

# **Accounting for Financial and Managerial Decision and Control [AFMDC]**

Unit 4

## **Ratios for Management Performance Analysis**

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- Performance measurement techniques: Analysis and interpretation of ratios for measuring productivity, profitability, activity, stability and growth possibility

# Learning Objectives

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- Compute productivity, profitability, activity, stability and growth possibility ratios
- Analyze the performances of an organization by measuring productivity, profitability, activity, stability and growth possibility ratios

# Ratios for Management Performance Analysis

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- Management is required to evaluate their performance compared to different periods of its own enterprise or with industry average or with same business nature of other enterprises
- Management is interested to know and review about the productivity, profitability, activity, stability and growth possibility of its own enterprise that can help management decide the course of action to be taken in future

# Ratios for Management Performance Analysis (Contd.)

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- (a) Ratio Measures Productivity
- (b) Ratio Measures Profitability
- (c) Ratio Measures Activity
- (d) Ratio Measures Stability
- (e) Ratio Measures Growth Possibility

# Ratio Measures Productivity

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i. Sales per Employee =  $\frac{\text{Net Sales}}{\text{No. of Employees}}$  = Rs. ....

ii. Net Added Value per Employee =  $\frac{\text{Total Value Added}}{\text{No. of Employees}}$  = Rs. ....

Value Added = Sales – Cost of Bought in Material and Services  
= Net Profit Before Taxes + All Conversion Cost

iii. Labour Equipment Ratio =  $\frac{\text{Net Fixed Assets}}{\text{No. of Employees}}$  = Rs. ....

iv. Wages Distribution Ratio =  $\frac{\text{Total Wages}}{\text{Total Value Added}}$  = ..... %

(Total Wages Includes Direct Wages and Indirect Wages)

v. Wage Base =  $\frac{\text{Total Wages}}{\text{No. of Employees}}$  = Rs. ....

# Ratio Measures Profitability

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i. Total Capital Profit Ratio =  $\frac{\text{Net Profit}}{\text{Total Capital}}$  = .....%

ii. Sales/Gross Profit Ratio =  $\frac{\text{Gross Profit}}{\text{Net Sales}}$  = .....%

iii. Net Profit/Sales Ratio =  $\frac{\text{Net Profit}}{\text{Net Sales}}$  = .....%

iv. Sales/Operating Profit Ratio =  $\frac{\text{Operating Profit}}{\text{Net Sales}}$  = .....%

(Operating Profit = Net Profit + Non-operating Expenses and Losses – Non-operating Income)

v. Owned Capital/Net Profit Ratio =  $\frac{\text{Net Profit}}{\text{Net Worth or Owned Capital}}$  = .....%

vi. Sales/Administration and Selling Expenses Ratio =  $\frac{\text{Administration and Selling Expenses}}{\text{Sales}}$   
= .....%

# Ratio Measures Activity

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- i. Total Capital Turnover Ratio =  $\frac{\text{Sales}}{\text{Parmanent Capital}}$  = ..... Times
- ii. Current Assets Turnover Ratio =  $\frac{\text{Sales}}{\text{Current Assets}}$  = ..... Times
- iii. Inventory Assets Turnover Ratio =  $\frac{\text{Sales}}{\text{Inventory}}$  = ..... Times
- iv. Account Receivable Turnover Ratio =  $\frac{\text{Sales}}{\text{A/C. Receivable}}$  = ..... Times
- v. Fixed Assets Turnover Ratio =  $\frac{\text{Sales}}{\text{Net Fixed Assets}}$  = ..... Times

# Ratio Measures Stability

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i. Interest Expenses Ratio =  $\frac{\text{Interest Expenses}}{\text{Sales}}$  = .....%

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

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

iv. Owned Capital Ratio =  $\frac{\text{Owners' Equity}}{\text{Permanent Capital}}$  = .....%

v. Ratio of Fixed Assets to Long-term Capital =  $\frac{\text{Net Fixed Assets}}{\text{Permanent Capital}}$  = .....%

# Ratio Measures Growth Possibility

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i. Sales Growth Rate =  $\frac{\text{Current Year's Net Sales}}{\text{Previous Year's Net Sales}} = \dots\dots\dots$  Times

ii. Added Value Growth Rate =  $\frac{\text{Current Year's Total Value Added}}{\text{Previous Year's Total Value Added}} = \dots\dots\dots$  Times

iii. Labour Strength Increase Rate =  $\frac{\text{Current Year's Total Number of Employees}}{\text{Previous Year's Total Number of Employees}} = \dots\dots\dots$  Times

iv. Total Capital Increase Rate =  $\frac{\text{Current Year's Total Capital}}{\text{Previous Year's Total Capital}} = \dots\dots\dots$  Times

v. Net Profit Increase Rate =  $\frac{\text{Current Year's Net Profit}}{\text{Previous Year's Net Profit}} = \dots\dots\dots$  Times

# Ratio Analysis on Behalf of Prospective Lenders and Investors

## Appraisal from the Point of View of Prospective Lenders

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- The prospective lenders or lending institutions, which have granted short-term loans, are primarily interested in company's liquidity position.
- However, in case of long-term loans, they will give more emphasis to the earning power and debt-equity position of the company.
- It is because in the absence of profits, even a very strong liquidity position of the company cannot ensure repayment of loans after some years.
- The long-term loans can be paid only when there is sufficient inflow of cash from internal resources.
- Therefore, a lending institution will prefer a low debt-equity ratio because in an adverse situation, it will provide an additional security to its investments in the company

# Ratio Analysis on Behalf of Prospective Lenders and Investors

## Appraisal from the Point of View of Prospective Lenders

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Lending institution will be interested in knowing about the following points:

- **Liquidity Position:** A good liquidity ratio will be preferred by the lending institution.
- **Profitability Position:** A higher profitability will provide a higher earning cover for interest.
- **Debt-equity Ratio:** A low debt-equity ratio will be a plus point for the company.
- **Growth in Retained Earnings:** A satisfactory rate of growth and retained earnings will definitely be preferred by a lending institution.

# Ratio Analysis on Behalf of Prospective Lenders and Investors

## Appraisal from the Point of View of an Investor

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An investor is primarily interested in the following four things to determine the relative strengths of the company's share in the market:

- The Earning per Share
- The Dividend per Share
- The Intrinsic Value of Share and
- The Prospects of Growth in the Value of Shares

# Ratio Uses on Behalf of Prospective Lenders and Investors

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1. Current Ratio =  $\frac{\text{Current Assets}}{\text{Current Liabilities}}$  = ..... Ratio
2. Quick Ratio =  $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$  = .....
3. Interest Coverage Ratio =  $\frac{\text{Net Profit Before Taxes and Interest}}{\text{Interest Charge}}$  = Times
4. Debt Equity Ratio =  $\frac{\text{Long Term Debt}}{\text{Shareholders' Equity}}$  = ..... %
5. Debt to Total Capital Ratio =  $\frac{\text{Long-term Debt}}{\text{Permanent Capital}}$  = .....%
6. Return on Investment =  $\frac{\text{Net Profit Before Taxes and Interest}}{\text{Total Assets (Operating)}}$  = .....%
7. Gross Profit Margin =  $\frac{\text{Gross Profit}}{\text{Net Sales}}$  = .....%

# Ratio Uses on Behalf of Prospective Lenders and Investors

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8. Net Profit Margin =  $\frac{\text{Net Profit}}{\text{Net Sales}} = \dots\dots\dots\%$

9. Earning per Share =  $\frac{\text{Profit after Tax} - \text{Dividend on Preference Shares}}{\text{Number of Outstanding Shares}} = \text{Rs. } \dots\dots\dots$

10. Book Value per Share =  $\frac{\text{Shareholder's Fund}}{\text{Number of Outstanding Shares}} = \text{Rs. } \dots\dots\dots$

11. Earnings to Price Ratio =  $\frac{\text{Earning per Share}}{\text{Market Price per Share}} = \text{Rs. } \dots\dots\dots$

12. Dividend Yield Ratio =  $\frac{\text{Dividend per Share}}{\text{Market Price per Share}} = \dots\dots\dots\%$

13. Dividend Payout Ratio =  $\frac{\text{Dividend per Share}}{\text{Earning per Share}} = \dots\dots\dots\%$

14. Dividend Cover Ratio =  $\frac{\text{Earning per Share}}{\text{Dividend per Share}} = \dots\dots\dots \text{Times}$

# Question 1

The Summarized Income Statement, Balance Sheet and Other Relevant Data of Asian Manufacturing Ltd., are as follows:

**Asian Manufacturing Ltd.  
Income Statement**

(Rs. in 1000)

	2002	2003	2004
Sales Revenue	15,000	20,000	24,000
Less: Cost of Goods Sold:			
Direct Material Consumed			
Beginning Inventory	3,000	4,000	4,000
Add: Material Purchases	7,000	9,000	10,000
Less: Ending Inventories	(4,000)	(4,000)	(3,000)
Total Direct Material Consumed	6,000	9,000	11,000
Direct Wages	3,000	4,000	5,000
Indirect Materials	100	200	300
Indirect Wages	200	200	300
Other Manufacturing Overheads	500	600	700
Cost of Production	9,800	14,000	17,300
Add: Beginning Inventory of Finished Goods	1,000	2,000	3,000
Less: Ending Inventory of Finished Goods	(2,000)	(3,000)	(4,000)
Cost of Goods Sold	8,800	13,000	16,300
Gross Profit	6,200	7,000	7,700
Less: Other Expenses:			
Administration and Selling Expenses	3,000	4,000	5,000
Interest on Bank Loan	1,000	1,000	1,000
Other Non-operating Expenses/Losses	500	1,000	500
Total	3,500	6,000	6,500
Net Profit	2,700	1,000	1,200

# Question 1

## Asian Manufacturing Ltd. Balance Sheet

(Rs. in 1000)

	2002	2003	2004
<b>Assets:</b>			
Fixed Assets Less Depreciation	30,000	35,000	40,000
Account Receivable	12,000	15,000	14,000
Inventories	6,000	7,000	7,000
Cash and Bank Balances	7,000	2,000	6,200
<b>Total</b>	<b>55,000</b>	<b>59,000</b>	<b>67,200</b>
<b>Capital and Liabilities:</b>			
Share Capital	30,000	35,000	35,000
Retained Earning	5,000	6,000	7,200
10% Bank Loan	10,000	10,000	10,000
Current Liabilities	10,000	8,000	15,000
<b>Total</b>	<b>55,000</b>	<b>59,000</b>	<b>67,200</b>

## Other Relevant Information

(Rs. in 1000)

	2002	2003	2004
Sales Revenue	15,000	20,000	24,000
<b>Less: Input Costs:</b>			
Direct Material Consumed	6,000	9,000	11,000
Indirect Material	100	200	300
<b>Total</b>	<b>6,100</b>	<b>9,200</b>	<b>11,300</b>
Net Value Added	8,900	10,800	12,700
Number of Employees	25	40	50

**Required:** Evaluate management performance of Asian Manufacturing Ltd. using following ratios:

- (i) Productivity ratios
- (ii) Profitability ratios
- (iii) Activity ratios
- (iv) Stability ratios
- (v) Growth possibility ratios

# Solution 1: Productivity Ratios

	2002	2003	2004
<b>1. Productivity</b>			
(a) Sales per employee = $\frac{\text{Net Sales}}{\text{No. of Employees}}$	$\frac{15,000,000}{25}$ = Rs. 600,000	$\frac{20,000,000}{40}$ = Rs. 500,000	$\frac{24,000,000}{50}$ = Rs. 480,000
(b) Net added value per employee = $\frac{\text{Net Value Added}}{\text{No. of Employees}}$	$\frac{8,900,000}{25}$ = Rs. 356,000	$\frac{10,800,000}{40}$ = Rs. 270,000	$\frac{12,700,000}{50}$ = Rs. 254,000
(c) Labour equipment ratio = $\frac{\text{Net Fixed Assets}}{\text{No. of Employees}}$	$\frac{3,000,000}{25}$ = Rs. 120,000	$\frac{3,500,000}{40}$ = Rs. 87,500	$\frac{4,000,000}{50}$ = Rs. 80,000
(d) Wage distribution ratio = $\frac{\text{Total Wages}}{\text{Total Value Added}}$	$\frac{3,000,000 + 200,000}{8,900,000}$ = 35.96%	$\frac{4,000,000 + 200,000}{10,800,000}$ = 38.89%	$\frac{5,000,000 + 300,000}{12,700,000}$ = 41.73%
(e) Wage base = $\frac{\text{Total Wages}}{\text{No. of Employees}}$	$\frac{3,000,000 + 200,000}{25}$ = Rs. 1,28,000	$\frac{4,000,000 + 200,000}{40}$ Rs. 1,05,000	$\frac{5,000,000 + 300,000}{50}$ Rs. 1,06,000

# Solution 1: Profitability Ratios

	2002	2003	2004
<b>2. Profitability</b>			
(f) Total capital profit ratio = $\frac{\text{Net Profit}}{\text{Total Capital}}$	$\frac{2700}{45000} = 6\%$	$\frac{1000}{51000} = 1.96\%$	$\frac{1200}{52200} = 2.30\%$
(g) Sales/Gross profit ratio = $\frac{\text{Gross Profit}}{\text{Net Sales}}$	$\frac{6200}{15000} = 41.33\%$	$\frac{7000}{20000} = 35\%$	$\frac{7700}{24000} = 32.08\%$
(h) Net profit Sales ratio = $\frac{\text{Net Profit}}{\text{Net Sales}}$	$\frac{2700}{15000} = 18\%$	$\frac{1000}{20000} = 5\%$	$\frac{1200}{24000} = 5\%$
(i) Sales/Operating profit ratio = $\frac{\text{Operating Profit}}{\text{Net Sales}}$	$\frac{6200 - 3000}{15000} = 21.33\%$	$\frac{7000 - 4000}{20000} = 15\%$	$\frac{7700 - 5000}{24000} = 11.25\%$
(j) Owned capital/Net profit ratio = $\frac{\text{Net Profit}}{\text{Owned Capital}}$ (Excluding current year profit)	$\frac{2700}{32300} = 8.36\%$	$\frac{1000}{40000} = 2.5\%$	$\frac{1200}{41000} = 2.93\%$
(k) Sales/Administration and selling expenses ratio = $\frac{\text{Adm. \& Selling exp.}}{\text{Net Sales}}$	$\frac{3000}{15000} = 20\%$	$\frac{4000}{20000} = 20\%$	$\frac{5000}{24000} = 20.83\%$

# Solution 1: Activity Ratios

	2002	2003	2004
<b>3. Activity</b>			
(l) $\frac{\text{Total capital}}{\text{turnover ratio}} = \frac{\text{Net Sales}}{\text{Total Capital}}$	$\frac{15000}{45000} = 0.33$ times	$\frac{20000}{51000} = 0.39$ times	$\frac{24000}{52200} = 0.46$ times
(m) $\frac{\text{Current assets}}{\text{turnover ratio}} = \frac{\text{Net Sales}}{\text{Current Assets}}$	$\frac{15000}{25000} = 0.6$ times	$\frac{20000}{24000} = 0.83$ times	$\frac{24000}{27200} = 0.88$ times
(n) $\frac{\text{Inventory assets}}{\text{turnover ratio}} = \frac{\text{Net Sales}}{\text{Inventory}}$	$\frac{15000}{6000} = 2.5$ times	$\frac{20000}{7000} = 2.86$ times	$\frac{24000}{7000} = 3.43$ times
(o) $\frac{\text{Account receivable}}{\text{turnover ratio}} = \frac{\text{Net Credit Sales}}{\text{Account Receivable}}$	$\frac{15000}{12000} = 1.25$ times	$\frac{20000}{15000} = 1.33$ times	$\frac{24000}{14000} = 1.71$ times
(p) $\frac{\text{Fixed assets}}{\text{turnover ratio}} = \frac{\text{Net Sales}}{\text{Net Fixed Assets}}$	$\frac{15000}{30000} = 0.5$ times	$\frac{20000}{35000} = 0.57$ times	$\frac{24000}{40000} = 0.60$ times

# Solution 1: Stability Ratios

	2002	2003	2004
<b>4. Stability</b>			
(q) Interest expenses ratio = $\frac{\text{Interest Expenses}}{\text{Net Sales}}$	$\frac{1000}{15000} = 6.7\%$	$\frac{1000}{20000} = 5\%$	$\frac{1000}{24000} = 4.17\%$
(r) Current ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$	$\frac{25000}{10000} = 2.5$	$\frac{24000}{8000} = 3$	$\frac{27200}{15000} = 1.81$
(s) Quick ratio = $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$	$\frac{19000}{10000} = 1.9$	$\frac{17000}{8000} = 2.125$	$\frac{20200}{15000} = 1.35$
(t) Owned capital ratio = $\frac{\text{Owners' Equity}}{\text{Total Capital}}$	$\frac{40000}{45000} = 88.89\%$	$\frac{41000}{51000} = 80.39\%$	$\frac{42200}{52200} = 80.84\%$
(u) Ratio of fixed assets to long term capital = $\frac{\text{Net Fixed Assets}}{\text{Long-term Capital}}$	$\frac{30000}{45000} = 66.67\%$	$\frac{35000}{51000} = 68.63\%$	$\frac{40000}{52200} = 76.63\%$

# Solution 1: Growth Possibility Ratios

	2002	2003	2004
(v) Sales growth rate = $\frac{\text{Current Year's Net Sales}}{\text{Previous Year's Net Sales}}$	–	$\frac{20000}{15000} = 1.3333$ =133.33%	$\frac{24000}{20000} = 1.20$ =120%
(w) Added value growth rate = $\frac{\text{Current Year's Total Value Added}}{\text{Previous Year's Total Value Added}}$	–	$\frac{10800}{8900} = 1.2/35$ 121.35%	$\frac{12700}{10800} = 1.1759$ = 117.59%
(x) Labour strength increase rate = $\frac{\text{Current Year's no. of Employees}}{\text{Previous Year's no. of Employees}}$	–	$\frac{40}{25} = 1.6$	$\frac{50}{40} = 1.25$
(y) Total capital increase rate = $\frac{\text{Current Year's Total Capital}}{\text{Previous Year's Total Capital}}$	–	$\frac{51000}{45000} = 1.1333$ = 113.33%	$\frac{52200}{51000} = 1.0235$ = 102.35%
(z) Net profit increase rate = $\frac{\text{Current Year's Profit}}{\text{Previous Year's Profit}}$	–	$\frac{1000}{2700} = 0.37$ = (63%)	$\frac{1200}{1000} = 1.20$ = 120%

## Question 2

The following selected financial data have been taken from annual report of ABC Limited for the year ended. You are required to appraise the company's financial position from the view point of (i) lending institutions and (ii) an investor

Items/Financial Year	Year 3 (Rs. In Lakhs)	Year 2 (Rs. In Lakhs)	Year 1 (Rs. In Lakhs)
Total Income	10,615	9093	8,280
Profit before Tax	803	815	540
Tax	405	474	315
Profit after Tax	398	341	225
Dividend	91	91	70
Retained Profit	307	250	155
Significant Financial Ratios:			
Return on Investment	32.7%	39.5%	32.9%
Return on Equity	29.9%	25.9%	19.7%
Debt-equity Ratio	41.1%	14.2%	19.4%
Current Ratio	1.25:1	1.25:1	1.15:1
DPS	Rs. 1.60	Rs. 1.60	Rs. 1.20
EPS	Rs. 7.48	Rs. 6.39	Rs. 4.17
Dividend Cover Ratio	4.67 times	3.99 times	3.49 times

Face Value per Share = Rs. 10

## Solution: Lending Institution View Point

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- The analysis of the financial data of the of the ABC Limited shows that the company has made marginal improvements in its liquidity position over the period of 3 years.
- The current ratio has risen from 1.15 to 1.25.
- The company has also been maintaining a satisfactory return on capital employed.
- The return on investment is 32.7%. The return on equity has rise upto 29.9% as on end of year 3. The debt-equity ratio is also satisfactory, it is only 41.1% which indicates that the company has the potentiality to raise more debt.
- There has been satisfactory rate of growth in the retained earnings of the company. It has almost double in three years, i.e., Rs. 155 lakhs in year 1 to Rs. 307 lakhs in year 3.
- The above analysis show that the financial position of the company is perfectly satisfactory from the point of view of the lending institution.

# Solution: An Investor's View Point

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- There has been an upward trend in the retained profit every year.
- It will show the increasing trend of its net worth. Profit after tax Rs. 398 lakhs in year 3 which was Rs. 225 lakhs in year 1, quite satisfactory.
- The rate of return on equity shareholders funds and earning per share have also gone up to 29.9% and Rs.7.48 respectively. The continuous increase in the retained profit (reserve) of the company is a definite indicator that there is possibility of company to increase value of share at market.
- The dividend cover ratio is also improving constantly. It stood at 3.49 times in year 1 and it stands at 4.67 times in year 3. It is significant to note that these ratio have been maintained in spite of increase in the dividend rate from Rs. 1.20 per share in year 1 to Rs. 1.60 per share in year 3.
- The above analysis shows that the financial position of the company is perfectly satisfactory from the point of view of an investor.

# Solution: An Investor's View Point

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- It may be concluded that the company has a sound financial position from view point of lender and an investor.
- However, the management must remain cautious towards the working capital position of the company.
- The current ratio is not satisfactory at present and therefore, they should take all possible steps in near future to improve the working capital position of the company.

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**Thank You**