

Chapter Two

IFRS based Financial statement analysis

2.1 Purpose of financial analysis

Definition: **financial analysis** is an evaluation of a firm's past performance and prospects for the future.

- The focus of financial analysis is on key figures in the financial statements and the significant relationships that exist between them.
- The analysis of financial statements is a process of evaluating relationship b/n component parts of f/s to obtain a better understanding of the firm's financial condition and performance.
- Financial analysis helps users understand the numbers presented in financial statements and serve as a basis for financial decision making.

Financial analysis consists of three major stages. These are:

1. **Preparation and selection:** - the preparatory steps include establishing the objective of the analysis and assembling the financial statements and other financial data.

❖ Objectives depend on the prospective of the financial statement user and the questions to be answered by the analyst. For instance, management analysis financial statements to help in planning and decision making.

The analysis providing answers to such questions as:

- How has the firm performed in the past?
- What are the firm's strengths and weaknesses?
- What changes are needed to improve future performance?

2. **Computation and relation:** - *arrange* it in a way that will bring about significant relationship.

It involves the application of various tools and techniques to gain a basic understanding of the firm's financial condition and performance. The most frequently used techniques in analyzing f/s are:

- a. **Ratio analysis:** converts birr amounts in to ratios.
- b. **Common- size statements:** express individual statement accounts as percentage of a base amount.

3. **Evaluation and interpretation:** involves the determination of the meaningfulness of the analysis and to develop conclusions, inferences, and recommendations about the firm's performance and financial condition.

Financial statement analysis focuses primarily on the balance sheet and the income statement. However, data from the following two statements may also be used:

- the statement of retained earnings, and
- the statement of changes in cash flow

2.2 Tools of financial analysis:

There are three tools of financial analysis:

1. **Horizontal analysis /trend analysis /:** - as the name indicates in horizontal analysis, we **compare** financial statement of a firm *for different accounting periods*.
 - it gives an indication of the direction of change and reflects whether the firm's financial performance has improved, deteriorated or remained constant over time.
 - Making use of comparative financial statement. e.g. I/S or balance sheet of period 2 with period 1

Note

- ❖ It is important to show *both the dollar amount of change and the percentage of change* because either one alone might be misleading.
- ❖ In case where analysis of financial statements of large number of years is to be made, the horizontal analysis becomes cumbersome. As result, it is recommendable to use trends relative to a certain base year. (the base year is 100%)

2. **Vertical analysis /common size statement/**

Analysis of financial statements where *a significant item* on a financial statement is used as a base value and other **all items are compared to it.**

Example in the case of balance sheet, **total asset** as a base value. Each asset account expressed in terms of total asset

- In the case of income statement, **net sales** as a base value. All expenses and net income are expressed in terms of net sales.
- the primary objective of vertical analysis is to highlight relationship b/n components of financial statements ,not to assess trends in individual components over time
- it helps us to disclose the internal structure of an enterprise
- it indicates the existing relationship between each income statement account and revenue
- shows the mix of assets that produce income and the mix of the source of capital
- it also helps us to further assess financial status of a firm in the industry

Example

	<u>Firm A</u>	<u>Firm B</u>
<u>Asset:</u>		
Current asset	40%	60%
Fixed asset	<u>60%</u>	<u>40%</u>
Total	100%	100%

Note: firm B is more liquid than firm A

3. **Ratio analysis**

"A single figure by itself has no meaning but when expressed in terms of a related figure, it yields significant inferences".

- ❖ Ratio analysis standardizes financial data by converting birr figure in the financial statements into ratios. A financial ratio is a mathematical relationship among several numbers usually stated in the form of **percentage or times**
- ❖ Ratio analysis helps us to draw meaningful conclusions and make interpretations about a firm's:
 - Financial conditions, and
 - Performance

2.3 Basis of comparisons:

-**Ratio**, as yardsticks or financial flags of a firm's overall performance, is meaningful only when compared with other information.

Comparisons can be made in the following ways:

1. **Industry standards /comparisons**: are standards used to compare a firm's financial conditions to that of the *industry average* as a whole and reflects its performance in relation to its competitors.

E.g. Comparison of Ethiopian air lines performance with air lines industry average

2. **Historical standards/trend analysis**/: are standards used to compare current performance to past trends with in the same firm and indicate the direction of change in performance. It helps us to determine whether the firm's financial conditions is improving or deteriorating.

3. **Management goals for key ratios** :are standards or plans set in advance for specific ratios or financial statement accounts and serve as to assess the status of financial position and as a basis for evaluating *actual performance*.

Examples, Management may se a net profit margin of 20 percent at the beginning and evaluate the actual performance.

2.4 Types of financial ratios

Financial ratio classified into five categories. These are:

1. Short term solvency or Liquidity measures
2. Long-term solvency measures
3. Asset Management or turnover measures
4. Profitability measures
5. Market value ratios(measures)

Example,

ABC Company
Balance sheet
As of December, 31
(In thousands)
yr2001

Assets:

Current assets:

Cash	675	450
A/R	1,050	700
Marketable securities	975	650

Inventory	<u>1,900</u>	<u>950</u>
Total current asset	4,600	2,750
Plant assets (net)	<u>3,125</u>	<u>1,250</u>
Total assets	7,725	4,000
<u>Liabilities</u>		
Current liability	900	450
Ling term liability	<u>1,800</u>	<u>800</u>
Total liabilities	2,700	1250
<u>Stockholders' equity</u>		
Common stock (100par)	2,000	2,000
Retained earning	<u>3,025</u>	<u>750</u>
Total liabilities &SHE	7,725	4,000

ABC Company
Income statement
For the year ended, December 31
(in thousands)

		<u>yr2001</u>
<u>yr2000</u>		
Sales	2250	1800
Sales returns	<u>375</u>	<u>300</u>
Net sales		1875
1500		
CGS	<u>1000</u>	<u>850</u>
GP	875	650
Operating expense:		

Selling expense	300	200
General expense	<u>105</u>	<u>60</u>
Total expense	405	260
Income from operation	470	390
Other income	<u>130</u>	<u>80</u>
Earning before interest and tax (EBIT)	600	470
Interest expense	<u>100</u>	<u>55</u>
Earning before tax (EBT)	500	415
Income tax(40%)	<u>200</u>	<u>166</u>
Net income		300
249		

1.liquidity ratios

“are a firm’s current assets sufficient to pay its current liability”

Liquidity ratios measure the ability of a firm to meet its short term obligations and reflect the short term financial strength/solvency of a firm.

Two commonly used ratios are:

A. Current ratio:- measures a firm’s ability to satisfy or cover the claims of short term creditors by using only current assets. That is, it measures a firm’s short term solvency or liquidity.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Current ratio for ABC (for yr2000)} = \frac{2750}{450} = 6.1 \text{ times}$$

Interpretation: ABC has birr 6.1 in current assets available for every one birr in current liabilities.

❖ **Low ratio-**suggests that a firm may face difficulty in paying its short term obligations.

❖ **High ratio-** indicates that too much capital is **tied up** in current assets and a firm may be sacrificing some return.

Note: the ratio highly exceeds the industry average (i.e. 2 times) so that ABC is able to pay its debts when they are due.

- A reasonable higher (**moderate**)the ratio,
 - the larger the amount of birr availability in current assets per birr of current liability
 - the more the firm’s liquidity position
 - the greater the safety of funds of short term creditors (i.e. less risk to creditors)
- **A very lower** current ratio results opposite from current ratio outlined as above. A low current ratio could be improved by:
 - long term borrowing to increase current assets
 - liquidating current liabilities using long term financing

- **A very high** current ratio may indicate,
 - excessive cash due to poor cash management
 - excessive A/R due to poor credit management
 - excessive inventories due to poor inventory management
 - A firm is not making full use of its current borrowing capacity

capacity

There fore, a firm should have **a reasonable current ratio.**

B. Acid -test or quick - ratio: - measures the short term liquidity by removing the **least liquid assets** such as:

- *Inventories*: are excluded because they are not easily and readily convertible in to cash. More over, losses are most likely to occur in the event of selling inventories
- *Prepaid expenses*: are excluded because they are not available to pay off current debts. Prepaid expenses include prepaid rent, prepaid insurance, prepaid advertising, supplies

Quick assets are:

- cash
- marketable securities
- receivables

Quick Ratio = $\frac{\text{Quick Asset}}{\text{Current liabilities}}$
or

$$= \frac{\text{Current Assets} - (\text{Inventory} + \text{prepaid expenses})}{\text{Current liabilities}}$$

Quick Ratio for **ABC** (for yr.2000) = $\frac{450+700+65}{450} = 4 \text{ times}$

Or

$$\frac{2750-950}{450} = 4 \text{ times}$$

Interpretation: ABC has birr 4 in quick assets for every birr in current liabilities.

- The current ratio is a *crude measure* of a firm's liquidity position as it takes into account *all current assets* with out any distinction in their composition.

2) Activity ratios

These ratios are also called.

- ◆ Efficiency ratios or
- ◆ Asset- utilization ratios

Activity ratios are employed to evaluate the **efficiency** with which the firm **manages and utilizes** its assets. These ratios are also called turn-over ratios because they indicate the speed with which assets are being converted or turned over into sales.

i.e Merchandise → A/R
 ↑ Cash ↙

- Overall liquidity ratios generally do not give an adequate picture of company's real liquidity due to differences in the kinds of current assets & liabilities the company holds. Thus, it is necessary to evaluate the activity ratio.

Example:-

	<u>ABC Café</u> (Birr)	<u>XYZ Café</u> (Birr)
Cash	0	7000
Marketable security	0	17,000
AIR	0	5,000
Inventories	<u>35,000</u>	<u>6,000</u>
Total current asset	35,000	35,000
Current Liabilities		
A/P	0	6,000
N/P	14,000	6,000
Accruals	<u>0</u>	<u>2,000</u>
Total current liability	14,000	14,000

The two cafeterias have the same liquidity (current ratio) but their composition is different.

$$\begin{aligned}
 \text{CR} &= \frac{\text{CA}}{\text{CL}} & \text{CR} &= \frac{\text{CA}}{\text{CL}} \\
 &= \frac{35,000}{14,000} & &= \frac{35,000}{14,000} \\
 &= \underline{\underline{2.5 \text{ times}}} & &= \underline{\underline{2.5 \text{ times}}}
 \end{aligned}$$

Activity (Asset utilization) Ratios include

- 1) A/R turnover ratio
- 2) A/P " "
- 3) Inventory " "
- 4) FA " "
- 5) Total Asset " "

- 1) **A/R turnover ratio**: - measures the liquidity if a firm's accounts receivable. That is, it indicates **how many times** or **how rapidly** A/R is converted into cash during a year. Financial analysts apply two **tools** to judge the quality or liquidity of A/R.

⇒ A/R turnover

⇒ Collection period

A/R turnover = $\frac{\text{Net credit sales (Total sales)}}{\text{Average A/R}}$

$$\begin{aligned}
 \text{A/R turnover for ABC (yr 2000)} &= \frac{1500}{700} \\
 &= \underline{\underline{2.14 \text{ times}}}
 \end{aligned}$$

$$\text{AIR turnover for (yr 2001)} = \frac{1875}{875^*} = 2.14 \text{ times}$$

*To compute average A/R sum up the last year A/R (i.e beginning of this year) and the A/R of the current year and divide by two .

Interpretation :- ABC's A/R are converted into cash 2.14 times in year. A **reasonably high** A/R turnover is preferable.

A ratio substantially lower than the industry average may suggest that a firm has:

- ◆ More **liberal credit** policy (i.e longer time credit period), poor credit selection, and **inadequate collection effort or policy** which could lead.
 - A/R to be too high
 - Bad debts or uncorrectable Receivables
- ◆ More restrictive cash discount (i.e no or little cash discount) that could make sales to be too low.

$$\text{A/R turnover} = \frac{\text{Net sales}}{\text{A/R}}$$

Note: - As result of the above factors,

- ◆ The firm could have poor profitability position.
- ◆ The firm's funds would be tied-up in receivable as payments by customers are delayed.

A ratio substantially higher than the industry average may suggest that a firm has:

- ◆ More restrictive credit policy (i.e. short term credit period)
- ◆ More liberal cash discount offers (i.e. larger discount and sale increase)
- ◆ More restrictive credit selection.
- ◆ More rigorous collection effort or policy

Note: the outcomes of a higher A/R turnover could be

- ◆ avoidance of the risk of bad debts
- ◆ Increase the firm's profitability position.
- ◆ Small funds tied-up in A/R
- ◆ Customers pay quickly

A reasonable High ratio is required for a firm to be efficient in converting its A/R into cash.

If available, only credit sales should be used in the numerator as A/R arises only from credit sales.

Average collocation period (ACP)

Represents the *average length of time* a firm must wait to receive cash after making a sale. That is, it indicates how many days a firm

ACP= $\frac{360 \text{ day}}{\text{A/R turnover}}$	ACP= $\frac{\text{Receivables}}{\text{Average sales per}}$
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ACP= <u>360 days</u>		<u>Receivable</u>
A/R turnover	or	Average sales per day
= <u>360 days</u>		= <u>700</u>
2.14		<u>1500</u>
= <u>168 days</u>		360
		4.16
		= <u>168 days</u>

A/P- Dec 31, 2000 30,000
A/P turnover = net purchase

$$\begin{aligned}
 & \text{A/P} \\
 &= \frac{150,000}{30,000} \\
 &= \underline{5 \text{ times}}
 \end{aligned}$$

Interpretation :- Assume that industry average of A/P turnover is 6 times. XYZ cafe pays its creditors lower times a year (i.e 5 times). Thus, it may be rated a risky borrower.

- ◆ **Average payment period (APP):-** measures the average length of time creditors must wait to receive their cash or simply the average time needed by a firm to pay its A/P to creditors or suppliers from which purchase made.

$$\text{APP} = \frac{360 \text{ days}}{\text{A/P turnover}}$$

$$\frac{\text{A/P}}{\text{Average purchase}}$$

$$\text{APP for XYZ cafe} = \frac{360 \text{ days}}{5 \text{ times}} = \underline{72 \text{ days}}$$

Assume, suppliers on the average extend, say 60 days credit terms.

Interpretation: - XYZ café would be given a low credit rating (low credit worthiness). That is XYZ is a risky borrower.

3. Inventory turn over: the frequency at which inventory is converted into sales/ A/R . That is how fast inventory is sold or turned over?

$$\text{Inventory turn over} = \frac{\text{CGS}}{\text{Average inventory}}$$

$$\begin{aligned}
 \text{Inventory turnover for ABC (2001)} &= \frac{1000}{\frac{950 + 1900}{2}} \\
 &= \underline{0.7 \text{ times}}
 \end{aligned}$$

Note:- The average inventory is the average of beginning and ending balances of inventory.

Interpretation:- ABC's inventory is sold out or turned over 0.7 times per year. In general, a high inventory turnover ratio is better than a low ratio.

- An Inventory turnover *significantly higher* than the industry average indicates:
 - Superior selling practices
 - Improved profitability as less money is tied-up in inventory.

Possible problems of high inventory turnover

- Very low level of inventory (i.e under investment in inventory)
- Lost sales due to insufficient inventory (i.e risk of out of stock)

- Stoppage of production process for manufacturing firms.

A very low inventory turn over suggests:

- Excessive inventory or over investment in anticipation of strike or price decreases.
- Inferior quality goods, stock of unsalable / obsolete goods.

Possible problems of a very low inventory turnover

- Cost of funds locked-up or tied up in inventory (opportunity cost)
- Deterioration
- Rental of space
- Insurance cost, property tax, and other inventory carrying costs.

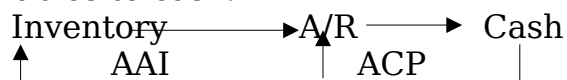
Average age of inventory (AAI):- The number of days inventory is kept before it is sold to customers.

$$\begin{aligned} \text{AAI} &= \frac{360 \text{ days}}{\text{Inventory turnover}} \\ &= \frac{360 \text{ days}}{0.7} \\ &= \underline{514 \text{ days}} \end{aligned}$$

Interpretation: - ABC carries its inventory for 514 days.

The lengthening of the holding period shows a potentially greater risk of obsolescence.

Operating Cycle: - is the number of days it takes to convert inventory and receivables to cash.



Operating cycle = AAI + ACP where, AAI, Average Age of Inventory
ACP, Average Collection Period

Operating cycle for ABC = 514 days + 168 days
= 682 days

Interpretation :- ABC takes 682 days to convert inventory and receivables to cash.

A short operating cycle is desirable.

4) **Fixed Asset turnover:** - measures the efficiency of a business firm with which the firm has been using **its fixed assets** to generate **revenue**

$$\text{Fixed Asset turnover} = \frac{\text{Net sales}}{\text{Net fixed asset.}}$$

$$\begin{aligned} \text{Fixed Asset turnover} &= \frac{1500}{1250} \\ \text{ABC (for 2000)} &= \underline{1.2 \text{ times}} \end{aligned}$$

Interoperation:- ABC generated birr 1.20 in net sales for every birr invested in fixed assets.

Other things being equal, a ratio *substantially below* the industry average:

-Shows underutilization of available fixed assets. (i.e presence of idle capacity) relative to the industry.

-Indicates possibility to expand activity level without requiring additional capital investment.

➤ Shows over investment in fixed assets, low sales, or both.
 -helps the financial manager to reject funds requested by production managers for new capital investments.

Suggests that sales should be increased, some fixed assets

Should be disposed of, or both.

- ◆ Other things being equal, a ratio higher than the industry average:
 - Requires the firm to make additional capital investments to operate a higher level of activity.
 - Shows more efficiency in managing and utilizing fixed assets.

A firm's fixed asset turnover is affected by:

- The cost of the assets.
- The time elapsed since their acquisition.
- The depreciation methods used

5. **Total Asset turnover:-** measures a firm's efficiency in managing its total assets to generate sales.

$$= \frac{\text{Net sales}}{\text{Net total assets}}$$

$$\text{(For year 2000)} = \frac{1500}{4000}$$

$$= 0.375 \text{ times}$$

Net total assets = Net fixed assets + Current Asset.

Depreciation is excluded.

Interoperation:- ABC generates birr 0.375 in net sales for every birr invested in **total assets**.

- **A high ratio** suggests greater efficiency in using assets to produce sale
- **A low ratio** suggests that ABC is not generating a sufficient volume of sales for the size of its investment in assets. Therefore, ABC should take steps to :-
 - increase sales
 - Dispose of some of its investment in assets or both.

Caution has to be taken in making comparison b/n Asset turnover ratio of different organizations because the initial cost of fixed assets differ. Moreover, the method of depreciation has its own impact on total asset turnover. Inflation has an impact. Comparing an old firm which had acquired many of its fixed assets at low prices with a new company which had acquired at high price may lead to misleading.

Firm A (Meta Brewery) (Dashen Brewery)	Firm B
✓ Old and well established company	- New company
✓ Old fixed assets recorded at lower historical cost	-New fixed assets purchased at higher prices
✓ Tend to have higher fixed asset turnover	-Tend to have lower fixed asset turnover

These differences could result from:

- Differences in net cost of fixed assets but not from differences operational efficiencies. Thus, the analyst should consider these facts while comparing Firm A and Firm B

1. Leverage, solvency and long term debt ratio

Solvency is a firm's ability to pay long term debt as they come due.

Leverage shows the degree of indebtedness of a firm.

There are two debt measurement tools. These are

A. Financial **leverage ratio**: measures degree of indebtedness

B. Coverage ratio: measures ability to pay debt

A) Financial leverage. These ratios examine balance sheet ratios and determine the extent to which borrowed funds have been used to finance the firm. It is the relationship of borrowed funds and owner's capital. This can be:

a) **Debt ratio**

b) **Debt equity ratio**

a) Debt ratio: the percentage of assets financed through debt

Debt ratio = $\frac{\text{Total Liability}}{\text{Total Assets}}$ for ABC (yr 2000) $1250/4000=31.25\%$

Interpretation: creditors have financed ABC about 31 cents of every birr assets. It obviously implies that owners have financed 68.75 percent of total assets.

Higher ratio shows- more of a firm's asset are provided by creditors relative to owners

- The firm may face some difficulty in *raising additional* debt.
- Further creditors may require a higher rate of return(interest rate) for taking higher risk

Creditors prefer moderate or low debt ratio, because low debt ratio provides creditors more protection in case a firm experiences financial problems.

b) Debt -equity ratio: expresses the relationship between the amounts of a firm's total assets financed by creditors (debt) and owners (equity). Thus, this ratio reflects the relative claims of creditors and shareholders'

a) $\text{Debt-equity ratio} = \frac{\text{Total Liability}}{\text{Stockholders' Equity}}$

For ABC (yr 2000)= $1250/2750=45.45\%$

Interpretation: Lenders' contribution is 0.45 times of stock holders' contributions. That is. $0.3125/0.6875=0.4545$

=Debt ratio

Equity ratio

= $\frac{\text{Total liability}}{\text{Liability}}$ = $\frac{\text{Total liability}}{\text{Total assets}}$ X $\frac{\text{Total assets}}{\text{Total Liability}}$ = $\frac{\text{Total liability}}{\text{Total Liability}}$

Total assets
Stockholders equity
Stock holders equity
Total assets

Total assets

Stockholders equity

B) **Coverage ratio**: these ratio measures the risk of debt by income statement ratios designed to determine the number of times fixed charges are covered by operating profits. Hence, they are computed from information available in the income statement.. It measures the relationship between what is normally available from operations of the firm's and the claims of outsiders. The claims of a firm are normally met from the earnings or operating profits of the firm. These claims include loan principal and interest, lease payment and preferred stock dividends. The coverage ratios include:

A. **Times Interest Earned Ratio**: measures the ability of an a firm to pay interest on a timely basis.

= EBIT

Interest expense

For ABC (yr 2001)=600/100= 6 times

Interpretation: ABC earning can cover 6 times its interest expense.

A low ratio suggests:

- Creditors are at more risk in receiving interest due.
- failure to meet interest payment can bring legal action by creditors possibly resulting in bankruptcy.
- The firm may face difficulty in raising additional financing through debt as it is more than similar firms.

A high ratio suggests the firm has sufficient margin of safety to cover its interest charges.

B. **Fixed Charge coverage ratio**: measures the firm's ability to meet all fixed payment obligation, such as loan principal, interest, lease payment and preferred stock dividends. It helps to assess the business organization ability to meet all fixed payments.

Fixed charge coverage ratio=
$$\frac{\text{EBIT} + \text{Lease payments}}{\text{Interest} + \text{Lease Payment} + (\frac{\text{principal pmt} + \text{P/stock dividend}}{1-T})}$$

1-T

Where, T is tax rate.

Note: a firm's fixed charges are examined on a before tax basis. Interest payments and lease payments are made on a before tax basis, so no need of adjustment. Principal payments and preferred stock dividend are not tax deductible and are paid from after tax earnings, a tax adjustment is necessary. That is, the payment grossed up by dividing (1-T) to find the before tax income.

Example, assume, Interest expense: 100000

Lease payment: 50,000

Principal payment: 10,000

Preferred stock dividend: 20,000

Tax rate: 40 percent

$$\text{Fixed charge coverage ratio} = \frac{600+50}{100+50+(10+20/1-0.4)} = 3.25 \text{ times}$$

Interpretation: ABC is able to cover its fixed charges 3.25 times.

If the ratio is lower:

- The firm may be unable to meet its fixed charges if earnings decline and may be forced into bankruptcy.
- Creditors and preferred stockholders see the firm as more risky.

A high ratio suggests a good protection in the event of worsening financial position

2. Profitability ratio

These ratios are used to measure the management effectiveness. Besides management of the company, creditors and owners are also interested in the profitability of the company. Creditors want to get interest and repayment of principal regularly. Owners want to get a required rate of return on their investment. The ratio includes:

- A. Gross profit margin
- B. Operating profit margin
- C. Net profit margin
- D. Return on investment
- E. Return on equity
- F. Earning per share

A. Gross profit margin

This ratio indicates management effectiveness in pricing policy, generating sales and controlling production costs.

$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Sales}}$

For ABC(yr 2000) = $650/1500=43.3\%$

Interpretation: The company profit is 0.43 cents for each birr of sales.

A high gross profit margin ratio is a sign of good management. A gross margin ratio may increase by the following factors:

- ❖ Higher sales price, CGS remaining constant
- ❖ Lower CGS, sales prices remaining constant

A low gross profit margin may reflect higher CGS due to the firm's:

- ❖ Inability to purchase raw materials at favorable terms
- ❖ Inefficient utilization of plant and machinery
- ❖ Over investment in plant and machinery, resulting higher cost of production

The ratio also low due to a fall in prices in the market or marked reduction in selling by the firm in an attempt to obtain large sales volume.

B. Operating profit margin: measures the percentage of operating profit to sales.

$$\text{Operating profit margin} = \frac{\text{EBIT}}{\text{Net sales}}$$

For ABC (yr 2000) = $470/1500 = 31.3\%$

Interpretation: ABC generates 31 cents operating profits for each of birr sales.

C. Net profit Margin: measures the percentage of net income to sales.

$$\text{Net profit margin} = \frac{\text{Net income}}{\text{Net sales}}$$

For ABC (yr 2000) = $249/1500 = 16.6\%$

Interpretation: ABC generates nearly 17 cents in net income for each of birr net sales.

D. Return on investment (ROI): measures the overall effectiveness of management in utilizing assets in the process of generating revenue. It reflects how effectively and efficiently the firm's assets are used. This ratio is also called Return on Asset (ROA).

Or using Dupont formula: $\text{ROA} = \text{net profit margin} \times \text{Total asset turnover}$
$$= \frac{\text{Net income}}{\text{Net sales}} \times \frac{\text{Net sales}}{\text{Total assets}}$$

$$\text{ROA} = \frac{\text{Net income}}{\text{Total assets}}$$

$249/4000 = 6.225\%$ or

$$= 0.06225 \times 0.3$$

$75 = 6.225\%$

Interpretation: ABC generates little more than 6 cents for every birr invested in assets.

E. Return on equity (ROE): measures the rate of return realized by *stockholders on their investment*.

$$\text{ROE} = \frac{\text{Net income}}{\text{Stockholders' equity}}$$

$$\text{ROE} = \text{ROA} \times \text{Leverage}$$

Where, $\text{Leverage} = \frac{\text{Total assets}}{\text{Stockholder equity}}$

Leverage ratio measures how the firm finances its assets. Basically, firms can finance with either debt or equity. $\text{ROA} = \text{ROE}$, with only equity

financing that asset is equal to stockholders equity and leverage multiplier is 1.

For ABC (yr 2000) $= 249/2750 = 9.05\%$

Interpretation: ABC generates about 9 cents for every birr in shareholders equity.

F. Earning per share (EPS) represents the amount of birr earned on behalf of each outstanding shares of common stock.

$$\text{EPS} = \frac{\text{Net income}}{\text{No. of C/stock shares}}$$

For ABC

(2000) $249/20 = 12.45$

Interpretation: ABC earns birr 12.45 for each shares outstanding.

3. Market Value ratio: these ratio are primarily used for investment decisions and long range planning and include:

A, **Price/ Earning ratio(P/E ratio):** shows the amount investors are willing to pay for each birr of the firm's earnings.

$$\text{P/E ratio} = \frac{\text{Current Market price per share}}{\text{Earning per share}}$$

Or

$$\text{P/E ratio} = \frac{D1/E1}{k-g}$$

Where, $D1/E1$, is the expected dividend payout ratio
 K , is the required rate of return

Assume, that ABC year end Dec 31, 2000 market price of common stock is birr 115 per share.

$\text{P/E ratio} = 115/12.45 = 9.24$ times.

Interpretation: the market is willing to pay 9.24 birr for every birr in earnings.

A high P/E multiplier often reflects the market's perception of the firm's growth prospects. Thus, if investors believe that a firm's future earnings potential is good and they may be willing to pay a higher price for the stock.

B. **Book value per share:** is the value of each share of common stock based on the firm's accounting records.

$$\text{Book value per share} = \frac{\text{Total stockholders equity} - \text{Preferred stock}}{\text{No. of shares outstanding}}$$

For ABC (yr 2000) $= 2750 - 0/20 = 137.50$ birr/share

C. **Dividend Ratios.** These can be: i) Dividend payout ratio
ii) Dividend yield

i) **Dividend Payout ratio**: shows the percentage of earnings distributed at the end of the accounting period. It is the birr amount of dividend paid on a share of common stock outstanding during the reporting period.

Assume that ABC dividend per share is birr 2.49 Dividend payout ratio = $2.49/12.45=20\%$

Interpretation: ABC paid 20 percent of its earning as dividend. The higher the ratio may reflect the firms lower growth opportunities.

ii) **Dividend yield**: shows the rate earned by shareholders from dividends relative to the current price of the stock. Dividend yield is part of a stock's total return.

$$\text{Dividend yield} = \frac{\text{Dividend per share}}{\text{share}}$$

For ABC Dividend yield = $2.49/115=2.17\%$

Limitation of Ratio analysis

The ratio analysis is a widely used technique to evaluate the financial position and performance of a business. But there are certain problems in using ratios. The analysts should be aware of these problems. The following are some of the limitations of the ratio analysis.

1. Many large firms operate different divisions in different industries, and for such enterprises it is difficult to develop a meaningful set industry average.
2. Most firms want to be better than industry average approximations. So merely attains average performance is not sufficient.
3. Non recognition of inflation in financial statement makes a ratio analysis difficult
4. Firms can employ a " window dressing" technique to make their financial statement more stronger
5. Different accounting methods are employed by different enterprises.

Dividend payout ratio = $\frac{\text{Dividend Per share}}{\text{K.g}}$
Problems with financial statement analysis

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