

Activity and Profitability Ratios

Activity Ratios

Activity Ratios, also known as Efficiency Ratios or Turnover Ratios, measure how efficiently a company utilizes its assets to generate sales or revenue. These ratios indicate the effectiveness of the company's management in using its resources. Common Activity Ratios include:

1. Inventory Turnover Ratio:

○ **Formula:** Inventory Turnover Ratio = Cost of Goods Sold (COGS) / Average Inventory

○ **Purpose:** It measures how many times the inventory is sold and replaced over a period. A higher ratio indicates efficient inventory management.

2. Receivables Turnover Ratio:

○ **Formula:** Receivables Turnover Ratio = Net Credit Sales / Average Accounts Receivable

○ **Purpose:** This ratio measures how quickly a company collects cash from its credit sales. A higher ratio indicates efficient collection processes.

3. Payables Turnover Ratio:

○ **Formula:** Payables Turnover Ratio = Net Credit Purchases / Average Accounts Payable

○ **Purpose:** It measures how quickly a company pays off its suppliers. A higher ratio suggests that the company is paying its suppliers faster.

4. Asset Turnover Ratio:

○ **Formula:** Asset Turnover Ratio = Net Sales / Average Total Assets

○ **Purpose:** This ratio indicates how efficiently a company uses its assets to generate sales. A higher ratio implies more efficient use of assets.

Profitability Ratios

Profitability Ratios assess a company's ability to generate earnings relative to its revenue, assets, equity, and other financial metrics. These ratios give insights into the company's financial health and its ability to generate profit. Common Profitability Ratios include:

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1. Gross Profit Margin:

- **Formula:**  $\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$
- **Purpose:** It measures the percentage of revenue that exceeds the cost of goods sold (COGS). A higher margin indicates that the company is effectively managing its production costs.

2. Net Profit Margin:

- **Formula:**  $\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$
- **Purpose:** It indicates the percentage of revenue that remains as profit after all expenses are deducted, including taxes and interest. A higher net profit margin indicates better profitability.

3. Return on Assets (ROA):

- **Formula:**  $\text{Return on Assets (ROA)} = \frac{\text{Net Profit}}{\text{Average Total Assets}} \times 100$
- **Purpose:** ROA measures how effectively a company uses its assets to generate profit. A higher ROA indicates efficient asset utilization.

4. Return on Equity (ROE):

- **Formula:**  $\text{Return on Equity (ROE)} = \frac{\text{Net Profit}}{\text{Average Shareholders' Equity}} \times 100$
- **Purpose:** ROE measures the return generated on shareholders' equity. A higher ROE indicates that the company is effectively using its equity base to generate profits.

Summary

- **Activity Ratios** focus on how efficiently a company uses its resources (like inventory, receivables, payables, and assets) to generate sales.
- **Profitability Ratios** assess a company's ability to generate profit from its operations, sales, and investments.

Both sets of ratios are crucial for understanding different aspects of a company's operational efficiency and financial health.



Solved Example on Activity Ratio

Question:

The following information is provided for XYZ Ltd. for the year ended 31st March 2024:

- Cost of Goods Sold (COGS): ₹12,00,000
- Net Sales: ₹18,00,000
- Net Credit Sales: ₹15,00,000
- Opening Inventory: ₹2,00,000
- Closing Inventory: ₹3,00,000
- Opening Accounts Receivable: ₹1,50,000
- Closing Accounts Receivable: ₹2,50,000
- Opening Accounts Payable: ₹1,00,000
- Closing Accounts Payable: ₹1,50,000
- Opening Total Assets: ₹10,00,000
- Closing Total Assets: ₹12,00,000

Calculate the following ratios:

1. Inventory Turnover Ratio
2. Receivables Turnover Ratio
3. Payables Turnover Ratio

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**Solution:**

**1. Inventory Turnover Ratio:**

- Formula:

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

- Calculation:

- Average Inventory =  $\frac{\text{Opening Inventory} + \text{Closing Inventory}}{2} = \frac{₹2,00,000 + ₹3,00,000}{2} = ₹2,50,000$

- Inventory Turnover Ratio =  $\frac{₹12,00,000}{₹2,50,000} = 4.8 \text{ times}$

- Interpretation: The inventory is turned over 4.8 times during the year.

**2. Receivables Turnover Ratio:**

- Formula:

$$\text{Receivables Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$$

- Calculation:

- Average Accounts Receivable =  $\frac{\text{Opening Accounts Receivable} + \text{Closing Accounts Receivable}}{2} = \frac{₹1,50,000 + ₹2,50,000}{2} = ₹2,00,000$

- Receivables Turnover Ratio =  $\frac{₹15,00,000}{₹2,00,000} = 7.5 \text{ times}$

- Interpretation: The company collects its receivables 7.5 times during the year.



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**3. Payables Turnover Ratio:**

- Formula:

$$\text{Payables Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Accounts Payable}}$$

- **Note:** If net credit purchases are not directly given, they are assumed to be the same as COGS unless stated otherwise.

- Calculation:

- Average Accounts Payable =  $\frac{\text{Opening Accounts Payable} + \text{Closing Accounts Payable}}{2} = \frac{₹1,00,000 + ₹1,50,000}{2} = ₹1,25,000$

- Payables Turnover Ratio =  $\frac{₹12,00,000}{₹1,25,000} = 9.6$  times

- Interpretation: The company pays off its payables 9.6 times during the year.

**4. Asset Turnover Ratio:**

- Formula:

$$\text{Asset Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

- Calculation:

- Average Total Assets =  $\frac{\text{Opening Total Assets} + \text{Closing Total Assets}}{2} = \frac{₹10,00,000 + ₹12,00,000}{2} = ₹11,00,000$

- Asset Turnover Ratio =  $\frac{₹18,00,000}{₹11,00,000} = 1.64$  times

- Interpretation: The company generates ₹1.64 in sales for every ₹1 of assets.



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**Assignment**

Ques 1; Calculate inventory turnover ratio of XYZ Ltd. As per the given Information in examples of activity ratios

|                            |          |
|----------------------------|----------|
| Opening inventories        | 50,000   |
| Closing inventories        | 60,000   |
| Cost of goods manufactured | 4,90,000 |

Ques 2: Calculate the following ratios for ABC Ltd. for the year ended 31st March 2024:

- Inventory Turnover Ratio
- Receivables Turnover Ratio
- Payables Turnover Ratio
- Asset Turnover Ratio

| Data                        | Values     |
|-----------------------------|------------|
| Cost of Goods Sold (COGS)   | ₹25,00,000 |
| Net Sales                   | ₹30,00,000 |
| Net Credit Sales            | ₹24,00,000 |
| Opening Inventory           | ₹4,50,000  |
| Closing Inventory           | ₹5,00,000  |
| Average Accounts Receivable | ₹2,00,000  |
| Average Accounts Payable    | ₹1,50,000  |
| Total Assets                | ₹20,00,000 |

Ques 3: For XYZ Ltd., as of 31st December 2024, calculate the following ratios:

- Inventory Turnover Ratio

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- Asset Turnover Ratio

| Data                                      | Values     |
|---|------------|
| Cost of Goods Sold (COGS)                 | ₹45,00,000 |
| Average Inventory                         | ₹5,00,000  |
| Net Sales                                 | ₹60,00,000 |
| Total Assets at the Beginning of the Year | ₹40,00,000 |
| Total Assets at the End of the Year       | ₹50,00,000 |

Hint: To calculate the average total assets, take the sum of total assets at the beginning and end of the year, then divide by two.

**Ques 4:** For LMN Pvt. Ltd., as of 31st March 2024, calculate the following ratios:

- Inventory Turnover Ratio
- Receivables Turnover Ratio

| Data   | Values     |
|--|------------|
| Cost of Goods Sold (COGS)                        | ₹30,00,000 |
| Opening Inventory                                | ₹4,00,000  |
| Closing Inventory                                | ₹6,00,000  |
| Net Credit Sales                                 | ₹50,00,000 |
| Accounts Receivable at the Beginning of the Year | ₹8,00,000  |
| Accounts Receivable at the End of the Year       | ₹10,00,000 |

Hint: For average inventory, use the sum of opening and closing inventory divided by two. Similarly, calculate average accounts receivable.

**Ques 5:** For OPQ Ltd., as of 31st December 2024, calculate the following ratios:

- Payables Turnover Ratio
- Asset Turnover Ratio

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| Data                                      | Values     |
|---|------------|
| Cost of Goods Sold (COGS)                 | ₹55,00,000 |
| Average Accounts Payable                  | ₹7,00,000  |
| Net Sales                                 | ₹85,00,000 |
| Total Assets at the Beginning of the Year | ₹45,00,000 |
| Total Assets at the End of the Year       | ₹55,00,000 |

Hint: To calculate the average total assets and average accounts payable, apply the standard averaging method.

**Solved Example on Profitability Ratio**

Question: The following information is provided for ABC Ltd. Calculate the following profitability ratios for ABC Ltd.:

1. Gross Profit Margin
2. Net Profit Margin
3. Return on Assets (ROA)
4. Return on Equity (ROE)

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Data Provided (for the year ended 31st March 2024):

| Particulars                      | Amount (₹) |
|----------------------------------|------------|
| Net Sales                        | 50,00,000  |
| Cost of Goods Sold (COGS)        | 30,00,000  |
| Operating Expenses               | 10,00,000  |
| Interest Expense                 | 2,00,000   |
| Income Tax                       | 1,20,000   |
| Net Income                       | 6,80,000   |
| Total Assets (Beginning)         | 35,00,000  |
| Total Assets (End)               | 45,00,000  |
| Shareholder's Equity (Beginning) | 20,00,000  |
| Shareholder's Equity (End)       | 25,00,000  |

**Solution:**

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**1. Gross Profit Margin**

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

Where:

$$\text{Gross Profit} = \text{Net Sales} - \text{Cost of Goods Sold (COGS)}$$

$$\text{Gross Profit} = 50,00,000 - 30,00,000 = 20,00,000$$

$$\text{Gross Profit Margin} = \frac{20,00,000}{50,00,000} \times 100 = 40\%$$

**2. Net Profit Margin**

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Net Sales}} \times 100$$

$$\text{Net Profit Margin} = \frac{6,80,000}{50,00,000} \times 100 = 13.6\%$$



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3. Return on Assets (ROA)

$$ROA = \frac{\text{Net Income}}{\text{Average Total Assets}} \times 100$$

Where:

$$\text{Average Total Assets} = \frac{\text{Total Assets (Beginning)} + \text{Total Assets (End)}}{2}$$

$$\text{Average Total Assets} = \frac{35,00,000 + 45,00,000}{2} = 40,00,000$$

$$ROA = \frac{6,80,000}{40,00,000} \times 100 = 17\%$$

4. Return on Equity (ROE)

$$ROE = \frac{\text{Net Income}}{\text{Average Shareholder's Equity}} \times 100$$

Where:

$$\text{Average Shareholder's Equity} = \frac{\text{Shareholder's Equity (Beginning)} + \text{Shareholder's E}}{2}$$

$$\text{Average Shareholder's Equity} = \frac{20,00,000 + 25,00,000}{2} = 22,50,000$$

$$ROE = \frac{6,80,000}{22,50,000} \times 100 = 30.22\%$$



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**Assignment**

**Ques 1:** The following information is provided for XYZ Ltd. Data Provided (for the year ended 31st December 2023):

Data Provided (for the year ended 31st December 2023):

| Particulars                      | Amount (₹)  |
|----------------------------------|-------------|
| Net Sales                        | 1,20,00,000 |
| Cost of Goods Sold (COGS)        | 70,00,000   |
| Selling & Distribution Expenses  | 15,00,000   |
| Administrative Expenses          | 10,00,000   |
| Interest Expense                 | 5,00,000    |
| Income Tax                       | 8,00,000    |
| Net Income                       | 12,00,000   |
| Total Assets (Beginning)         | 60,00,000   |
| Total Assets (End)               | 70,00,000   |
| Shareholder's Equity (Beginning) | 30,00,000   |
| Shareholder's Equity (End)       | 40,00,000   |

Calculate the following profitability ratios for XYZ Corp.:

1. Gross Profit Margin [Hint = 41.6%]
2. Net Profit Margin [Hint = 10%]
3. Return on Assets (ROA) [Hint = 18.4%]
4. Return on Equity (ROE) [Hint = 34.2%]

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**Ques 2:** The following information is provided for ABC Textiles Ltd. Data Provided (for the year ended 31st December 2023): Calculate the following profitability ratios for ABC Textiles Ltd.:

**Data Provided (for the year ended 31st March 2024):**

| Particulars                      | Amount (₹)  |
|----------------------------------|-------------|
| Net Sales                        | 3,00,00,000 |
| Cost of Goods Sold (COGS)        | 1,80,00,000 |
| Manufacturing Overheads          | 30,00,000   |
| Selling & Distribution Expenses  | 25,00,000   |
| Administrative Expenses          | 20,00,000   |
| Interest Expense                 | 7,00,000    |
| Depreciation                     | 10,00,000   |
| Tax Expense                      | 12,00,000   |
| Net Income                       | 16,00,000   |
| Total Assets (Beginning)         | 2,00,00,000 |
| Total Assets (End)               | 2,50,00,000 |
| Shareholder's Equity (Beginning) | 1,20,00,000 |
| Shareholder's Equity (End)       | 1,50,00,000 |

- Gross Profit Margin [Hint = 73.3%]
- Net Profit Margin [Hint = 5.3%]
- Return on Assets (ROA) [Hint = 7.11%]
- Return on Equity (ROE) [Hint = 1.95%]

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Ques 3: The following information is provided for WXY Automobiles Ltd. Data Provided (for the year ended 31st December 2023): Calculate the following profitability ratios for WXY Automobiles Ltd.:

**Data Provided (for the year ended 31st December 2024):**

| Particulars                       | Amount (₹)  |
|-----------------------------------|-------------|
| Net Sales                         | 7,00,00,000 |
| Cost of Goods Sold (COGS)         | 4,50,00,000 |
| R&D Expenses                      | 70,00,000   |
| Marketing & Distribution Expenses | 60,00,000   |
| Administrative & Other Expenses   | 50,00,000   |
| Interest Expense                  | 20,00,000   |
| Depreciation                      | 25,00,000   |
| Income Tax                        | 35,00,000   |
| Net Income:                       | 40,00,000   |
| Total Assets: (Beginning)         | 5,00,00,000 |
| Total Assets: (End)               | 6,00,00,000 |
| Shareholder's Equity (Beginning)  | 3,00,00,000 |
| Shareholder's Equity (End)        | 3,50,00,000 |

1. Gross Profit Margin
2. Net Profit Margin
3. Return on Assets (ROA)
4. Return on Equity (ROE)