FINANCIAL ANALYSIS AND FORECASTING

INTRODUCTION

In measuring the performance of a firm, the finance manager uses financial information.
It is the process of identifying financial strength and weaknesses of a firm through establishing the relationship between the items of income statement and those of statement of financial position.
Two methods are used in measuring performance of a business. They include:

- Ratio analysis.
- Financial forecasting.

RATIO ANALYSIS

Ratio analysis is the process of establishing and interpreting various ratios to enhance decision making.
Ratios are used to identify trends over time for one company or to compare two or more companies at one point in time.
Ratio analysis uses financial report and data and summarizes the key relationship in order to appraise financial performance. The effectiveness will be greatly improved when trends are identified, comparative ratios are available and inter-related ratios are prepared.

TYPES OF FINANCIAL RATIOS

They are broadly classified into:

1. Liquidity ratios
2. Profitability ratios
3. Activity/turnover/efficiency ratios
4. Gearing ratios
5. Stock market ratios

LIQUIDITY RATIOS

This category of ratios is used as a measure of firm's ability to meet its current obligations as they fall due.
They include:

- Current ratio
- Acid Test Ratio/Quick Ratio

a) Current Ratio.

It is a liquidity and efficiency ratio that measures a firm's ability to pay off its short-term liabilities with its current assets.
It is obtained by the following formulae:

$$\text{Current Ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

A higher current ratio is always more favourable than a lower current ratio because it shows that the company can easily pay its current debt when they fall due.

b) Acid Test Ratio/Quick Ratio

Quick ratio or acid test ratio measures the ability of a company to pay its current liabilities when they fall due with quick assets only. Quick assets are current assets that can be converted to cash within 90 days or in the short-term. Cash, cash equivalents, short-term investments or marketable securities, and current accounts receivable are considered as quick assets.

The acid test of finance shows how well a company can quickly convert its assets into cash in order to pay off its current liabilities.

$$\text{Acid test ratio} = \frac{\text{current assets} - \text{inventory}}{\text{current liabilities}}$$

As the ratio increases, the liquidity of the company also increases. This is a good sign for investors, but an even better sign to creditors because creditors want to know they will be paid back on time.

PROFITABILITY RATIOS

They are used to assess a business's ability to generate earnings compared to its expenses and other relevant costs incurred during a specific period of time.

They include:

- Return on capital employed
- Return on Total Assets
- Returns on Shareholders' Equity
- Return on common equity
- Gross profit Margin
- Net Profit Margin
- Operating Margin Ratio
- Operating Expenses Ratio

a) Return on capital employed.

Return on capital employed (ROCE) is the ratio of net operating profit of a company to its capital employed. It measures the profitability of a company by expressing its operating profit as a percentage of its capital employed.

Capital employed is the sum of stockholders' equity and long-term finance. Alternatively, capital employed can be calculated as the difference between total assets and current liabilities.

$$\text{Return on capital employed} = \frac{Earnings\ Before\ Interest\ \&\ Tax\ (EBIT)}{Capital\ Employed}$$

Where: capital employed = Total of the long term funds i.e.:
Common Equity + Preference shares + Long term debt
Or
Capital employed = Total Assets – Current Liabilities

A higher value of return on capital employed is favourable indicating that the company generates more earnings per shilling of capital employed. A lower value of ROCE indicates lower profitability.

b) Return on Investment/Return on Total Assets.

The return on assets ratio, often called the return on total assets, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. In other words, the return on assets ratio or ROA measures how efficiently a company can manage its assets to produce profits during a period.

$$\text{Return on Total Assets} = \frac{Net\ Profit\ After\ Tax}{Total\ Assets}$$

The return on assets ratio measures how effectively a company can earn a return on its investment in assets.

c) Returns on Shareholders' Equity.

It is a profitability ratio that measures the ability of a firm to generate profits from its shareholder's investments in the company.

This is an important measurement for potential investors because they want to see how efficiently a company will use their money to generate net income.

ROE is also an indicator of how effective management is at using equity financing to fund operations and grow the company and it can be computed by use of the following formulae;

$$\text{Returns on Shareholders Equity} = \frac{Profit\ After\ Tax}{Common\ Equity + Preference\ share\ capital}$$

Return on equity measures how efficiently a firm can use the money from shareholders to generate profits and grow the company. Unlike other return on investment ratios

d) Return on common equity.

This is a profitability ratio that measures the ability of a firm to generate profits from its shareholders investments in the company. In other words, the return on equity ratio shows how much profit each shilling of common stockholders' equity generates.

ROE is also an indicator of how effective management is at using equity financing to fund operations and grow the company.

$$\text{Return on common equity} = \frac{Net\ profit\ After\ Tax + Preference\ Dividends}{Common\ Equity\ Capital}$$

e) Gross profit Margin

Gross profit margin is a profitability ratio that calculates the percentage of sales that exceed the cost of goods sold. In other words, it measures how efficiently a company uses its materials and labour to produce and sell products profitably.

$$\text{Gross profit Margin} = \frac{Gross\ profit}{Net\ sales}$$

Note: there is a difference between margin and mark-up.

Margin is sales minus the cost of goods sold, while mark-up is the amount by which the cost of a product is increased in order to derive the selling price.

$$\text{Gross profit mark-up} = \frac{gross\ profit}{cost\ of\ goods\ sold} \times 100$$

Relationship between margin and mark-up

In calculating mark up from margin you less the denominator with the numerator for example:

Margin	**Mark-up**
Margin = $\frac{Gross\ profit}{Sales}$ Sales = profit + Cost of sales $\frac{1}{3}$ $\frac{2}{7+2} = \frac{2}{9}$ $\frac{3}{8}$	Mark up = $\frac{Gross\ profit}{Cost\ of\ sales}$ Cost of sales = Sales - Profit $\frac{1}{3-1} = \frac{1}{2}$ $\frac{2}{7}$ $\frac{3}{8-3} = \frac{3}{5}$

f) Net Profit Margin

Net profit margin (also called profit margin) is the most basic profitability ratio that measures the percentage of net income of an entity to its net sales. It represents the proportion of sales that is left over after all relevant expenses have been adjusted.

$$\text{Net Profit Margin} = \frac{Net\ Profit\ After\ Tax}{Sales}$$

g)Operating Margin Ratio

The operating margin ratio, also known as the operating profit margin, is a profitability ratio that measures what percentage of total revenues is made up by operating income

$$\text{Operating Margin Ratio} = \frac{Operating\ Profit}{Sales}$$

A higher operating margin is more favourable compared with a lower ratio because this shows that the company is making enough money from its ongoing operations to pay for its variable costs as well as its fixed costs.

h)Operating Expenses Ratio

Operating expense ratio also known as operating cost ratio or operating ratio is computed by dividing operating expenses of a particular period by net sales made during that period. Like expense ratio, it is expressed in percentage.

$$\text{Operating Expenses Ratio} = \frac{Operating\ Costs}{Sales} \times 100$$

The operating ratio is used to measure the operational efficiency of the management. It shows whether or not the cost component in the sales figure is within the normal range. A low operating ratio means a high net profit ratio (i.e., more operating profit) and vice versa.

TURNOVER / ACTIVITY / EFFICIENCY RATIO

Efficiency ratios also called activity ratios measure how well companies utilize their assets to generate income. Generally, they are asset management ratios, and they include: -

- Stock Turnover.
- Stock holding period.
- Debtor's turnover.
- Average collection period.
- Average payment period.
- Creditor's turnover.
- Total Assets turnover.
- Fixed Assets Turnover.
- Capital Employed Turnover.

a) Stock Turnover.

The inventory turnover ratio is an efficiency ratio that shows how effectively inventory is managed by comparing cost of goods sold with average inventory for a period. This measures how many times average inventory is "turned" or sold during a period.

$$\text{Stock Turnover} = \frac{Cost\ of\ sales}{Average\ stock}$$

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

This measurement also shows investors how liquid a company's inventory is.

b) Stock holding period.

A holding period is the amount of time the investment is held by an investor or the period between the purchase and sale of a security.

$$\text{Stock holding period} = \frac{Average\ stock}{Cost\ of\ Sales}\ x\ 365 \text{ days}$$

c) Debtor's turnover (Receivable turnover)

Debtor's turnover or accounts receivable turnover is the number of times per year that a business collects its average accounts receivables. The ratio is intended to evaluate the ability of a company to efficiently issue credit to its customers and collect funds from them in a timely manner.

$$\text{Debtors turnover} = \frac{Annual\ Credit\ sales}{Average\ Debtors}$$

A high turnover ratio indicates a combination of a conservative credit policy and an aggressive collections department, as well as a number of high-quality customers. A low turnover ratio represents an opportunity to collect excessively old accounts receivable that are unnecessarily tying up working capital.

d) Average collection period.

The average collection period indicates the average number of days elapsed between a credit sale and the date the company receives the payment from the credit sale.

$$\text{Average collection period} = \frac{Average\ receivables}{Annual\ credit\ sales}\ x\ 365\ days$$

The average collection period is a strong indication of a firm's liquidity over the accounts receivables, which is the money that customers owe to the company, as well as of the company's credit policies. A short average collection period suggests a tight credit policy and effective management of accounts receivable, which both allow the firm to meet its short-term obligations.

e) Average payment period.

Average payment period (APP) is a solvency ratio that measures the average number of days it takes a business to pay its vendors for purchases made on credit.

$$\text{Average payment period} = \frac{Average\ payables}{Annual\ credit\ purchases}\ x\ 365\ days$$

f) Creditor's turnover.

The accounts payable turnover ratio is a liquidity ratio that shows a company's ability to pay off its accounts payable by comparing net credit purchases to the average accounts payable during a period. In other words, the accounts payable turnover ratio is how many times a company can pay off its average accounts payable balance during the course of a year.

$$\text{Creditors turnover} = \frac{Annual\ credit\ purchases}{Average\ payables}$$

g) Total Assets turnover.

The asset turnover ratio is an efficiency ratio that measures a company's ability to generate sales from its assets by comparing net sales with average total assets. In other words, this ratio shows how efficiently a company can use its assets to generate sales.

The total asset turnover ratio calculates net sales as a percentage of assets to show how much sales are generated from each shilling of company assets.

$$\text{Total Assets turnover} = \frac{Sales}{Total\ Assets}$$

This ratio measures how efficiently a firm uses its assets to generate sales, so a higher ratio is always more favourable. Higher turnover ratio means the company is using its assets more efficiently. Lower ratio means that the company isn't

Fixed Assets Turnover.

The fixed asset turnover ratio is an efficiency ratio that measures a company's return on their investment in property, plant, and equipment by comparing net sales with fixed assets. In other words, it calculates how efficiently a company is a producing sales with its machines and equipment.

$$\text{Fixed Assets Turnover} = \frac{Sales}{Total\ Fixed\ Assets}$$

A high turnover indicates that assets are being utilized efficiently and large amount of sales are generated using a small amount of assets.

h) Capital Employed Turnover.

Capital Employed Turnover is a profitability ratio that measures how efficiently a company can generate profits from its capital employed by comparing net operating profit to capital employed. In other words, return on capital employed shows investors how many shilling in profits each shilling of capital employed generates.

$$\text{Capital Employed Turnover} = \frac{Sales}{Total\ Capital\ Employed}$$

GEARING RATIOS

These are capital structure ratios which show the trend to which the firm's assets as financed by owner's equity and borrowed funds.

Financial gearing measures the relationship between shareholders' funds (equity) and prior charge capital.

They include: -

- Debt Ratio.
- Debt to equity ratio.
- Time interest & earning ratio (interest cover).
- Gearing ratio.

a) Debt Ratio.

Debt ratio is a solvency that measures a firm's total liabilities as a percentage of its total assets. In a sense, the debt ratio shows a company's ability to pay off its liabilities with its assets. In other words, this shows how many assets the company must sell in order to pay off all of its liabilities.

This ratio measures the financial leverage of a company. Companies with higher levels of liabilities compared with assets are considered highly leveraged and more risky for lenders.

$$\text{Debt Ratio} = \frac{Total\ Debt}{Total\ Assets}$$

A lower debt ratio usually implies a more stable business with the potential of longevity because a company with lower ratio also has lower overall debt.

b) Debt to equity ratio.

The debt-to-equity ratio is a measure of the relationship between the capital contributed by creditors and the capital contributed by shareholders. It also shows the extent to which shareholders' equity can fulfil a company's obligations to creditors in the event of a liquidation.

$$\text{Debt to equity ratio} = \frac{Long\ term\ debt}{Common\ Equity\ Capital}$$

c) Time interest & earned ratio (interest cover).

The interest coverage ratio is a financial ratio that measures a company's ability to make interest payments on its debt in a timely manner. Unlike the debt service coverage ratio this liquidity ratio really has nothing to do with being able to make principle payments on the debt itself. Instead, it calculates the firm's ability to afford the interest on the debt.

$$\text{Time interest \& earned ratio (interest cover)} = \frac{Earning\ Before\ Interest\ \&\ Tax}{Interest\ expense}$$

If the computation is less than 1, it means the company isn't making enough money to pay its interest payments. Forget paying back the principle payments on the debt. A company with a calculation less than 1 can't even pay the interest on its debt. This type of company is beyond risky and probably would never get bank financing.

d) Gearing ratio.

The gearing ratio measures the proportion of a company's borrowed funds to its equity. The ratio indicates the financial risk to which a business is subjected, since excessive debt can lead to financial difficulties. A high gearing ratio represents a high proportion of debt to equity, and a low gearing ratio represents a low proportion of debt to equity.

$$\text{Gearing ratio} = \frac{long\ term\ debt + preference\ share\ capital}{capital\ employed}$$

STOCK MARKET RATIOS

These are ratios that give an indication of how investors perceive the company by analysing it's past performance and future prospects, The performance of the company's shares in the stock market is crucial from shareholders' point of view and management as well. In some organizations top management bonus are linked to the share price in the stock market.

These ratios measure the earnings of the shareholders returns.

They include the following: -

- Earnings per share (EPS)
- Dividends per share (DPS)
- Dividends pay-out ratio
- Retention ratios
- Dividend cover
- Dividend yield
- Earnings yield
- Price-earnings ratios.

a) Earnings per share (EPS)

Earnings per share (EPS), also called net income per share, is a market prospects ratio that measures the amount of net income earned per share of stock outstanding. In other words, this is the amount of money each share of stock would receive if all of the profits were distributed to the outstanding shares at the end of the year.

$$\textbf{Earnings per share (EPS)} = \frac{Profit\ After\ Tax}{Number\ of\ of\ ordinary\ shares\ issued}$$

Note: Profit after tax is also earning attributable to ordinary shareholders.

b) Dividends per share (DPS)

Dividend per share is a measure of the dividend pay out per share of common stock. The measure is used to estimate the amount of dividends that an income investor might expect to receive if he or she were to buy a company's common stock. The measure is especially effective when tracked on a trend line, since a consistent amount per share indicates management's willingness to make consistent pay out to investors.

$$\text{Dividend per share (DPS)} = \frac{Total\ dividends\ for\ the\ year}{No.of\ ordinary\ share\ issued}$$

c) Dividends pay-out ratio

The dividend pay-out ratio measures the percentage of net income that is distributed to shareholders in the form of dividends during the year. In other words, this ratio shows the portion of profits the company decides to keep to fund operations and the portion of profits that is given to its shareholders.

Investors are particularly interested in the dividend payout ratio because they want to know if companies are paying out a reasonable portion of net income to investors.

$$\text{Dividend pay-out ratio} = \frac{Dividend\ per\ share\ (DPS)}{Earnings\ per\ share\ (EPS)}\ x\ 100$$

d) Retention ratios

The retention ratio measures the amount of earnings or profits that are added to retained earnings at the end of the year. In other words, the retention rate is the percentage of profits that are withheld by the company and not distributed as dividends at the end of the year.

This is an important measurement because it shows how much a company is reinvesting in its operations.

Retention ratio is the opposite of the dividend pay-out ratio because it shows how much money the company chooses to keep in its bank account; whereas, the dividend pay-out ratio computes the percentage of profits that a company choose to distribute to its shareholders. T

$$\text{Retention rate} = \frac{retained\ earnings}{net\ income}$$

Note: retained earnings = net income – dividends distributed

e) Dividend cover

Dividend Cover states the number of times an organization is capable of paying dividends to shareholders from the profits earned during an accounting period.

Dividend Coverage Ratio indicates the capacity of an organization to pay dividends out of profit attributable to the shareholders.

$$\text{Dividend cover} = \frac{Earnings\ Per\ Share}{Dividend\ per\ share}$$

Dividend Coverage is a measure of the ability of an organization to pay dividends. Although dividend payments are usually discretionary, companies normally seek to maintain a reasonable level of dividend pay-out in line with the market expectations.

A high dividend cover may suggest that the company is retaining a higher portion of its earnings to meet its financing requirements which may result in higher dividend pay-outs in the future.

f) Dividend yield

The dividend yield is a financial ratio that measures the amount of cash dividends distributed to common shareholders relative to the market value per share. The dividend yield is used by investors to show how their investment in stock is generating either cash flows in the form of dividends or increases in asset value by stock appreciation.

$$\text{Dividend pay-out ratio} = \frac{DPS)}{MPS} \times 100$$

g) Earnings yield

The earnings yield is the ratio of a company's earnings per share to its stock price. It is the inverse of the price-to-earnings ratio.

The earnings yield is a way to measure returns, and it helps investors evaluate whether those returns commensurate with an investments risk.

$$\text{Earnings yield} = \frac{EPS}{MPS}$$

Earnings yield is a critical component which evaluates whether stocks are overvalued or undervalued. However, it is only one method for evaluating investments, it is no substitute for comprehensive analysis. Even though earnings and stock prices are somewhat correlated, the price at which the investor buys and then sells a stock ultimately determines returns.

h) Price-earnings ratios.

The Price Earnings Ratio (P/E Ratio) is the relationship between a company's stock price and earnings per share. It is a popular ratio that gives investors a better sense of the value of the company. The P/E shows the expectations of the market and is the price you must pay per unit of current earnings (or future earnings, as the case may be).

The beauty of the P/E ratio is that it standardizes stocks of different prices and earnings levels.

$$\text{Price Earnings ratio} = \frac{Maerket\ Price\ per\ share}{Earnings\ Per\ Share}$$

Illustration 1

The following data was extracted from the financial records of Jawabu Co. Ltd on 31st December 2016

	Sh.
Profit after tax	720,000

Ordinary share dividend proposed	540,000
Number of ordinary shares issued	80,000
Market price ordinary shares	108

Required;-

i) Earnings per share (EPS)
ii) Dividends per share(DPS)
iii) Dividends pay-out ratio
iv) Retention ratios
v) dividend cover
vi) Dividend yield
vii) Earnings yield
viii) Price-earnings ratios.

Answer

i) EPS = $\frac{Profit\ after\ tax}{Number\ of\ ordinary\ shares\ issued}$

$= \frac{720{,}000}{80{,}000}$ = Ksh. 9

ii) Dividend pay-out ratio = $\frac{6.75}{9}$ = 0.75

Dividend cover = $\frac{DPS}{EPS}$

iii) Dividend cover = $\frac{9}{6.75}$ = 1.333

Dividend cover = $\frac{EPS}{DPS}$

iv) DPS = $\frac{Totaldividendsperyear}{Numberofordinarysharesissued}$ = $\frac{540{,}000}{80{,}000}$ = 6.75

v) Retention ratio = 1-0.75 = 0.25
Retention ratio = 1 – Dividend payout ratio

vi) Earning yield = $\frac{9}{108}$ = 0.083
Earnings yield = $\frac{EPS}{MPS}$

vii) Price -earnings ratio = $\frac{108}{9}$ = 12
P/E Ratio = $\frac{MPS}{EPS}$

viii) Dividend yield = $\frac{DPS}{MPS} = \frac{6.75}{108}$ = 6.25%

Illustration 2

The following are the summarized financial statements for Bokasa Limited.

Bokaa Limited statement of financial position as at 31 December:

	2015		2016	
	Sh. '000'	**Sh. '000'**	**Sh. '000'**	**Sh. '000'**
Non-current assets		4,995		12,700
Current assets:				
Inventory	40,145		50,455	
Accounts receivable	40,210		43,370	
Cash at bank	12,092		5,790	
		92,447		99,615
Total assets		97,442		112,315
Current liabilities:				
Accounts payable	34,389		39,215	
Taxation	2,473		3,260	
	36,862		42,475	
Long-term liabilities:				
10% loan notes	19,840		19,840	
Total liabilities		(56,702)		(62,315)
Net assets		40,740		50,000
Equity:				
Called-up share capital sh.0.25 per share		9,920		9,920
Retained earnings		30,820		40,080
Shareholders' funds		40,740		50,000

Bokasa Limited income statement for the year ended 31 December:

	2015 Sh."000"	2016 Sh."000"
Revenue	486,300	583,900
Operating profit	17,238	20,670
Interest payable	(1,984)	(1,984)
Profit before taxation	15,254	18,686
Taxation	(5,734)	(7,026)
Profit for the year	9,520	111,660

	31 December 2015 Sh."000"	31 December 2016 Sh."000"
Notes:		
1. Retained profit brought forward	23,540	30,820
2. Dividends paid during the year	2,240	2,400

Required:

For each of the two years, calculate;

(i) Earnings per share (EPS)
(ii) Dividend cover
(iii) Current ratio
(iv) Acid test ratio
(v) Return on capital employed (ROCE)