5, 00,000 – Rs. 1, 00,000
Rs. 8, 00,000

Avg. creditors = op (creditors + bills payable) + cl. (creditors + bills payable) /2

= (Rs. 80,000+ Rs. 3,000) + (Rs. 1, 00,000 + Rs. 17,000) / 2

= Rs. 1, 00,000

Creditors turnover ratio = Rs. 8, 00,000 / Rs. 1, 00,000 = 8 Times

Q9. The following is the balance sheet of XYZ Ltd. as on 31st march 2014.

Liabilities	Rs.	Assets	Rs.
Share capital	80000	Fixed assets	160000
General reserve	30000	Debtors	60000
Profit and loss A/c	50000	Bills receivable	20000
Mortgage loan @ 10%	80000	Cash at Bank	50000
Creditors	40000	Preliminary expenses	10000
Bills payable	20000		300000
	300000		

Other information:
Sales during the year 2013- 2014 amounted to Rs. 1, 60,000
Calculate
(i) Fixed assets turnover ratio
(ii) Current assets turnover ratio
(iii) Working capital turnover ratio
Solution:
(i) Fixed assets turnover ratio = sales / fixed assets = Rs. 1, 60,000 / Rs. 1, 60,000 = 1 Times
(ii) Current assets turnover ratio = sales / current assets = Rs. 160,000 / Rs. 1,30,000 = 1.23
Times
Current assets = debtors + bills receivable + cash at bank
= Rs, 60,000 + Rs. 20,000 + Rs. 50,000
= Rs. 1, 30,000
(iii) Working capital ratio = sales / working capital = Rs. 1, 60,000 / Rs. 70,000 = 2.28 Times
Working capital = current assets – current liabilities
= Rs. 1, 30,000 – Rs. 60,000 = Rs. 70,000.

Profitability ratio: in general terms, efficiency in business is measured by profitability. Thus profitability is of utmost importance for a concern. If a concern goes on losing

money, it financial condition will definitely be bad sooner or later. Thus a measures of profitability is the overall measures of efficiency.

1. Gross profit ratio

Gross profit ratio = gross profit / net sales * 100

- It establishes relationship of gross profit on sales to net sales of a firm.
- It is reliable guide to the adequacy of selling prices and efficiency of trading activities.
- It help to determine selling price so that there is adequate gross profit to cover the operating expenses, fixed charges, dividend and building up reserves.
- It helps to determine, how much the selling price per unit may decline without resulting in losses on operations of the firms.

2. Operating ratio

Operating ratio = cost of goods sold + operating expenses / net sales * 100

- It establishes relationship of operating cost and net sales.
- This ratio indicates the proportion that the cost of sales or operating cost bears to sales.
- It excludes non-operating incomes and expenses.
- It tests the operational efficiency of the business.

3. Net profit ratio

Net profit ratio = net profit / net sales * 100

- It establishes relationship between net profit and sales.
- It is an indicator of overall efficiency of the business.
- Higher the net profit ratio betters the business.
- An increase in the ratio over the previous period shows improvement in the operational efficiency and decline means otherwise.

4. Return on Investment (ROI) or Return on Capital Employed Ratio

Capital employed ratio = profit before interest, tax and dividend / capital employed * 100

- It establishes the relationship of profit (profit means profit before interest and tax) with capital employed.
- It judges the overall performance of the enterprise.
- It measures how efficiently the sources entrusted to the business are used.
- Non-operating assets are excluded while determining capital employed, income from investment should also be excluded from profit.

5. Earnings per share (EPS)

Earnings per share = net profit after tax – preference dividend / No. of equity share

- It measures the earnings available to an equity shareholder on per share basis.
- It helps in evaluating the prevailing market price of share in the light of profit-earning capacity.

6. Dividend per share (DPS)

Dividend per share = dividend paid to equity shareholders / No. of equity share

- It represents the dividend distributed per equity share.
- In general, higher the dividend per share, better it is and vice versa.

7. Price earnings ratio

Price earnings ratio = Market price per share / Earning per share

- It establishes the relationship between the market price of the share and earning per share.
- It indicates, how many times the market price of share to it is earnings.
- It is most widely used in the stock exchange by the investors.
- It indicates as to how much the public is ready to pay for future earnings prospects of the company.
- A high price earnings ratio indicates the faith of investors in the stability and appreciation of company earning.
- It used in forecasting market value of the share i.e., Market price per share = price earnings ratio X EPS

Q10. Compute the gross profit ratio based on the following information: sales Rs. 6, 00,000; gross profit 25% on cost.

Answer: let the cost be = Rs. 100; gross profit = Rs.25; sales = Rs.125

Cost of goods sold = 100 /125 * 600000 = Rs. 480000

Gross profit = sales – cost of goods sold = Rs. 600000 – Rs. 480000 = Rs. 120000

Gross profit ratio = gross profit / net sales * 100

= Rs.120000 / Rs. 600000 = 20%

Q11. From the following details, calculate operating ratio:

Cost of goods sold	Rs. 600000
Operating expenses	Rs. 40000
Sales	Rs. 820000
Sales return	Rs. 20000

Solution: operating ratio = cost of goods sold + operating expenses / net sales * 100

= Rs. 600000 + Rs. 40000 / Rs. 800000 * 100 = 80%

Q12. Gross profit ratio if a company was 25%. Its cash sales were Rs. 200000 and its credit sales were 90% of the total sales. If the indirect expenses of the company were Rs. 20,000, calculate its net profit ratio.

Answer: total sales = cash sales + credit sales

Cash sales = 200000

Credit sales = 90% of total sales

Total sales = cash sales X 100 / 10 = Rs. 200000 X 100 / 10 = 20, 00,000

Gross profit = Rs. 20, 00,000 X 25/100 = Rs. 500000

Net profit = gross profit – indirect expenses

= Rs. 500000 – Rs. 20000 = Rs. 480000

Net profit ratio = net ratio / net sales = Rs. 480000/ Rs. 2000000 * 100 = 24%

Q13. Following the balance sheet of X Ltd. as on 31 March 2014:

Liabilities	Rs.	Assets	Rs.
Share capital	2000000	Fixed assets (Net)	2900000
Reserves	500000	Current assets	2500000
10% loans	1000000	Underwriting commission	100000
Current liabilities	1500000		
Profit for the year	500000		
	5500000		5500000

Find out the return on capital employed.

Solution: profit before interest: profit- as stated Rs. 500000
Add; int. (10% of Rs. 100000) Rs. 100000
Total Rs. 600000
Capital employed: fixed assets Rs. 2900000
Add: working capital (Rs. 2500000 – Rs. 1500000) Rs. 1000000
Total Rs. 3900000

Return on capital employed = profit before interest / capital employed * 100
= Rs. 600000 / Rs. 3900000 *100 = 15.38%

Q14. Net profit after interest and tax Rs.1110000. Profit distributed as dividend per share 50%. Equity share capital (10000 equity shares @ Rs. 100 per share) Rs. 1000000. Calculate dividend per share.

Answer: DPS = profit distributed as equity dividend / No. of equity share
= Rs. 555000 / 10000 = Rs. 55.5

Q15. The capital of Everest co. Ltd. is as follow:

	Rs.
9% preference shares of Rs. 10 each	300000
Equity shares of Rs. 10 each	800000
Total	1100000

The accountant has ascertained the following information:

Profit after tax at 60% p.a.	270000
Equity dividend paid 20%	60000
Market price per equity share	40

You are required to calculate the following.
(i) Earning per share
(ii) Price earnings ratio

Solution:
(i) earnings per share = net profit after preference dividend / no. of equity share
= Rs. 270000 – Rs. 27000 / Rs. 80000 = Rs. 3.0375
(ii) price earnings ratio = market price per share / earning per share
= Rs. 40 / Rs. 3.0375 = 13.16: 1

5. Summary:

Now you are familiar with the ratio analysis, how it is useful for quick decision making and analysis the financial position of the enterprise.

- There are four types of ratio Liquidity ratio, Solvency ratio, Activity ratio and profitability ratio.
- Each type of ratio analysis specific aspect or financial position of the enterprise.
- Liquidity ratio analysis the liquidity position of an enterprise and how quickly assets converted into the cash.
- Solvency ratio analysis the solvency position of an enterprise and capacity to meet long-term debt
- Activity ratio analysis the turnover rate and effectiveness of an enterprise uses resources at its disposal.
- Profitability ratio analysis profit position of an enterprise and measures overall efficiency.