A Study Manual on the

BASICS OF FINANCIAL MANAGEMENT

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FOREWORD

I have written this students' manual titled "The Basics of Financial Management" after teaching financial management as a subject in the undergraduate and graduate programmes. It is to my opinion that readers, especially students who studies financial management as a subject may find this manual very helpful. I have used the simple English language to make it easier for the reader to understand faster. This manual has taken into consideration the finacial management taught in both undergraduate and graduate programmes.

CHAPTER ONE

1.0 NATURE AND SCOPE OF FINANCIAL MANAGEMENT

1.1 INTRODUCTION

Firms create manufacturing capacities for production of goods while some provide services to consumers. They sell goods or services to earn profit and they raise funds to acquire manufacturing and other facilities. Thus, the three most important activities of a firm are *Finance, Production and Marketing.* A firm secures whatever capital it needs and employs it (finance activity) in activities, which generate returns on, invested capital (production and marketing activities).

1.2 FINANCE DEFINED

Finance can be defined as art and science of managing money. Individuals, firms and governments earn or raise funds and spend or invest it. So finance is concerned with the process, institutions, markets and instruments involved in transfer of funds among and between individuals, businesses and governments (transfer of funds from surplus units to deficit units).

1.3 MAJOR AREAS OF FINANCE

Finance can be categorized into two major categories depending upon career opportunities. These are ***finance services*** and ***managerial finance***

1.3.1. Finance Service

Finance Services is an area of finance concern with the design and delivery of advice and financial products to individuals, businesses and governments i.e. commercial banks, and insurances e.t.c.

1.3.2. Managerial Finance

It is concerned with the duties of the financial manager in the business firm. Financial Managers actively manage the financial affairs of many types of

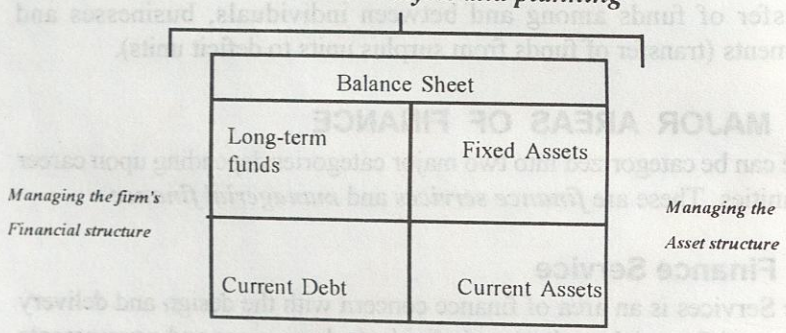
businesses i.e. profit or non-profit businesses, private or public businesses. Some of the duties performed by Financial Managers are budgeting, financial forecasting, cash management, credit administration, investment analysis and fund procurement.

Financial Managers puts more emphases on the availability of cash to the firm for decision-making. Note that accountants put more emphases on profits. And the other main difference between the Financial Manager and the Accountant is that the accountant devotes the majority of his time to the collection and presentation of financial data, while the financial manager evaluates the accountant's statements, develops additional data, and makes decisions based on subsequent analyses.

1.4. ACTIVITIES OF THE FINANCIAL MANAGER

The main activities of the financial manager can be evaluated in terms of the firm's basic financial statements. These are: -

1. Financial analysis and planning,
2. Managing the firm's asset structure, and
3. Managing the firm's financial structure.



1.4.1 Financial Analysis and Planning

Financial analysis and planning is concerned with: -

- Transforming financial data into a form that can be used to monitor the firm's financial condition,
- Evaluating the need for increased productive capacity, and
- Determining what additional financing is required.

These functions encompass the entire balance sheet as well as the firm's income statement and other financial statements.

1.4.2. Managing the Firm's Asset Structure

The financial manager determines both the mix and the type of assets found on the firm's balance sheet. This activity is concerned with the asset side of the balance sheet. Once the mix is determined, the financial manager must establish and attempt to maintain certain optimal levels of each type of the current asset. The financial manager must also decide which are the best-fixed assets to acquire and know when existing fixed assets need to be modified or replaced.

1.4.3. Managing the Firm's Financial Structure

This activity deals with the liability and equity side of the balance sheet and involves two major decisions. First, the most appropriate mix of short-term and long-term financing must be determined. This decision is important as it affects the firm's profitability and overall liquidity. A second and equally important concern is, which individual short-term or long-term sources of financing are best at a given point in time. Many of these decisions are dictated by necessity, but some require an in-depth analysis of the available alternatives, their costs, and their long-run implications.

1.5. SURVEY OF KEY FINANCIAL DECISIONS (FINANCE FUNCTION)

Although it may be difficult to separate the finance functions from production, marketing and other functions, yet the functions themselves can be readily identified. Thereby the financial decisions (finance functions) can be expressed in the form of an equation:

$$V = f(I, F, D, L)$$

Where V = Value of the shareholder's wealth in the firm
I = Investment decisions
F = Financing decisions
D = Dividend decisions
L = Liquidity or short-term asset mix decisions

1.5.1. Investment Decision

Investment decision or sometimes called capital budgeting involves the decision of allocation of capital to long-term assets, which will yield benefits in future. Its one very significant aspect is the task of measuring the prospective profitability of new investments. Future benefits are difficult to measure and cannot be predicted with certainty. Because of uncertainty future, investment decision involves risk. Investment proposals should, therefore, be evaluated in terms of both ***expected return and risk.*** Besides the decision to commit funds in new investment proposals, investment decision also involves decision of recommitting funds when an asset becomes less productive or non-profitable. Investment decision is the most difficult decision which, financial manager's have to make due to the fact that it involves a large sum of money as an out-flow. Investment decision is irreversible that when it has been implemented it is very difficult to reverse it. The decision maker should therefore be very careful when making a decision on investment.

1.5.2 Financing Decision

Financing decision is another important financial decision, which must be performed by the financial manager. Under the financing decision, the financial manager must decide when, where and how to acquire funds to meet the firm's investment needs. The financial manager should determine the proportion of debt and equity. ***The mix of debt and equity is known as the firm's capital structure.*** The financial manager should strive to obtain the best financing mix or the optimal capital structure for the firm. The firm's capital structure is considered optimum when the market value of shares is maximized. The use of debt affects the return and risk of shareholders; it may increase the return on equity funds but it always increases risk. When the shareholders' return is maximized with minimum risk, the market value per share will be maximized and the firm's capital structure would be considered optimum.

1.5.3. Divident Decision

Divided decision is also a major financial decision. The financial manager must decide whether the firm should distribute all profits, or retain them, or distribute a portion and retain the balance. The divided policy should be determined in terms of its impact on the shareholder's value. The optimum divided policy is one, which maximizes the market value of the firm's shares. Thus, if shareholders are not indifferent to the firm's dividend policy, the financial manager must determine the optimum dividend-payout ratio. The dividend-payout ratio is equal to the percentage of dividends distributed to earnings available to shareholders. The financial manager should also consider the questions of dividend stability, bonus shares and cash dividends in practice.

1.5.4. Liquidity Decision

Current assets management which affects a firm's liquidity is yet another important financial decision, in addition to the management of long-term assets. Current assets should be managed efficiently for safeguarding the firm against the dangers of liquidity and insolvency. Investment in current assets affects the firm's profitability, liquidity and risk. A conflict exists between profitability and liquidity while managing the current assets. If the firm does not invest sufficient funds in current assets, it may become illiquid. But it would lose profitability, as idle current assets would not earn anything. Thus a proper trade-off must be achieved between profitability and liquidity. In order to ensure that neither insufficient nor unnecessary funds are invested in current assets, the financial manager should develop sound techniques of managing current assets. The financial manager should estimate the firm's needs for current assets and make sure that funds would be available when needed.

1.6. GOAL OF THE FINANCIAL MANAGER

The firm's investment and financing decisions are unavoidable and continuous. In order to make them rationally, the firm must have a goal. It is generally agreed in theory and practice that the ***firm's goal should be the maximization of the shareholder's wealth, which is reflected at the market place***. Profit maximization fails to serve as an operational goal of the firm were management is different from the owners. Also profit maximization suffers from the following limitations: -

- *Definition of profit:* The precise meaning of the profit maximization objective is unclear. The definition of term profit is ambiguous. Does it mean short- or long-term profit? Does it refer to profit before or after taxation? Total profits or profits per share. Does it mean total operating profits or profits accruing to shareholders?

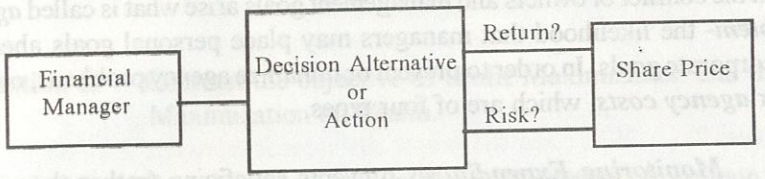
- *Time value of money:* The profit maximization objective does not make a distinction between returns received in different time periods. It gives no consideration to the time value of money.

- *It ignores risk:* The streams of benefits may possess different degree of certainty. Two firms may have same total expected earnings, but if the earnings of one firm fluctuate considerably as compared to the other, it will be more risky. Possibly, owners of the firm would prefer smaller but surer profits to a potentially larger but less certain stream of benefits.

The objective of wealth maximization takes care of the questions of the timing and risk of expected benefits. These problems are handled by selecting an appropriate rate for discounting the expected flow of future benefits. It should be remembered that benefits are measured it terms of cash flows. In the investment and financing decisions, it is the flow of cash, which is important, not the accounting profits.

The wealth maximization objective is consistent with the objective of maximizing owner's economic welfare. Maximizing the economic welfare of owners is equivalent to maximizing the utility of their consumption over time. With their wealth maximized, owners can adjust their cash flows in such a way as to optimize their consumption. From the shareholder's point of view, the wealth created by the firm through its actions is reflected in the market value of the firm's shares. Therefore, the wealth maximization principle implies that the ***fundamental objective of a firm should be to maximize market value of shares***. The value of the firm is represented by their market price, which in turn, is a reflection of the firm's financial decisions.

Figure 1. Financial Decisions and Share Price



1.7 AGENCY THEORY

In a company, the decision-taking authority lies in the hands of the management. As a company is a complex organization of various interested parties, management has the difficult role of reconciling objectives of these parties. In doing so, management may not necessarily act in the best interest of owners and may pursue its own personal goals. But the possibility of pursuing exclusively its personal goals is considered remote because of the continuous supervision by the company's owners, employees, creditors, customers and government will restrict management's freedom to act in its own interest. It is certain that the management will like to survive over the long run. Thus, overall management objective is very likely to be directed towards this goal. A management can survive only when it is successful; and it is successful when it manages the company better than someone else. Every group connected with the company will evaluate management performance from the point of view of the fulfillment of its own objective. The survival of management will be threatened if the objective of any of these groups remains unfulfilled. The wealth maximization objective may be generally in ***harmony*** with the interests of various groups such as owners, employees, creditors and society, and thus, it may be consistent with the management objective of survival.

There can, however, arise situations where a conflict may occur between the shareholders' and management's goals. For example, management may play safe and create satisfactory wealth for shareholders than the maximum. Such as "***satisfying***" behaviour of management will frustrate the objective of ***normative guide*** to management.

1.7.1 Agency Costs

From the conflict of owners and management goals arise what is called *agency problem*- the likelihood that managers may place personal goals ahead of the corporate goals. In order to prevent or minimize agency problems, owners incur *agency costs*, which are of four types.

1. *Monitoring Expenditures* prevents satisficing (rather than share price maximization) behaviour to management. These outlays pay for audits and control procedures that are used to assess and limit managerial behaviour to those actions that tend to be in the best interest of the owners.

2. *Bonding Expenditures* protect against the potential consequences of dishonest acts by managers. Typically the owners pay a third-party bonding company to obtain a fidelity bond. This bond is a contract under which the bonding company agrees to reimburse the firm for up to a certain amount if a specified manager's dishonest act results in financial loss to the firm.

3. *Structuring Expenditure* typically involves managerial compensation that provides financial incentives for action consistent with share price maximization. Popular incentives package include stock option, performance shares and cash bonuses.

4. *Opportunity Costs* are attributable to the difficulties typically shown by large firms in responding to new opportunities. The firm's necessary organizational structure, decision hierarchy, and control mechanism may cause profitable opportunities to be foregone as a result of management's inability to seize upon them quickly.

REVIEW QUESTIONS

Question 1. Contrast the objective of Profit Maximization and that of Maximization of Wealth.

Question 2. Peter Mwisho Company has 1,000 shares of common stock outstanding with the current price of shs.500 per share. The current earning per share are shs.50. The Company decides to retain shs.50 per share and invest the funds to earn a 5 percent rate of return in every future year. The earning per share increase to shs.75 and the stock prices rises to shs.550. However, the firm could have paid out the earnings as dividends and the shareholders could have invested the funds in a project of equivalent risk to earn 10 percent. If the dividend were paid, the stock price per share would remain at shs.500

Since the earnings per share and stock price of the company have increased, the investment decision maximizes the wealth of shareholders. Do you agree that this decision maximizes shareholders' wealth? ***(ADCA Adopted)***

Question 3. Discuss the main activities of the financial manager, using the basic financial statement?

Question 4. "The profit maximization is not an operationally feasible criterion". Do you agree? Illustrate your views.

Question 5. How can conflicts arise between owners' and managements' goal? How does wealth maximization care of this conflict?

Question 6. Why do firms incur agency costs? Are they effective in practice? Briefly describe each of the following categories of agency cost.

1. Monitoring Expenditures
2. Bonding Expenditures
3. Structuring Expenditures
4. Opportunity Costs

Question 7. What are the major differences between accounting and finance with respect to:

1. The method of fund recognition?
2. Decision making?

Question 8. The maximization of wealth objective suggests that management attempt to minimize shilling cost of production at a given level of out put. The company does not pay some costs of production (i.e. pollution). Is the objective of maximizing wealth functional for society's point of view? If the answer is no, which objective would you substitute in its place? ***(ADCA Adopted)***

CHAPTER TWO

2.0 TOOLS OF FINANCIAL ANALYSIS

2.1 INTRODUCTION

Financial analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing relationships between the items of the balance sheet and income statement. Users of financial statements can get better insight about financial strengths and weaknesses of the firm if they properly analyze information reported in these statements. Management should be particularly interested in knowing financial strength of the firm to make their best use and to be able to spot out financial weaknesses of the firm to take suitable corrective actions. Future plans of the firm should be laid down in view of the firm's strengths and weaknesses.

2.2 USERS OF FINANCIAL ANALYSIS

Financial analysis can be undertaken by:

- ***Trade creditors***: are interested in the firm's ability to meet their claims over a very short period of time. Their analysis will therefore, confine to the evaluation of the firm's liquidity position.

- ***Suppliers of long-term debt***: are concerned with the firm's long-term solvency and survival. They analyze the firm's profitability over time; the firm's ability to generate cash to be able to pay interest and repay principal and the relationship between various sources of funds (capital structure relationship).

- ***Investors***: are most concerned about the firm's earnings. They concentrate on past and future profitability, and also on the firm's capital structure.

- ***Management***: they are interested in every aspect of financial analysis. It is their overall responsibility to see that the resources of

the firm are used in more effective and efficient manner, and that the firm's financial condition is sound.

2.3. NATURE OF RATIO ANALYSIS

Ratio analysis is a powerful tool of financial analysis. ***A ratio is defined as "the indicated quotient of two mathematical expressions" or as " the relationship between two or more things"***. In financial analysis, a ratio is used as a benchmark for evaluating the firm's financial performance and position. The absolute accounting figures reported in the financial statements do not provide meaningful understanding of the performance and position of the firm.

2.3.1. Standards of Comparison

The ratio analysis involves comparison for the useful interpretation of the financial statements. Note that a single ratio in itself does not indicate favourable or unfavourable condition; it should be compared with some standard ratio. Standards of comparison may consist of:

- *Time series analysis*: The easiest way to evaluate the performance of a firm is to compare its current ratios with the past ratios. When financial ratios over a period of time are compared it is known as the time series analysis (trend analysis). 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. The analyst should not simply determine the change, but, more important, he should understand why ratios have changed.

- *Pro forma analysis*: Sometimes future ratios are used as the standard of comparison. Future ratios can be developed from the pro forma financial statements. The comparison of the current or past ratios with future ratios shows the firm's relative strengths and weaknesses in the past and the future. If the future ratios indicate weak position, corrective action should be initiated.

- *Cross-sectional analysis*[1]: Another way of comparison is to compare ratios of one firm with some selected firms in the same industry at the same point in time. This kind of comparison indicates the relative financial position and performance of the firm. A firm can easily resort to such a comparison, as it is not difficult to get published financial statements of the similar firms.

- *Industry analysis*: To determine the financial condition and performance of a firm, its ratios may be compared with the average ratios of the industry of which the firm is the member. This sort of analysis, known as the industry analysis, helps to ascertain the financial standing and capability of the firm vis-à-vis other firms in the industry. Industry ratios are important standards in view of the fact that each industry has its characteristics which influence the financial and operating relationships.

2.4 TYPES OF RATIOS

Several ratios, calculated from the accounting data, may be grouped into various classes, according to the financial activity or function to be evaluated. In view of the requirements by the various users of ratios, they may be classified into the following four categories, namely, liquidity ratios, leverage ratios (debt ratios), activity ratios and profitability ratios. Liquidity, activity, and debt ratios primarily measure risk; profitability ratios measure return. In the near-term, the important elements are liquidity, activity, and profitability, since these provide the information critical to the short-run operation of the firm. If the firm cannot survive in the short-run, then we cannot be concerned about the long-term. Debt ratios are useful primarily when we are sure the firm will be successful in the short-run. Let us discuss the foresaid categories of ratios with the help of the illustration given below

[1] Cross sectional comparison of firms operating in several lines of business are difficult to perform. The use of weighted-average industry average ratios based on the firm's product line mix or, if data are available, analysis of the firm on a product-line-by-product-line basis, can be performed to analyze a multi-product firm

Illustration: Stated below are the financial statements (balance sheet and income statement) of Emmanuel Mwisho Company for the year of 2000.

Income Statement (000shs.) [December,2000]

Sales revenue	3,074,000
Less: Cost of goods sold	2,088,000
Gross profit	***986,000***
Less: Operating expenses:	
Selling expenses	100,000
General expenses	229,000
Depreciation expenses	239,000
Total expenses	568,000
Operating profit	***418,000***
Less: Interest expenses	93,000
Net profit before taxation	***325,000***
Less: Taxes (29%)	94,000
Net profit after taxes	***231,000***
Less: Preferred share dividend	10,000
Net profit available to common stockholders	221,000
Common stock outstanding	76,262 shares

Balance Sheet ('000shs.) December, 2000

ASSETS	
Current assets:	
Cash	363,000
Marketable securities	68,000
Accounts receivable	503,000
Inventories	289,000
Total current assets	***1,223,000***
Gross fixed assets (at cost)	
Land and buildings	2,072,000
Machinery and equipment	1,866,000
Furniture and fittings	358,000
Vehicles	275,000
Others	98,000
Total gross fixed assets	4,669,000
Less: Accumulated depreciation	2,295,000
Net fixed assets	***2,374,000***
Total assets	***3,597,000***

TOTAL LIABILITIES AND EQUITIES	
Current liabilities:	
Accounts payable	382,000
Notes payable	79,000
Accruals	159,000
Total current liabilities	***620,000***
Long-term liabilities	1,023,000
Total liabilities	***1,643,000***
Stockholders' equity	
Preferred stock	200,000
Common stock	191,000
Premium	428,000
Retained earnings	1,135,000
Total stockholders' equity	***1,954,000***
Total liabilities and equities	***3,597,000***

2.4.1 Liquidity Ratios

It is extremely essential for a firm to be able to meet its short-term obligations as they fall due. Thereby liquidity ratios measure the ability of the firm to meet its short-term obligations. A firm should make sure that it does not suffer from luck of liquidity, and also that it does not have excess liquidity. Failure for a firm to meet its obligation due to luck of sufficient liquidity, will result to:

1. Poor credit worthiness,
2. Loss of creditors' confidences or
3. Even in legal tangles resulting in the closure of the firm.

A high degree of liquidity is also bad due to idle asset earns nothing. Therefore, it is necessary to strike the balance between high liquidity and lack of liquidity. The three basic measures of liquidity are net working capital, current ratio and quick (acid-test) ratio.

2.4.1.1 Net Working Capital

This is not a pure ratio. It is calculated by subtracting the total current liabilities from total current assets.

Net working capital = Total current assets – Total current liabilities

Illustration: (2000) Net working capital = shs.1,223,000,000 – shs.620,000,000 = shs.603,000,000

Net working capital is useful only in comparing the liquidity of the same firm over time and should not be used for comparing different firms. It is also useful for internal control purposes. To make cross sectional as well as time series comparisons, net working capital as a percent of sales can be calculated. For Emmanuel Mwisho Company in 2000 this ratio would be 19.6% (shs.603,000, shs.3,074,000). In general, the larger the value, the greater the firm's liquidity, and vice versa. Because of the relative nature of this measure, it is frequently used to make liquidity comparison.

2.4.1.2 Current Ratio

Current ratio measures the ability of the firm to settle its short-term obligation as it falls due. It is calculated by the formula:

Current ratio[1] *= Current Assets ÷ Current Liabilities*

It shows how much current assets in shillings is available for every current debt. A ratio of greater than one means the firm has more current assets than current liabilities.

Illustration: (2000) Current ratio = shs.1,223,000,000 / shs. 620,000,000
= shs.1.97 to shs.1.00 (it means that there is shs.1.97 of current assets to each shs.1.00 of maturing short-term obligation).

The conventional rule of shs.2.00 to shs.1.00 is considered optimal if no standard measure is given. The higher the ratio, the better the firm is as far as liquidity is concerned.

A final point worth noting is that whenever a firm's ratio is shs.1.00 to shs.1.00, its net working capital is zero. If the firm's current ratio is less than one, then the net working capital is negative.

2.4.1.3 Quick Ratio

This ratio establishes a relationship between quick assets and current liabilities. Quick assets are properties of the firm, which can be converted into cash immediately or reasonable soon without a loss of value. Most current assets are quick assets with the exception of inventories. Inventories are known as least liquid assets. Therefore the formula for quick ratio is as:

Quick ratio[2] *= (Current Assets – Inventories) ÷ Current Liabilities*

Illustration: (2000) Quick ratio = $\frac{\text{Shs.1,223,000,000 – shs.289,000,000}}{\text{Shs.620,000,000}}$

= shs.1.51 to shs.1.00 (means that there is shs.1.51 of quick assets available to each shs.1.00 of current liability).

The ratio of shs.1.00 to shs.1.00 is considered optimal in case there is no standard measure given. The quick ratio provides the better measure of overall liquidity only when a firm's inventory cannot easily be converted into cash.

2.4.2. Leverage Ratios

Short-term creditors are more concerned with the firm's current paying ability while long-term suppliers of debt are more concerned with the firm's long-term financial strength. In fact the firm should have a strong short as well as long-term financial position. There should be an appropriate mix of debt and owners' equity in financing the firm's assets.

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[2] Sometime the quick ratio is defined as (cash + marketable securities + accounts receivable)÷ current liabilities. If the firm were to show as current assets items other than cash, marketable securities, accounts receivable, and inventories, its quick ratio might vary, depending on the method of calculation.

The manner in which assets are financed has a number of implications:

- Debt is more risky from the viewpoint of the firm (due to interest payments are made when profits are made or not and sometimes failure to pay interest and principle may results to legal action).
- Employment of debt is of advantageous for the shareholders in two ways. First, the shareholders can retain control of the firm with a limited stake and sound, their earnings may be magnified when the firm's rate of return is higher than the interest rate

Types of Leverage ratios are Total debt ratio, Debt-Equity ratio and Times-Interest Earned ratio.

2.4.2.1. Total Debt Ratio

The total debt ratio measures the proportion of total assets provided by the firm's creditors. The higher the ratio, the greater the amount of other people's money being used in an attempt to generate profits.

Total Debt Ratio = Total Liabilities ÷ Total Assets

Illustration: (2000) total debt ratio = shs.1,643,000,000 ,shs.3,597,000,000

= 0.457 or 45.7% (it means that 45.7% of the total assets has been financed by debt).

If no standard measure is given, then 50% is considered as an optimal ratio.

2.4.2.2. Debt-Equity Ratio

The debt-equity ratio indicates the relationship between the long-term funds provided by the creditors and those provided by the owners. The formula for calculating the debt-equity ratio is as follows:

Debt-Equity ratio = Long-Term Debt ÷ Net Worth

Illustration: (2000)debt-equityratio=shs.1,023,000,000 ÷ shs.1,954,000,000

= 0.524 or 52.4% (it means the firm's long-term debts are only 52.4% as large as stockholders' equity).

100% is considered optimal, if no standard measure is given.

2.4.2.3. Times Interest Earned Ratio

Times interest earned ratio measures the extent to which earnings can decline without resultant to financial embarrassment to the firm because of inability to meet annual interest payments. Times Interest Earned Ratio is calculated as follows:

Times interest earned ratio = EBIT ÷ Interest Expense.

Where EBIT means Earning Before Interest and Taxes.

Illustration: Times interest earned ratio = shs.418,000,000 ÷ shs.93,000,000

= 4.5 times (it means that the firm is able to pay its interest payments 4.5 times without suffering financial embarrassment).

The higher the ratio the better a good margin of safety the firm is.

2.4.3. Activity Ratios

Funds of the creditors and owners are invested in various assets to generate sales revenue and profits. The better management of assets, the larger the amounts of sales revenue a firm shall have. Activity ratios are employed to evaluate the efficiency with which the firm manages and utilizes its assets. These ratios are also called ***turnover ratios*** because they indicate the speed with which assets are being converted or turned over into sales revenue. ***Activity ratios, thus, involves a relationship between sales revenue and assets.*** Several activity ratios can be calculated to judge the effectiveness of assets utilization.

2.4.3.1 Invetory Turnover

Inventory turnover ratio indicates the efficiency of the firm in selling its product. It is calculated by dividing the cost of goods sold by the average inventory.

Inventory turnover = Cost of Goods Sold ÷ Average Inventory.

Illustration:(2000)Inventory turnover = shs.2,088,000,000÷shs.289,000,000

= 7.2 times (It means that a firm is turning its inventory of finished products into sales revenue 7.2 times).

The resulting turnover is meaningful only when compared with that of other firms in the same industry or to the firm's past inventory turnover. ***Generally, the higher the ratio, the better indicator of good inventory management a firm has***. A low inventory turnover implies excessive inventory levels, or slow-moving or obsolete inventory. Also caution should be taken into consideration with relative high inventory turnover, as a high inventory turnover may be a result of a very low level of inventory, which results in frequent stock outs. The turnover may be high if the firm replenishes its inventory in too many small lot sizes. Therefore too high or too low inventory turnover should be investigated further.

2.4.3.2 Average Collection Period

Average collection period measures for how long are debtors remaining outstanding. It is useful in evaluating credit and collection policies.

Average Collection Period = Debtors , Average Credit Sales Per Day.

Average credit sales per day = Total Credit Sales , 360[2]

Illustration:(2000)Averagecollectionperiod= shs.503,000,000÷shs.8,539,000

= 58.9 days (It means, on average it takes the firm 58.9 days to collect a debt).

[3] Unless otherwise specified, a 360-day consisting of 30-day months is assumed throughout this manual

The average collection period measures the quality of debtors since it indicates the speed of collection. ***The shorter the average collection period, the better the quality of debtors, as a short collection period implies the prompt payment of debtors.*** The average collection period should be compared against the firm's credit terms and policy to judge its credit and collection efficiency.

2.4.3.3 Fixed Asset Turnover

The fixed asset turnover measures the efficiency, with which the firm has been using its fixed or earning assets to generate sales revenue. It is calculated by dividing the firm's sales revenue by its net fixed assets:

Fixed Asset Turnover = Sales Revenue ÷ Net Fixed Assets.

Illustration:(2000)Fixed asset turnover = shs.3,074,000,000 ÷ shs.2,374,000

= 1.29 times (It means that the firm turns over its net fixed assets 1.29 times a year).

Generally, higher fixed asset turnover are preferred since they reflect greater efficiency of fixed asset utilization.

2.4.3.4. Total Asset Turnover

The total asset turnover indicates the efficiency with which the firm is able to use all its assets to generate sales shillings. ***Generally, the higher a firm's total asset turnover, the more efficiency its assets have been used***. This measure is of great interest to management since it indicates whether the firm's operations have been financially efficient. Total asset turnover is calculated as follows:

Total asset turnover = Sales Revenue ÷ Total Assets.

Illustration:(2000)Total asset turnover = shs.3,074,000,000÷shs.3,597,000,000

= 0.85 (It means that a firm turns its assets 0.85 times a year).

2.4.4. PROFOTABILITY RATIOS

A firm should earn profits to survive and grow over a long period of time. Profit is the ultimate output of the firm, and it will have no future if it fails to make sufficient profits. Therefore, the financial manager should also continuously evaluate the efficiency of its firm in terms of profits. Profitability ratios are calculated to measure the operating efficiency of the firm. Besides management, creditors and investors are also interested on the profitability of the firm. Generally, two major types of profitability are calculated:

- Profitability in relation to sales,
- And profitability in relation to investment

2.4.4.1. GROSS PROFIT MARGIN

The first profitability ratio in relation to sales revenue is the gross profit margin. It indicates the percentage of each sales shillings remains after the firm has paid for its goods. ***The higher the gross profit margin the better, and the lower the relative cost of merchandise sold.***

Gross Profit Margin = Gross profits ÷ Sales Revenue.

Illustration: (2000) Gross margin = shs.986,000,000÷shs.3,074,000,000
= 32.1%

The higher the ratio, the better a firm is. A gross profit margin ratio may increase due to any of the following factors:

- Higher sales prices, while cost of goods remains the same,
- Lower cost of goods, while sales prices remains the same.

A low gross profit margin may reflect higher cost of goods due to the firm's inability to purchase raw materials in favourable terms, or inefficient utilization of assets or over-investment in plant and equipment or the fall in sales prices.

2.4.4.2. OPERATING PROFIT MARGIN

This is a ratio, which measures the profitability of the firm after taking into consideration other operating expenses. ***The higher the ratio, the better the firm is with operating profit margin***. The operating profit margin is calculated as follows:

Operating Profit Margin = Operating Profit ÷ Sales Revenue
*Illustration:*Operating profit margin = shs.418,000,000 ÷ shs.3,074,000,000
= 13.6%

2.4.4.3 Net Proft Margin

The net profit margin measures the percentage of each sales shillings remaining after all expenses, including taxes, have been deducted. ***The higher the net profit margin, the better the firm is.*** The net profit margin is a commonly cited measure of the firm's success with respect to earnings on sales. The formula is:

Net Profit Margin = Net Profits, Sales Revenue.
Illustration: (2000) Net profit margin = shs.231,000,000 /shs.3,074,000,000
= 7.5%

This ratio also indicates the firm's capacity to withstand adverse economic condition. A firm with a high net profit margin would be in an advantageous position to survive in the face of falling sale prices or rising costs of production or declining demand for the product.

2.4.4.4 Return on Investment (ROI)

The return on investment, which is sometimes known as return on total assets, measures the overall effectiveness of management in generating profits with its available assets. ***The higher the firm's return on investment, the better***. The formula is as follows:

Return On Investment = Net Profits After Taxes ÷Total Assets.
Illustration: (2000) ROI = shs.231,000,000 ÷ shs.3,597,000,000
= 6.4%

2.4.4.5 Return on Equity (ROE)

The return on equity measures the return earned on the owners (both preferred and common stockholders) investment. Generally, the higher this return, the better off the owners. Return on equity is calculated as follows:
Return On Equity = Net Profits After Taxes ÷ Net Worth

*Illustration:(*2000) Return on equity = shs.231,000,000 / shs.1,954,000,000
= 11.8%

Return on equity indicates how well the firm has used the resources of owners and it is an important tool to the present shareholders and the potential shareholders. Return on equity should be compared with other firms in the same industry.

2.4.4.6 Earnings Per Share (EPS)

The firm's earnings per share are generally of interest to present or potential investors and management. The earnings per share represent the number of shillings earned on behalf of each outstanding share of common stock. They are closely watched by the public and considered an important indicator of firm's success. It is calculated as follows:

Earnings Per Share = Earnings Available to Common Stock holders ÷ Number of Shares of Common Stock Outstanding

Illustration: (2000) EPS = shs.221,000,000 / 76,262
= Shs2,900 (This figure represents the shillings amount earned on behalf of each share outstanding.It does not represent the amount of earnings actually distributed to shareholders).

The EPS of the firm should be compared with the industry average and the EPS of other firms.

2.4.4.7 Divident Per Share (DPS)

The net profits after taxes belong to shareholders. But the income, which they really receive, is the amount of earnings distributed as cash dividends. Therefore a large number of present and potential investors may be interested in DPS, rather than EPS. DPS is the earnings distributed to ordinary shareholders divided by the number of ordinary shares outstanding:

DPS = Earnings paid to Shareholders ÷ Number of Ordinary Shares Outstanding

Illustration: (2000) DPS = shs.180,000,000 / 76,262
= shs2,360 (This figure represents the shillings amount distributed as dividends to common stockholders)

The company distributed shs.2,360 per share as dividend out of shs.2,900 earned per share. The difference per share is retained in the business.

2.4.4.8 Divident- Payout Ratio

The dividend-payout ratio(or simply payout ratio) is DPS (or total dividends) divided by the EPS(or total shareholder's earnings)

Payout Ratio = Dividend Per Share (DPS), Earnings Per Share (EPS)

Illustration: (2000) = shs.2,360 , shs.2,900 = 81.3% (Payout ratio)

2.4.4.9 Price/ Earning (P/E) Ratio

Though not a true measure of profitability, the ***price/earning (P/E) ratio*** is commonly used to assess the owners' appraisal of share value. The P/E ratio represents the amount investors are willing to pay for each shilling of the firm's earnings. The level of the price/earnings ratio indicates the degree of confidence (or certainty) that investors have in the firm's future performance. ***The higher the P/E ratio, the greater investor confidence in the firm's future.*** The P/E ratio is calculated as follows:

Price/Earning (P/E) Ratio = Market Price Per Share of Common Stock ÷ Earnings Per Share

Illustration: (2000) P/E Ratio = shs.5,000 , shs.2,900
= 1.72 (This figure indicates that investors were paying shs.1.72 for each shs.1.00 of earnings)

2.4.4.10 Dividend and Earning Yields

The dividend yield is the dividends per share divided by the market value per share, and the earnings yield is the earnings per share divided by the market value per share. That is:

Dividend Yield =Dividend Per Share (DPS) ÷ Market Value Per Share(MV)

Earnings Yield = Earnings Per Share (EPS) ÷ Market Value Per Share (MV)

Illustration: (2000)

Dividend Yield = shs.2,360 ÷ shs.5,000
= 47.2%

Earnings Yield = shs.2,900 ÷ shs.5,000
= 59.2%

The dividend yield and earnings yield evaluate the shareholders' return in relation to the market value of the share. The earnings yield is also called the ***earnings-price ratio***. The information on the market value per share is generally not available from the financial statements; it has to be collected from the external sources, such as Stock Exchange.

2.5 UTILITY OF RATIO ANALYSIS

In ***Credit Analysis,*** the analyst will usually select a few important ratios. The analyst may use the current ratio or quick ratio to judge the firm's liquidity or debt-paying ability; debt equity ratio to determine the stake of the owners in the business and the firm capacity to survive in the long run and any one of the profitability ratios, for example, return on equity, to determine the firm's earnings prospects. If the profitability is high, the current ratio is low and the debt equity ratio is high (unreasonable), the extension of credit may be approved to the firm, because a profitable company will grow and will have improvement in its current ratio and other ratios.

The ratio analysis is also useful in ***Security Analysis.*** The major focus in security analysis is on the long-term profitability. Profitability is dependent on a number of factors and, therefore, the security analyst also analyses other ratios. He would certainly be concerned with the efficiency with which the firm utilizes its assets and the financial risk to which the firm is exposed. Therefore, besides analyzing the profitability ratios meticulously, he will also analyze activity ratios and debt ratios. The detailed analysis of the earning power is important for security analysis.

2.6 DIAGNOSTIC ROLE OF RATIOS

The essence of financial soundness of the firm lies in balancing its goals, commercial strategy, product-market choices and resultant financial needs. The firm should have financial capability and flexibility to pursue its commercial strategy. Ratio analysis is a very useful analytical technique to raise pertinent questions on the number of managerial issues. It provides bases or clues to investigate such issues in detailed. While assessing the financial health of the firm with the help of ratio analysis, answers to the following questions relating to the firm's profitability, assets utilization, liquidity, financing and strategies capabilities may be sought[4]:

Profitability Analysis

1. How profitable is the firm? What Accounting Policies and Practices does the firm follow? Are they stable?

2. Is the profitability (ROI) of the firm high/low/average? Is it due to Profit margin, asset utilization, non-operating income, window dressing, and change in accounting policy or inflationary condition?

3. Is the return on equity (ROE) high/low/average? Is it due to return on investment, financing mix capitalization of reserves?

4. What is the trend in profitability? Is it improving because of better utilization of resources? What is the impact of cyclical factors on profitability trend?

5. Can the company sustain its impressive profitability or improve its profitability given the competitive and other environmental situations

Assets Utilization

1. How effectively does a firm utilize its assets in generating sales?

2. Are the levels of debtors and inventories relative to sales reasonable, given the firm's competitive and operating characteristics?

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[4] K.J. Buttler, et.al. (1981: 3-7)

3. What are the trends in collecting period, inventory turnover and fixed assets turnover?

4. Is the improvement in the fixed assets turnover due to depreciated book value of fixed assets? or sale of some fixed assets?

Liquidity Analysis

1 What are levels of the current assets relative to current liabilities? Is it reasonable given the nature of the firm's business?

2. What is the mix of current assets? Is the proportion of slow moving inventories high?

3. How promptly does the firm pay its creditors?

4. How far can it stretch payment to creditors without jeopardizing its relations with them?

5. How efficiently and frequently does the firm convert its current assets into cash?

6. Does the firm have lease commitments not disclosed in the Balance Sheet?

7. Does it have large contingent liabilities?

8. What potential does the firm have to raise debt on acceptable terms? From whom? On what conditions? How quickly?

9. Can the firm raise equity funds? Would market respond favourable? To whom and at what price shares would be sold? Is the management willing for dilution of control if shares are issued?

Strategic Analysis

1. What kind of competitive, operating and environmental risk would occur?

2. How would management respond in strategic and operating terms?

3. What kind of financial pressures would be faced?

4. Would it be able to raise necessary funds on acceptable terms?

5. Would the firm be able to use its reserve resources? In what sequence would these resources be used?

2.7 CAUTIONS IN USING RATIO ANALYSIS

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

- It is difficult to decide on the proper basis of comparison.
- The comparison is rendered difficult because of differences in situations of two companies or of the company over years
- The price level changes make the interpretations of ratios invalid.
- The difference in the definitions of terms in the balance sheet and income statements makes the interpretation of ratios difficult.
- The ratios calculated at a point in time are less informative and defective as they suffer from short-term changes.
- The ratios are generally calculated from past financial statements and, thus are no indicators of future.

2.7.1 Standards for Comparison

Ratios of the firm have meaning only when they are compared with some standards. It is difficult to find out the proper basis of comparison. Usually it is recommended that ratios should be compared with industry average But the industry averages are not easily available in Tanzania.

2.7.2 Company Differences

Situation of two companies are never the same. Similarly, the factors influencing the performance of a company over years are not similar. Thus, the comparison of the ratios of two companies becomes difficult and meaningless when they are operating in different situations.

2.7.3 Price Level Changes

The interpretation and comparison of ratios are also rendered invalid by the changing value of money. The accounting figures, presented in the financial statements, are expressed in the monetary unit, which is assumed to remain constant. In fact, price change over years, which affect accounting earnings. At least three effects of inflation can be identified:

1. The nominal value of inventory increases on account of rising prices. This results into ***"inventory profit."*** A firm will lose in real terms if the general price level increases faster than appreciation in the value of inventory.

2. Assets are stated at original cost (less depreciation) in the balance sheet. Because of inflation, their current value or replacement cost will be much higher than book value. Thus depreciation calculated on the book value will be very low.

3. Inflation affects accounting profits of the firm, which borrow. If the interest rate is fixed, shareholders gain at the cost of lenders. The real value of the lender's obligation is reduced by inflation. The accounting profits, does not recognize the gain from borrowing arising due to inflation. Since firms will differ in terms of the nature of the inventory, age, and type of assets and debt policy, inflation will affect them differently.

2.7.4 Different Difinitions of Terms

In practice, differences exist as to the meaning of certain terms. Diversity of views exists as to what should be included in net worth or shareholders' equity, current assets or current liabilities. In Tanzania, the preparation of the financial statements should be according to the TFAS. Whether share

capital should be included when calculating Debt-Equity Ratio? Whether intangible assets should be included when calculating the Return On Investment.

2.7.5 Changing Situations

The ratios do not have much use if they are not analyzed over years. The ratios at a moment of time may suffer from temporary changes. This problem can be resolved by analyzing trends of ratios over years. Trend analysis is static to an extent although it is more useful. The balance sheets, prepared at different points of time are static in nature. They do not reveal the changes, which have taken place between dates of two balance sheets. The Statement of changes of financial position reveals this information.

2.7.6 Historical Data

The basis for calculating ratios is historical financial statements. The financial analyst is more interested in what happens in future, while ratios indicate what happens in the past. Management of the firm has information about the firm's future plans and policies and, therefore, is able to predict future happening to certain extent. But the outside analyst has to rely on the past ratios, which may not necessarily reflect the firm's financial position and performance in the future.

REVIEW QUESTIONS

Question 1. Determine the Cost of Goods Sold of the store company with the financial data given below:

- Current Ratio 2.5 - Quick Ratio 2.0
- Current liabilities shs.600,000 - Inventory turnover 4 times

Question 2. Indicate the effects of the transactions listed below on each of the following Total Current Assets and Net Working Capital. Use + to indicate an increase, - to indicate a decrease and, O to indicate no effect.

1. Cash is acquired through issuance of additional common stock.
2. Goods are sold for cash.
3. A fixed asset is sold for less than book value.
4. A fixed asset is sold for more than a book value.
5. Goods are sold on credit
6. A cash dividend is declared and paid
7. Cash is obtained through short-term loans
8. Short term notes receivable are sold at a discount
9. Marketable securities are sold below cost.
10. Goods are bought on credit
11. A wholly depreciated asset is retired.

12. Accounts receivable are collected.
13. A stock dividend is declared and paid.
14. Advances are paid to employees
15. Equipment is bought with short- term notes

Question 3. Complete the Balance Sheet and sales information for the Ezra company Ltd using the information that follows:

- Debt to Networth 40 percent
- Acid test ratio 1.2
- Total asset turnover 2.0 times
- Days sales out standing in Debtors 30
- Gross Profit margin 30 percent
- Inventory turnover 4 times.

Balance Sheet.

Cash	----------	A/c Payable	----------
Debtors	----------	Common Shares	15,000
Inventory	----------	Retained earnings	33,000
Equipment	----------	Total debt and equity	
Total assets	----------	Total debt and equity	---------
Sales	----------	COGS	----------

(ADCA Adopted)

Question 4. ADCA Company Ltd. Has shs.800,000 in current assets and shs.200,000 in current liabilities. How much can its short-term debt (notes payable) increase without violating a current ratio of shs.3 to shs.1? The funds from the additional notes payable will be used to increase inventory.

Question 5. The Kenneth Company reports shs.2,500,000 in purchases of raw materials for the year.
Outstanding accounts payable total shs.325,000. How many days' purchases remain outstanding?

Question 6. Assume that a firm has owners' equity of Tshs. 100.000. The ratios for the firm are

- Current debt to total debt = 0.40
- Total debt to owners equity = 0.60
- Fixed assets to owners equity = 0.60
- Total assets turnover = 2 times
- Inventory turnover = 8 times.

Complete the Balance Sheet that follows below.

Balance Sheet.

Current debt----------	*Cash* ----------
Long sterm debt. ----------	Inventory ----------
Owners equity ----------	Fixed assets ----------
Total capital----------	

Question 7. Financial Analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the relationship between the items in the Balance Sheet and income statement.

REQUIRED: Mention any five users of final statements

Question 8. (a) Ratio Analysis involves comparison for a useful interpretation of the Final Accounts

REQUIRED: Mention three different ways of ratio comparison

(b) Several ratios calculate from the accounting data may be grouped into various classes according to the function to be evaluated.

REQUIRED: Mention different categories of Ratios

(c) Ratio analysis is a widely used technique to evaluate the financial position and performance of the business.

REQUIRED: Mention any 5 limitations of Ratio Analysis

(d) What do we mean by technically insolvency

Question 9. A company has total annual sales (all credit) of shs.400,000,000, and gross profit margin of 20 percent. Its current assets are shs.80,000,000; current liabilities, shs.60,000,000; inventories, shs.30,000,000; and cash shs.10,000,000.

1. How much average inventory should be carried if management wants the inventory turnover to be 4? (Assuming a 360-day year for calculation)

(b) How rapidly (in how many days) must accounts receivable be collected if management wants to have an average of shs.50,000,000 invested in receivables? (Assume a 360-day year)

Question 10. The data for various companies of about the same size in the same industry are given below:

Company	A	B	C	D	E	F
Sales (in millions)	10	20	8	5	12	17
Total assets(mil)	8	10	6	2.5	4	8
Net income (mil)	0.7	2	0.8	0.5	1.5	1

1. Determine the asset turnover, net profit margin, and earning power for each of the companies.

2. Which firm appears to be out of line? What might be the problems? What addition data would you need to confirm your analysis?

CASE STUDY : STEEL WORKS, INC.

A combination of mammoth investment and negative financial returns has plagued the steel industry since the late 190's. Since then, steel consumption has dropped nearly 25 percent and increasing numbers of products are being produced from alternative materials like aluminum and plastic. It is a dismal picture, but one that steel works, Inc., plans to meet head on.

Steel works is a Tanzania manufacturer of steel products serving the Tanzania and foreign markets. The company's products directly compete with foreign imports, which over last five years have captured a significant portion of the domestic market. Domestic consumption of steel imports continues to increase due to the low price per ton. Foreign producers are able to manufacture steel at a low cost when compared to Tanzanians firms due to lower labour costs and more technological advanced manufacturing facilities.

Steel works hopes to compete more effectively by implementing a modernization program, which includes the construction of a state-of-the-art manufacturing facility. Beno Mhagama, an experienced budget analyst, has been aligned to evaluate the firm's current financial position. Steel works plans to meet the industry's challenge by achieving productivity gains. Construction of a new facility will cost shs. 400 million in 1999 and is expected to lower the variable costs per ton of steel. Both capacity and quality will improve with the addition of the new plant. Beno must also forecast the 1999 financial position based on these proposed capital outlays.

Beno has gathered the following financial statements and financial data for use in performing needed analysis and developing the financial forecasts of 1999.

STEELS WORK INC. INCOME STATEMENTS (TSH 000'S) FOR THE YEAR ENDED DEC. 31ST 1998.

SALES REVENUE			shs. 5,075,000
Less: Cost of Goods sold			3,704,000
Gross profits			1,371,000
Less: Operating expenses			
Selling expenses	shs.	650,000	
General expenses		416,000	
Depreciation expenses		152,000	
Total operating expenses			1,218,000
Operating profits		shs.	153,000
Less: Interest expenses			93,000
Net Profit before taxes		shs.	60,000
Less: Taxes (40%) 24,000			
Net profit affair taxes		shs.	36,000

STEEL WORKS INC

HISTORICAL RATIOS

RATIO	1996	1997	1998	IND. AVERAGE
Current ratio	1.7	1.8	1.5	
Quick ratio	1.0	0.9	1.2	
Inventory Turnover	5.2	5.0	10.2	
Average collection period	50	55	46	
Fixed asset turnover	3.2	3.5	4.1	
Total asset turnover	1.5	1.5	2.0	
Debt ratio	45.8%	54.3%	24.5%	
Times interest earned	2.2	1.9	2.5	
Gross profit margin	27.5%	28%	26%	
Net profit margin	1.1%	1.0%	1.2%	
Return on investment	1.7%	1.5%	2.4%	
Return on equity	3.1%	3.3%	3.2%	

STEEL'S WORKS INC.
BALANCE SHEET (TSHS. 000'S)

ASSETS	DEC. 1998	DEC. 1997
CURRENT ASSETS		
Cash	shs. 25,000	shs. 24,000
Accounts receivable	805,556	763,900
Inventories	700,625	763,445
Total current assets	shs. 1,531,181	shs. 1,551,445
Gross Fixed Assets	shs. 2,093,819	shs. 1,691,707
Less: Acc. Depreciations	500,000	348,000
Net fixed assets	shs. 1,593,819	1,343,707
Total assets	shs. 3,125,000	2,895,152

LIABILITIES AND STOCK HOLDER'S EQUITY		
CURRENT LIABILITIES		
Accounts payable	shs. 230,000	shs. 400,500
Notes payable	311,000	370,000
Accruals	75,000	100,902
Total current liabilities	shs. 616,000	shs. 871,402
Long term liabilities	1,165,250	700,000
Total liabilities	shs. 1,781,250	shs. 1,571,402
STOCK HOLDER'S EQUITY		
Preferred Stock	shs. 50,000	shs. 50,000
Common Stock(at par)	100,000	100,000
Paid-in-capital in excess of par	193,750	193,750
Return earnings	1,000,000	980,000
Total stock holders equity	1,323,750	1,323,750
Total Liabilities and Stock holder's equity	shs 3,125,000	shs. 2,895,152

Required

Calculate the company's financial ratios for the most recent year (1998), analyze its overall financial situation from both a cross-sectional and a time-series viewpoint. Break your analysis into an evaluation of the firm's liquidity, activity, debt and profitability. ***(MBA Adopted)***

CHAPTER THREE

3.0 CAPITAL BUDGETING (INVESTMENT) DECISIONS

3.1 NATURE OF CAPITAL BUDGETING

Capital budgeting is a vital management task because its purpose is to provide a basis for wise decisions about the products a firm will make and the processes it will operate in the future. Therefore, it is the foundation for the future profitability of a firm. Capital budgeting is a complex and requires teamwork of several members of the management group.

The efficient allocation of capital is the most important finance function of the modern times. It involves decisions to commit the business funds to the long-term assets. Such decisions are of considerable importance to the business since they tend to determine its value and size by influencing its growth, profitability and risk.

The capital budgeting decisions of the business are generally known as investment decision, or capital expenditure decisions. *A capital budgeting decision may be defined as the business decision to invest its current funds most effectively and efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years.* The long-term assets are those assets, which affects the business operations beyond the period of one year. The business capital budgeting decision would generally include expansion, acquisition, modernization and replacement of the long -term assets. Sale of the division or business [divestment] is also analyzed as a capital budgeting decision. Activities such as the change in the method of sale distribution, or the undertaking of an advertisement campaign or a research and development program have a long term implication for the business expenditure and benefits, and therefore, they may also be evaluated as capital budgeting decisions. It is important to note that investment in the long- term asset invariably requires funds to be tied up in the current assets such as stocks and inventories. As such, investment in fixed and current assets is one single activity.

The following are the features of capital budgeting decisions:

1. The exchange of current funds for future benefits.
2. The funds are invested in the long-term assets.
3. The future benefits will occur to the business over a series of years.

It is significant to emphasis that expenditures and benefits of the investment should be measured in cash. In the capital budgeting analysis, it is the cash flow, which is important, and not the accounting profits. It may also be pointed out that capital budgeting decision also affects the business value. The business value will increase if investments are profitable and add to the shareholders' wealth. Thus investment should be evaluated on the basis of the criterion, which is compatible with the objective of the shareholders' wealth maximization. An investment will add to the shareholders' wealth if it yields benefits in excess of the minimum benefits as per the opportunity cost of capital.

3.2 IMPORTANCE OF CAPITAL BUDGETING DECISIONS

Capital budgeting decisions require special attention because of the following reasons

1. *They have long-term implication to the business, and can influence its risk complexion.*
2. *They involve the commitment of large amounts of money.*
3. *They are irreversible decisions.*
4. *They are among the most difficult decisions to make.*

3.2.1 Growth

The effects of capital budgeting decisions extends into the future and have to be endured for the longer period than the consequences of the current operating expenditure. A current expenditure is an outlay of funds resulting in benefits received within one year. Business decision to invest in the long- term assets has a decisive influence on the rate and direction of its growth. A wrong decision can prove disastrous for the continued survival of the business; unwanted or unprofitable expansion of assets will result in heavy operating cost to the business. On the other hand, inadequate investment in assets would make it difficult for the business to compete successfully and maintain its market share.

[3] C.D.Quirin (1977)

3.2.2 Risk

Long- term commitment of funds may also change the risk complexion of the business. If adoption of an investment increases average gain but causes frequent fluctuation in its earnings, the business becomes more risky. Thus capital budgeting decision shape the basic character of the business.

3.2.3 Funding

Capital budgeting decisions generally involve large amounts of funds, which make it imperative for the business to plan its investment programs very carefully and make advance arrangements for procuring finances internally or externally.

3.2.4 Irreversible

Most capital budgeting decisions are irreversible. It is difficult to find the market once they have been acquired. The business will incur heavy losses if such assets are scrapped.

3.2.5 Complexity

Capital budgeting decisions are among the most difficult decisions. They are an assessment of future events, which are difficult to predict. It is really a complex problem to correctly estimate future cash flows of the investment. Economic, political, social and technological forces cause the cash flow uncertainty.

3.3 TYPES OF CAPITAL EXPENDITURES

There are many ways to classify investment projects. Some classification is as follows: -

3.3.1 Expansion and Diversification

The most common type for a capital expenditure is to expand the level of operations usually through the acquisition of fixed assets. A growing firm often finds it necessary to acquire new fixed assets rapidly; sometimes this includes the purchase of additional physical facilities such as additional property and plant. For example, a fertilizer company may increase its plant size to manufacture more urea. Expansion of new business requires investment in new products and a new kind of production activity within the business. If a packing manufacturing business invests in new plant and machinery to provide

ball bearings, which the business has not manufactured before, this represents expansion of a new business or diversification.

3.3.2 Replacement and Modernization

As a firm's growth slows and it reaches maturity, most of its capital expenditures will be for the replacement or renewal of obsolete or worn-out assets. Each time a machine requires a major repair, the outlay for the repair should be evaluated in terms of the outlay to replace the machine and the benefits of replacement. The main objective of replacement and modernization is to improve the operational efficiency and reduce costs. Cost savings will be reflected in the increased profits, but the business revenue may remain the same. Assets become outdated and absolute with technological changes. The business must decide to replace those assets with new assets that operate more economically.

3.3.3 Renewals

Renewal may involve rebuilding, overhauling, or retrofitting an existing machine or facility. For example, an existing drill press could be renewed by replacing its motor and adding a numeric control system, or a physical facility could be renewed by rewiring, adding air conditioning, and so on. Business wishing to improve efficiency may find that both replacing and renewing existing machines are suitable solutions.

3.3.4 Other Purposes

Some capital expenditures do not result in the acquisition or transformation of tangible fixed assets shown in a firm's balance sheet. Instead, they involve a long-term commitment of funds by the firm in expectation of a future return. These expenditures include outlays for advertising, research and development, management consulting and new products. Other capital expenditure proposals - such as the installation of pollution - control and safety devices mandated by the government are difficult to evaluate because they provide intangible returns rather than clearly measurable cash flows.

Yet another useful way to classify capital expenditure (projects) is as follows:
Mutually exclusive projects: - These are projects, which compete with one another so that the acceptance of one eliminates the others from further consideration. A firm may, for example, either use a more labour intensive,

semi-automatic machine, or employ a more capital-intensive, highly automatic machine for production. Choosing the semi-automatic machine precludes the acceptance of the highly automatic machine.

Independent projects: - These are projects, which serve different purposes and do not compete with each other. For example, a heavy engineering firm may be considering expansion of its plant capacity to manufacture additional excavators and addition of new production facilities to manufacture new product-light commercial vehicles. Depending on the profitability and availability of funds, the company can undertake both investments

Contingent projects: - These are dependent projects; the choice of one investment necessitates that one or more other investments should be undertaken. For example, if a firm decides to build a factory in a remote, backward area, it may have to invest in houses, roads, hospitals, schools etc. for employees to attract the work force. Thus building of factory also requires investment in facilities for employees. The total expenditure will be treated as one single investment.

3.4 CAPITAL BUDGETING PROCESS

The Capital Budgeting Process can be viewed as consisting five distinct but interrelated steps. It begins with proposal generation. This is followed by review and analysis, decision-making, implementation and follow- up. Each step is important; major time and effort, however, are devoted to review and analysis and decision-making. A brief description of each of these steps is as follows: -

3.4.1 Proposal Generation

People at all levels within the business organization make proposal for projects. To stimulate the flow of ideas that could result in potential cost savings, many business offer cash rewards to employees whose proposals are ultimately adopted. Project proposals typically travel from the originator to a reviewer at a higher level in the organization. Clearly, proposals requiring large outlays will be much more carefully scrutinized than less costly ones.

3.4.2 Review and Analysis

Project proposals are formally reviewed to asses the appropriateness in light of the business overall objectives and plans and secondly and more important, to evaluate the economic validity. The proposed costs and benefits are evaluated and then converted into a series of relevant cash flows to which various capital budgeting techniques are applied in order to measure the project merit of the potential outlay. In addition, various aspects of the risk associated with the proposal are either incorporated into the economic analysis or rated and recorded along with the economic measures. Once the economic analysis is over or completed, a summary report, often with the recommendation, is submitted to the decision makers.

3.4.3 Decision Making

The actual shillings outlay and the importance of a project determine the organization level at which the expenditure decision is made. Business typically delegates capital- expenditure authority on the basis of certain shillings amount limits.

3.4.4 Implementation

Once the proposal has been approved and funding has been made available, the implementation phase begins. For minor outlay, implementation is somehow routine; the expenditure is made and payment rendered, for major expenditures, greater control is required to ensure that what has been proposed and approved is acquired at the budgeted costs

3.4.5 Follow-Up

Involves monitoring the results during the operating phase of the project. The comparisons of actual outcomes in terms of costs and benefits with those expected and those of previous projects are vital when actual outcome deviate from projected outcomes, action may be required to cut costs, improve benefits, or possibly terminate the project

3.5 BASIC TERMINOLOGIES

Before beginning to develop the concepts, tools, and techniques related to capital budgeting it is useful to understand some of the basic terminologies of these

areas. In addition, below are a number of key assumptions used to simplify the discussion in the remainder of this manual.

3.5.1 Independent Versus Mutually Exclusive Projects

The two most common projects types are (1) independent and (2) mutually exclusive projects. ***Independent projects*** are projects that do not compete one another for the business investment; the acceptance of one does not eliminate the others from further consideration. If the business has unlimited funds to invest, then all the independent projects that meet its minimum investment criteria can be implemented. ***Mutually exclusive projects*** are projects that compete with one another. The acceptance of one project eliminates the other from further consideration.

3.5.2 Unlimited Funds Versus Capital Rationing

The availability of funds for projects affects the business decision environment. If a business has ***unlimited funds*** for investment, making capital budgeting decisions is quite simple. All independent projects that will provide the returns greater than some predetermined level can be accepted. Typically, businesses are not of such situation; they instead operate under ***capital rationing***. This means that they have only a fixed number of shillings available for capital expenditures and that many projects for this limited amount of shillings. Businesses must therefore ration its funds by allocating them to projects that will maximize share value.

3.5.3 Accept-Reject Versus Ranking Approaches

Two basic approaches to capital budgeting decisions are available. The accept–reject approach involves evaluating project proposals to determine whether they meet the business minimum acceptance criterion. This can be used when the business has unlimited funds, as the preliminary step when evaluating mutually exclusive projects, or in the situation on which capital must be rationed. In these cases only acceptable projects should be considered. The second method, the ranking approach, involves ranking projects on the basis of some predetermined measure such as the rate of return. The project with the highest return is ranked first, and the project with the lowest return is ranked last. Note that only acceptable projects should be ranked. Ranking is useful in selecting

the *best* of a group of mutually exclusive projects with the view to capital rationing.

3.5.4 Conventional Vs Non-Conventional Cash Flow Pattern

Cash flow patterns associated with capital investment projects can be classified as conventional or non- conventional. A ***conventional cash flow pattern*** consists of an initial outflow followed by the series of cash inflows. This pattern is associated with many types of projects. For example, a business may spend shs.500, 000 today and as the result expect to receive cash inflow of shs.200, 000 each year for the next eight years. A ***non-conventional cash flow pattern*** is any pattern in which an initial outlay is not followed by the series of cash inflows. For example, the purchase of a machine may require initial cash out flow of shs.20, 000,000 and may generate cash inflows of shs.8, 000,000 each year for four years. In the fifth year after the purchase, an outlay of shs.7, 000,000 may be required to overhaul the machine, after which it generates cash inflows of shs.4, 000,000 each year for five years.

3.5.5 Annuity Versus Mixed Stream Cash Flows

An ***annuity*** is a stream of equal annual cash flows. A series of cash flows exhibiting any pattern other than an annuity is a ***mixed stream*** of cash flows.

3.5.6 Capital Expenditure Versus Current Expenditure

Capital expenditure is an outlay of funds by the firm that is expected to produce benefits over a period of greater than one year while Current expenditure is an outlay of funds by the firm resulting in benefits received within one year

3.5.7 Capital Budgeting

It's the process of evaluating and selecting long-term investments consistent with the firm's goal of shareholder's wealth maximization

3.5.8 Wealth Maximization Vs Profit Maximization

The goal of the financial manager is to maximize the wealth of the owners for whom the firm is being managed. The wealth of corporate owners is measured by the share price of the stock, which is in turn is based on the timing of returns, cash flows, and most important, on risk. Profit maximization is when the financial manager is maximizing the earning per share. Profit

maximization is not a good operating goal due to the following reasons: It ignores the timing of returns, cash available to the shareholders and risk.

3.5.9 Value-Added Principle

The discounting process facilitates measuring cash flows in terms of present values; that is, in terms of current shilling. Therefore, the Net Present Values can be added. For example, NPV (A+B) = NPV (A) + NPV (B). This is called the value-added principle, and it implies that if we know the NPVs of separate projects, the value of the firm will increase by the sum of their NPVs.

3.5.10 Opportunity Cost of Capital

The rate of return on the best alternative investment of the same risk that is available. It is the highest return that will not be earned if the funds are invested in a particular project. For example, the opportunity cost of not investing in bond X yielding 8% might be 7.99%, which could be earned on bond Y.

3.6 IMPLICATION OF TECHNOLOGICAL CHANGE

The speed of technological change is increasing at an ever-greater pace. Consequently the life cycle of many products and processes is shortening and, as they become obsolete i.e. computer facilities, the search becomes more intense for new and more profitable opportunities. No system of capital budgeting will obviate the need for an energetic research and development program to explore new ways of improving the profitability of a firm, but it can facilitate management's ability to recognize opportunities and ensure they are converted into profit generating projects at the earliest moment

3.7 MANAGEMENT PHILOSOPHY

Capital budgeting can flourish more easily in a firm, which uses modern capital budgeting techniques. This would presuppose that:

1. The nature of the business has been studied and clearly defined
2. Objectives for each part of the business and each part of the organization have been established and are understood by the organization.

3. Long and short range planning of all parts of the business are an integral part of the management function of the business.
4. Progress towards the objectives is measured and corrective actions taken.
5. Organizational responsibilities are clearly defined.

3.8 ATTITUDE OF MANAGEMENT

Despite all the advances of science, still remains much of an art where judgment is needed to be made by management. Very few top management problems are clear-cut and can be measured in their entirety. One of the objectives of scientific management is to increase the area of a problems which can be measured, and thereby enable management to focus more intensely on the remainder of the problem where judgment is needed.

One of the ways of accomplishing this is to use better methods of measuring information presented to management. The Capital Budgeting Techniques described in this manual is one of them. Improved methods are also being used in forecasting and estimating. In addition, it is possible to measure areas, which previously were considered to be immeasurable or intangible or were the cost of collecting data formerly was prohibitive. Probability is making a contribution to this field. Furthermore advances in computers in the past 35 years has enabled calculations to be made one million times faster at one ten thousandth of the cost. Consequently, computers can be used in the capital budgeting to examine a further range of alternatives and provide more data than was formerly practical.

3.9. SPECIAL PROBLEMS OF CAPITAL BUDGETING

The essential nature of a capital budgeting problem is spending money today, but having to wait over a period of years for the benefits to occur. A decision on a capital project once made and money spent is usually not reversible. Consequently, a mistake in spending several millions of Tanzanian shillings for plant and equipment to produce an unprofitable product is visible to all concerned for several years. An increasing speed of technological change makes it more and more necessary to reduce risk of such an error. Capital

budgeting techniques are therefore used to reduce risk and error. A sound capital budgeting technique should be used to measure the economic worth of the investment project. The essential property of a sound technique is that should maximize the stockholder's wealth.

Moreover the task of general management in capital budgeting is to ensure that the views of the operating managers in spending the money for the plant and equipment are aligned with the objectives of investors in relation to the funds they have placed in the business. A clear definition of the objectives of the company and the yardsticks used in economic evaluation is helpful in appraising capital expenditure.

There is rarely only one way of carrying out a project. Plants can be of different size, installed at different times, and there may be different processes for making the product. A careful valuation of the alternatives is fundamental to sound appraisal methods.

In addition, costs used in capital budgeting may be different from those in accounting records. Decisions on projects relate to the future, and future costs rather than historical data are used. Furthermore, it is generally the change in cost from an existing situation, which has to be measured, and, therefore pro-rating overhead to processes and products may not be applicable to a capital budgeting problem. In addition, it is cash costs, which are important for investment decisions, rather than book values containing non-cash elements. Finally, it is long-run costs rather than short-run costs, which are applicable to investment decisions.

Accurate estimating and forecasting are vital. It is no use having a sophisticated method of putting the economics of a project together if a casual approach is taken to estimating the future. Good forecasts of sales volume and selling prices are the foundation for good capital budgeting, backed up by sound techniques for engineering estimates of equipment costs and operating costs.

In a large business, teamwork is needed and administration becomes an important factor. In the first place, it is wasteful for one part of the project;

say engineering design, to be carried out with time consuming and meticulous accuracy if market data is very imprecise. A balance is needed if the project is to be installed and earning profits at the earliest time consistent with sound decision-making. Furthermore uniformity is needed in projects arising from different parts of the business if they are to be evaluated on the same basis, and consequently, the most attractive one chosen. Moreover information should be recorded in a logical manner suitable to the needs of each level of management, and flowing through the organization in a way, which will enable the appropriate managers to review the project for the facts pertinent to their own responsibility and to pass the project on to the next appropriate level of management. Constant review of the project is needed both before the decision is made, during the period of construction and to the initial stages of operation to ascertain whether the proposed benefits are in fact being achieved.

3.10 CAPITAL BUDGETING TECHNIQUES

Three steps are involved in the evaluation of the investment:

1. Estimation of cash flows.
2. Estimation of the required rate of return
3. Application of the decision rule.

The capital budgeting decision rules may be referred to as capital budgeting technique or investment criteria. A sound appraisal technique should be used to measure the economic worth of a project. The essential property of a sound technique is that it should maximize the shareholder's wealth. The following other characteristics should also be possessed by the sound investment evaluation criterion [6]:

1. It should consider all cash flows to determine the true profitability of the project.
2. It should provide for an objective and unambiguous way of separating good projects from bad projects.
3. It should recognize the fact that bigger cash flows are preferable to smaller ones and early cash flows are preferable to later ones.
4. It should help ranking of the projects according to their true profitability.

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[6] J.T.S.Poterfield, (1985:169)

5. It should help to choose among the mutually exclusive projects that projects which maximizes the shareholders' wealth.
6. It should be a criterion, which is applicable to any conceivable investment project independent of others

There are two approaches under which a firm may evaluate the capital expenditure or investment. These are:

(i) ***Non– Discounted Cash flow Criteria (Non-Discounted Cash Flow Technique)***

Under this approach, there are two different methods, which a business may use. These are:

(a) Accounting Rate of Return on Investment (ARR).
(b) Payback period (PB).

(ii) ***Discounted Cash flow Criteria (Discounting Cash flow Techniques.)***
Here a business can use different methods such as:

(a) Net present value analysis (NPV).
(b) Profitability Index (PI).
(c) Internal Rate of Return. (IRR).

3.10.1 Accounting Rate of Return on Investment (ARR)

This method uses accounting information, as revealed by financial statements, to measure the profitability of an investment. ***The accounting rate of return is found out by dividing the average after tax profit by the average investment.*** The average investment would be equal to half of the original investment if no residual value at the end of its useful life.

This is the method used by a firm to evaluate an investment by using the formulae.

ARR = Average Incomes (after taxes) ÷Average Investment

Where
- Average income after taxes = Total income after tax divide by number of years

- Average investment = (Initial Investment + salvage Value) ÷ 2

Acceptance rule:. As the accept-or- reject criterion, this method would accept all those projects whose ARR is higher than the minimum rate established by management and reject all those projects, which have ARR less than the minimum rate. This method would rank a project as number one if it has highest ARR and lowest rank would be assigned to the project with lowest ARR

Illustration: Flora Kauzen Company is considering two projects for making investment. They are mutually exclusive projects.

PROJECT A: Initial Investment shs.42, 000,000

Year	Net Income (after tax)
1	shs.19, 000,000
2	19,000,000
3	19,000,000
4	19,000,000
5.	19,000,000

PROJECT B: Initial investment shs.45, 000,000

Year	Net Income (after tax)
1	shs.16, 000,000
2	21,000,000
3	15,000,000
4	17,000,000
5	18,000,000

Additional Information.

1. The residual value for Project A is shs.2000,000 and project B is shs.3000, 000.
2. Management has set that, the minimum acceptable Accounting Rate of Return on Investment to be 0.80 or 80%.

Required: Calculate the Accounting Rate of Return (ARR) for project A and B

Solution:

ARR = Average Income after taxes ÷ Average Investment

Project A

Average Income after taxes = (shs.19,000,000 + 19,000,000 + 19,000,000 + 19,000,000 + 19,000,000) ÷5 = shs.19,000,000

Average Investment = (shs.42,000,000 + shs.2000,000) ÷ 2 =shs.22,000,000

ARR = shs.19,000,000 , shs.22,000,000 = 0.846

ARR= 84.6% (Accept the project because ARR is greater than 0.80)

Project B:

Average Income after taxes = (Shs.16, 000,000 + 21,000,000 + 15,000,000 + 17,000,000 + 18,000,000) ÷ 5 = shs.17,400,000

Average Investment =(shs.45,000,000 + shs.3,000,000) ÷ 2 = shs.24,000,000

ARR = shs.17,000,000 , shs.24,000,000 = 0.725

ARR = 72.5% (Reject the project because ARR is less than 0.80)

The advantages of this method are:

1. It is simple to calculate and easy to understand
2. It is popular because it uses the accounting data with which executives are familiar.
3. It incorporates the entire stream of income in calculating the project's profitability.

Its limitations are:

1. Crude and unsophisticated
2. It ignores cash flows available to the business. (It uses net profit after tax)
3. It does not take into consideration the time value of money
4. No objective way to determine the minimum acceptance rate of return

The ARR method continues to be used as a performance evaluation and control measure. But its use as a capital budgeting technique is certainly undesirable. It may lead to unprofitable allocation of capital

3.10.2 The Payback Period (PB)

Payback periods are commonly used criterion for evaluating investment projects. The payback period is the exact amount of time required for the business to recover its initial investment as calculated from the cash flows. In the case of an annuity, the payback period can be found by dividing the initial investment by the annual cash inflows. For a mixed stream, the yearly cash inflows must be accumulated until the initial investment is recovered.

Acceptance rule: Many businesses uses the payback period as an accept-or-reject criterion as well as the method of ranking projects. If the payback period calculated for a project is less than the maximum payback period set by the management, it should be accepted, if not it would be rejected. As a ranking method, it gives highest ranking to the project, which has the shortest payback period. Thus if the business has to choose between two mutually exclusive projects, projects with shorter payback period will be selected.

Illustration: Peter Mwisho Company is considering two projects for making investment. They are mutually exclusive projects.

PROJECT X Initial Investment shs.42, 000,000

Year	Cash inflows
1	shs.14, 000,000
2	14,000,000
3	14,000,000
4	14,000,000
5.	14,000,000

PROJECT Y Initial investment shs.45, 000,000

Year	Cash inflow
1	shs. 28,000,000
2	12,000,000
3	10,000,000
4	10,000,000
5	10,000,000

Additional Information.

1. The cash flow stated above is the net cash inflow after taxes.
2. The residual value for Project A is shs.2, 000,000 and project B is shs.3, 000,000
3. The Decision rule for payback should be less than three years.

Required: Calculate the Payback period for Projects X and Y

Solution:

Payback Period:

Project X:

(Note that the cash inflows are the same thereby it is known as an annuity.)

= *42,000,000 , 14,000,000 = 3years*

= *3 years (Reject the project because it is not less than 3 years)*

Project Y:

(Note that the cash inflow is not the same thereby it is a mixed stream.)

45,000,000	*Initial investment*
(28,000,000)	*1*
(12,000,000)	*Year 2*
(5,000,000)	*Year 0.5*

Therefore Payback period is 2.5 years (Accept the project because it is less than 3 years)

Advantages: The most significant merit of payback is that it is ***simple to understand and easy to calculate***. The firms' executives consider the simplicity of method as a virtue, which is evident from the heavy reliance on it for appraising investment proposals in practice. Another merit is that it ***cost less*** than most of the sophisticated techniques, which require a lot of the analysts' time and the use of computers.

Weaknesses: The major weakness of payback period is that the appropriate payback period cannot be specified in light of the wealth maximization goal. The second weakness is that this approach fails to take fully into account the time factor in the value of money by merely measuring how quickly the business recovers its initial investment; it only implicitly considers the timing of the cash flows. A third weakness is the failure to recognize cash flows that occur after the payback period. A fourth weakness is, the administrative difficulties may be faced in determining the maximum acceptable payback period. There is no rational basis for setting the maximum payback period. It is generally a subjective decision.

It is emphasized that the payback period is not a good method for evaluating the acceptability of the investment projects. It can, however be used along with the NPV rule (to be discussed) as the first step in roughly screening the projects. In practice, the use of Discounted Cash flow Technique has been increasing but payback period continues to remain popular and primary method of investment evaluation.

3.10.3 Net Present Value (NPV)

Net Present Value gives explicitly consideration to the time value of money, and therefore considered a sophisticated capital budgeting technique. It is one of the Discounted Cash flow Technique (DCF) which explicitly recognizing the time value of money. It correctly postulates that cash flow arising at different time period differ in value and are comparable only when their equivalents-present values are found.

The following steps are involved in the calculation of NPV

1. Cash flows of the investment project should be forecasted based on realistic assumptions
2. Appropriate discount rate should be identified to discount the forecasted cash flows
3. Present value of the cash flows should be calculated using opportunity cost of capital as the discount rate.
4. Net present value should be found out by subtracting present value of the cash inflows from present value of cash outflows. The project should be accepted if NPV is positive

NPV is found by subtracting the initial investment (II) from the present value of the cash inflows (CF), discounted at the rate equal to the business cost of capital (K). Thus NPV is equal to present value of cash inflows less initial investment.

Acceptance rule: It should be clear that the acceptance rule using the NPV technique is to accept the investment project if its net present value is positive and to reject if the net present value is negative. The market value of the business share would increase if projects with positive net present value were accepted. This is so because the positive net present value will result only if the project

would generate cash inflow at the higher rate than the opportunity cost of capital.

NPV technique can be used to select between mutually exclusive projects; the one with higher NPV should be selected. Using the NPV technique, projects would be ranked in order of net present values, that is, first rank will be given to the project with highest net present value and so on.

Illustration: Ezra Mwisho Company is considering two projects for making investment. They are mutually exclusive projects.

PROJECT A: Initial Investment shs.42, 000,000

Year	Cash inflows
1	shs. 14,000,000
2	14,000,000
3	14,000,000
4	14,000,000
5.	14,000,000

PROJECT B: Initial investment shs.45, 000,000

Year	Cash inflows
1	shs. 28,000,000
2	12,000,000
3	10,000,000
4	10,000,000
5	10,000,000

Additional Information.

1. The cash inflow stated above is the net cash inflows after taxes.
2. The cost of capital is 10 percent.

Required: Calculate the Net Present Value for project A and B.

Solution:

PROJECT A

(Note that the cash inflow is an annuity, thereby when a statistical table is used, we use present value of an Annuity.)

NPV = (shs.14,000,000 PVIFA, 10% 5 years) - shs.42,000,000
= (shs. 14,000,000 x 3.7908) - Tshs.42,000,000
= shs.53,071,000 – shs.42,000,000
= Shs.11, 071,000 (Project A should be accepted because NPV is greater than zero)

PROJECT B

(Note that the cash inflow is a mixed stream thereby we use a PVIF Table.)

Year	*Cash Flow*	*PVIF*	*Present Value*
1.	Shs.28, 000,000	0.9091	shs.25, 454,000
2.	12,000,000	0.8264	9,916,000
3.	10,000,000	0.7513	7,513,000
4.	10,000,000	0.6830	6,830,000
5.	10,000,000	0.6209	6,209,000
		Present value	55,914,000
		Less:Initial investment	45,000,000
		Net Present Value	shs. 10,914,000

(Project B should be accepted because NPV is greater than zero.)

Advantages: NPV has the following advantages
1. It takes into consideration all cash flows.
2. It is a true measurement of profitability.
3. It is based on the concept of the time value of money
4. It satisfies the value-additive principle
5. It is consistent with wealth maximization.

Limitations: The following are the limitations of NPV
1. It requires estimation of cash flows, which is the tedious task.
2. It requires computation of the opportunity cost of capital, which poses practical difficulties.
3. It is sensitive to discount rates.

3.10.4 Profitability Index (PI)

This is another Discounted Cash Flow Technique of evaluating the project proposals. It is the ratio of the present value of cash inflows, at the required rate of return, to the initial cash outflow of the project.
Profitability Index is a derivative of NPV approach. However, in this case it is re-expressed as a ratio. The formula for calculating profitability index is as follows:

PI = Present Value of the Cash Inflows ÷ Present Value of the Cash Outflows (Initial Investment)

Acceptance rule: When profitability index is greater than one, the project should be accepted due to the fact that net present value is positive and if the profitability index is less than one it should be rejected because the net present value is negative.

Illustration: Kenneth Mwisho Company is considering two projects for making investment. They are mutually exclusive projects.

PROJECT A Initial Investment shs. 42,000,000

Year	Cash inflows
1	shs.14,000,000
2	14,000,000
3	14,000,000
4	14,000,000
5.	14,000,000

PROJECT B Initial investment shs. 45,000,000

Year	Cash inflows
1	shs. 28,000,000
2	12,000,000
3	10,000,000
4	10,000,000
5	10,000,000

Additional Information.

1. The cash inflows stated above is the net cash inflows after taxes.
2. The cost of Capital is 10 percent.

Required: Calculate the Profitability Index for Project A and B.

Solution:

PROJECT A

PI = PV of Cash Inflows ÷Initial Investment

= Shs.53,071,000(shs.14,000,000 PVIFA 10% 5 years) ÷ Shs.42,000,000

*= **1.26 (Accept the project because the PI is greater than one)***

PROJECT B

Year	***Cash Flow***	***PVIF***	***Present Valve***
1.	*Shs.28, 000,000*	*0.9091*	*shs.25, 454,000*
2.	*12,000,000*	*0.8264*	*9,916,000*
3.	*10,000,000*	*0.7513*	*7,513,000*
4.	*10,000,000*	*0.6830*	*6,830,000*
5.	*10,000,000*	*0.6209*	*6,209,000*
	Present value of cash inflows		*55,914,000*

PI = shs.55,914,000(PV of the cash inflows), Shs.45,000,000(Investment)

*= **1.24(Accept the project because the PI is greater than one)***

Advantages: The following are the advantages of profitability index:

1. It considers all cash inflows
2. It recognizes the time value of money
3. It is a relative measure of profitability
4. It is generally consistent with the wealth maximization principle.

Limitations: The following are the limitations of NPV

1. It requires estimation of cash flows, which is the tedious task.
2. It requires computation of the opportunity cost of capital, which poses practical difficulties.
3. It is sensitive to discount rates.

3.10.5 Internal Rate of Return (IRR)

The Internal rate of return (IRR) is another Discounted Cash Flow Technique, which takes into account of the magnitude and timing of the cash flows. The internal rate of return is defined as the discount rate that equates the present value of cash inflows with the initial investment associated with a project. The IRR, in other words, is the discount rate that equates the NPV of an investment opportunity to zero (since the present value of cash inflows equals the initial investment).

Calculating the IRR

The IRR must be calculated using trial-and-error techniques. Calculating the IRR for an annuity is considerably easier than calculating for the mixed stream of the operating cash inflows. The steps involved in calculating the IRR in each case are given as follows:

For an annuity

Step 1: *Calculate the payback period of the project*

Step 2: *Use the Present Value Interest Factor of an Annuity (PVIFA) to find, for the life of the project, the factor closest to the payback value. This is the Internal Rate of Return (IRR).*

For a mixed stream

Step 1: *Calculate the average annual cash inflows*

Step 2: *Divide the average annual cash inflows into the initial investment to get an average payback period (Present Value Interest Factor of an Annuity). The average payback is needed to estimate the IRR for the average annual cash inflow.*

Step 3: *Use PVIFA table and the average payback period in the same manner as described in step 2 for finding IRR of an annuity. The result will be a rough approximation of the IRR, based on the assumption that the mixed stream of cash inflows is an annuity.*

Step 4. *Adjust subjectively the IRR obtained in step 3 by comparing the pattern of average annual cash inflows (calculated in step 1) to the actual mixed stream of cash inflows. If the actual cash inflow stream seems to have higher inflows in the earlier years than the average stream, adjust the IRR up by the few percentage points. If the actual cash inflows in the earlier years are below the average, adjust the IRR down a few percentage points. If the average cash inflows seem fairly close to the actual pattern, make no adjustment in the IRR.*

Step 5: *Using the IRR from step 4, calculate the net present value of the mixed stream project, treating the estimated IRR as the discount rate.*

Step 6: *If the resulting NPV is greater than zero, subjectively raise the discount rate: If the resulting NPV is less than zero, subjectively lower the discount rate:*

Step 7: *Calculate the NPV using the new discount rate. Repeat step 6. Stop as soon as two consecutive discount rates that cause the NPV to be positive*

or negative, respectively, have been found. Which ever of these two rates causes the NPV to be closer to zero is the IRR to the nearest one percent.

The acceptance rule: The accept-or-reject rule, using the IRR technique is to accept the project if its' IRR is higher than the opportunity cost of capital. The project shall be rejected if IRR is lower than the opportunity cost of capital. The decision may remain indifferent when IRR is equal to opportunity cost of capital.

Illustration: Neri Mwisho Company is considering investing in one of the mutually exclusive projects, which are projects A and B.

PROJECT A: Initial Investment shs.42, 000,000

Year		Cash inflows
1	shs.	14,000,000
2		14,000,000
3		14,000,000
4		14,000,000
5.		14,000,000

PROJECT B Initial investment shs.45, 000,000

Year		Cash inflows
1	shs.	28,000,000
2		12,000,000
3		10,000,000
4		10,000,000
5		10,000,000

Additional Information.

1. The cash inflows stated above is the net cash inflows after taxes.
2. The cost of Capital is 10 percent.

Required: Calculate the IRR of projects A and B

Solution:

PROJECT A:

The two- step procedure for finding the IRR of an annuity can be demonstrated in the proposed Project A.

Step 1: *Dividing the initial investment of shs.42, 000,000 by the annual cash inflow of shs.14, 000,000 results in the payback period of 3 years*

Step 2: *Using the PVIFA table closest to 3.000 for five years are 3.058 (for 19 percent) and 2.991 (for 20 percent). The value closest to 3.000 is 2.991; therefore the IRR for Project A, to the nearest 1 percent, is 20 percent. The actual value, which is between 19 and 20 percent, could be found by using the financial calculator or computer or interpolation; is 19.87 percent.*

(Note: For our purposes, values rounded to the nearest 1 percent are acceptable.)

PROJECT B

The application of the seven-step procedure for finding the Internal Rate of Return of a mixed stream of cash inflows can be illustrated in project B

Step 1: *Summing the cash inflows for years 1 through 5 results in the total cash inflows of shs.70, 000,000, which, when divided by the number of years in the project life, results in the average annual cash inflow of shs.14, 000,000 [(shs.28, 000,000+ shs.12,000,000 + shs.10, 000,000 + shs.10, 000,000 + shs.10,000,000) ÷ 5]*

Step 2: *Dividing the initial outlay of shs.45, 000,000 by the average annual cash inflow of shs.14, 000,000 (calculated in step 1) results in the "average payback period " (or the PVIFA) of 3.214 years*

Step 3: *The closest factor to 3.214 for 5 years is 3.199, the factor for a discount rate of 17 percent. The starting estimate of the IRR is therefore 17 percent.*

Step 4: *Since the actual early-year cash inflows are greater than the average cash inflows of shs.14, 000,000, a subjective increase of 2 percent is made to the discount rate. This makes the estimated IRR 19 percent*

Step 5: *Using the PVIF (Present Value Interest Factor) for 19 percent*

Year	Cash inflows	PVIF(19%)	Present value
1	shs.28, 000,000	0.840	shs.23, 520,000
2	12,000,000	0.706	8,472,000
3	10,000,000	0.593	5,930,000
4	10,000,000	0.499	4,990,000
5	10,000,000	0.419	4,190,000
		Present value of cash inflows	shs.47,102,000
		Less: Initial Investment	45,000,000
		Net Present Value	shs. 2,102,000

Step 6 and 7: *Since the net present value of shs.2, 102,000 calculated in step 5, is greater than zero, The discount rate should be subjectively increased. Since the NPV is not close to zero, lets try an increase to 21%.*

Year	Cash inflows	PVIF (21%)	Present Value
1	shs.28,000,000	0.826	shs.23,128,000
2	12,000,000	0.683	8,196,000
3	10,000,000	0.564	5,640,000
4	10.000,000	0.467	4,670,000
5	10,000,000	0.386	3,860,000
		Present value of the cash inflows	Tshs.45, 494,000
		Less: Initial investment	45,000,000
		Net Present Value	Tshs. 494,000

This calculation indicated that the NPV of Tshs.494 for an IRR of 21% is reasonably close to, but still greater than zero. Thus a higher discount rate should be tried. Since it is close to zero, lets try 22 percent

Year	*Cash inflows*	*PVIF(22%)*	*Present Value*
1	*shs.28, 000,000*	*0.820*	*shs.22, 960,000*
2	*12,000,000*	*0.672*	*8,064,000*
3	*10,000,000*	*0.551*	*5,510,000*
4	*10.000,000*	*0.451*	*4,510,000*
5	*10,000,000*	*0.370*	*3,700,000*
	Present value of the cash inflows		*shs.44, 744,000*
	Less: Initial investment		*45,000,000*
	Net Present Value		*(shs.256,000)*

Since 21 and 22 percent are consecutive discount rates that give positive and negative net present values, the trial-and- error process can be terminated. The IRR we are looking is the discount rate for which the net present value should be close to zero. For this purpose the 22 percent causes the NPV to be closer to zero than the 21 percent, so 22 percent is the IRR we shall use. If we had used the financial calculator, a computer, or interpolation, the exact IRR would be 21.66 percent: as indicated earlier-on, for our purpose the IRR rounded to the nearest one percent will suffice. Therefore, the IRR of project B is approximately 22 percent.

Project B is acceptable since its IRR is approximately 22 percent, which is greater than the cost of capital of 10 percent. This is the same conclusion reached using the NPV criterion. It is interesting to note that the IRR suggest that the project B is more preferred to project A, which has the IRR of 20 percent. This conflicts with the ranking obtained when we used NPV criterion. Such conflicts are not unusual as there is no guarantee that these two techniques (NPV and IRR) will rank the projects in the same order. However, both methods should reach the same conclusion about the acceptability or non-acceptability of the projects.

***Advantages*:** The following are the advantages of the IRR technique:

1. It considers all cash inflows.
2. It is a true measure of profitability.
3. It is based on the concept of time-value of money.
4. It is generally, consistent with wealth maximization.

Limitations: The following are limitations of the IRR technique

1. It requires estimates of cash flows, which is the tedious task.
2. It does not hold the value-added principle.
3. At times it fails to indicate correct choice between mutually exclusive projects.
4. At times yields multiple rates.
5. It is relatively difficult to compute.

3.10.5.1 Net Present Value Versus Internal Rate of Return

The better technique for evaluating investment projects is difficult to determine because the theoretical and practical strength of the techniques differ. It is therefore wise to view both NPV and IRR techniques in light of each of the following dimensions.

***Theoretical View*:** On a purely theoretical basis, NPV is the better technique to capital budgeting. Its theoretical superiority is attributed to a number of factors. Most important is the fact that the use of NPV implicitly assumes that any intermediate cash inflows generated by the project are reinvested at the business cost of capital. The use of IRR assumes reinvestment at the often-high rate specified by the IRR. Since the cost of capital tends to be a reasonable estimate of the rate at which the business could actually reinvest intermediate cash inflows, the use of NPV with its more conservative and realist reinvestment rate is in theory preferable. In addition, certain mathematical properties may cause a project with non conventional cash flows to have zero or more than one IRR; this problem does not occur with the NPV technique

Practical View: In spite of the theoretical superiority of NPV, most financial managers prefer to use IRR. The preference for IRR is attributable to the general disposition of business people towards the rate of return rather than the actual shillings returns. They tend to find NPV more difficult to use because it

does not really measure benefits relative to the amount invested. Because a variety of techniques are available for avoiding the pitfalls of the IRR, its widespread use should not be viewed as reflecting a lack of sophistication on the part of the decision makers.

3.11 RISK - ADJUSTMENT TECHNIQUES

Risk-Adjustment Techniques are budgeting techniques in which the risk element has been taken into consideration when evaluating an investment projects. The author will now try to illustrate the two major risk-adjustment techniques using the net present value (NPV) decision method. The NPV acceptance rule of accepting only those projects with NPV greater or equal to zero will continue to hold.

Two opportunities to adjust the present value of cash flows for risk exist: (1) the cash inflows, (CF), can be adjusted, or (2) the discount rate, k, can be adjusted. Here we describe and compare two techniques – the cash inflow adjustment process, ***using certainty equivalents***, and the discount rate adjustment process, ***using risk-adjusted discount rates.***

3.11.1 NPV Using Certainty Equivalents (CES) Technique

One of the most direct and theoretically preferred approaches for risk adjustment is the use of certainty equivalents. Under the Certainty Equivalent technique the forecasted cash inflows are reduced to conservative levels. For example, if an investor, according to his "best estimate", expects a cash flow of shs.800,000 next year, he will apply an intuitive correction factor and may work with shs.600,000 to be on safe side. In formal way, the certainty equivalent technique may be expressed as:

$$NPV = \sum_{t=1}^{n} \frac{\alpha (CF)^t}{(I + R_f)^t} - II$$

Where α = Certainty equivalent factor

CF = Relevant cash inflows

R_F = Risk free rate.

$\alpha (CF)^t$ = Shows the adjustment for risk by first converting the expected cash inflows to certain amounts

The certainty equivalent coefficient, assumes a value between zero and one, and varies inversely with risk. The Lower certainty equivalent coefficient will be used if greater risk is perceived and a higher certainty equivalent coefficient be used if lower risk is anticipated. These coefficients reflect decision - maker's confidence in obtaining a particular cash flow in certain period. For example, cash inflows of shs.1,000,000 may be estimated in the next year, but if a firm feels that only 80 percent of it is a certain amount, then the certainty equivalent coefficient will be 0.80. That is, the firm only considers shs.800,000 as the certain cash inflows. Thus to obtain the certain cash inflows, a firm will simply multiply estimated cash flows by the certainty equivalent coefficients.

Illustration: Emmanuel Mwisho company is considering two projects for making investment. They are mutually exclusive projects.

PROJECT C Initial Investment shs.42,000,000

Year	Cash inflows
1	shs. 14,000,000
2	14,000,000
3	14,000,000
4	14,000,000
5.	14,000,000

PROJECT D Initial investment shs.45, 000,000

Year	Cash inflows
1	shs. 28,000,000
2	12,000,000
	10,000,000
	10,000,000
	10,000,000

Additional Information.

1. The cash inflows stated above is the net cash inflows after taxes.
2. The cost of Capital is 10 percent.
3. The certainty equivalents for project A.

Year			
	1	=	90 percent
	2	=	90 percent
	3	=	80 percent
	4	=	70 percent
	5	=	60 percent

4. The Certainty equivalents for project B.

Year			
	1	=	100 percent
	2	=	90 percent
	3	=	90 percent
	4	=	80 percent
	5	=	70 percent.

5. The Risk - free rate is 6 percent.

Required: Calculate the Net Present Value for Project C and D using the Certainty Equivalents technique.

Solution:

PROJECT C

Year	*C.F.(000's)*	*CE*	*CF(000's)*	*Certain PVIF6%*	*P.V.(000's)*
1	*14,000*	*0.9*	*shs 12,600*	*0.943*	*shs. 11,882*
2	*14,000*	*0.9*	*12,600*	*0.890*	*11,214*
3	*14,000*	*0.8*	*11,200*	*0.840*	*9,408*
4	*14,000*	*0.7*	*9,800*	*0.792*	*7,762*
5	*14,000*	*0.6*	*8,400*	*0.747*	*6,275*
				Present value	*46,541*
				Less: Initial Investment	*42,000*
				NPV =shs.	*4541*

PROJECT D

Year	*C.F.(000's)*	*CE*	*Certain CF(000's)*	*PVIF6%*	*P.V.(000's)*
1	*28,000*	*1.0*	*shs28,000*	*0.943*	*shs. 26,404*
2	*12,000*	*0.9*	*10,800*	*0.890*	*9,612*
3	*10,000*	*0.9*	*9,000*	*0.840*	*7,560*
4	*10,000*	*0.8*	*8,000*	*0.792*	*6,336*
5	*10,000*	*0.7*	*7,000*	*0.747*	*5,229*
				Present value shs.	*55,141*
			Less:	*Initial Investment*	*45,000*
				NPV =	*shs. 10,141*

EVALUATION OF CERTAINTY EQUIVALENTS

The certainty - equivalent approach explicitly recognizes risk, but the procedure for reducing the forecasts of cash flows is implicit and likely to be inconsistent from one investment to another Further, this method suffers from many dangers in a large business. These are:

(i) The forecaster, expecting the reduction that will be made in his forecasts, may inflate them in anticipation. This will no longer give forecasts according to "best estimate".

(ii) If forecasts have to pass through several layers of management, the effect may be to greatly exaggerate the original forecast or to make it ultra conservative.

(iii) By focusing explicit attention only on the gloomy outcomes, chances are increased for passing by some good investments.

3.11.2 NPV Using Risk - Adjusted Discount Rate (RADR)

For a long time the economic theorists have assumed that, to allow for risk, a firm required a premium over and above an alternative, which was risk - free. Accordingly, the more uncertain the returns in the future, the greater the risk and the greater the premium required. Based on this reasoning, it is proposed that the risk premium be incorporated into the capital budgeting through the discount rate. That is, if the time preference for money is to be recognized by discounting estimated future cash flows, at some risk - free rate, to their present value, then, to allow for the riskness, of those future cash flows a risk premium rate may be added to risk- free discount rate. Such a composite discount rate will allow both time preference and risk preference and will be a sum of risk-free rate and the risk premium rate reflecting the investor's attitude towards risk. Note that the higher the risk of a project, the higher the risk - adjusted discount rate. And it is a more practical approach for risk adjustment.

The formula of NPV using the Risk-Adjusted Discount Rates is as follows:

$$NPV = \sum_{t=1}^{n} \frac{(CF)^t}{(I + RADR)^t} - II$$

Where II = Initial Investment
$(CF)^t$ = Relevant cash inflows
$RADR$ = Risk Adjusted Discount Rate

The Risk-Adjusted Discount Rate (RADR) is the rate of return that must be earned on a given project in order to compensate the business owners adequately, thereby resulting in the maintenance or improvement of share price.

Illustration: Hilda Mwisho company is considering two projects for making investment. They are mutually exclusive projects.

PROJECT A: Initial Investment shs.42, 000,000

Year	Cash inflows
1	shs. 14,000,000
2	14,000,000
3	14,000,000
4	14,000,000
5.	14,000,000

PROJECT B: Initial investment shs.45, 000,000

Year		Cash inflows
1	shs.	28,000,000
2		12,000,000
3		10,000,000
4		10,000,000
5		10,000,000

Additional Information.

1. The cash inflows stated above is the net cash inflows after taxes.
2. The cost of capital is 10 percent.
3. The risk - adjusted discount rates are:

   Project A is 14 Percent
   Project B is 11 Percent.

Required: Calculate the Net Present Value for Project A and B using Risk Adjusted Discount Rate.

Solution:

PROJECT A:

NPV = (shs.14, 000,000 PVIF 14% 5 years) - shs.42, 000,000
= (shs.14,000,000 x 3.433) - 42,000,000
NPV = shs. 6,062,000

PROJECT B:

Year	*CF(000's*	*PVIF, 11%*	*P.V.(000's)*
1	*shs. 28,000*	*0.901*	*shs. 25,228*
2	*12,000*	*0.812*	*9,744*
3	*10,000*	*0.713*	*7,310*
4	*10,000*	*0.659*	*6,590*
5	*10,000*	*0.593*	*5,930*
		Present Value	*shs. 54,802*
	Less:	*Initial Investment*	*45,000*
		NPV =	*shs. 9,802*

In contrast to the net present value technique, if the business uses internal rate of return technique, then to allow for perceived risk of an investment project, the project IRR should be compared with the Risk-Adjusted Discount Rate. If IRR is higher than this adjusted rate, the project should be accepted, otherwise if IRR is less than adjusted rate, it should be rejected

Advantages: The following are the advantages of risk-adjusted discount rates:

(i) It is simple and can be easily understood.

(ii) It has a great deal of intuitive appeal for risk – averse businessman.

(iii) It incorporates an attitude (risk-aversion) towards uncertainty.

Limitations: This approach, however suffers from the following limitations.

(i) There is no easy way of deriving a risk - adjusted discount rate.

(ii) It is based on the assumption that investors are risk - averse. Though it is generally true, there do exist risk-seekers in the world. Such people do not demand premium for assuming risks; they are willing to pay premium to take risks. Accordingly, the opposite discount rate would be reduced, not increased, as the level of risk increases.

3.11.2.1 Risk-Adjusted Discount Rates Vs Certanity Equivalents

The certainty-equivalent technique recognizes risk in capital budgeting analysis by adjusting estimated cash inflows and employs risk-free rate to discount the cash flows. On the other hand, the risk-adjusted discount rate adjusts for risk by varying the discount rate. It has been suggested that the certainty equivalents technique is theoretically a superior technique over the risk-adjusted discount approach, because it can measure risk more accurately. But the risk-adjusted discount rate is most preferred by financial managers, investors, management e.t.c due the reasons explained earlier in this chapter.

3.12 SENSITIVITY ANALYSIS

In the evaluation of an investment project, we work with the forecasts of cash flows. Forecasted cash flows depend on the expected revenues and costs. Further, expected revenue is the function of sales volume and unit selling price. Similarly, sales volume will depend on the market size and the firm's market share. Costs include variable costs, which depend on sales volume and unit variable cost and fixed costs. The net present value or the internal rate of return of project is determined by analyzing the after- tax cash flows arrived at by combining forecasts of various variables. It is difficult to arrive at accurate and unbiased forecast of each variable. We cannot be certain about the outcome of any of these variables. The reliability of the NPV or IRR of the project will depend on the reliability of the forecasts of variables underlying the estimates of net cash flows. To determine the reliability of the project's NPV or IRR, we can work out how much difference it makes if any of these forecasts goes wrong. We can change each of the forecast, one at a time, to, at least, three values: pessimistic, expected, and optimistic. The NPV of the project is recalculated under three different assumptions. This method of recalculating NPV or IRR by changing each forecast is called ***sensitivity analysis***.

Sensitivity Analysis is the way of analyzing change in the project's NPV (or IRR) for a given change in one of the variables. It indicates how sensitive a project's NPV (or IRR) is to change in particular variables. The more sensitive the NPV, the more critical the variable.

The following steps are involved in the use of sensitivity analysis:

1. Identification of those variables, which have an influence on the project's NPV (or IRR).
2. Definition of the underlying (mathematical) relationship between the variables.
3. Analysis of the impact of the change in each of the variables of the project's NPV.

The decision maker, while performing sensitivity analysis, computes the project's NPV (or IRR) for each forecast under the three assumptions: ***(a) pessimistic (b) expected, and (c) optimistic.*** It allows the analyst to ask "what if" questions. For example, what is the NPV if the volume increases or decreases? What is the NPV if the variable cost or fixed cost increases or decreases? What is the NPV if the selling prices increases or decreases? A whole range of questions can be answered with the help of sensitivity analysis. It examines the sensitivity of the variables underlying the computation of NPV or IRR, rather than attempting to quantify risk

Illustration: The financial manager of a food processing company is considering the installation of a plant costing shs.10,000,000 to increase its processing capacity. The expected values of the underlying variables are given in Table 1. Table 2 provides the project's after-tax cash flows over its expected life of 7 years.

TABLE 1: EXPECTED VALUES OF VARIABLES UNDERLYING FOOD PROCESSING PLANT

1. Investment (shs.'000s)	10,000
2. Sales volume (units. '000s)	1,000
3. Unit sales price	15.00
4. Unit variable cost (shs.)	6.75
5. Annual fixed costs (shs. '000s)	4,000
6. Depreciation (%)	33.33%WD
7. Corporate Tax rate (%)	50%
8. Discount rate (%)	12%

TABLE 2: NET CASH FLOW OF THE PROJECT

Cash flows ('000s)

	YEAR 1	YEAR2	YEAR3	YEAR4	YEAR5	YEAR6	YEAR7
1. Revenue	15,000	15,000	15,000	15,000	15,000	15,000	15,000
2. Variable cost	6,750	6,750	6,750	6,750	6,750	6,750	6,750
3. Fixed cost	4,000	4,000	4,000	4,000	4,000	4,000	4,000
4. Depreciation	3,333	2,222	1,481	988	658	439	293
5. EBIT	917	2,028	2,769	3,262	3,592	3,811	3,957
6. Tax	459	1,014	1,385	1,631	1,796	1,906	1,979
7. Profit after tax	458	1,014	1,384	1,631	1,796	1,905	1,978
8. Net cash flow	3,791	3,236	2,866	2,619	2,455	2,345	2,272

The Initial Investment is shs.10,000,000

The project's NPV at 12% discount rate and IRR are as follows

NPV = shs.3,276,000

IRR = 22.9%

Since NPV is positive (or IRR > discount rate), the project should be undertaken.

How confident is the financial manager about his forecasts of various variables? Before he takes the decision, he may like to know NPV changes if any of the forecasts goes wrong. A sensitivity analysis can be conducted with regard to volume, price, costs etc. In order to do so, we must obtain pessimistic and optimistic values for volume, price and costs:

TABLE 3: FORECASTS UNDER DIFFERENT ASSUMPTIONS

Variable	*Pessimistic*	*Expected*	*Optimistic*
1. Volume (units '000)	750	1,000	1,250
2. Unit selling price	13.50	15	16.5
3. Unit variable cost (shs)	7.425	6.75	6.075
4. Annual fixed costs (000shs)	4,800	4,000	3,200

If we change each variable (other holding constant), the project's NPV are calculated in Table 4 (detailed calculations not shown).

TABLE 4: SENSITIVITY ANALYSIS UNDER DIFFERENT ASSUMPTIONS

	Net Present Values (shs. '000)		
Variable	*Pessimistic*	*Expected*	*Optimistic*
1. Volume	(1,430)	3,276	7,082
2. Unit selling price	(147)	3,276	6,699
3. Unit variable cost	1,736	3,276	4,816
4. Annual fixed costs	1,451	3,276	880

Table 4 shows the project's NPV when each variable is set to its pessimistic and optimistic values. The project does not seem to be attractive with change in assumptions. The most critical variable is sales volume followed by the unit-selling price. If the volume declines by 25% (to 750,000 units), NPV of the project becomes negative (-1,430,000). Similarly, if the unit- selling price falls by 10% (to shs.13.50), NPV is negative (-147,000).

3.12.1 Pros and Cons of Sensitivity Analysis

Sensitivity analysis has the following advantages:

1. It compels the decision maker to identify the variables, which affect the cash flow forecasts. This helps him in understanding the investment project in totality.

2. It indicates the critical variables for which additional information may be obtained. The decision maker can consider actions, which may help in strengthening the "weak spots" in the project

3. It helps to expose inappropriate forecasts, and thus guides the decision maker to concentrate on relevant variables.

Let us emphasize that sensitivity analysis is not a panacea for your project's all uncertainties. It helps to understand the project better. It has the following limitations:

1. It does not provide clear- cut results. The terms "optimistic" and "pessimistic" could mean different things to different persons in an organization. Thus the range of values suggested may be inconsistent.

2. It fails to focus on the interrelationship between variables. For example, sales volume may be related to price and cost. A price cut may lead to high sales and low operating cost.

3.13 STATISTICAL TECHNIQUES TO HANDLE RISK

Statistical techniques are analytical tools for handling risk investment. These techniques drawing from the fields of mathematics, logic, economics and psychology enable the decision-maker to make decisions under uncertainty. The concept of probability is fundamental to the use of the risk analysis techniques.

3.13.1 Probability Defined

The most crucial information for the capital budgeting decision is a forecast of future cash flows. A typical forecast is single figure for a period. This is referred to as ***"best estimate" or "most likely"*** forecast. But the questions are: To what extent can one rely on this single figure? How is this figure arrived at? Does it reflect risk? In fact, the decision analysis is limited in two ways by this single figure forecast. Firstly, we do not know the chances of this figure actually occurring. Secondly, the meaning of best estimates or most likely is not very clear. It is not known whether it is mean, median or mode. For these reasons, a forecaster should not give just one estimate, but a ***range*** of associated probability- ***a probability distribution***.

Probability may be described as a measure of someone's opinion about the likelihood that an event will occur. If an event is certain to occur, we say that it has a probability of one or 100% of occurring. If an event is certain not to occur, we say that it has a zero probability of occurring or zero percent. Thus, probability of all events to occur lies between zero and one. A probability

distribution may consist of a number of estimates. But in the simple form it may consist of only a few estimates. One commonly used form employs only the "high, low and best guess" estimates, or "the optimistic, most likely and pessimistic" estimates. For example, the annual cash flows expected from a project could be shs.200,000 or shs.170,000 or shs.80,000 with the probability of high, low and best as 0.20, 0.60 and 0.20. The foresaid information may be shown on a tabular table as:

Assumption	*Annual Cash flows*	*Probability*
Best guess	200,000	0.2
High guess	170,000	0.6
Low guess	80,000	0.2

Illustration: A company has determined the following probabilities for net cash flows generated by the project:

Year 1		*Year 2*		*Year 3*	
Cash flow	*Probability*	*Cash flow*	*Probability*	*Cash flow*	*Probability*
1,000	0.10	1,000	0.20	1,000	0.30
2,000	0.20	2,000	0.30	2,000	0.40
3,000	0.30	3,000	0.40	3,000	0.20
4,000	0.40	4,000	0.10	4,000	0.10

Required: Calculate the expected cash inflows. Also calculate the present value of the cash flows using 10% discount rate.

Solution: The expected cash flows

Year 1

Cash flow	*Probability*	*Expected Value*
1,000	0.20	shs.200
2,000	0.30	600
3,000	0.40	1,200
4,000	0.10	400

Expected Net Cash Flows shs.2,400

Year 2

Cash flow	*Probability*	*Expected Value*
1,000	0.20	shs.200
2,000	0.30	600
3,000	0.40	1,200
4,000	0.10	400

Expected Net Cash Flows shs.2,400

Year 3

Cash flow	*Probability*	*Expected Value*
1,000	0.30	shs.300
2,000	0.40	800
3,000	0.20	600
4,000	0.10	400

Expected Net Cash Flows shs.2,100

The present value of the expected value of cash flow at 10% discount rate is as follows:

Year	*Expected Value*	*PVIF*	*Present Value*
1	shs.3,000	0.909	shs.2,727
2	2,400	0.826	1,982
3	2,100	0.751	1577

The Present Value of expected cash flows shs.6,286

3.13.2 Standard Deviation: An Absolute Measure of Risk

Although through the calculation of the expected net present value, risk is explicitly incorporated into the capital budgeting analysis, yet a better insight into the risk analysis will be obtained if we find out the dispersion of cash flows, i.e, the difference between the possible cash flows that can occur and their expected values. The dispersion of cash flow indicates the degree of risk. ***A common used measure of risk is the standard deviation or variance. Simply stated, variance measures the deviation about expected cash flow of each of the possible cash flows. Standard deviation is the square root of variance.***

Its formula is as follows: $\delta_{NCF} = \sqrt{\delta^2_{NCF}}$

3.13.2 Coefficient of Variation: A Relative Measure of Risk

A relative measure of risk is the *coefficient of variation. It is defined as the standard deviation of the probability distribution divided by its expected value:*

$$Coefficient\ of\ variation = CV = \frac{Standard\ Deviation}{Expected\ Value}$$

$$CV = \sigma \div X$$

The coefficient of variation is a useful measure of risk when we are comparing the projects, which have same standard deviations but different expected values, or different standard deviation but same expected values, or different standard deviations and different expected values. The higher the coefficient of variation the riskier the investment is.

Illustration: Assume Project X has an expected value of shs.6,000,000 and a standard deviation of shs.1,200,000, while Project Z has an expected value of shs.10,000,000 and a standard deviation of shs.3,000,000.

Required : Calculate the Coefficient of Variation, and state which Project is riskier?

Solution:

Project X: CV = 1,200,000 ÷ 6,000,000 = 0.20 or 20%

Project Z: CV = 3,000,000 ÷ 10,000,000 = 0.30 or 30%

Therefore Project Z is riskier.

3.14 DECISION TREES FOR DECISION MAKING

A present decision depends upon future events, and the alternatives of a whole sequence of decisions in future are affected by the present decision as well as future events. Thus, the consequence of each decision is influenced by the outcome of chance event. At the time of taking decision, the outcome of the

chance event is not known, but a probability distribution can be assigned to it. ***A decision tree is a graphic display of the relationship between a present decision and future events, future decisions and their consequences. The sequence of events is mapped out over time in a format similar to the branches of a tree.***

While constructing and using a decision tree, some important steps should be considered:

Define investment: The investment proposal should be defined. Marketing, production or any other department might sponsor the investment proposal. The proposal may be to enter a new market or produce a new product.

Identify decision alternatives: The decision alternatives should be clearly identified. For example, if a firm is thinking of building a plant to produce a new product, it may construct a large plant, a medium-sized plant or a small plant initially and expand it later on or construct no plant. Each alternative will have different consequences.

Draw a decision tree: The decision tree should be graphed indicating the decision points, chance events and other data. The relevant data such as the projected cash flows, probability distributions, the expected present values etc, should be located on the decision tree branches.

Analyze data: The results should be analyzed and the best alternative should be selected.

Illustration: Morogoro DAWASA has developed a scientifically more effective water filter than the ones currently available in the market. One option before Morogoro DAWASA is to start production on a large scale by installing a large plant costing shs.50,000,000. Alternatively, it can initially install a small plant at a cash outlay of shs.10,000,000 and then decide to expand the capacity after the year at a cost of shs.45,000,000 if the initial demand is high. There are 50-50 chances that the initial demand will be high or low. If the initial demand is high, then there is 70% chance that demand in the subsequent years will be high. If the initial demand turns out to be low, it is also expected to remain low in subsequent years.

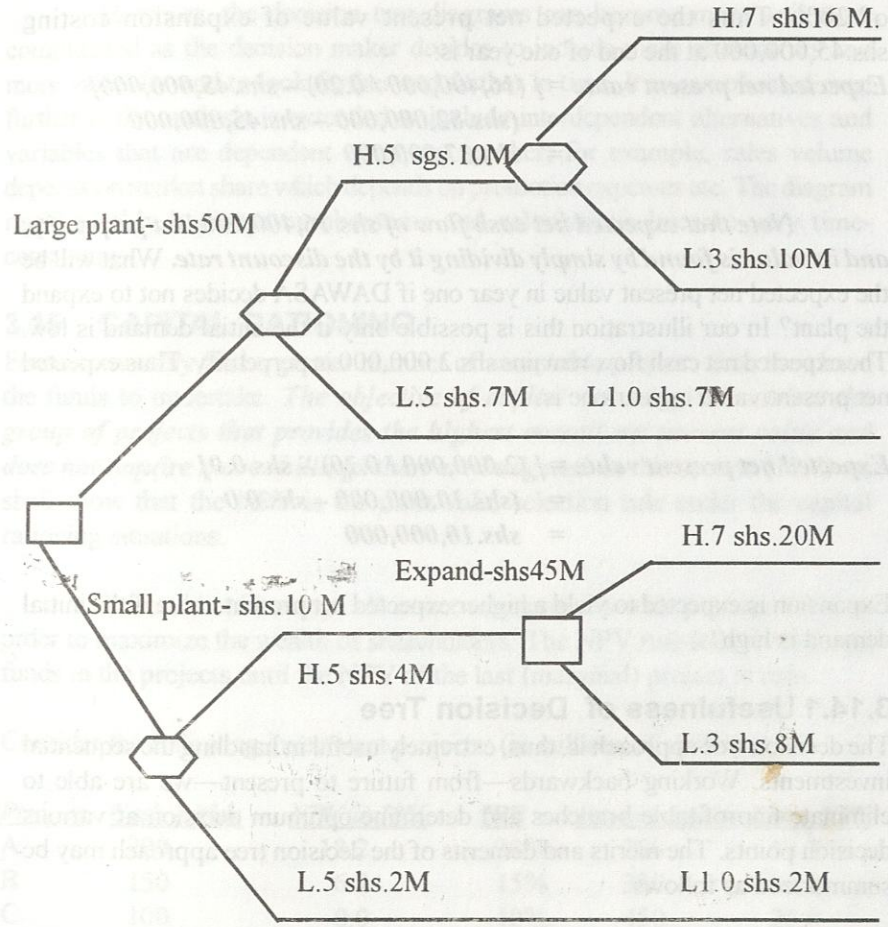
The large plant is likely to generate net cash flow of shs.10,000,000 in year 1 if demand is high and shs.7,000,000 if demand is low. With a high initial demand, net cash flows are expected to be shs.16,000,000 in perpetuity if the subsequent demand is high and shs.10,000,000 if the subsequent demand is low. The subsequent demand will remain low if the initial demand is low and the expected cash flow in perpetuity will be shs.7,000,000. The small plant is estimated to yield net cash flows of shs.4,000,000 in year 1 if the demand is high and shs.2,000,000 if demand is low. If the initial demand is high, the company will expand its capacity and it is expected to generate net cash flows of shs.20,000,000 in perpetuity if the subsequent demand is high and shs.8,000,000 if the subsequent demand is low. If the initial demand is low, the subsequent demand will be low, and the expected net cash flow is shs.2,000,000 in perpetuity.

Required: What should Morogoro DAWASA do?

The problem of water filter is a sequential decision, and can be depicted as a decision tree as shown in the figure below.

1. Decision points shown by Squares
2. Chance events shown by only Circles.

The decision points faced by the DAWASA are represented by squares. DAWASA has first to decide whether a large plant or a small plant should be built. After one year, it has to decide whether the capacity should be expanded if the initial choice was to build a small plant. The chances of initial and subsequent demand being high and low are shown by circles, and are known as chance events. The expected cash flows with associated probabilities are shown on the branches of tree. The probabilities of demand after year one depend on demand conditions in year one. For example, there is 70% probability that demand will be higher in the first year as well as the subsequent years? This is given by the joint probability of occurrences of high demand, i.e. 0.5 x 0.7 = 0.35



In order to decide whether DAWASA should build a large plant, we should first analyze the problem of plant expansion after the first year. This is called method of ***backward induction or rolling back***. If the initial demand is high and DAWASA expands its plant, the expected net cash flow is:

Expected net cash flow = 0.7 x 20 + 0.3 x 8 = shs.16,400,000

To calculate the net present value of the expected cash flow, we need a discount rate. Let us assume that DAWASA has an opportunity cost of capital

of 20%. Thus the expected net present value of expansion costing shs.45,000,000 at the end of one year is:

Expected net present value = [(16,400,000 / 0.20) – shs. 45,000,000]
= (shs. 82,000,000 – shs. 45,000,000
= shs. 37,000,000

Note that expected net cash flow of shs. 16,400,000 is a perpetuity, and its value is found by simply dividing it by the discount rate. What will be the expected net present value in year one if DAWASA decides not to expand the plant? In our illustration this is possible only if the initial demand is low. The expected net cash flow remains shs.2,000,000 in perpetuity. Thus expected net present value in year one is:

Expected net present value = [(2,000,000 / 0.20) – shs. 0.0]
= (shs. 10,000,000 – shs. 0.0
= shs. 10,000,000

Expansion is expected to yield a higher expected net present value if the initial demand is high.

3.14.1 Usefulness of Decision Tree

The decision tree approach is, thus, extremely useful in handling the sequential investments. Working backwards—from future to present—we are able to eliminate unprofitable branches and determine optimum decision at various decision points. The merits and demerits of the decision tree approach may be summarized as follows:

1. It clearly brings out the implicit assumption and calculations for all to see question and revise.
2. It allows a decision maker to visualize assumptions and alternatives in graphic form, which is usually much easier to understand than the abstract, analytical form.

However, the decision tree diagrams can become more and more complicated as the decision maker decides to include more alternatives and more variables and to look farther and farther in time. It is complicated even further if the analysis is extended to include interdependent alternatives and variables that are dependent upon one another; for example, sales volume depends on market share which depends on promotion expenses etc. The diagram itself quickly becomes cumbersome and calculations become very time-consuming.

3.15 CAPITAL RATIONING

Firms commonly find a greater number of acceptable projects than they have the funds to undertake. ***The objective of capital rationing is to select the group of projects that provides the highest overall net present value and does not require more shillings than are budgeted.*** In this section (12.6) we shall show that the NPV is the most valid selection rule under the capital rationing situations.

A firm should accept all investment projects with positive NPV in order to maximize the wealth of shareholders. The NPV rule tells us to spend funds in the projects until the NPV of the last (marginal) project is zero.

Consider the following investment projects: (in millions of shillings)

Projects	*Cash outlay*	*NPV @ 10%*	*IRR*	*Cum.casoutlay*	*Cum. NPV*
A	200	18.2	20%	200	18.2
B	150	6.8	15%	350	25.0
C	100	0.0	10%	450	25.0
D	50	(2.3)	5%	500	22.7

The firm will get highest NPV if it accept A and B. Any project between B and C should also be accepted by the firm. C is the marginal project; the firm may or may not accept it since it does not increase or decrease NPV. D should be rejected, as its NPV is negative. Thus, the firm may spend shs.350,000,000 to obtain the maximum NPV for its shareholders. Suppose the funds available with the firm are limited; it can spend only shs.200,000,000. Then it should accept only project A, which yields highest NPV and spends the entire budget.

Because of the capital constraint, however, the shareholders wealth will not be maximized. The IRR rule also indicates the same decisions in the case of independent projects, although it can be misleading in a number of situations. In the example, C earns a rate of return just equal to the cost of capital (C has zero NPV); this is a marginal project. Thus, the IRR rule tells us to invest funds in the projects' until the marginal rate of return is equal to the cost of capital. Again, because of the limited funds, project B, which yields a return (15%) higher than the cost of capital (10%) will have to be foregone.

Capital rationing refers to a situation where the firm is constrained for external, or self-imposed, reasons to obtain necessary funds to invest in all investment projects with positive NPV. Under capital rationing, the management should not only determine the profitable investment opportunities, but should decide to obtain that combination of profitable projects which yields highest NPV within the available funds.

3.16 TYPES OF CAPITAL RATIONING

Capital rationing may arise due to external factors or internal constraints imposed by the management. Thus there are two types of capital rationing: [7]

1. *External capital rationing*
2. *Internal capital rationing*

3.16.1 External Capital Rationing

It mainly occurs on account of the imperfections in capital markets. Imperfections may be caused by deficiencies in market information, or by rigidities of altitude that hamper the free flow of capital. For example ABC Company is a closely held company. It borrows from the financial institutions as much as it can. It still has investment opportunities, which can be financed by issuing equity capital. But it does not issue shares. The owner-managers do not approve the idea of the public issue of shares because of the fear of losing control of the business. Sometimes the firm may invest in a project, which is likely to be profitable. The prospective investors, however, are not convinced

[7] ibid, pg 205

of the prospects of the project. For the firm, therefore, the capital markets are non-existent. The NPV rule will not work if shareholders do not have access to the capital markets.

3.16.2 Interanl Capital Rationing

It is caused by self-imposed restrictions by the management. Various types of constraints may be imposed. For example, it may be decided not to obtain additional funds by incurring debt. This may be part of a firm's conservative financial policy. Management may fix an arbitrary limit to the amount of funds to be invested by the divisional managers. Sometimes management may resort to capital rationing by requiring a minimum rate of return higher than the cost of capital. Whatever may be the type of restrictions, the implication is that some of the profitable projects will have to be foregone because of lack of funds. However, the NPV rule will work since shareholders can borrow or lend in the capital markets.

It is quite difficult sometimes to justify the internal capital rationing. But generally it is used as a means of financial control. In a divisional set-up, the divisional managers may overstate their investment requirements. One way of forcing them to carefully assess their investment opportunities and set priorities is to put upper limits to their capital expenditures. Similarly, a firm may put investment limits if it finds itself incapable of coping with the strains and organizational problems of a fast growth.

REVISION QUESTIONS

Question 1. The Inter-Bungalow Industries Ltd. is evaluating two alternative machines to convert scrap into useable raw material. The machines are expected to generate the following cost-benefit streams over their expected four years lives:

		MACHINE A	MACHINE B
Initial Cost		shs 100,000	Tsh. 100,000
Net Income after Depreciation but Before taxes	1.	30,000	40,000
	2.	30,000	40,000
	3.	30,000	20,000
	4.	30,000	20,000

When measuring the investments taking into consideration the risk elements the certainty equivalents for the two projects are as follows:

	MACHINE A	MACHINE B
Year 1	90%	90%
Year 2	80%	90%
Year 3	70%	90%
Year 4	60%	90%

The firm's risk-adjusted discount rate for both projects is fourteen percent and the government bond is currently having the rate of ten percent

Due to rapid technological change in this field, the machines will be worthless after four years. The firm's cost of capital is twelve percent and the taxation rate is 40 percent. The firm uses straight-line method for depreciation purposes.

Required:

i. Calculate the Accounting Rate of return for Machine A and Machine B

ii. Calculate the payback period for machine A and Machine B

iii Calculate the Net Present Valve for machine B and Machine A

iv. Calculate the Profitability Index for Machine B and Machine A

v. Calculate the NPV using the Certainty Equivalent Approach for both for Machine A and Machine B

vi. Calculate the NPV using the Risk-Adjusted Discount Rate Approach *(ADCA Adopted)*

Question 2 **Assuming the following probability distribution of market returns, Calculate:**

1. The expected value of the market returns
2. The risk of the market returns
3. The relative risk of the market returns

State	Probability	market return
1	0.12	-0 10
2	0.26	0.15
3	0.44	0.20
4	0.18	0.25

Question 3 Nerri Mwisho Company has an opportunity to invest in a machine at a cost of Tshs.656,670. The net cash flows after taxation from the machine would be tshs.210,000 per year and would continue for five years. The applicable cost of capital is twelve percent and the risk-free rate is six percent and the risk-adjusted discount rate is twenty percent. The certainty equivalent for the project for the whole five years is ninety percent.

Calculate the following:

i. Calculate the net present value for the investment .
ii. Calculate the internal rate of return
iii. Should the investment be made? Why? *(ADCA Adopted)*

Question 4. Kenneth Mwisho Products has a five-Year maximum acceptable payback period. The firm is considering the purchase of a new machine and chooses between two alternatives. The first machine requires an initial investment of shs.14,000 and generates annual cash inflow after – taxes of shs.3,000 for each of the next seven years. The second machine requires an initial investment of shs.21,000 and provides an annual cash inflow after taxes of shs.4000 for 20 years.

Required

i. Determine the payback period for each machine.

ii Comment on the acceptability of the machines, assuming they are independent projects.

iii Which machine should the firm accept. Why?.

Iv Do the machines in this problem illustrate any of the criticism of using payback? Discuss.

Question 5. *Project A*: Initial Investment – shs.42,000,000

Year	*Cash Flow (shs.'000)*	*Net Income(shs.'000)*
1	shs.14,000	shs.19,000
2.	14,000	19,000
3.	14,000	19,000
4.	14,000	19,000
5	14,000	19,000

Project B: Initial investment shs.45,000,000

Year	*Cash Flow(shs.'000)*	*Net Income(shs'000)*
1	sh. 28,000	shs. 16,000
2	12,000	21,000
3.	10,000	15,000
4	10,000	17,000
5	10,000	18,000

Additional information

1. The residual value for project A is shs.2,000,000 and for project B is shs.3000,000.
2. The cost of capital is 10 percent.
3. The certainty equivalents for project A

Year		
	1	1.00
	2	0.90
	3	0.90
	4	0.80
	5	0.70

4. The Risk free rate is 6 percent
5. The Risk Adjusted Discount Rates are project A is 14% and project B is 11%

Required

(a) The Accounting Rate of Return for Projects A and B
(b) The payback period for projects A and B
(c) The Internal Rate of Return for projects A and B
(d) The Net present value for projects A and B
(e) The Profitability Index for projects A and B
(f) The NPV using certainty Equivalents for projects A and B
(g) The Risk Adjusted Discount Rates for projects A and B

(ADCA Adopted)

Question 6. Assume that Project X costs shs.2,500,000 now and is expected to generate year-end cash inflows of shs.900,000; shs.800,000; shs.700,000; shs.600,000 and shs.500,000 in years 1 through 5. The cost of capital is assumed to 10%.

Required:

What is the net present value of the project? Should the project be accepted? Why?

Question 7. The project costs shs.16, 000,000 and is expected to generate cash inflows (annuity) of shs.7, 000,000 for the period of three years and the cost of capital is 18%

Required:
Calculate the Internal Rate of Return? Should the project be accepted? Why.

Question 8. The initial cash outlay of a project is shs.100, 000,000 and can generate cash inflow of shs.40,000,000; shs.30,000,000; shs.50,000,000 and shs.20,000,000 in the years 1 through 4. Assume the cost of capital is 10%.

Required:
Calculate the profitability index? Should the project be accepted or rejected? Why.

Question 9. Assume the project requires an outlay of shs.500,000 and yields annual cash inflow of shs.125,000 for 7 years.

Required:
Calculate the payback period.

Question 10. Suppose the project requires an outlay of shs.200,000 and generates cash inflows of shs.80,000; shs.70,000; shs.40,000 and shs.30,000 during the next 4 years.

Required:
Calculate the payback period.

Question 11. An equipment A, has a cost of shs.750,000 and the net cash flow of shs.200,000 per year for six years. A substitute equipment B, would cost shs.500, 000 and generate net cash flow of shs.150,000 per year for six years. The required rate of return is eleven percent.

Required:

Calculate the NPV and IRR for equipment A and B. Which equipment should be purchased assuming they are mutually exclusive projects?

Question 12. The Peterson Company is evaluating a machine to increase its present capacity in making chocolates. The original cost of the machine is shs.50,000 and it is expected to last for three years, and has no salvage value at the end of this time period. The new machine will increase the firm's net income before taxes by shs.25, 000 a year. The firm uses the capital cost allowance of 30 percent of the declining balance per year for both tax and financial reporting purposes. The taxation rate is 40 percent, and has the after-tax cost of capital of 10 percent.

***Required*:**

(a) What is the present value of the after-tax cash flows?

(b) What is the present value of the tax shield from the capital cost allowance?

(c) Should the firm accept the project?

(d) Without prejudice to the above analysis, what would be the Internal Rate of Return on the project if the relevant cash flows were as follows?

Year	After-tax cash flows
1.	(Shs.48,037)
2.	20,000
3.	20,000
4.	20,000

(e) With reference to your answer in (d), would you accept or reject the project? ***(ADCA Adopted)***

Question 13. The Peter Mwisho Company is evaluating two alternative machines to convert scrap into useful raw material. The machines are expected to generate the following cost-benefit streams over their expected three-year lives:

	Machine A	**Machine B**
Initial Cost	shs.100000	shs.100000
Net Profit after depreciation but before taxes		
1	30000	20000
2	40000	30000
3	40000	40000

Due to rapid change in technology in this field, the machines will be worthless after three years. The firm's after-tax cost of capital is 12% and their tax rate is 40%. The firm uses the straight-line method for depreciation purposes.

Required:

a. What are the present values of the after tax cash inflows from each machine?

b. Based upon the above analysis, which machine should the firm acquire?

Question 14. There are at least two primary methods for incorporating the concept of risk into the capital budgeting decisions. These are the Risk Adjusted Discount Rates (RADR) and the Certainty Equivalents (CEs). These methods are different conceptually and each has its own advantages and disadvantages.

Required:

1. How do these methods differ?
2. What are the difficulties involved in employing these methods both practically and conceptually? ***(ADCA Adopted)***

CHAPTER FOUR

4.0 MEASURING THE COST OF CAPITAL

4.1 INTRODUCTION

One of the greatest advances in the theory and practice of capital budgeting is the recognition that manager's spending money for new investments are using funds invested in the businesses by shareholders and debenture holders. The benefits therefore derived from the projects should be measured in the same way investors use in deciding to outlay new funds. The capital budgeting problem, therefore, is essentially balancing ***benefits*** from the new project with the ***"cost"*** of the funds needed to finance them.

4.2 DEFINITION OF COST OF CAPITAL

The "Cost of capital" is the rate of return a firm must earn on its investments in order to maintain its market value and attract needed funds. It can also be thought of as the rate of return required by the market suppliers of capital in order to attract their funds in a firm.

4.3 SIGNIFICANCE OF THE COST OF CAPITAL

It should be recognized at the outset that the cost of capital is one of the most difficult and disputed topics in the finance theory. Financial experts express conflicting opinions as to the way in which the cost of capital can be measured. It should be noted that it is the concept of vital importance in the financial decision-making. It is useful as a standard for:

1. ***Evaluating investment decisions,***
2. ***Designing a business debt policy, and***
3. ***Appraising the financial performance of the management.***

4.3.1 Investment Evaluation

The primary purpose of measuring the cost of capital is its use as a financial standard for evaluating investment projects. In the NPV method, an investment project is accepted if its net present value is positive. The project NPV is calculated by discounting its cash flows by the cost of capital. In this sense,

the cost of capital is the discount rate used for evaluating the desirability of the investment project. In the IRR method, the investment project is accepted if it has the internal rate of return greater than the cost of capital. In this context, ***the cost of capital is the minimum required rate of return on the investment project.*** It is also known as the cutoff or the target or the hurdle rate.

An investment project that provides a positive NPV when its cash flows are discounted by the cost of capital makes the net contribution to the wealth of shareholders. If the project has zero NPV, it means that its cash flows have yield a return just equal to the cost of capital, and the acceptance or rejection of the project will not affect the wealth of shareholders. ***The cost of capital is the minimum required rate of return on the project that keeps the present wealth of shareholders unchanged.*** It may thus be noted that the cost of capital represents the financial standard for the allocation of the business funds, supplied by owners or creditors, to the various investment projects in the most efficient manner.

4.3.2 Designing Debt Policy

The debt policy of the business is significantly influenced by the cost consideration. In designing the financial policy, that is the proportion of debt to equity in the capital structure, the business aims at minimizing the overall cost of capital. The cost of capital can also be useful in deciding about the methods of financing at a point in time. For example, cost may be compared in choosing between leasing and borrowing.

4.3.3 Performance Appraisal

Further, the cost of capital framework can be used to evaluate the financial performance of top management. Such an evaluation will involve a comparison of actual profitability of the projects undertaken by the business with the projected overall cost of capital, and the appraisal of the actual costs incurred by management in raising the required funds. The cost of capital also plays useful role in dividend decision and investment in current assets.

4.4 BASIC CONSIDERATIONS - ASSETS VS SOURCES OF CAPITAL

Some writers, notably Modiglian and Miller, have projected the cost of capital from the asset side of the balance sheet. They point out that there is an inherent earning power in the business and if the capital structure is changed together with the consequential changes in the cost of equity and debt, the overall cost of capital of the business does not necessarily change. It has been well said, "It is the nature of a business and its risk which determines the cost of capital, and not the way the capital structure pie is divided between various types of securities". This is becoming a fairly widely accepted view by some financial managers. Nevertheless, it seems difficult to measure the cost of capital based on the asset side of the balance sheet and a firm's ability to generate profits from those assets than to assess the cost of capital from the liability side.

From the practical point of view, it appears easier to approach the problem by establishing estimates for the three key variable of:

- *The capital structure of the firm*
- *The cost of long-term debt*
- *The cost of equity capital*.

4.5. CAPITAL STRUCTURE

Capital Structure refers to the mix of long-term sources of funds, such as debentures, long-term debt, preference share capital and equity share capital including reserves and retained earnings. Some firms do not plan their capital structure, and it develops as a result of the financial decisions taken by the financial manager without any formal planning. These firms may prosper in the short-run, but ultimately they may face considerable difficulties in raising funds to finance their activities. With unplanned capital structure, these firms may also fail to economize the use of their funds. Consequently, it is being increasingly realized that a firm should plan its capital structure to maximize the use of the funds and to be able to adapt more easily to the changing conditions.

Theoretically, the financial manager should plan an *optimum capital structure* for his firm. The optimum capital structure is obtained when the market value per share is maximized. The value will be maximized when the

marginal real cost of each source of funds is the same. In practice, the determination of an optimum capital structure is a formidable task, and one has to go beyond the theory. There are significant variations among industries and among individual firms within an industry in terms of the capital structure. Since a number of factors influence the capital structure decision of a firm, the judgment of a person making the capital structure decision plays a crucial part. Two similar firms can have different capital structures if the decision makers differ in their judgment of a significance of various factors. A totally theoretical model perhaps cannot adequately handle all those factors, which affect the capital structure decision. These factors are highly psychological, complex and qualitative and do not always follow accepted theory, since capital markets are not perfect and the decision has to be taken under imperfect knowledge and risk.

4.5.1 Features of an Appropriate Capital Structure

The Board of Directors or the Chief Executive of a firm should develop an appropriate capital structure, which is most advantageous to the firm. This can be done only when all those factors, which are relevant to the firm's capital structure decision is properly analyzed and balanced. The capital structure should be planned generally keeping in view the interests of the equity shareholders and the financial requirements of a firm. The equity shareholders, being the owners of a firm and the providers of risk capital (equity) would be concerned about the ways of financing a firm's operations. However, the interests of other groups, such as employees, customers, creditors and government, should also be given reasonable consideration. As stated in chapter one, when a firm lays down its objective in terms of the shareholders' welfare, it is generally compatible with the interests of other groups. Thus, while developing an appropriate capital structure for its firm, the financial manager should inter alia aim at maximizing the long-term market price per share. Theoretically, there may be a precise point or range within which the market value per share is maximized. In practice, for most firms within an industry there may be a range of an appropriate capital structure within which there would not be great differences in the market value per share. One way to get an idea of this range is to observe the capital structure patterns of a firm vis-à-vis their market prices of shares.

A sound or appropriate capital structure should have the following features:

1. ***Profitability:*** The capital structure of a firm should be most advantageous. Within the constraints, maximum use of leverage at a minimum cost should be made.

2. ***Solvency:*** The use of excessive debt threatens the solvency of the firm. To the point debt does not add significant risk it should be used, otherwise its use should be avoided.

3. ***Flexibility***: The capital structure should not be inflexible to meet the changing conditions. It should be possible for the firm to adapt its capital structure with a minimum cost and delay if warranted by a changed situation. It should also be possible for the firm to provide funds whenever needed to finance its profitable activities.

4. ***Capacity:*** The capital structure should be determined within the debt capacity of the firm, and this capacity should not be exceeded. The debt capacity of the firm depends on its ability to generate future cash flows. It should have enough cash to pay creditors' fixed charges and principal sum.

5. ***Control:*** The capital structure should involve minimum risk of loss of control of the firm. The owners of closely held firms are particularly concerned about dilution of control.

Further, the emphasis given to each of these features will differ from firm to firm. For example, one firm may give more importance to flexibility than control, while another firm may be more concerned about solvency than any other requirement. Furthermore, the relative importance of these requirements may change with shifting conditions. The firm's capital structure should, therefore, be easily adaptable.

4.5.2 The Capital Structure Approaches

The capital structure will be planned initially when a firm is incorporated. The initial capital structure should be designed very carefully. The management of

the firm should set a target capital structure and the subsequent financing decisions should be made with a view to achieve the target capital structure. The financial manager has also to deal with an existing capital structure. The firm needs funds to finance its activities continuously. Every time when funds have been procured, the financial manager weighs pros and cons of various sources of finance and selects most advantageous sources keeping in view the target capital structure. Thus the capital structure decision is a continuous one and has to be taken whenever a firm needs additional finances.

The following are the three most common approaches to decide about a firm's capital structure:

=> Operating and financial leverage approach for analyzing the impact of debt on EPS.

=> Cost of capital and valuation approach for determining the impact of debt on the shareholders' value.

=> Cash flow approach for analyzing the firm's ability to service debt.

In addition to these approaches governing the capital structure decisions, many other factors such as control, flexibility, or marketability are also considered in practice.

4. OPERATING AND FINANCIAL LEVERAGE APPROACH: (EBIT-EPS ANALYSIS)

The use of fixed cost sources of finance, such as debt and preference share capital to finance the assets of the firm is known as ***financing leverage or trading on equity. If the assets financed with the use of debt yield a return greater than the cost of debt, earning per share increases without an increase in the owners' investment.*** The earning per share also increases when the preference share capital is used to acquire assets. But the leverage impact is more pronounced in case of debt because **(i)** the cost of debt is usually lower than the cost of preference share capital and **(ii)** the interest paid on debt is tax deductible.

Because of its effect on the earnings per share, financial leverage is an important consideration in planning the capital structure of a firm. The firms with high level of the earnings before interest and taxes (EBIT) can make more profitable use of the high degree of leverage to increase return on the shareholders' equity. One common method of examining the impact of leverage is to analyze the relationship between EPS and various possible levels of EBIT under alternative methods of financing.

Illustration: Suppose that a firm has all-equity capital structure consisting of 100,000 shares of shs.100 per share. The firm wants to raise shs.2,500,000 to finance its investments and is considering three alternative methods of financing: **(i)** to issue 25,000 common shares at shs.100 each, **(ii)** to borrow shs.2,500,000 at a 8% rate of interest, **(iii)** to issue 2,500 preference shares of shs.1000 each at a 8% rate of dividend. If the firm's earnings before interest and taxes after additional investment are shs.3,125,000 and the tax rate is 50%, the effect on the earnings per share under the three financing alternatives will be as follows:

TABLE 1. EPS UNDER ALTERNATIVE FINANCING: [FAVOURABLE EBIT]

	Equity(shs)	Debt(shs)	Preference(shs.)
EBIT	3,125,000	3,125,000	3,125,000
Less: Interest	0	200,000	0
Profit before taxation	3,125,000	2,925,000	3,125,000
Less: taxes	1,562,500	1,462,500	1,562,500
Profit after taxes	1,562,500	1,462,500	1,562,500
Less: Preference dividend	0	0	200,000
Earning available to common holders	1,562,500	1,462,500	1,362,500
Outstanding shares	125,000	100,000	100,000
EPS	*12.5*	*14.6*	*13.6*

The firm is able to maximize the earnings per share when using debt financing. Though the rate of preference dividend is equal to the interest rate, EPS is high in case of debt financing because interest charges are tax deductible while preference dividends are not. With increasing levels of EBIT, EPS will increase at a faster rate with the high degree of leverage.

However, if a firm is not able to earn a rate of return on its assets higher than the interest rate, debt will have adverse impact on EPS.

Suppose the firm in the above illustration has an EBIT of shs.750,000, EPS under different methods will be as follows:

TABLE 1. EPS UNDER ALTERNATIVE FINANCING: [UNFAVOURABLE EBIT]

	Equity(shs)	Debt(shs)	Preference(shs.)
EBIT	750,000	750,000	
Less: Interest	0	200,000	0
Profit before taxation	-750,000	550,000	
Less: taxes	375,000	275,000	
Profit after taxes	375,000	275,000	
Less: Preference dividend	0		0
Earning available to common holders	375,000	275,000	
Outstanding shares	125,000	100,000	100,000
EPS	*3.0*	*2.7*	*1.7*

It is obvious that, under unfavourable conditions, i.e., when the rate of return on total assets is less than the cost of debt, the earnings per share will fall with the degree of leverage.

The EBIT-EPS analysis is one important tool in the hands of the financial manager to get insight into the firm's capital structure management. He can consider the possible fluctuations in EBIT and examine their impact on EPS under different financial plans. If a rate of return on the firm's assets is less than the cost of debt, the firm should refrain from employing debt capital. But if a return on the firm's assets is greater than the cost of debt, then the firm should utilize the debt capital.

4.5.2.2 Cost of Capital and Valuation Approach

The cost of a source of finance is the minimum return expected by its suppliers. The expected return depends on the degree of risk assumed by investors. Shareholders than debt holders assume a high degree of risk. In the case of debt holders, the rate of interest is fixed and the firm is legally bound to pay interest whether it makes profits or not. For shareholders the rate of dividends is not fixed and the board of directors has no legal obligation to pay dividends even if the firm makes a profit. The loan of debt holders is returned within a prescribed period, while shareholders will have to share the residue only when the firm is wound up. This leads one to conclude that debt is a cheaper source of funds than equity. This is generally the case even when taxes are not considered. The tax deductibility of interest charges further reduces the cost of debt. The preference share capital is also cheaper than equity capital, but is not as cheap as debt is. Thus, using the component, or specific, cost of capital as a criterion for financing decisions, a firm would always like to employ debt since it is the cheapest source of funds.

The cost of equity includes the cost of new issue of shares and the cost of retained earnings. The cost of debt is cheaper than the cost of both these sources of equity funds. Between the cost of new issue and retained earnings, the latter is cheaper. The cost of retained earnings is cheaper than the cost of new issues because no floatation costs are incurred when the earnings are retained. As the result, between the two sources of equity funds, retained earnings are preferred.

4.5.2.3. Cash Flow Approach

One of the features of a sound capital structure is conservatism. Conservatisms do not mean employing no debt or small amount of debt. Conservatism is related to the fixed charges created by the use of debt or preference capital structure and the firm's ability to generate cash to meet these fixed charges. In practice, the question of the optimum (rather appropriate) debt-equity mix boils down to the firm's ability to service debt without any threat and operating inflexibility. A firm is considered prudently financed if it is able to service its fixed charges under any reasonable predictable adverse conditions.

The fixed charges of a firm include payment of interest, preference dividends and principal, and they depend on both the amount of senior securities and the terms of payment. The amount of fixed charges will be high if the firm employs a large amount of debt or preference capital with short-term maturity. Whenever a firm thinks of raising additional debt, it should analyze its expected future cash flows to meet the fixed charges. It is mandatory to pay interest and return the principal amount of debt. If a firm is not able to generate enough cash to meet its fixed obligation, it may have to face financial insolvency. The firms expecting larger and stable cash inflows in the future can employ a large amount of debt in their capital structure. It is quite risky to employ fixed charges sources of finance by those firms whose cash inflows are unstable and unpredictable. It is possible for a high growth, profitable firm to suffer from cash shortage if its liquidity (working capital) management is poor.

One important ratio, which should be examined at the time of planning the capital structure, is the ***ratio of net cash inflows to fixed charges (debt-servicing ratio).*** It indicates the number of times the fixed financial obligations are covered by the net cash inflows generated by the firm. The greater the coverage, the greater the amount of debt a firm can use. However, a firm with a small coverage can also employ a large amount of debt if there are not significant yearly variance in its cash inflows and a small probability of the cash inflows being considerably less to meet fixed charges in a given period. Thus, it is not the average cash inflows, which are important to determine the debt capacity of a firm. Fixed financial obligations must be met when due, not on the average and not in most years but always.

Debt capacity: The technique of cash flow analysis is helpful in determining the firm's debt capacity. ***Debt capacity is the amount, which a firm can service easily even under adverse conditions; it is the amount that a firm should employ***. There may be lenders who are prepared to lend to you. But you should borrow only if you can service debt without any problem. A firm can avoid the risk of financial distress if it can maintain its ability to meet contractual obligation of interest and principal payments. Debt capacity should be thought in terms of cash flows rather than debt ratios. A high debt ratio is not necessarily bad. If you can service high debt without any risk, it will increase shareholder's wealth. On the other hand, a low debt ratio can prove to be

burdensome for a firm, which has liquidity problems. A firm faces financial distress (or even insolvency) when it has cash flow problem. It is dangerous to finance a capital-intensive project out of borrowings, which has built in uncertainty about the earnings and cash flows.

4.6 COST OF SPECIFIC SOURCES OF CAPITAL

The major sources of capital are debt, preference shares and equity shares. The cost of other sources such as leasing and convertible securities are not discussed in this manual. Generally, the component cost of specific source of capital is equal to the investors' required rate of return. But the investors' required rate of return should be adjusted for taxes when computing the cost of a specific source of capital. In the investment analysis, net cash inflows are computed on after-tax basis, therefore, the component costs, used to determine the cost of capital, should also be expressed on an after-tax basis.

4.6.1 Cost of Long-Term Debt (Debentures)

A business may raise debt in various ways. It may borrow funds from financial institutions or public either in the form of public deposit or debentures for the specific period of time at a certain rate of interest. A debenture may be issued at a discount or premium or at par. The contractual or coupon rate of interest forms the basis for calculating the cost of any form of debt.

The cost of long-term debt (K_i) is the after tax cost today of raising long-term funds through borrowing. Funds may be raised through the sale of debentures, which are done at the security markets. The cash, which a firm actually receives after the sale of a debenture, is known as a ***net proceeds***. The debenture may be sold at par, premium or discount. The cost incurred in the process of selling a debenture is known as ***flotation costs***. When the net proceeds from the sale of the debenture equals its par value, the before - tax cost would just be equal the coupon interest rate.

Calculation of the Cost of debt using "Approximation Method".

To calculate the ***before tax cost of debt,(K_d)*** using Approximation formulae:

$$K_d = [I + (F-V) \div n] \div [(V+F) \div 2]$$

Where I = Annual interest in shillings.

F = Face Value of the debenture

V = Net Proceeds from the sale

n = Number of Years to maturity.

After - Tax Cost of Debt

The specific cost of financing must be stated on an after-tax basis. Since interest on debt is tax - deductible, a tax adjustment is required. The before - tax debt cost, K_d can be converted to an after - tax debt cost, k_i, by the following equation:

$$K_i = K_d (I - t)$$

Where K_i = after tax cost of debt

t = taxation rate.

Illustration: Neri Mwisho manufacturing business is interested in measuring its after tax cost of debt. Current investigation has gathered the following data. The firm is in the 40 percent marginal tax bracket.

Debt: The firm can raise an unlimited amount of debt by selling shs.1, 000, 10 percent, and 10 - year debentures on which annual interest payments will be made. To sell the issue, an average discount of shs.30 per debenture would have to be given. The firm must also pay flotation cost of shs.20 per debenture.

Required: Calculate the after tax cost of debt (K_i)

Solution

Cost of debt (using Appropriation method)

$$K_d = [I + (F-V) \div n] \div [(V+F) \div 2]$$

Therefore $I = 0.10 \times shs.1000 = shs.100$

$V = shs.1000 - 30 - 20 = shs.950$

$n = 10$ *years*

$$K_d = [shs100 + (shs.1000 - shs.950), 10], [(shs.1,000 + shs.950), 2]$$

$$= (shs.100 + shs.5), shs.975$$

$$= 0.1077$$

$$K_i = K_d (I-T)$$

Where $T = 0.40$

$$= 0.1077 (I - 0.40)$$

$$= \underline{\textbf{6.5 percent(which is the after cost of debt)}}$$

4.6.2 Cost of Preference Shares

Most preference share dividends are stated in shillings amount. Sometimes preference share dividends are stated as an annual percentage rate; this rate represents the percentage of the preference share's face value. The measurement of the preference share poses some conceptual difficulty. In case of debt there is a binding legal obligation on the business to pay interest, and the interest constitutes the basis to calculate the cost of debt. However, in the case of preference share, payment of dividends is not legally binding on the business and even if the dividends are paid, it is not a charge on earnings; rather it is a distribution of earnings to preference shareholders

The cost of preference share is the function of the dividend expected by investors. Preference Share is never issued with an intention not to pay dividends. Although it is not legally binding upon the business to pay dividends on preference share, yet it is generally paid when the business makes sufficient profits. Failure of the business to pay dividends, although it does not cause bankruptcy, yet it can be a serious matter from the preferred shareholders' point of view. The business credit standards may be damaged if it does not pay

dividends to its preference shareholders. The accumulation of preference dividend arrears may adversely affect the prospects of ordinary shareholders in receiving any dividends, because dividends on preference shares represent a prior claim on profits. As the consequences the business may find it difficult in raising funds by using preference shares. Also the market value of the ordinary equity shares may adversely be affected if the dividend on preference shares is in arrears. For these reasons, dividends on preference shares should be paid regularly except when the business does not earn profits, or it is in a very tight cash position

The cost of preference share (K_p) is found by dividing the annual preference share dividend, (D_p) by the net proceeds from the sale of the preference share.

$$K_p = D_p \div N_p$$

where K_p = Cost of preference shares

D_p = Annual preference share dividend

N_p = Net proceeds from a sale.

Illustration: Neri Mwisho manufacturing business is interested in measuring its cost of preference share capital. Current investigation has gathered the following data. The firm is in the 40% percent marginal tax bracket..

Preference share: The firm can sell eleven percent preference share at its shs.100 per share par value. The cost of issuing and selling the preference share is expected to be shs.4 per share. An unlimited amount of preference share can be sold under these terms.

Required: Calculate the business cost of preference share.

Solution

Cost of preference share (K_p)

$$K_p = D_p \div N_p$$

$D_p = 0.11 \times shs.100 = shs.11$

$N_p = shs.100 - shs.4 = shs.96$

$K_p = shs.11 \div shs.96$

0.1146 or 11.5 %

4.6.3 Cost of Retained Earnings

Business may raise equity capital ***internally*** by retained earnings. Alternatively, they should distribute the entire earnings to equity shareholders and raise equity capital externally by issuing new shares. In both cases, shareholders are providing funds to the business to finance the projects. Therefore, equity shareholders' rate of return will be the same whether they supply funds by buying new shares or by foregoing dividends, which could have been distributed to them. There is, however, a difference between retained earnings and issue of equity shares from the business point of view. The business may have to issue new shares at a price lower than the current market price. Also, it may have to incur flotation costs. Thus, external equity will cost more to the business than the internal equity.

If earnings were not retained, they would be paid out to the ordinary shareholders as dividends. Thus the cost of Retained Earning (K_r) to the business is the same as the cost of an equivalent fully subscribed issue of additional ordinary share. This means that retained earnings increase the shareholders' equity in the same way as a new issue of ordinary shares.

By using the Gordon model (Growth model) to calculate for the cost of retained earnings.

$$K_r = (D_1 \div P_0) + g$$

Where Po = value of ordinary share

D_1 = Expected dividend next year

g = Constant rate of growth in dividends

Note that, it is not necessary to adjust the cost of retained earning for either under pricing or flotation costs. By using retained earnings as a source of financing, the business bypasses these costs and still raises the equity capital.

Illustration: Neri Mwisho manufacturing business is interested in measuring its cost of retained earnings. Current investigation has gathered the following data. The firm is in the 40% percent marginal tax bracket.

Ordinary Share The firm's common stock is currently selling for shs.80 per share. The firm expects to pay the cash dividends of shs.6 per share next year. The firm dividends have been growing at an annual rate of 6 percent, and this rate expects to continue in future. The stock have to be under priced by shs.4 per share, and flotation costs are expected to amount to shs.4 per share. The firm can sell an unlimited amount of new common stock under these terms.

Retained Earnings When measuring this cost the firm does not concern itself with the flotation costs. It expects to have available shs.225, 000 of retained earnings in the coming year. Once these retained earnings are exhausted, the firm will use new ordinary share as the source of equity financing.

Required: Calculate the cost of retained earnings.

Solution

Cost of Retained Earning

$$K_r = (D_1 \div P_0) + g$$

$D_1 = shs.6$

$P_o = shs.80$

$g = 0.06$

$Kr = (shs.6 \div shs.80) + 0.06$

$= 0.075 + 0.06 = 0.1350$

K_r = ***13.5% (the cost of internal financing that is, retained earnings is 13.5%)***

4.6.4 Cost of New Issues of Ordinary Share

The cost of newly issued ordinary share, (k_n) is determined by calculating the cost of ordinary share after considering both the amount of under pricing and the associated flotation costs. Note that ordinary share can be sold at par, premium or discount.

$$K_n = (D_1 \div N_n) + g$$

where N_n = Net Proceeds from the sale

D_1 = Expected dividend next year

g = Growth rate of the dividends

Illustration: Neri Mwisho manufacturing is interested in measuring its cost of ordinary share. Current investigation has gathered the following data. The firm is in the 40 percent marginal tax bracket.

Ordinary share The firm's ordinary share is currently selling for shs.80 per share. The firm expects to pay the cash dividends of shs.6 per share next year. The firm dividends have been growing at an annual rate of 6 percent, and this rate expects to continue in future. The share will be under priced by shs.4 per share, and flotation costs are expected to amount to shs.4 per share. The firm can sell an unlimited amount of new ordinary shares under these terms.

Retained Earnings When measuring this cost the firm does not concern itself with the flotation costs. It expects to have available shs.225, 000 of retained earnings in the coming year: once these retained earnings are exhausted, the firm will issue new ordinary shares as the source of equity financing.

Required: Calculate the cost of newly issued ordinary share

Solution

Cost of new ordinary share (K_n)

$$K_n = (D_1 \div N_n) + g$$

$N_n = shs.80 - shs.4 - shs.4 = shs.72$

$K_n = (shs.6 \div shs.72) + 0.06$

$= 0.0833 + 0.06 = 0.1433$

K_n = ***14.33%***

4.7 WEIGHTED AVERAGE COST OF CAPITAL (WACC)

Once the component costs have been calculated, they are multiplied by the weights of the various sources of capital to obtain a weighted average cost of capital (WACC). The composite, or overall cost of capital is the weighted average of the costs of various sources of funds, weights being the proportion of each source of funds in the capital structure. It should be remembered that it is the weighted average concept, not the simple average, which is relevant in calculatin g the overall cost of capital. The simple average cost of capital is not appropriate to use because firms hardly use various sources of funds equally in the capital structure

The following steps are used to calculate the weighted average cost of capital

1. To calculate the cost of the specific sources of funds (i.e., cost of debt, cost of equity, cost of preference shares etc.)

2. To multiply the cost of each source by its proportion in the capital structure.

3. To add the weighted component costs to get the firm's weighted average cost of capital

An equation for weighted average cost of capital could be:

$$K_a = (W_i \times Ki) + (W_p \times K_p) + (W_s \times K_r \text{ or } K_n)$$

Where W_i = proportion of long-term debt in capital structure

W_p = proportion of preference shares in capital structure

W_s = proportion of ordinary share equity in capital structure

$$W_i + W_p + W_s = 1$$

The firm's common stock equity weight, Ws, is multiplied by either the cost of retained earnings, Kr, or the cost of new issued ordinary share, Kn, depending on whether the common stock equity will be financed by use of retained earnings, Kr, or issue of new shares, Kn.

The weighted cost of capital can be computed by using the book-value or the market-value weights. If there were a difference between book value and market-value weights, the weighted average cost of capital would differ according to the weights used. The weighted average cost of capital calculated using the book-value weights would be understated if the market value of the share were higher than the book value and vice-versa

Illustration: Neri Mwisho manufacturing is interested in measuring its overall cost of capital. Current investigation has gathered the following data. The firm is in the percent 40% marginal tax bracket.

The computed costs of each source of capital are as follows:

Cost of debt (using Appropriation method)	= 6.5%
Cost of preferred stock	= 11.5%
Cost of retained earnings	= 13.5%
Cost of newly issued common stock	= 14.33%

The firm's target capital structure is:

• Long-term debt	=	40 percent
• Preference share	=	15 percent
• Ordinary share equity	=	45 percent
Total	=	100 percent

Required: Calculate the firm Weighted Average Cost of Capital

Solution

Weighted Average cost of Capital

Source of capital	*Target*	*Cost*	*Weighted cost*
Long-term debit	*40%*	*6.50%*	*2.60%*
Preferred stock	*15%*	*11.50%*	*1.73%*
Common stock equity	*45%*	*12.50%*	*6.08%*
		WACC	***= 10.4***
			====

NOTE: Neri Mwisho shall only invest in the projects having returns, which are greater than the Weighted Average Cost of Capital.

4.7.1 Book Value Versus Market Value

Book value weights use accounting values to measure the proportion of each type of capital in the business financial structure. ***Market value weights*** measure proportion of each type of capital at its market value. Market weights are appealing, since the market values of securities closely approximate the actual shillings to be received from their sale. Moreover, since the cost of various types of capital are calculated using prevailing market prices, it seems reasonable to use market value weights.

4.7.2 Weighted Average Cost of Capital and Investment Appraisal

The business weighted average cost of capital is the key input to the investment decision-making process. The business should invest only in those projects with higher expected return than the weighted average cost of capital. Of course at any given time the volume of financing and investment undertaken will affect the business financing costs and project returns.

4.8 ESTABLISHING THE MINIMUM ACCEPTANCE RETURN ON INVESTMENT

There are two special types of projects to be considered in addition to those, which contribute directly to a firm's earnings in a measurable manner. The first are those classes of projects where the precise monetary benefits cannot be measured and include such projects as research facilities, safety and health, employee welfare, protection of property, office furniture and equipment etc.

The second class of expenditures are more interesting and are outlays which have to be made to prevent the current rate of firm earnings from falling. For example, it is possible a competition may introduce some product improvement or method of delivery, which, if not copied, would result in substantially declining earnings due to loss of business to competitors. Although the benefits from the projects are measurable, they do not add earnings on the capital, which had been originally invested in a firm. The cost of capital should, therefore be increased for these two classes of expenditures. The amount of the increase will depend on the average outlay on these types of projects compared with those where the benefits are measurable.

Some thought should also be given as to whether projects in the past have produced the expected benefits or whether shortcomings have occurred. If they have had a tendency to fail, this should be considered in relation to the minimum acceptable rate of return.

The minimum return so established is usually for low risk projects. However, appropriation requests generally contain proposals with various degrees in risk in them. For example, they could range from a new untried process resulting in a new product not yet established in the market, to replacement of a piece of equipment with a stable market for the product and with little technological change anticipated. It would seem desirable, therefore, that the spread between the return on the project and the minimum acceptable return for low risk projects be clearly visible to those deciding whether to accept the project.

REVISION QUESTIONS

Question 1. Flora Kauzeni Shoe Company Ltd. recently formed to manufacture high fashion women shoes. It has the following capital structure.

10% debentures	shs.	4,000,000
12% preferred stock		4,000,000
Common stock (400,000 shares)		8,000,000
	shs.	16,000,000

The common stock sells for shs.20, and it expects to pay a shs.2 dividend this year which will grow at ten percent per year for the foreseeable future. The taxation rate is 50 percent.

Required

1. Compute the cost of each component of the capital.

2 Compute the percentage weights in the capital structure.

Compute the weighted average cost of capital. ***(ADCA adopted)***

Question 2. ADCA Company is expected to grow at 9% per year. ADCA's common stock sells at shs.30 per share, and the company pays a dividend of shs.3 per share. What is the cost of equity capital?

Question 3. The ADPA Company plans to issue twenty-year bonds, which have a ten percent coupon. The bonds have a par value of shs.1000 and can be sold for shs.920. What is the yield to maturity on the new bond issue? And if this were a perpetual bond issue, what would be its yield to maturity?

Question 4. Consider the following perpetual preferred stock issue. A preferred stock carries a dividend yield of ten percent and has a par value of shs.1000. The market value of the preferred stock is shs.950. The flotation cost on this preferred stock issue is ten percent of its market price. What is the cost of the preferred stock? ***(ADCA adopted)***

Question 5. The Peter Mwisho Company earns shs.50 per share. The expected year-end dividend is shs.16, and price per share is shs.400. Peter's earnings, dividends, and stock price have been growing at eight percent, and this growth is expected to continue indefinitely. New common stock can be sold to net shs.380. Calculate the cost of the retained earnings? ***(ADCA adopted)***

Question 6. The Ezra Mwisho Company's cost of equity is 18 percent. The before tax cost of debt is 12 percent, and the firm is in the tax bracket of 40 percent using the following balance sheet, calculated the Weighted Average Cost of Capital.

ASSETS		***DEBTS***	
Cash	100,000	A/c payable	200,000
A/c receivable	200,000	Accrued expenses	200,000
Inventories	300,000	Long-term debt	400,000
Equipment (net)	1,800,000	Equities	1,600,000
	2,400,000		2,400,000

(ADCA adopted)

Question 7. The Flora Kauzeni Company has the following capital structure at 31st March 1994, which is considered to be optimum.

14% debentures	shs.	300,000
11% Preference		100,000
Equity (100,000 shares)		1,600,000
		2,000,000

The company's share has the current market price of Tsh. 23.60 per share and the cost of issuing the share is equal to ten percent of its market price. The expected dividend per share next year is 50 percent of the 1994 EPS. The following are the earnings per share figure for the company during the preceding ten years. The past trend is expected to continue.

YEAR	EPS	YEAR	EPS
1985	sh. 1.00	1990	shs. 1.61
1986	1.10	1991	1.77
1987	1.21	1992	1.95
1988	1.33	1993	2.15
1989	1.46	1994	2.36

The 16 percent new debentures can be issued. The firm's debenture is currently selling at shs.96.00, which is a discount of shs4.00. The new preference issues can be sold at a net price of shs.9.20, paying a dividend of shs.1.10 per share. The company's marginal tax rate is 50 percent.

Required.

1. Calculate the after – tax cost.
   - of new debt
   - of new preference stock
   - of retained earnings
   - of new common stock
2. Find the Weighted Average Cost of Capital.
3. How much can be spent for capital investment before new common stock must be sold? Assume that retained earnings available for next year's investment are 50 percent of 1994 earnings. ***(ADCA Adopted)***

Question 8. The management of Ezra Company wishes to determine a suitable discount rate for the evaluation of new projects during the next year. The management is happy with the present capital structure. The right hand side of the balance sheet is shown below:

Accounts Payable	shs. 1,000,000
1st mortgage bonds 8%	3,000,000
Preferred stocks	1,000,000
Common stocks	4,000,000
Retained earning	2,000 000
Total Liabilities and Equities	shs.11,000,000

The firm computes its cost of capital by using book values for weights. The common stocks are currently selling for shs.60 a share, but a new share will net only shs.50 after flotation cost. The dividend for the coming year is shs.3.00 a share. However, this is expected to grow to shs.3.30 at the end of the first year, shs.3.63 at the end of the second year, and shs.4.83 at the end of the five years. New bonds may be issued at a coupon rate of 95, and new preference stocks at a stated dividend of 12%. The firm has the tax rate of 40%

Required

(a) Compute the specific costs of capital?

(b) What will be the percentage weights to be applied to each of these sources of financing?

(c) What will be the firm's weighted average cost of capital?

(d) Will this weighted average cost of capital be the discount rate for all the projects, which the firm is going to evaluate?

Question 9. ***Consider all the following situations independently. (ADCA Adpoted)***

(a) The company is expected to exist for only 5 years and to be liquidated at the end of that time. It will pay a constant dividend of sh.1.00 per share at the end of each year, and it is expected liquidation value at the end of 5 years is shs.50.00 per share plus the fifth year dividend. The current market price is shs.29.40.

Required: What is the cost equity capital to the firm?

(b) The company pays the current dividend of shs.4.00 a share. This is expected to continue until the end of the fifth year, at which time the dividend will drop toshs.3.00 a share and continue at that level for the indefinite period. The present price of the share is shs.30.30

Required: What is the cost of equity capital to the firm?

(c) In determining the weighted average cost of capital to use as the hurdle rate of capital investments, the firm must weigh each specific cost by some factor.

Required: Describe the weights that must be employed. How can the use of weighted average cost of capital be justified considering the fact that a firm may raise only debt in one year and only equity in another year?

Question 10. The total assets of Neri Mwisho Seafood's, Ltd. Were shs.5,000,000 at the end of 1999. The assets are estimated to be shs.7,500,000 by the end of 2000. The capital structure of the firm is considered to be optimal currently and is:

Debt (8%bonds)	shs.2,000,000
Preferred stock (9%)	500,000
Common stock	2,500,000
TOTAL	shs. 5,000,000

Common shares, which are selling on the market for shs.55 a share, could be floated to net the m shs.50. Investors expect the firm to grow at a 105 rate in future. The dividend for 1999 will be shs.1.00 per share. All equity financing will have to be through new common shares. New bonds and new preferred can be issued at par with 9% and 105 rates respectively. The business tax rate is 40%.

Required:

1. How much of the business growth during 1999 will have to be financed by equity to keep the capital structure unchanged?
2. Compute the costs of: common stick, debt and preferred stock?
3. What is the firm's weighted-average cost of capital?

Question 11. The Hilda Mwisho Shoe Company Ltd. was recently formed to manufacture high fashion women shoes. It has the following capital structure:

10% debentures of 2020	shs.4,000,000
12% preferred stock	4,000,000
Common stock (400000)	8,000,000
	Shs16,000,000

The common stock sells for shs.22 and it is expected to pay an shs.2 dividend this year, which will grow at 10% per year in future. The business tax rate is 50%.

Required

(a) Compute the cost of equity capital?
(b) Compute the weighted average cost of capital?

Question 12. Queen Malo Hotel has asked its financial manager to measure the cost of each Specific type of capital as well as the weighted average cost of capital. The weighted average cost of capital is measured using the business target capital structure weights.

The business wishes to finance projects using 40% long-term debt, 10% preference shares and 50% ordinary share equity. The business taxation rate is 40%.

DEBT: The business can sell a 10-year shs.1000-par-value debenture having a ten percent annual coupon interest rate for shs.980. A flotation cost of 3% of the par value would be required in addition to the discount of shs.20 per debenture.

PREFERENCE SHARES: Eight percent preference share having a par value of shs.100 can be sold for shs.65. An addition fee of shs.2 per share must be paid to the under writers.

ORDINARY SHARES: The business ordinary share is currently selling for shs.50 per share and the dividend growth rate is 7 percent. It is expected that, to the new ordinary share, it must be under-priced by shs.3 and the business must pay flotation cost of shs.2 per share.

Required:

1. Calculate the specific cost of each source of financing
2. If retained earnings available is shs.7, 000,000. What is the Breaking point?
3. Calculate the weighted average cost of capital ***(ADCA Adopted)***

CASE STUDY.

O'grady Apparel Co. was founded 45 years ago when an Irish Merchant named garret O'grady landed in Zanzibar with an inventory of heavy Canvas, which hoped to sell for tents and Wagon covers to miners headed for the Unguja gold fields. Instead, however, he turned to the sale of harder-wearing clothing.

Today, the O'grady Apparel company is a small manufacturer of Fabrics and Clothing whose stock is traded on the over-the counter exchange. In 1998, the Zanzibar based company experienced sharp increases in both domestic and African Markets resulting in record earnings. Sales rose from

shs.15.9 million in 1997 to shs.18.3 million in 1998 with the earning per share of shs.3.28 and shs.3.84 respectively.

The African sales represented 29 percent of total sales in 1998, up from 24 percent the year before and only 3 percent in 1993, one year after foreign operations were launched. Although foreign sales represents nearly one-third of total company most markedly. In 1999 management expects sales to surpass shs.21 million, while earning per share are expected to raise to shs.4.40 (selected Income statement items are presented on Table 1).

Because of the recent growth, Flora Kauzeni, the Corporate treasurer, is concerned that available funds are not being used to their fullest. The projected shs.1,300,000 of internally-generated 1999 funds are expected to be insufficient to meet the company's expansion needs. Management has set a policy to maintain the current capital structure proportion of 25 percent long-term debt, 10 percent preferred stock, and 65 percent common stock equity for at least the next three years. In addition, it plans to pay out about 40 percent of its earning as dividends. Total capital expenditures are yet to be determined.

Division and product managers have presented Miss Flora Kauzeni several competing investment opportunities. However, since funds are limited, choices of which projects to accept must be made. The Investment opportunity schedule (105) is shown in Table 2. In order to analyze the effect of the increased financing requirements on the Weighted Average Cost of Capital (WACC). Miss Flora Contacted a leading investment banking firm, which provided the financing cost information given on Table 3. The firm is in the 40 percent tax bracket.

TABLE 1: SELECTED INCOME STATEMENT ITEMS

	1996	1997	1998	1999
Net Sales	13,860,000	15,940,000	18,330,000	21,080,000
Net profit after taxes	1,520,000	1,750,000	2,020,000	2,323,000
Earnings per share	2.88	3.28	3.84	4.40
Dividends per share	1.15	1.31	1.54	1.76

TABLE 2: INVESTMENT OPPORTUNITY SCHEDULE (105)

INVESTMENT OPPORTUNITY	IRR	INITIAL INVESTMENT
A	21%	shs. 400,000
B	19	shs. 200,000
C	24	shs. 700,000
D	27	shs. 500,000
E	18	shs. 300,000
F	22	shs. 600,000
G	17	shs. 500,000

TABLE 3: FINANCING COST DATA

LONG TERM DEBT:-

The firm can raise shs.700,000 of additional debt by selling 19 year shs.1000, 12 percent annual interest rate bonds to net shs.970 after flotation costs. Any debt in excess of shs.700,000 will have a before-tax cost of 18 percent..

PREFERRED STOCK:-

Preferred stock, regardless of the amount sold, can be issued with shs.60 per valve, 17 percent annual dividend rate, and will no shs.57 per share after flotation costs.

COMMON STOCK EQUITY:-

The firm expects its dividends and earnings to continue to grow the constant rate of 15 percent per year. The firm's stock currently selling for shs.20 per share. The firm expects to have shs.1,300,000 of available retained earnings. Once retains earnings have been exhausted the firm can raise additional funds by selling a new common stock, netting shs.16 per share after flotation costs.

Required

1. Over the relevant ranges noted in the following table, calculate the after-tax cost of each source of financing needed to complete the Table (NB: show all the necessary workings).

SOURCE	RANGE	AFTER TAX COST
· Long term debt	shs. O-Tshs. 700,000	----------
	shs.700,000 and above	----------
· Preferred stock	shs. O and above	----------
· Common stock equity	shs.1,300,000	----------
	shs.1,300,000 and above	----------

2. (i) Determine the Breaking points associated with each source of capital.
   (ii) Determine the Weighted Average cost of capital.
   (iii) Determine the Weighted marginal cost of capital

3 Using the Weighted Average cost of capital calculated in part 2, which if any, often available investments would you recommend the firm to accept? Explain your answer.

CHAPTER FIVE

5.0 FINANCIAL MARKETS

5.1 INTRODUCTION

Business firms, individuals and governments often need to raise capital for investments and other expenditures. So they are going to raise this capital in the market. In the market entities wanting to borrow money, known as the ***deficit units*** are brought together with those having excess money, known as ***surplus units*** in the ***financial markets***. Financial managers should, therefore, know the ways in which securities are traded and priced in the financial markets. They should also know the procedures to be followed in issuing securities.

5.2 DEFINITION OF FINANCIAL MARKET

A ***financial market is a term used to describe markets that provide a forum in which suppliers of funds and demanders of funds can transact business directly or indirectly.*** Financial markets may exist in two different ways, namely: money financial markets and capital financial markets ***Money financial markets are institutions, which handle short term and highly liquid financial assets***. The financial assets include cash, cheques, and short-term deposits, treasury bills commercial papers. The largest money financial market is found in New York. In Tanzania these institutions include the Central Bank (BOT) and Commercial banks. ***Capital financial markets can be defined as markets for long-term debt and corporate stock.*** These funds are traded through capital instruments known as securities.

5.2 WHAT CONSTITUTE THE CAPITAL FINANCIAL MARKETS

5.2.1 Commodity

The capital financial markets trades in long-term funds, which can be in form of ***equity capital and debt capital***. These funds can be traded through capital instruments like shares, corporate bonds or government bonds.

5.2.2 Suppliers

Suppliers are those with accumulated funds (excess money). They buy capital instruments at the market.

5.2.3 Demanders

Demanders are economic units who need funds for investment.

5.2.4 Prices

The price of funds in the financial market can be interest rates and dividend payments

5.2.5 Intermidiaries

These are individuals whose responsibility is to buy or sell securities on behalf of the public e.g brokers.

5.3 SECURITIES

"Securities" ***are instruments, which acknowledge indebtedness and conversely constitute a right to the proceeds in respect of which such instruments have been issued.*** Securities are therefore:

- Document of title to certain financial rights; and
- Evidence of the terms of contract under which the securities are issued.

There are many types of securities, which may be issued. The Capital Market and Securities Act, 1994 defines securities to include:

- Debentures, stocks, shares, bonds or notes issued or proposed to be issued by a body corporate and any right, warrant or option in respect thereof;
- Bonds or other loan instrument of the government of Tanzania or any other country;
- Rights or interest, whether described as units or otherwise under any unit trust;
- Such other instruments as the minister may by notice in the Gazette prescribe.

5.3.1 Classification of Securities

Securities may be classified either in terms of the nature of the rights that they grant to the holders thereof (equity or debt related securities) or in terms of the duration or long-term securities.

5.3.1.1 Equity or Debt Related Securities

Equity related securities are those securities, which entitle a holder of such securities to the ownership of a company. The most typical of theses securities are shares of the company, which entitle a holder thereof to the payment of dividend in the event a company, makes a profit and such dividend is declared. It should be noted that the returns of a person who invests in shares of a company depend on the profitability of such company.

Debt related securities on the other hand are securities, which grant a right of repayment of a principal sum plus interest. A clear distinction exists between equity related and debt related instruments in this respect. Debt related instruments provide the holders thereof with an unconditional right of repayment. This right of holders does not depend on the profitability of the issuer. Bonds are the typical type of debt related securities.

5.3.1.2 Short and Long-Term Securities

Short-term securities are those instruments, which have short-term maturity, and are highly liquid. In Tanzania, Treasury bill is one type of short-term security, which is presently at the market. Recently, one commercial bank introduced an instrument known as a "discounted banker's payment". On the other hand, long-term securities are instruments, which have long-term maturity (more than one year)

5.4 TYPES OF SECURITIES

Below are indicated some securities which, are very commonly used.

5.4.1 Shares

A share ***is a portion or unit of equity ownership in a corporation. It is therefore an interest of a shareholder in a company***. The one who buys a share is named a "shareholder" and he gets a "share certificate". A share certificate is a document issued by a company stating that a specified person

holds certain shares. The total value of shares which, a company is authorized to issue is spelt out in the Memorandum of Association of a company as "authorized share capital" otherwise known as nominal capital.

In legal terms, shareholders are treated as different from the company in which they hold shares. The company has its own legal personality. It may sue or be sued. The rights of the shareholders include: the right to vote at the general meeting, to receive dividends and the right to a return of capital in the event the company is wound up. Dividend consists of distribution of earnings to the shareholders. The distribution of earnings is based on the profit made by a company in proportion to the shareholder's stake in a company. Dividends are distributed after taxation of profits. If a company does not make profit no dividend is usually payable.

There are normally two types of shares – ordinary shares and preference shares. Ordinary shares entitle a shareholder to the rights, which have been mentioned above. Preference shares on the other hand, entitle the shareholders thereof to dividend or a fixed claim on assets of a company in case of liquidation (i.e. they have priority over ordinary shares). Such dividend can either cumulate or non- cumulative. The rights of preference shareholders are settled prior to those of ordinary shareholders. However, preference shareholders are excluded from exercising decision-making powers (vote) in a company.

5.4.2 Debentures

Debentures are securities issued by a company using its assets of a company as collateral for a loan. The collateral may take the form of a fixed charge against some specified property or a floating charge without any specified property. A floating charge simply relates to all present and prospective assets of a company. A debenture may also consist of both a fixed and floating charge at the same time. A floating charge allows a company to use the assets freely without having to refer back to the debentures, however, in the event of default to pay interest or winding up of the company, debenture holders may intervene such that a floating charge is converted into a charge. When a company is being liquidated, debentures carry the highest priority in terms of repayment and payment of interest.

5.4.3 Bonds

Bonds are certificates, which are issued as evidence of loans guaranteeing the payment at some future date as well as the payment of a pre-determined rate of interest. Public as well as corporate bodies usually issue bonds. The word "coupon" is usually used to denote the rate of interest, which accrues from a bond. The use of this word is based on the history of bonds whereby the bonds were at one time issued in bearer form and each certificate carried a series of coupons which would be clipped off and sent to a paying agent by the bearer as each interest payment date fell due.

There are several types of bonds classified according to the financial structure of the instruments or the markets in which such instruments are issued and traded. Bonds are usually transferable so that where a secondary financial market exists they are very liquid instruments.

5.4.4 Treasury Bills

A Treasury bill is a short-term debt instrument usually 91, 182 and 364 days issued by the government in exchange for lending money. This is an instrument which matures in a short period and which may be re-discounted (i.e. exchanged for an amount of cash adjusted to reflect the current interest rate) at the Central Bank at sight. Treasury Bills are used for monetary policy purposes and for financing venue shortfalls in the government's budget. On behalf of government, Central Bank may sell Treasury Bills with a view of transferring spending power from the public to the government.

The advantage of this is that it becomes unnecessary for the Central Bank to print additional money to finance Government expenditure, thereby greatly reducing the inflationary effect of financing the Government's deficit. Treasury Bills are bought as investment because they are secure, transferable and they can be pledged as collateral which is attractive. They are risk-free investments

5.4.5 Warrants

A warrant is a security usually issued together with another security (i.e. share or bond) and which entails the holder to buy a proportionate amount of the later security. A warrant is commonly used as some type of "sweeter" to enhance the marketability of the accompanying securities. Warrants are freely transferable and also traded in the secondary financial markets.

5.4.6 Units

The word unit is generally used to explain any division of quality accepted as a standard of measurement or of exchange. In security business, a unit denotes a measurement of security (a share). More specifically, units relates to shares of a unit trust scheme. The fund manager issues the unit to "unit holder" in the form of certificate.

5.4.7 Notes

The simplest form of all securities is a "note" which is simply a written promise to pay a specified amount to a specified entity on demand or on a specified date.

5.5 CAPITAL FINANCIAL MARKET SEGMENTATION

Capital Financial Market can operate ***with Security Market or without a Security Market.*** Security Market is a market place in which firms raise funds through the sale of new securities and in which purchasers can resell securities.

5.5.1 Capital Financial Market without Security Market

There are some countries, which are having Capital Financial Market without having a Security Market (Stock Exchange Market). The main disadvantages of Capital Market without Security Market are: -

1. It does not facilitate effective mobilization of capital from savers with surplus funds to investors who need funds for investment because there is no market institution to do that service in the Capital Market.

2. It does not allow marketability of investor's interests in companies holding their funds because there is no market for resale of already issued securities.

3. Most investors rely on the government for funding their projects and thereby if the government has no money, then profitable projects are either lost or shelved.

4. Where investment opportunities cannot be exploited from local resources, results is made to financing facilities like joint venture with the foreign investors or sale of public corporation or privatization or partnership with capital rich foreign investors.

5.5.2 Capital Financial Markets with Security Market

It's a Capital Financial Market, which operates through Security Market. And these can operate as Primary Capital Financial Market or Secondary Capital Financial Market.

5.5.2.1 Primary Capital Financial Markets

These are markets, which deals with first issue of securities to the first holders. They institutions making the Primary Capital Financial Markets are underwriters (commercial banks), stock exchange markets and over the counter.

5.5.2.2 Secondary Capital Financial Markets

These are markets, which trades in already issued securities. Institutions making the Secondary Capital Financial Markets are stock exchange markets, dealers and brokers.

5.6 ROLE OF SECONDARY CAPITAL FINANCIAL MARKETS

1. To provide investors an opportunity to sell their holdings when they are no longer interested in holding the same for a number of reasons.

2. To provide an opportunity to the investor to diversify his investment portfolio thus minimizing risks

3. It regulates prices of securities in the market.

4. To provide an investor with an expert service or advise on investment decisions through the stock exchange at a minimal fee

5. And knowledge about prices facilitates the process of transferring resources from less efficiency companies to more efficient ones

5.7 EFFECTS ON NOT HAVING STOCK EXCHANGE MARKETS

There are many disadvantages for the country not having the stock exchange market. The main ones are as follows: -

1. Inability by demanders of capital to obtain funds for investments, thereby most investors have to rely on the government for funding the projects.

2. Existence of Capital Markets without Security Markets thus ineffective mobilization of capital from savers to demanders of funds.

3. It does not allow marketability of investor's interest in companies holding their funds because there is no market for sale of already issued securities.

4. If the government has no money, then the profitable opportunities are in most cases lost.

5. Investors lack opportunities to diversify their investment portfolio to minimize risk.

6. Investors lack knowledge about real prices of their securities.

7. Existence of unrealistic financial rates such as interest rates, discounting rates etc, due to lack of stock exchange.

5.8 CAPITAL MARKET EFFICIENCY

Financial manager borrow and lends (invests) funds in the capital markets. Capital markets facilitate the allocation of funds between savers and borrowers. This allocation will be optimum if the capital markets have efficient pricing mechanism. Are capital markets efficient?

Capital markets deal in securities. The security prices have been observed to move randomly and unpredictably. This randomness of security prices may be interpreted to imply that investors in the capital markets take a quick cognizance of the information relating to security prices, and that the security prices quickly adjust to such information. Thus the efficiency of security prices depends on the speed of price adjustment to any available information. The more the speed of adjustment, the more efficient the prices. ***The capital market efficiency may, therefore, be defined as the ability of securities to reflect and incorporate all relevant information in its prices.***

If capital markets are efficient, then the current share price of a firm is "fair". There is no question of the share price being over- or under- valued. The phenomenon of under- or over-valuation of shares is possible only in an inefficient capital markets. The implications for the financial managers are that the share prices being fair in efficient capital market, the question of the timing of the issue is not relevant. Further, the security prices reflect all relevant information. Therefore, share prices cannot be influenced by irrelevant information such as earnings enhanced by changing the method of depreciation or inventory valuation. The efficient capital market also implies that the financial manager should maximize the net present value in making financial decisions.

5.8.1 Forms of Capital Market Efficiency

Three forms of capital market efficiency may be distinguished: [7]

1. Weak-form of efficiency.

2. Semi-strong form of efficiency.

3. Strong form of efficiency.

5.8.1.1 Weak-Form of Efficiency

In the weak form of efficiency, the security prices reflect all past information about the price movement. It is therefore, not possible for an investor to predict future security price by analyzing historical prices, and achieve a performance (return) better than the stock market index. It is so because the capital market has no memory, and the stock market index has already incorporated past information about the security prices in the current market price.

How does one know that the capital market is efficient in its weak form? To answer this question, we can find out the correlation between the "security prices over time". In an efficient capital market, there should not exist a significant correlation between the security prices over time. Most empirical tests have shown that there exists serial independence between the security prices over time. An alternative method of testing the weakly efficient market hypothesis is to formulate the trading strategies using the security prices and compare their performance with the stock market performance. The capital market will be inefficient if the investor's trading strategy could beat the market.

[7] H.V. Roberts. as quoted by R.A. Brealey (1991: 295)

5.8.1.2 Semi-Strong Form of Efficiency

In a semi-strong form of efficiency, the security prices reflect all available information. This implies that an investor will not be able to outperform the market by analyzing the existing company-related or other relevant information available in, say, the annual accounts. In fact such information is already impounded in the current security prices.

How can we establish that capital market is semi-strong efficient? One can study the effect of events such as the earnings/ dividends announcements, bonus issues, right issues, and changes in accounting policies e.t.c. For example, if a firm increases its dividend rate, one can study the speed with which the price of a firm share is adjusted to this information. The semi-strong efficient market hypothesis implies that the share price reflects an event or information very quickly, and therefore, it is not possible for an investor to beat the market using such information.

5.8.1.3 Strong-Form of Efficiency

In the strong form of efficiency, the security prices reflect all published and unpublished public and private information. This is significantly strong assertion, and empirical studies have not borne out the strongly efficient market hypothesis. People with private or inside information have been able to outperform the market

5.9 DAR-ES-SALAAM STOCK EXCHANGE [DSE][8]

What is a Stock Exchange?

1. A Stock Exchange is a market where large and small investors can buy and sell securities.
2. It is an organized market where buyers and sellers of securities meet as they are represented by dealers/ brokers and acquire or dispose securities.

[8] Dar es Salaam Stock Exchange. Public Information Brochure (Issued Feb 2000)

3. It is a market in which securities are traded by the members of the Exchange who act as both Agents (Brokers) and as Principals (Dealers).

The Dar-es-Salaam Stock Exchange is one such market, which was established in Tanzania in 1996 as a result of the government policy of transforming the economy of the country from a public sector to a private sector bias. The Dar-es Salaam Stock Exchange was incorporated in 1996 as a company limited by guarantee without a share capital. It became operational in April 1998. The Dar-es-Salaam Stock Exchange is therefore a non-profit making body created to facilitate the government implementation of the reforms and in the future to encourage wider share ownership of privatized and all the companies in Tanzania.

5.9.1 Dar-es-Salaam Stock Exchange Structure[9]

Governing Council governs the Dar-es-Salaam Stock Exchange, which consist of ten members drawn from various interested groups in the society. These are:

1. Three Licensed Dealing Members;
2. Two Associate members representing listed companies;
3. One Associate member representing institutional investors;
4. Two Associate members representing professions;
5. One Associate member representing the public; and
6. The Chief Executive Officer who is an ex-officio member.

5.9.2 Roles of the Dar-es-Salaam Stock Exchange[10]

The Dar-es Salaam Stock Exchange is a central place where the exchange of shares or bonds takes place. It is a secondary market where existing shares and bonds, (i.e securities already issued in the primary market) are being sold and bought. The existence of the Dar-es-Salaam Stock Exchange offers an opportunity for successful issue of shares to the public through Initial Public Offering (IPO). For the avoidance of doubt, no company issues shares through the Dar-es-Salaam Stock Exchange directly. The securities are issued to the public in the first instances and thereafter traded at the Dar-es-salaam Stock Exchange.

[9] Dar es Salaam Stock Exchange. Public Information Brochure No.1 page1 (Issued Feb 2000)

[10] Dar es Salaam Stock Exchange. Public Information Brochure No.1 pag2 (Issued Feb 2000)

The Dar-es-Salaam Stock Exchange plays the following roles:

1. It provides a market place for shares already issued to change hands ***(this is the physical location where dealing takes place, the trading floor)***

2. It creates liquidity – this is the ability of securities to be converted into cash at a market price. It is relative ease with which investors can get in/out of a position, by buying and selling shares.

3. It provides a mechanism for price discovery- the price is determined when offers and bids match on the trading board. When the quotation of a bid and an offer matches, the transaction price of the shares is determined and the shares in question are considered to have been sold. The price at which these shares are sold indicates the value of the shares in question and indeed the value of a company when the shares are considered in their totality.

4. It allows for transparency- all operations are carried out openly. Price sensitive information on any listed security must be disclosed to the public. All the companies listed on the Dar-es-Salaam Stock Exchange are required by law to disclose all information to the public to allow current and potential investors to assess the company and make informed decisions on whether they should buy or sell.

5. It facilitates the privatization of parastatals, which are being restructured by the Government through the Presidential Parastatal Sector Reform Commission (PSRC).

6. It assists indigenous people in attaining a stake in the privatized companies.

7. It assists companies in need of funds to raise capital for their developments

8. It facilitates savings in the society to be used for investing in shares of the companies.

9. The Stock Exchange is also a mirror for the performance of the economy.

10. It assists the Government to raise money through issuance of Government Bonds

11. It also assists the Government to raise money by way of selling its holdings in the privatized companies

5.9.3 Function of the Dar-es-Salaam Stocl Exchange[11]

The main functions of any stock market are:

1. To bring companies and investors together so that investors can invest capital into companies; and companies can use the capital they raise to invest in projects.

2. To provide investors with a means of selling their investments should they wish to do so, by offering a ready market in the buying and selling of securities.

3. To assist shareholders in realizing some of the value of their shares in cash when they decide to sell a portion of their holdings.

4. To facilitate share-offer tenders in case of take-over.

[11] Dar es Salaam Stock Exchange. Public Information Brochure No.1 page 4 (Issued Feb 2000)

5.9.4 Procedures in Dar-es-Salaam Stock Exchange[12]

The Capital Market and Security Act of 1994 and the rules made the Dar-es-Salaam Stock Exchange Council regulate dealings in the Dar-es-Salaam Stock Exchange. The Act stipulates the following:

1. ***Listing Procedure:*** the Capital Markets and Security Authority (CMSA) and the Dar-es-Salaam Stock Exchange Council must approve all companies wishing to be listed at the Dar-es-Salaam Stock Exchange. A ***sponsoring broker*** has to be appointed to process an application through the Dar-es-Salaam Stock Exchange and Capital Markets and Security Authority. The duties of a sponsoring broker will include ***to coordinate contacts between Dar-es-Salaam Stock Exchange and the listed company, and to ensure that the company complies with the listing conditions***. Documents required before listing include Auditor's Report, Sponsor's Report, Prospectus, Audited Accounts for the last three years, Memorandum and Articles of Association, Share distribution, e.t.c.

2. ***Trading Rules:*** The trading is conducted on ***continuous open outcry auction.*** For the trading to take place, at least two Authorized Dealer's Representatives must be present on the Trading Floor. A set of comprehensive trading rules that governs trading operations exists. These rules ensure fair play among market operators and custody of investor's funds. They also ensure fair and efficient market operations.

5.9.4 Buying Shares

An individual wishing to buy shares at Dar-es-Salaam Stock Exchange must approach the Licensed Dealing Member and express his/her desire to buy shares of a given listed company.

[12] Dar es Salaam Stock Exchange. Public Information Brochure No.1 pag 4 (Issued Feb 2000)

This individual must give the money equivalent of the number of shares he is willing to buy to the stockbroker/dealer. The stockbroker/dealer will deposit the money so received in a Trust Account, an account specifically opened by the brokers to keep clients money intended for Dar-es-Salaam Stock Exchange transactions.

The selected dealer/stockbroker will post the order (bid) on the trading board on the following trading day. When the bid matches an offer (an order to sell) by either the same broker or other brokers, then the transaction is considered to have been concluded.

5.9.5 Selling Shares

An individual wishing to sell his/her shares will have to contact the Licensed Dealing Member indicating his/her desire to sell the shares of a listed company.

The individual will have to surrender his/her share certificate to the Licensed Dealing Member and conclude the process of opening up an account at the Central Depository System of the Dar-es-Salaam Stock Exchange. The Licensed Dealing Member will have to verify the validity of the certificate with the Issuer, one of the listed companies and deposit the shares/bonds in the Central Depository System.

The Licensed Dealing Member, having opened a Central Depository System account for the client and deposited the shares therein, verified the certificate, will then come to the Dar-es-Salaam Stock Exchange Trading Floor and post the offer on the board. When the offer equals a bid price quotation, the transaction is considered to have been concluded, and the shares/bonds will have been sold.

5.9.6 Types of Order

A client may instruct a broker to process several types of orders. An order may be:

1. *A Limit order:* This is an order which has a specified price when it is posted for execution; or

2. *A Market order*: This is an order, which does not have a specific price when posted for execution. This type of order must be executed promptly at the best price obtainable and will have priority over limit order at the same price levels and assumes an initial price limit value normally based on the price most advantageous in the market. A market order trades through a range of prices starting at the best price in the market.

5.9.7 Collection of Cash From Sale [13]

A transaction for share sales is settled in 5 working days. This is the delivery and settlement system, and it is based on the DVP (Delivery Vs Payment) of 5 business days. For bonds, the settlement takes place in DVP of T+3. This is because brokers may have opened Trust Accounts in two different banks and the banking system requires at least 5 days for the money to be cleared into the selling broker's account. Note that the clearance and settlement of cash for upcountry transactions may take longer than 5 days as the cheques must be cleared across regions.

5.9.8 Listing of Securities at the Dar-es-Salam Stock Exchange [14]

Listing of shares and bonds at Dar-es-Salaam Stock Exchange (DSE) provides companies, the governments as well as municipal authorities with a possible source of accessing funds from both the public as well as institutional investors. Listing of these securities will facilitate secondary market trading of the shares and bonds and thus provide the necessary liquidity required on the market.

Listing of securities by companies, the government and municipal authorities is considered to be the supply side of the stock market while the investing public and institutional investors constitute the demand side. The two sides come into contact when the shares or bonds are issued for the first time (i.e. in an initial public offer) and subsequently traded through brokers at the Dar-es-Salaam Stock Exchange.

[13] Dar es Salaam Stock Exchange. Public Information Brochure No.1 page 6 (Issued Feb 2000)

[14] Dar es Salaam Stock Exchange. Public Information Brochure No.2 page 1 (Issued Feb 2000)

A company listing its shares or bonds at the Dar-es-Salaam Stock Exchange would obtain the following advantages:

1. A company can raise capital relatively cheaply from the public;
2. The performance of the company is monitored by the market and therefore a listed company is likely to perform better to meet the expectations of the public;
3. Listing is a marketing tool for a company as it is going to be referred to on a daily basis during the release of market information to the public;
4. Shares or bonds of a listed company are easily transferable. This fact enhances the ability of a company to raise funds from the public due to the existence of a ready market for the investors should they wish to sell their shares of the company;
5. Listed companies are generally considered to be good performers and therefore are perceived to have the potential to provide a good return to the investors;
6. Listing widens the range of financing choices for the company;
7. It lowers financing costs for enterprises;
8. Facilitates share ownership changes/ privatization;
9. Listing attracts foreign portfolio investors;
10. The value of a company can be discovered in the market through the interplay of demand and supply of company shares at the Dar-es-Salaam Stock Exchange.
11. A company will increase its opportunities to venture into new investments and expansions by having alternative means of raising capital for such investments;

12. Listing at the Dar-es-Salaam Stock Exchange also adds status and outlook of a company in the fore of the public.

All the aforementioned advantages are to be availed amidst the background of certain obligations without which a number of those advantages would not be enjoyed. All listed companies are required to comply with a number of listing requirements whose objectives are to ensure:

1. Initial and periodic release of information to the public so as to inform investors of a company's position and progress over a period of time. Listed companies are for instance required to inter alia publish interim reports covering six months and the annual report.

2. The companies have a track record of adequate duration to allow for the possible investors to appraise its present and possibly future performance;

3. The companies are of a size, which make the participation of the public in investing therein viable.

For a ***company to be allowed to list equities at the Dar-es-Salaam Stock Exchange, it must fulfill certain conditions***. These conditions include.

1. The company has to be duly incorporated in the United Republic of Tanzania with its shares being fully transferable;

2. The company must have been in existence and operational for a period of not less than 3 years to facilitate the availability of information for valuation by investors;

3. The company must have a track record of profits and dividend payments over at least three years;

4. The company must have a minimum of Tshs.50 million of share capital and fully paid up;

5. The company must be a public company with a minimum of seven shareholders. A public company is a company whose shareholders are a minimum of seven and whose shares are freely transferable;

6. The public must hold at least 25% of the issued share capital. Shares held by employees are not to be counted as part of the 25%;

7. The company must have a minimum of 1,000 shareholders or the potential of achieving this requirement after a listing;

8. The company should demonstrate that it will have sufficient working capital; and

9. The company must show that it has a competent board of directors and senior management.

A ***company applying for a listing of debt (loan) securities must meet the following criteria:***

1. It must have already obtained a listing of its ordinary share capital;

2. It should offer at least Tshs.50 million of issued loan capital of the class to be listed. Further issues of shares of a class already listed are not subject to these limits;

3. Its total loan capital should not exceed 100% of shareholders` funds less intangible assets; and

4. It is required to enter into a contract with the Exchange on such terms as the Exchange may require for the protection of stockholders.

REVISION QUESTIONS

Question 1. Securities are instruments, which acknowledge indebtedness and conversely constitute a right to the proceeds in respect of which such instruments have been issued.

Required: Mention and explain briefly on the classifications of securities?

Question 2. Capital Financial Market can operate with Security Market or without a Security Market. Security Market is a market place in which firms raise funds through the sale of new securities and in which purchasers can resell securities.

Required: What are main disadvantages of having a capital market without a security market?

Question 3. The capital market efficiency may, be defined as the ability of securities to reflect and incorporate all relevant information in its prices.

Required: Mention and explain briefly of three different forms of capital market efficiency?

Question 4. Secondary Capital Markets are markets, which trades in already issued securities. They institutions making the Secondary Capital Financial Markets are stock exchange markets, dealers and brokers.

Required: State the roles of secondary capital markets?

Question 5. Listing of shares and bonds at Dar-es-Salaam Stock Exchange (DSE) provides companies, the Governments as well as municipal authorities with a possible source of accessing funds from both the public as well as institutional investors.

Required:

1. What are the advantages of listing securities at Dar-es-Salaam Stock Exchange?
2. Mention the listing obligation at the Dar-es-Salaam Stock Exchange?
3. What are conditions applicable for listing of debt securities?
4. What are the procedures to be followed for the listing of securities at the Dar-es-Salaam Stock Exchange?

Question 6. A Stock Exchange is a market where large and small investors can buy and sell securities. It is an organized market where buyers and sellers of securities meet as they are represented by dealers/ brokers and acquire or dispose securities. It is a market in, which securities are traded by the members of the Exchange who act as both Agents (Brokers) and as Principals (Dealers

Required:

1. Mention the roles of the Dar-es-Salaam Stock Exchange.
2. What are the functions of the Dar-es-Salaam Stock Exchange.

CHAPTER SIX

6.0 BASICS OF WORKING CAPITAL AND SHORT-TERM FINANCING

6.1 Concepts of Working Capital

There are two concepts of working capital – ***gross concept and net concept***:

1. ***Gross working capital***, simply called as working capital, refers to the firm's investments in current assets. Current assets are assets, which can be converted into cash or expense within one accounting period and includes cash, short-term securities debtors, bills receivable and inventory.

2. *Net working capital* refers to the difference between current assets and current liabilities. Current liabilities are those claims of outsiders, which are expected to mature for payment within one accounting period and includes creditors, bills payable, and outstanding expenses. Net working capital can be positive or negative. ***A positive net working capital will arise when current assets exceeds current liabilities. A negative net working capital occurs when current liabilities are in excess of current assets.***

6.1.1 Gross Working Capital Management

The two concepts of working capital-gross and net-are not exclusive, rather they have equal significant from management point of view. ***The gross working capital concept focuses attention on two aspects of current assets management which are optimum investment in current assets and financing in current assets***. The consideration of the level of the investment in current assets should avoid two-danger points- excessive and inadequate investment in current assets. Investment in current assets should be adequate, not more, not less, to the needs of the firm. Excessive investment in current assets should be

avoided because it impairs firm's profitability, as idle investment earns nothing. On the other hand, inadequate amount of working capital can threaten solvency of the firm because of its inability to meet its current obligations. It should be realized that the working capital needs of the firm might be fluctuating with changing business activity. This may cause excess or shortage of working capital frequently. The management should be too prompt to initiate an action and corrective action.

Another concept of the gross working capital points to the need of arranging funds to finance current assets. Whenever a need for working capital funds arises due to the increasing level of business activity or for any other reason, arrangement should be made quickly. Similarly, if suddenly some surplus funds arise, they should not be allowed to remain idle, but should be invested in the short-term securities. Thus, the financial manager should have the knowledge of the sources of working capital funds as well as investment avenues where idle funds may be temporarily invested.

6.1.2 Net Working Capital Management

Net working capital, being the difference between current assets and current liabilities, is a qualitative concept. ***It indicates the liquidity position of the firm and suggests the extent to which working capital needs may be financed by permanent sources of funds.*** Current assets should be sufficiently in excess of current liabilities to constitute a margin or buffer for maturing obligations within the ordinary operating cycle of a business. In order to protect their interests, short-term creditors always like a firm to maintain the current assets at a higher level than current liabilities. It is a conventional rule to maintain the level of current assets twice of the level of the current liabilities. However, the quality of the current assets should be considered in determining the level of the current assets vis-à-vis current liabilities. A weak liquidity position poses a threat to solvency of the firm and makes it unsafe and unsound. A negative working capital means negative liquidity, and may prove to be harmful for the firm. Excessive liquidity is also bad. It may be due to mismanagement of current assets. Therefore, prompt and timely action should be taken by management to improve and correct the imbalance in the liquidity position of the firm.

Net working capital concept also covers the question of judicious mix of long-term and short-term funds for financing current assets. For every firm, there is a minimum amount of net working capital, which is permanent. Therefore a portion of the working capital should be financed with the permanent sources of funds such as owner's capital, debentures, preferred capital or retained earnings. Management must, therefore decide the extent to which current assets should be financed with equity capital and/or borrowed capital.

6.1.3 Working Capital Strategies

One of the most important decisions that must be made with respect to current assets and current liabilities is how current liabilities available is limited by the shilling amount of purchase in case of accounts payable, by the shilling amount of accrued liabilities in the case of accruals, and the amount of seasonal borrowing considered acceptable by lenders in the case of notes payable. Lenders make short-term loans to allow a firm to finance seasonal buildups of accounts receivable or inventories. ***They generally do not lend short-term money for long-term uses.***

There are two basic strategies- ***the aggressive strategy and the conservative strategy***-for determining an appropriate mix of short-term (current liability) and long-term financing. And note that the firm's financing requirements can be separated into ***permanent and seasonal needs***. Permanent needs are financing requirements for the firm's fixed assets plus the permanent portion of the firm's current assets; these requirements remain unchanged over the year. Seasonal needs are financing requirements for temporary current assets, which vary throughout the year.

6.1.3.1. Aggessive Financing Strategy

The aggressive financing strategy requires that the firm finance its seasonal needs with short-term funds and its permanent needs with long-term funds. Short-term borrowing is geared to the actual need for funds. In other words, the aggressive strategy involves a process of matching maturities of debt with the duration of each of the firm's financial needs. ***The aggressive strategy operates with minimum net working capital since only the permanent portion of the firm's current assets is being financed with long-term funds.***

6.1.3.2. Conservative Financing Strategy

The most conservative financing strategy should be to finance all projected funds requirements with long-term funds and use short-term financing in the event of an emergency or unexpected outflow of funds. It is difficult to imagine how this strategy could actually be implemented, since the use of short-term financing tools, such as accounts payable and accruals, is virtually unavoidable.

6.1.3.3. Conservative Versus Aggressive Strategy

Unlike the aggressive strategy, the conservative strategy requires the firm to pay interest on unneeded funds. The lower cost of the aggressive strategy therefore makes it more profitable than the conservative strategy; however, the aggressive strategy involves much more risk. For most firms a trade-off between the extremes represented by these two strategies should result in an acceptable financing strategy.

6.2 MANAGEMENT OF CASH

Cash is the most important current asset for the operations of the firm. Cash is a basic input needed to keep the firm running on a continuous basis; it is also the ultimate output expected to be realized by selling the service or product manufactured by the firm. The firm should keep sufficient cash, neither more or less. Cash shortage will disrupt the firm's manufacturing operation while excessive cash will simply remain idle, without contributing anything towards the firm's profitability. Thus, a major function of the financial manager is to maintain a sound cash position.

Cash is the money, which a firm can disburse immediately without any restriction. The terms cash includes coins, currency and cheques held by the firm, and balances in its bank accounts. Sometimes near-cash items, such as marketable securities or bank- deposits, are also included in cash. The basic characteristic of near-cash assets is that they can readily be converted into cash. Generally, when a firm has excess cash, it invests it in marketable securities. This kind of investment contributes some profit to the firm.

Cash management is concerned with the managing of:

1. *Cash flows into and out of the firm,*
2. *Cash flows within the firm, and*
3. *Cash balances held by the firm at a point of time by financing deficit or investing surplus cash*

Cash management can be represented by the ***cash management*** *cycle* shown below:

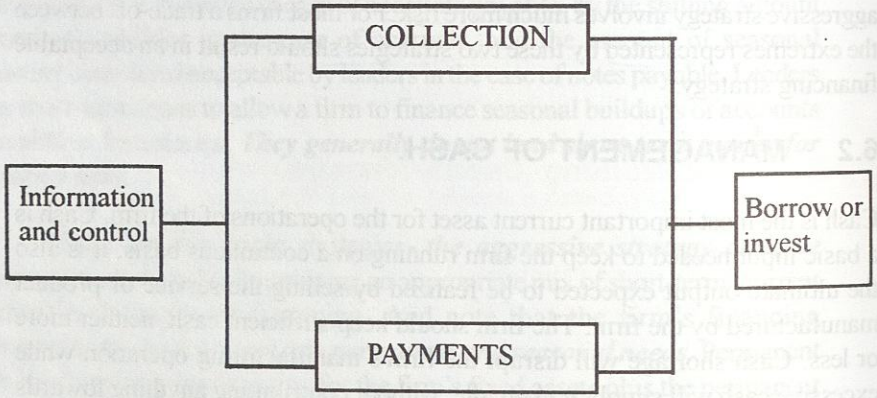


Figure 1: Cash Management Cycle

Sales generate cash, which has to be disbursed out. The surplus cash has to be invested while deficit has to be borrowed. Cash management seeks to accomplish this cycle at a minimum cost. At the same time, it also seeks to achieve liquidity and control. Cash management assumes more importance than other current assets because cash is the most significant and the least productive asset that a firm holds. It is significant because it is used to pay the firm's obligations. However, cash is unproductive. Unlike fixed assets or inventories, it does not produce goods for sale. Therefore, the aim of cash management is to maintain adequate control over cash position to keep the firm sufficiently liquid and to use excess cash in some profitable way.

Cash management is also important because it is difficult to predict cash flows accurately, particularly the inflows, and that there is no perfect coincidence between the cash inflows and outflows. During some periods, cash outflows will exceed cash inflows, because payments for taxes, dividends, or seasonal inventory build up. At other times, cash inflow will be more than cash payments because there may be large cash sales and debtors may be realized in large sums promptly. Cash management is also important because cash constitutes the smallest portion of the total current assets, yet management's considerable time is devoted in managing it.

In order to resolve the certainty about cash flow prediction and lack of synchronization between cash receipts and payments, the firm should develop appropriate strategies for cash management. The firm should evolve strategies regarding the following four facets of cash management:

=> ***Cash planning:*** Cash inflows and outflows should be planned to project cash surplus or deficit for each period of the planning period. Cash budget should be prepared for this purpose.

=> ***Managing the cash flows***: The flow of cash should be properly managed. The cash inflows should be accelerated while, as far as possible, decelerating the cash outflows.

=> ***Optimum cash level:*** The firm should decide about the appropriate level of cash balances. The cost of excess cash and danger of cash deficiency should be matched to determine the optimum level of cash balances.

=> ***Investing surplus cash***: The surplus cash balances should be properly invested to earn profits. The firm should decide about the division of such cash balance between bank deposits, marketable securities e.t.c

The ideal cash management system will depend on the firm's products, organization structure, competition, culture and option available.

6.2.1 Motives for Holding Cash

The firm's need to hold cash may be attributed to the following motives:

=> *The transaction motive*

=> *The precautionary motive*

=> *The speculative motive*

6.2.1.1 Transaction Motive

The transactions motive ***requires a firm to hold cash to conduct its business in the ordinary course.*** The firm needs cash primarily to make payments for purchases, wages and salaries, other operating expenses, taxes e.t.c. The need to hold cash would not arise if there were perfect synchronization between cash receipts and cash payments, i.e., enough cash is received when the payment has to be made. But cash receipts and payments are not perfectly synchronized. For those periods, when cash payments exceed cash receipts, the firm should maintain some cash balance to be able to make required payments. For transactions purpose, a firm may invest its cash in marketable securities. Usually, the firm will purchase securities whose maturity corresponds with some anticipated payments in future. ***Note that the transactions motive mainly refers to holding cash to meet anticipated payments whose timing is not perfectly matched with cash receipts.***

6.2.12. Precautionary Motive

The precautionary motive is a need to hold cash to meet contingencies in future. It provides a cushion to withstand some unexpected emergency. The precautionary amount of cash depends upon the predictability of cash flows. If cash flow can be predicted with accuracy, less cash is maintained for an emergency. The amount of precautionary cash is also influenced by the firm's ability to borrow at short notice when the need arises. Stronger the ability of the firm to borrow at short notice, less the need for precautionary balance. The precautionary balance may be kept in cash or marketable securities. Marketable securities play an important role here. The amount of cash set aside for

precautionary reasons is not expected to earn anything; therefore, the firm should attempt to earn some profit on it. Such funds should be invested in high-liquid and low-risk marketable securities. Precautionary balance should, thus, be held more in marketable securities.

6.2.13. Speculative Motive

The speculative motive relates to the holding of cash for investing in profit-making opportunities as and when they arise. The opportunity to make profit may arise when the security prices change. The firm will hold cash, when it is expected that interest rates will rise and security prices will fall. Securities can be purchased when the interest rate is expected to fall; the firm will benefit by the subsequent fall in interest rates and increase in security prices. The firm may also speculate on material prices. If it is expected that materials' prices will fall, the firm can postpone materials' purchasing and make purchase in future when price actually falls. Some firms may hold cash for speculative purposes. By and large, business firms do not engage in speculations. Thus, the primary motives to hold cash and marketable securities are: the transactions and the precautionary motives.

The firm must decide the quantum of transactions and precautionary balances to be held. This depends upon the following factors[15]:

=> The expected cash inflows and outflows based on the cash budget and forecasts.

=> The degree of deviation between the expected and actual net cash flows.

=> The maturity structure of the firm's liabilities.

=> The firm's ability to borrow at short notice in the event of any emergency.

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[15] J.C.Van Horne (1975: 421)

=> The philosophy of management regarding liquidity and risk of insolvency.

=> The efficient planning and control of cash.

All these factors, analyzed together, will determine the appropriate level of the transactions and precautionary balances.

6.3 MANAGEMENT OF MARKETABLE SECURITIES

Marketable securities ***are short-term, interest-earning, money market instruments that can easily be converted into cash.*** Marketable securities are classified as part of the firm's liquid assets

6.3.1 Characteristics of Marketable Securities

The basic characteristics of marketable securities affect the degree of their salability. To be truly marketable, a security must have two basic characteristics:

A Ready Market: The market for a security should have both breadth and depth in order to minimize the amount of time required to convert it to cash. The number of participants (buyers) determines ***the breadth of a market***. A ***broad market*** is one that has many participants. A depth of a market is determined by its ability to absorb the purchase or sale of a large shilling amount of a particular security. It is therefore possible to have a broad market that has no depth. For example, 200,000 participants each willing to purchase one share of a security is less desirable than 2,000 participants each willing to purchase 2,000 shares. ***Although both breadth and depth are desirable, in order for a security to be salable, it is much more important for a market to have depth.***

Safety of Principal: There should be little or no loss in the value of a marketable security over time. Consider a security recently purchased for shs.10,000. If it can easily be sold for shs.5,000, does it make it marketable? No. According to the definition of marketability, the security must not only be salable quickly but also be salable for close to the shs.10,000 initially invested. This aspect of marketability is referred to as safety of principal. ***Only securities***

that can be easily converted into cash without experiencing any appreciable reduction in principal are candidates for short-term investment

6.4 MANAGEMENT OF RECEIVABLES

Trade credit is considered as an essential marketing tool, acting as a bridge for the movement of goods through production and distribution stages to customers. A firm grants trade credit to protect its sales from the competitors and to attract potential customers to buy its products at favourable terms. ***When a firm sells its products or services and does not receive cash immediately, the firm is said to have granted trade credit to customers.*** Trade credit, thus, creates receivables or debtors, which the firm is expected to collect in the near future. The receivables or debtors arising out of credit has three characteristics:

=> It involves an element of risk, which should be carefully analyzed. Cash sale is totally risk less, but not the credit sales as the cash payment is yet to be received.

=> It is based on economic value. To the buyer, the economic value in goods or services passes immediately at the time of sale, while the seller expects an equivalent value to be received later on.

=> It implies futurity. He will make the cash payment for goods or services received by the buyer in a future period. The customers from whom receivables or book debt have to be collected in future are called trade debtors and represent the firm's claim or asset.

Receivables constitute a substantial portion of current assets of several firms. Granting credit and creating debtors amount to blocking of the firm's funds. The interval between the date of the sale and the date of payment has to be financed out of working capital. This necessitates the firm to get funds from banks or other sources. Thus, trade debtors represent investment. As substantial amounts are tied-up in trade debtors, it needs careful and proper management.

6.4.1 The Firm's Credity Policy

A firm's investment in account receivable depends on:

=> The volume of credit sales, and

=> The collection period.

For example, if the firm's credit sales are shs.300,000 per day and customers on an average take 45 days to make payment, then the firm's average investment in accounts receivable is:

Daily credit sales x Average collection period

Shs.300,000 x 45 = shs.13,500,000

The volume of credit sales is a function of a firm's total sales and the percentage of credit sales to total sales. Total sales depend on market size, firm's market share, product quality, intensity of competition, economic conditions etc. The financial manager hardly has control over these variables. The percentage of credit sales to total sales is mostly influenced by the nature of the business and industry norm.

There is one way in which the financial manager can affect the volume of credit sales and collection period and consequently, investment in debtors. That is through the changes in credit policy. ***Credit policy may be defined as the guidelines for determining whether to extend credit to a customer and how much credit to extend.*** In establishing an optimum credit policy, the financial manager must consider the three important decision variables, which are:

=> ***Credit standards,***

=> ***Credit terms, and***

=> ***Collection efforts.***

6.4.1.1 Credit Standards

Credit standards ***are the criteria, which a firm follows in selecting customers for the purpose of credit extension.*** The firm may have tight credit standards; that is, it mat sell mostly on cash basis, and may extend credit only to the most reliable and financially strong customers. Such standards will result in no bad-debt losses, and less cost of credit administration. But the firm may fail to expand sales. The profit sacrificed on lost sales may be more than the costs saved by the firm. On the contrary, if credit standards are loose, the firm may have larger sales. But the firm will have to carry larger amount of debtors. The cost of administering credit and bad-debt losses will also increase. Credit standards influence the quality of the firm's customers. There are two aspects of the quality of customers:

- The time taken by customers to repay credit obligation and
- The default rate.

The ***average collection period (ACP)*** determines the speed of payment by customers. It measures the number of days for which a credit sales remains outstanding. The longer the average collection period, the higher the firm's investment in trade debtors. ***Default rate*** can be measured in terms of bad-debt losses ratio-proportion of uncollected trade debtors. Bad-debt losses ratio indicates default risk. Default risk is the likelihood that a customer will fail to repay the credit obligation. On the basis of past practice and experience, the financial manager should be able to form a reasonable judgment regarding the chances of default. To estimate the probability of default, the financial manager should consider three C's

=> ***Character:*** It refers to the customer's willingness to pay. The financial manager should judge whether the customers would make honest efforts to honour their credit obligations. The moral factor is of considerable importance in credit evaluation in practice.

=> ***Capacity:*** It refers to the customer's ability to pay. Ability to pay can be judged by assessing the customer's capital and assets, which may offer as security. Capital is evaluated by the financial position of the firm as indicated by analysis of ratios and trends in firm's cash and working capital position. The financial manager should determine the real worth of assets offered as collateral.

Condition: It refers to prevailing economic and other conditions, which may affect the customers' ability to pay. The adverse economic conditions can affect the ability or willing customer to pay.

6.4.3.2 Credit Terms

The stipulations under which the firm sells on credit to customers are called credit terms. These stipulations include:

The Credit Period: The length of time for which credit is extended to customers is called the credit period. It is generally stated in terms of a net date. For example, if the firm's credit terms are "net 40", it is expected that customers will pay credit obligation not later than 40 days. A firm's credit period may be governed by the industry norms. But depending on its objective, the firm can lengthen the credit period. On the other hand, the firm may tighten its credit period if customers are defaulting too frequently and bad-debt losses are building up. The firm lengthen credit period to increase its operating profit through expanded sales. However, there will be net increase in operating profit only when the cost of extended credit period is less than the incremental operating profit. With increased sales and extended credit period, investment in trade debtors would increase. Two factors cause this increase: **(a)** incremental sales result into incremental trade debtors and **(b)** existing customers will take more time to repay credit obligation (i.e. the average collection period will increase), thus increasing the level of trade debtors.

The Cash Discount: A cash discount is a reduction in payment offered to customers to induce them to repay credit obligation within a specified

period of time, which will be less than the normal credit period. It is usually expressed in percentage of sales. Cash discount terms indicate the rate of discount and the period, which is available. If the customer does not avail the offer, he must make payment within the normal credit period. In practice, credit terms would include: **(a)** the rate of cash discount, **(b)** the cash discount period, and **(c)** the net credit period. For example, credit terms may be expressed as " 2/10, net 40". This means that a 2% discount will be granted if the customer pays within 10 days; if he does not avail the offer he must make payment within 40 days. ***The firm uses cash discount as a tool to increase sales and accelerate collections from trade debtors***. Thus the level of trade debtors and associated costs may be reduced. The cost involved is the discounts taken by customers.

6.4.1.3 Collection Efforts

A collection policy is needed because all customers do not pay the firm's bills in time. Some customers are slow-payer while other customers are non-payers. The collection efforts should, therefore, aim at accelerating collections from slow-payers and reducing bad-debt losses. A collection policy should ensure prompt and regular collection. Prompt collection is needed for faster turnover of working capital, keeping collection costs and bad debts within limits and maintaining collection efficiency. Regularity in collections keeps debtors alert, and they tend to pay their dues promptly.

In order to collect the slow paying account, the firm should follow collection procedures in a clear-cut sequence. For example, when the normal credit period granted to a customer is over and he has not made the payment, a polite letter reminding the customer that the account is overdue should be sent. If the trade debtor stills remain uncollected, letters that are progressively strong-worded are sent. This may be followed by telephone, email, or the firm's representative's personal visit. Sales representatives should be motivated to put their best efforts in collections. They may be given incentives for faster and prompt collections. If the payment is still not made, the firm may proceed for legal action. Before taking an legal action, the financial condition of the customer should be examined. If the financial condition is very weak, legal action against the customer may simply help to cause his bankruptcy. This would mar the

chances of getting any payment from the customer. Under such situation, it is better to be patient or accept reduced payment in settlement of account.

6.5 MANAGEMENT OF INVENTORIES

Inventories constitute the most significant part of current assets of most firms. Inventories are stock of the product a firm is manufacturing for sale and components that make up the product. The various forms in which inventories exist in a manufacturing firm are:

Raw Materials: Are those basic inputs that are converted into finished product through the manufacturing process. Raw materials inventories are those units, which have been purchased and stored for future productions.

Work In Progress: These are inventories, which are semi-manufactured products. They represent products that need more work before they become finished products for sale.

Finished Goods: These are inventories, which are completely manufactured products and are ready for sale.

Stocks of raw materials and work in progress facilitate production, while stock of finished goods is required for smooth marketing operations. Thus, inventories serve as a link between the production and consumption of goods. The levels of three kinds of inventories for a firm depend on the nature of its business. A manufacturing firm will have substantially high levels of all three kinds of inventories, while a retail or wholesale firm will have a very high level of finished goods inventories and no raw material and work in progress inventories.

6.5.1 Need to Hold Inventories

There are three general motives for holding inventories. These are[16]:

Transactions motive: It emphasizes the need to maintain inventories to facilitate smooth production and sales operations.

Precautionary motive: It necessitates holding of inventories to guide against the risk of unpredictable changes in demand and supply forces and other factors.

Speculative motive: It influences the decision to increase or reduce inventory levels to take advantage of price fluctuation.

The firm should maintain adequate stock of raw materials for a continuous supply to the production line. It is not possible for a firm to procure raw materials whenever it is in need. A time lag exists between demand for materials and its supply. Also, there exists uncertainty in procuring raw materials in time on many occasions. The firm should maintain sufficient stock of raw materials at a given time to streamline production. Other factors, which may necessitate purchasing and holding of raw materials inventories are quality discounts and anticipated price increase. The firm may purchase large quantities of raw materials than needed for desired production and sales levels to obtain quantity discounts of bulk purchasing. At times, the firm would like to accumulate raw materials in anticipation of price rise.

6.5.2 Objective of Inventory Management

In the context of inventory management, the firm is faced with the problem of meeting two conflicting needs:

1. To maintain a large size of inventory for efficient and smooth production and sales operations.

[16] Martin K. Starr, and David W. Miller (1990: 17)

2. To maintain a minimum investment in inventories to maximize profitability.

Both ***excessive and inadequate inventories are not desirable***. These are two danger points within which the firm should not operate. The objective of inventory management should be to determine and maintain optimum level of inventory investment. ***The optimum level of inventory will lie between two danger points of excessive and inadequate inventories.***

The firm should always avoid a situation of over investment or under-investment in inventories. ***The major dangers of over investment are:***

1. ***Unnecessary tie-up of the firm's funds and loss of profit:*** The excessive level of inventories consumes funds of the firm, which cannot be used for any other purpose, and thus, it involves an opportunity cost.

2. ***Excessive carrying costs:*** The carrying costs, such as the costs of storage, handling, insurance, recording and inspection, also increase in proportion to the volume of inventory. These costs will impair the firm's profitability further.

3. ***Risk of liquidity:*** Excessive inventories carried for a long-period increase chance of loss of liquidity. It may not be possible to sell inventories in time and at full value. Another danger of carrying excessive inventory is the physical deterioration of inventories while in storage.

Maintaining an inadequate level of inventories is also dangerous. The consequences of under-investment in inventories are:

1. ***Production hold-ups:*** Inadequate raw materials and work in progress inventories will result in frequent production interruptions.

2. ***Failure to meet delivery commitments:*** If finished goods inventories are not sufficient to meet the demands of customer regularly, customers

may shift to competitors, which will amount to permanent loss to the firm.

The main objective of inventory management, thus, should be to avoid excessive and inadequate levels of inventories and to maintain sufficient inventory for the smooth production and sales operations. Efforts should be made to place an order at the right time with the right source to acquire the right quantity at the right price and quality. An effective inventory management should:

1. Ensure a continuous supply of raw materials to facilitate uninterrupted production.

2. Maintain sufficient stocks of raw materials in periods of short supply and anticipate price changes.

3. Maintain sufficient finished goods inventory for smooth sales operation, and efficient customer care.

4. Minimize the carrying cost and time, and

5. Control investment in inventories and keep it at an optimum level.

6.6 SPONTANEOUS SOURCES OF SHORT-TERM FINANCING

Spontaneous Sources of Short-Term Financing arises from the normal operations of the firm. The two major spontaneous sources of short-term financing are creditors and accruals. As the firm's sales increases, creditors increases in response to the increased purchases required to produce at higher levels. Also in response to increasing sales, the firm's accruals increase as wages and taxes rises due to greater labour requirements and the increased taxes on the firm's increased earnings. There is normally no explicitly cost attached to either of these current liabilities, although they do have certain implicit costs. In addition, both are forms of unsecured short-term financing—short term financing obtained without pledging specific assets as collateral. The firm should take advantage of these often "interest-free" sources of unsecured short-term financing whenever possible.

6.7 UNSECURED SOURCES OF SHORT-TERM LOANS

Firms obtain *unsecured* sources of short-term loans from two majors sources-banks and commercial papers. These sources are negotiated and result from deliberate action by the financial manager. Bank loans are more popular because they are available to firms of all sizes while commercial papers tend to be available only to large firms.

6.7.1 Bank Loans

Banks are a major source of unsecured short-term loans to firms. The major type of loan made by the banks to firms is the short-term liquidation loan. Short-term liquidation loan is a loan on which the borrowed funds provide the mechanism through which the loan itself is repaid. Banks lends unsecured short-term funds in three basic ways:

1. ***Single-payment notes,***
2. ***Lines of credit, and***
3. ***Revolving credit agreements***.

6.7.1.1 Single-Payment Notes

A single-payment note can be obtained from a commercial bank by a creditworthy business borrower. This type of loan is usually a "one-shot" deal made when a borrower needs additional funds for a short period but does not believe this to continue. The resulting instrument is a note, which is supposed to be signed by a borrower. The note states the terms of a loan, maturity date, and interest payable.

6.8.1.2 Lines of Credit

Lines of credit is an agreement between a commercial bank and the firm that states the amount of unsecured short-term borrowing the bank will make available to the firm over the specified period which is in most cases one year. Lines of credit is not a guaranteed loan but indicates that if the bank has sufficient funds available, it will allow the borrower to owe it up to a certain amount of funds.

6.8.1.3. Revolving Credit Agreements

Revolving credit agreements is nothing more than a guaranteed line of credit. It is guaranteed in the sense that the commercial bank making the arrangements

assures the borrower that a specified amount of money will be made available regardless of the scarcity of money. The interest rate and other requirements are just the same as those in the lines of credit. But in the revolving credit agreement there is also a commitment fee charged on the revolving credit agreement. A commitment fee is a fee normally charged on the revolving credit agreement, often based on the unused balance of the borrower's credit line.

Illustration: IDM has a shs.20,000,000 revolving credit agreement with CRDB bank. Its actual borrowing was shs.15,000,000. CRDB charges a commitment fee of 2% on unborrowed funds. What is the cost of commitment?

Solution: Unborrowed fund = shs.20,000,000 – shs.15,000,000 = shs.5,000,000

Cost of commitment = 2% x shs.5,000,000 = ***shs.100,000***

6.7.2 Commercial Papers

Commercial papers is a form of financing that consists of short-term, unsecured promissory notes issued by firms with a high credit standards. Generally, only large firms of unquestionable financial soundness and reputation are able to issue commercial papers. Firms, which purchase commercial papers, keep them in terms of marketable securities.

6.8 SECURED SOURCES OF SHORT-TERM LOANS

Secured sources of short-term loans are short-term loans obtained by pledging specific assets as collateral. ***A collateral is the security offered the lender by the borrower, usually in the form of an asset such as debtors or inventory***. A lender usually obtains a security interest in the collateral through the execution of a contract with the borrower known as security agreement. A security agreement is the agreement between the borrower and the lender that specifies the collateral held against a secured loan. A copy of a security agreement is filed at a public place.

6.9.1 Use of Debtors as Collateral

Two commonly used means of obtaining short-term financing with debtors are:

- *Pledging the debtors*
- *Factoring the debtors*.

6.8.1.1 Pledging of Debtors

A pledge of a debtor is often used to obtain short-term loan. Because debtors are normally quite liquid, they are attractive form of short-term collateral. Before the lender accepts a debtor as a collateral, he must first evaluate the desirability of the debtor. Pledging of the debtor can be done in any of the two ways, which the lender finds good:

- ***Notification basis***: It's the basis on which a debtor whose account has been pledged is notified to remit payments directly to the lender rather than to the borrower.
- ***Non-notification basis***: This means that a customer whose account has been pledged as collateral is not notified of this action. The borrower continues to collect the pledged accounts receivable and the lender trust that the borrower will remit these payments as they are received.

6.8.1.2 Factoring the Debtors

Factoring of debtors involves their outright sale at a discount to a factor or other institution in order to obtain funds. A factor is a financial institution that specializes in buying debtors from businesses. A factoring agreement is signed which normally states the exact conditions, charges, and procedures for the purchase of a debtor. Factoring is done on the notification basis that is the factor receives payment direct from the customer. And the sale of a debtor to the factor is made on a non-recourse basis. Non-recourse basis is the basis on which debtors are sold to a factor with the understanding that the factor accepts all credit risks on the purchased accounts.

6.8.2 Use of Inventory as Collateral

Inventory is generally second to debtors in desirability as short-term loan collateral. Inventory is attractive as collateral since it normally has a market value greater than its book value, which is used to establish its value as collateral. A lender securing a loan with inventory will probably be able to sell it for at least book value if the borrower defaults on its obligations. The most important characteristic of inventory being evaluated as a collateral is marketability.

Specialized items such as slow-moving items are not desirable as collateral. The methods in which inventory may be used as a collateral are:

- *Floating inventory liens.*
- *Trust receipt inventory loans.*
- *Warehouse receipt loans*

6.8.2.1 Floating Inventory Liens

A lender may be willing to secure a loan under a floating inventory lien, which is a claim on the borrower's general inventory as collateral for a secured loan. This arrangement is most attractive when the firm has a stable level of inventory consisting of less expensive items of a diversified group.

6.8.2.2 Trust Receipt Inventory Loans

A trust receipt inventory loans can often be made against relatively expensive automotive, consumer-durable, and industrial equipment that can be identified by serial numbers. Under this agreement the borrower keeps the inventory and the lender may advance 80% to 100% of its cost. The lender files a lien on all the items financed. The borrower is free to sell the item and remits the amount to the lender.

6.8.3.3 Warehouse Receipt Loans

A warehouse receipt loan is an agreement whereby the lender, who may be a commercial bank, receives control of the pledged collateral, which is stored, or warehoused in the lender's possession. After selecting acceptable collateral, the lender hires a warehousing company to act as its agent and take possession of the inventory.

REVISION QUESTIONS

Question 1. One of the most important decisions that must be made with respect to current assets and current liabilities is how current liabilities available is limited by the shilling amount of purchase in case of accounts payable, by the shilling amount of accrued liabilities in the case of accruals, and the amount of seasonal borrowing considered acceptable by lenders in the case of notes payable.

Required:

1. Mention and explain on the two working capital strategies?
2. Mention and explain on the firm's financing requirements?

Question 2. Cash is the most important current asset for the operations of the firm. Cash is a basic input needed to keep the firm running on a continuous basis.

Required: Mention and explain the motives of holding cash?

Question 3. Marketable securities are short-term, interest-earning, money market instruments that can easily be converted into cash. Marketable securities are classified as part of the firm's liquid assets.

Required: Discuss the characteristics of marketable securities?

Question 4. Credit policy may be defined as the guidelines for determining whether to extend credit to a customer and how much credit to extend.

Required: In establishing an optimum credit policy, the financial manager must consider the three important decision variables. Mention and discuss them.

Question 5. Inventories constitute the most significant part of current assets of most firms.

Required: Discuss the motives of holding inventories.

Question 6. Banks are a major source of unsecured short-term loans to firms. The major type of loan made by the banks to firms is the short-term liquidation loan.

Required: Discuss the three different ways in which banks lends unsecured short-term funds.

Question 7. Peter Mwisho Company has a shs.90,000,000 revolving credit agreement with CRDB bank. Its actual borrowing was shs.75,000,000. CRDB charges a commitment fee of 6% and interest rate of 8%. What is the cost of commitment and the interest amount?

Question 8. A pledge of a receivable is often used to obtain short-term loan. Because receivables are normally quite liquid, they are attractive form of short-term collateral. Before the lender accepts a receivable as a collateral, he must first evaluate the desirability of the debtor.

Required: Pledging of the debtor can be done in any of the two ways. Discuss them.

Question 9. Inventory is generally second to debtors in desirability as short-term loan collateral. Inventory is attractive as collateral since it normally has a market value greater than its book value, which is used to establish its value as collateral. A lender securing a loan with inventory will probably be able to sell it for at least book value if the borrower defaults on its obligations.

Required: Discuss the methods in which inventory may be used as a collateral.

CHAPTER SEVEN

7.0 DIVIDEND FUNDAMENTALS

7.1 INTRODUCTION

Expected cash dividends are the key return variable from which owner determine share price. Cash dividend represents a source of cash flow to shareholders and provides them with the information about the firm's current and future performance. Because retained earning are the form of internal financing, the dividend decision can significantly affects the firm's external financing. Retained earnings are profits not yet distributed as dividends. External financing of the firm may be debentures, common shares and preferred shares.

7.2 THE RELEVANCE OF DIVIDENDS

The key argument of those supporting dividend relevance is that because current dividend payments reduce investor uncertainty, investors will discount the firm's earnings at a lower rate, k , thereby placing a higher value on the firm's stock. If dividends are not paid, investor uncertain will increase, raising the required rate of return, k_s, and lowering the stock value.

The dividend relevance school's leading proponent, Myron J. Gordon, suggests that stockholders prefer current dividends and that there is, in fact, a direct relationship between the dividend policy of the firm and its market value. Gordon argument suggests that ***investors are generally risk averters and attach less risk to current as opposed to future dividends or capital gains.*** And most financial managers believe that dividend policy affects stock value. ***And throughout this manual, we will consider dividend to be relevant-that each firm must develop a dividend policy that fulfills the goals of owners and maximizes their wealth in the long run.***

7.3 THE IRRELEVANCE OF DIVIDENDS

The residual theory of dividends suggests that dividends are irrelevant-that the value of the firm is not affected by its dividend policy. The major advocates of

this view are Franco Modigliani and Merton H. Miller (commonly referred to as M and M). They argue that the way a firm splits its earnings between dividends and reinvestment has no direct effect on stock value. Franco Modigliani and Merton H. Miller suggest the existence of a ***clientele effect: The theory that a firm will attract stockholders whose preferences with respect to the payment and stability of dividends correspond to the payment pattern and stability of the firm itself.*** Since the shareholders get what they expect, Franco Modigliani and Merton H. Miller argue that the value of the firm's stock is unaffected by changes in dividend policy.

However, recognizing that dividends do somehow affect stock prices, Franco Modigliani and Merton H. Miller suggest that the positive effects of dividend increases are attributable not to dividend itself but to the ***information content*** of dividends with respect to future earnings. The information provided by the dividends causes owners to bid up the price of the stock based on future expectations. Franco Modigliani and Merton H. Miller argue that when acceptable investment opportunities are not available, the firm should distribute the unneeded funds to the owners, who can invest the money in other firms that have acceptable investment alternatives. They conclude that since dividends are irrelevant to the firm's value, the firm does not need to have a dividend policy.

7.4 CASH PAYMENT PROCEDURES

The firm's Board of Directors decides cash dividend payment. The directors normally meet quarterly or semi annually in the dividend meeting. During the dividend meeting they evaluate the past period financial performance and future outlook to determine whether and in what form and amount dividend should be paid. The payment date of the cash dividend, if one is declared, must also be established.

The amount of dividend: Whether dividend should be paid and if they are, how large are important questions, which, largely depends on the firm's dividend policy. Firms should set a policy with respect to the amount of the periodic dividend, but under certain circumstances the board of directors may change the amount.

The relevant dates: When the board of directors declare dividend, they will also indicate the record and the payment dates. The record date is the date set by the firm's board of directors on which all persons whose names are recorded, as shareholders will at a specific future time receive a dividend. The shareholders are often referred to as holders of record. There is also an ex-dividend period, which is beginning four business days or six days during the weekends in which a new shareholder's name is recorded in the firm's books and during this time the current buyer shall not receive dividends. The payment date is the actual date on which the firm will mail the dividend to the holder of record. ***Holders of record are owners of the firm's shares on the date of record. Date of record (dividends) is the date, set by the firm's directors, on which all persons whose names are recorded, as stockholders will at a specified future time receive a declared dividend.***

7.5 DIVIDEND RE-INVESTMENT PLANS

A growing number of firms offer dividend re-investment plans, which enables shareholders to use dividends to acquire shares at no transaction costs. The firm in either of two ways can handle dividend re-investment plans:

1. A third party trustee is paid a fee to buy the firm's outstanding shares in the market on behalf of the shareholders who wish to re-invest their dividends.
2. It involves the buying newly issued shares directly from the firm without paying transaction costs.

7.6 FACTORS AFFECTING DIVIDEND POLICY

The factors, which should be taken into consideration by the board of directors when formulating the dividend policy, are legal constraints, contractual constraints, internal constraints, the firm's growth prospects, owner's consideration, and market considerations.

7.6.1 Legal Constraints

Most countries prohibit firms from paying out as cash dividends any portion of the legal capital. Legal capital is measured by the par value of common shares while other countries consider legal capital also to include paid-in capital in excess of par (premium).

7.6.2 Constractual Constraints

Sometimes the firm's ability to pay cash dividends may be constraint by certain restrictive provision in the loan agreement e.g. dividend shall be paid after achieving a certain level of earnings.

7.6.3 Internal Constraints

The firm's ability to pay cash dividends is generally constraints by the amount of excess cash available. Although it is possible to borrow funds to pay cash dividends, lenders are reluctant to make such loans since no intangible benefits to repay loans. Although a firm may have high profits, its ability to pay dividends may be constrained by low level of quick assets.

7.6.4 Growth Prospects

The firm's financial requirements are directly related to the degree of asset expansion anticipated. If the firm is at infant stage, it may need all the money it can get to finance capital expenditure and also a growing firm also requires funds to maintain and improve assets.

7.6.5 Owners Consideration

In establishing the dividend policy, the primary concern of the firm should be maximization of shareholder's wealth. Therefore the firm must establish a policy that has favorable effects on the wealth of the majority of owners.

7.6.6 Market Consideration

Since the wealth of the owners is reflected in the market place of the firm's shares, an awareness of the market probable response to certain types of policies is helpful in formulating a suitable dividend policy. Shareholders are believed to have a fixed or increasing level of dividends as opposed to a fluctuating pattern of dividend. Also, shareholders are believed to have a policy of continuous dividend payment. Since regular paying a fixed or increasing dividend eliminates uncertainty about the frequency and magnitude of dividends, the earnings of the firm are likely to be discounted at a lower rate. This should result in an increase in the market value of the share and therefore increased owners' wealth.

7.7. TYPES OF DIVIDEND POLICIES

The firm's dividend policy represents a plan of action to be followed whenever the dividend decision must be made. The dividend policy must be formulated with two objectives in mind:

- ***Maximize shareholder's wealth, and***
- ***Providing for sufficient financing***

The types of dividend policies are:

1. ***Constant-Payout Ratio Dividend Policy;***
2. ***Regular Dividend Policy***
3. ***Low Regular-and-Extra Dividend Policy***

7.7.1 Constant-Payout Ratio Dividend Policy

Constant-payout dividend policy is a policy based on a payment of a certain percentage of profits to shareholders in each dividend period. Dividend payout ratio is calculated by dividing the firm's cash dividend per cash by its earnings per share, thereby indicating the percentage of each shilling earned that is

distributed to the owners in the form of cash. The problem with this policy is that if the profits drop or if the firm makes a loss in a given period, the dividends may be low or even nonexistent. Since dividends are often considered an indicator of the firm's future performance and status, this type of policy may thus adversely affect the firm's share.

7.7.2 Regular Dividend Policy

Regular dividend policy is a dividend policy based on the payment of a fixed-shilling dividend in each period. This policy provides the owners with generally positive information, indicating that the firm is operating well and thereby minimizing the uncertainty. Firms using this policy will increase the regular dividend once a proven increase in earnings has occurred, but the dividends under this policy are almost never decreased.

7.7.3 Low Regular-and-Extra Dividend Policy

Low regular-and-extra dividend policy is a policy where a firm pays a low dividend, supplemental by an additional dividend when profits warrant it. The additional dividend is known as extra dividend. By establishing a low regular dividend that is paid each period, the firm gives investigation the stable income necessary to build confidence in the firm, and the extra dividend permits them to share in the earnings if the firm experiences an especially good period. Firms using this policy must raise the level of the regular dividend once proven increases in earnings have been achieved. The extra dividend should not be paid regularly, otherwise it will lose it's meaning.

7.8 STOCK DIVIDENDS

A stock dividend is simply the distribution of additional shares to shareholders. It represents nothing more than a re-capitalization of the company; a shareholder's proportional ownership remains unchanged. ***To illustrate, a company had the following capital structure before issuing a stock dividend.***

Common stock (shs.500 par, 400,000 shares)	-	shs. 200,000,000
Contributed capital	-	100,000,000
Retained earnings	-	700,000,000
Net worth	-	shs. 1,000,000,000

Now, suppose the company pays a 5% stock dividend, amounting to 20,000 additional shares of stock, and the fair market value of the share is shs.4,000. For each 20 shares of stock owned, the shareholder receives an additional share. The balance sheet of the company after the stock dividend would be:

Common stock (shs.500 par, 420,000 shares)	-	shs.210,000,000
Contributed capital	-	170,000,000
Retained earnings	-	620,000,000
Net worth	-	shs.1,000,000,000

With a stock dividend, shs.80,000,000 (shs.4,000 x 20,000) is transferred from retained earnings to the common stock and contributed capital accounts (excess of par or premium account). Because the par value is the same, the increase in number of shares is reflected in a shs.10,000,000 increase in the common stock account (shs.500 x 20,000). The residual of shs.70,000,000 goes into the contributed capital. The net worth of the company remains the same.

Because the number of shares of stock outstanding is increased by 5%, earnings per share of the company are reduced proportionately. Suppose that total net profit after taxes were shs.100,000,000. Before the stock dividend, earnings per share would be shs.250, (shs.100,000,000/ 400,000). After the stock dividend, earnings per share are shs.238, (shs.100,000,000 / 400,000). Thus, the shareholder has more shares of stock but lowering earnings per

share. His proportional to total earnings available to common stock remains unchanged.

7.8 STOCK SPLITS

With a stock split, shares are increased through a proportional reduction in the par value of the stock. ***Suppose that the capital structure of a company before a two-for-one stock split was:***

Common stock (shs.500 par, 400,000 shares)	-	shs.200,000,000
Contributed capital	-	100,000,000
Retained earnings	-	700,000,000
Net worth	-	shs.1,000,000,000

After the split, the capital structure is:

Common stock (shs.250 par, 800,000 shares)	-	shs.200,000,000
Contributed capital	-	100,000,000
Retained earnings	-	700,000,000
Net worth	-	shs.1,000,000,000

With a stock dividend, the par value is not reduced, whereas with stock split, it is. As a result of stock split, the common stock, capital surplus, and retained earnings accounts remain unchanged. The net worth, of course, also remains the same; only change is in the par value of the stock. Except in accounting treatment, the stock dividend and stock split are very similar. A stock split, however, is usually reserved for occasions when a company wishes to achieve a substantial reduction in the market price per share. The principal purpose of a split is to place the shares in a more popular trading range. The stock of a super-growth company may not sell quickly at several thousands shillings a share. Usually, it is split periodically. The total number of shares increases accordingly, and price falls to a popular trading range.

REVISION QUESTIONS

Question 1. Discuss in detail the dividend relevance and dividend irrelevance?

Question 2. Mention and explain briefly on the factors, which affect the dividend policy?

Question 3. The firm's dividend policy represents a plan of action to be followed whenever the dividend decision must be made.

Required: Mention and explain fully the different types of dividend policies

Question 4. The Emmanuel Mwisho Company's equity account (book value) as on December 30th , 2000, is as follows:

Common stock (shs.500 par, 600,000 shares)	shs.300,000,000
Contributed capital	100,000,000
Retained earnings	800,000,000
Net worth	shs.1,200,000,000

Currently, Emmanuel is under pressure from shareholders to pay some dividends. Emmanuel cash balance is shs.30,000,000, all of which is needed for transactions purposes. The stock is trading at shs.700 per share.

Required:

1. What is the legal limit that can be paid in dividends?
2. What is the practical limit that can be paid in dividends?
3. Compute the equity accounts if a company pays a 20% stock dividend?
4. Compute the equity accounts if the company declares a six-for-five stock split.
5. Discuss the stock price movements that should occur after (3) and (4) above

CHAPTER EIGHT

8.0 FINANCIAL PLANNING AND FORECAST

8.1 INTRODUCTION

A business should be managed economically, efficiently and effectively. These three concepts are interrelated. Economy and efficiency are similar: both relate to saving resources. Economy ensures that input costs are minimized. Efficiency ensures that maximum output is achieved at the minimum level of input cost sufficient to be effective. Efficiency, therefore, subsumes economy. A firm cannot be efficient and uneconomic, but it may be both economic (i.e. cheap) and inefficient. Effectiveness is a far more positive idea. Effectiveness means that a service provided properly caters for a real need. For example, a health authority might provide substantial facilities for ulcer operations. However, most doctors and patients may opt instead for new effective drug treatment for which there is, in consequence, a long waiting list. Such a health authority would not be providing an effective service since patients are not being treated and cured. This implies that the business should be able to achieve its objectives by minimizing the use of resources. Thus managing implies coordination and control of the efforts of the business for achieving the business objectives. The process of managing is facilitated when management charts its future course of action to be taken in advance, and takes rational decisions, utilizing the individual and group efforts in a coordinated and rational manner. One systematic approach for attaining effective management performance is financial planning and budgeting. ***Financial planning*** indicates a business growth, performance, investments and requirements of funds during a given period of time, usually three to five years. It involves the preparation of pro-forma income statement, balance sheet and cash flow statement. Financial planning helps the business management to regulate flow of funds, which is the primary concern.

8.2 FINANCIAL PLANNING

Growth in revenues is an important objective of most businesses. An increase in a business's market share will lead to higher growth. The business would need assets to sustain the higher growth in revenues. It may have to invest in additional plant and machinery to increase its production capacity. Also, it

would need additional current assets to produce and sell more goods or services. The business would have to acquire raw materials and convert them into finished goods after incurring manufacturing expenses. It may have to sell goods on credit because of the industrial norm or to push up revenues. This gives rise to book debts (debtors or accounts receivables). The suppliers of raw materials may extend credit to the business. The business may use its internally generated funds to finance its current and fixed assets. When the business grows at the higher rate, internal financing may not be sufficient. Thus the business would have to raise external funds either by issuing equity or debt or both. ***The process of estimating the funds requirements of the business and determining the sources of funds is called financial planning.***

Financial planning is usually regarded as a part of overall planning, both in the long and short term. It assumes that the business projects its operations in financial terms, thereby generating profit plans with yardsticks of performance, such as return on investment. Before any capital expenditure is implemented, the management should prepare a proposal on it, which must indicate the type, nature, and preliminary economic of a project, and projected cash flows and profits, and indicate where the funds will be derived to finance the project.

8.2.1 Financial Forecasting

Financial forecasting is an integral part of financial planning. Forecasting uses past data to estimate the future financial requirements. A simple approach to financial forecasting is to relate the items of profit and loss account and balance sheet to sales. This is called the percentage to sales method.

Illustration 1. (Based on percentage to sales method) Ezra Mwisho Limited Company is a large machine tools and machinery manufacturing company. The company has been growing at a high rate. Because of the long production cycles of a number of its products, it carries large inventory. The company has its customers both in the public and private sectors. It faces a problem of realizing its credit sales on time from the public sector customers. In the past, the company has generally resorted to borrowings to meet its funds requirements. Tables 1 and 2 contain Ezra's profit and loss accounts and balance sheets for the years 1997 to 2000.

Table 1: Profit and loss Account for the year ended 31st December. (in millions)

	1997	*1998*	*1999*	*2000*	*2001*
Net sales	139.0	152.0	183.0	206.2	238.3
Cost of Goods Sold	81.2	87.7	104.7	123.7	138.7
Gross profit	*57.8*	*87.7*	*104.7*	*123.7*	*138.7*
Admi. expenses		10.3	11.6	12.9	16.8 19.3
Selling expenses		20.1	21.1	23.2	25.0 27.1
Other expenses	11.6	12.9	13.4	15.5	19.1
PBIT	*15.8*	*18.7*	*28.8*	*25.4*	*34.1*
Interest	9.8	11.1	16.0	17.8	18.6
Profit Before Taxes	*6.0*	*7.6*	*12.8*	*7.6*	*15.5*
Tax	2.8	3.6	6.2	3.9	7.2
Profit after taxes	*3.2*	*4.0*	*6.6*	*3.7*	*7.3*
Dividends	1.5	1.5	3.0	3.0	3.0
Retained Earnings	1.7	2.5	3.3	0.7	4.3

Table 2: Balance Sheets as on the year ended 31st December.(in millions)

	1997	1998	1999	2000	2001
SOURCES OF FUNDS					
Net Worth:					
Share capital	40.0	40.0	40.0	40.0	40.0
Reserves	12.1	14.6	17.9	18.6	22.9
Net Worth	52.1	54.6	57.9	58.6	62.9
Borrowings	67.0	71.8	96.0	110.8	114.8
Capital employed	***119.1***	***124.4***	***153.9***	***169.4***	***177.7***
USES OF FUNDS					
Net fixed assets:					
Gross block	86.1	92.3	99.3	115.8	141.5
Less: Accu. Deprec.	30.2	34.3	38.7	45.9	54.1
Net block	55.9	58.0	60.6	69.9	87.4
Capital works in progress	3.4	4.6	10.3	17.3	7.0
Net fixed assets	***59.3***	***62.6***	***70.9***	***87.2***	***94.4***
Current assets:					
Inventory	97.4	110.3	122.5	119.4	122.7
Debtors	47.4	67.8	108.3	126.3	127.9
Cash and bank	5.4	2.8	3.9	6.4	11.6
Others	17.0	14.4	17.0	22.2	23.5
Less: Current debts	107.4	133.5	168.7	192.1	202.4
Net current assets	***59.8***	***61.8***	***83.0***	***82.2***	***83.3***
Net Assets	***119.1***	***124.4***	***153.9***	***169.4***	***177.7***

How has Ezra Mwisho Company financed its operations in the past? How has it performed? If Ezra Mwisho Company grows as in the past, what would be its funds requirements?

We can prepare funds flow statement for the company to see how it financed its activities in the year ending on 31st December 2000. (See Table 3)

Table 3: Funds Flow Statement for the year ended 31st December.(in millions)

Sources of funds	
Profit after tax	7.3
Depreciation	8.2
Funds from operations	15.5
Borrowings	4.0
	19.5
Uses of funds	
Gross Block (fixed assets)	25.7
Capital works in progress	(10.3)
Dividends	3.0
Increase in net current assets	1.1
	19.5

Changes in Net Current Assets (in millions)	
Current assets:	
Inventory	3.3
Debtors	1.6
Cash and bank	5.2
Other assets	1.3
Change in current assets	11.4
Curent debts	10.3
Change in Net Current assets	***1.1***

We can calculate Ezra Company's financial ratios to analyse its past performance. Table 4 shows the relationships of a number of profit and loss account and balance sheet items to sales.

Table 4: Financial ratios (percentage of sales)

	1997	*1998*	*1999*	*2000*	*2001*
PERCENT. OF SALES					
Profit and loss items:					
Cost of goods sold	54.8	57.7	57.2	60.0	58.2
Adimin. Expenses	7.4	7.6	7.0	8.1	8.1
Selling expenses	14.5	13.9	12.7	12.1	11.3
Other expenses	8.3	8.5	7.3	7.5	8.0
Interest	7.0	7.3	8.7	8.6	7.8
Profit after tax	2.3	2.6	3.6	1.8	3.1
Balance sheet items:					
Net fixed assets	42.7	41.2	38.7	42.3	39.6
Inventory	70.0	72.6	66.9	57.9	51.5
Debtors	34.1	44.6	59.2	61.3	53.7
Cash and bank balance	3.9	1.8	2.1	3.1	4.9
Other current assets	12.2	9.5	9.3	10.8	9.9
Current debts	77.3	87.8	92.2	93.2	84.9
Net current assets	43.0	40.7	45.3	39.9	35.0
Net Assets	*85.7*	*81.8*	*84.1*	*82.2*	*74.6*

8.2.2 Steps in Financial Planning

The following steps are involved in financial planning:

1. Analysis of the firm's past performance to ascertain the relationships between financial variables, and the firm's financial strengths and weaknesses.

2. Analysis of the firm's operating characteristics-product, market, competition, production and marketing policies, control systems, operating risk etc. to decide about its growth objective.

3. Determining the firm's investment needs and choices, given its growth objective and overall strategy.

4. Forecasting the firm's revenues and expenses and need for funds based on its investment and dividend policies.

5. Analysing the consequences of its financial plans for the long-term health and survival to the firm.

6. Evaluation the consistency of financial policies with each other and with the corporate strategy.

Financial planning involves the questions of a firm's long-term growth and profitability and investment and financing decisions. It focuses on aggregative capital expenditure programmes and debt-equity mix rather than the individual projects and sources of finance

8.3 BUDGET

A budget ***is a short-term financial plan or an action plan to guide managers in achieving the objectives of the firm or it may be defined as a comprehensive and coordinated plan, expressed in financial terms, for the operations and resources of the firm for some specific period of time.***

- The basic elements of a budget are:
- It is a comprehensive and coordinated plan.
- It is expressed in financial terms.
- It is a plan for the firm's operations and resources.
- It is a future plan for a specified period.

8.3.1 Integrated Plan

A budget is a plan of the firm's expectations in the future. Planning involves the control and manipulation of relevant variables-controllable and non-controllable, and reduces the impact of uncertainty. It makes management active to influence the environment in the interest of the firm. A budget expresses the plan in formal terms and helps to realise the firm's expectations. It is a comprehensive plan in the sense that all activities and operations are considered when prepared. It is a budget of the firm as a whole. ***Budgets are indeed prepared for various segments of the firm, but they are components of the total budget- the master budget***. The budget of a department will not have much significance unless it is part of the master budget for the entire firm. The master budget is prepared after coordinating budgets for various segments of the firm. If budgets for various segments of the firm are not prepared jointly and in harmony with each other, the master budget will lose much of its importance and may even prove to be harmful in realising the firm's expectations.

8.3.2 Financial Qualification

For operational purposes, a budget is always quantified in financial terms. Initially the budgets may be developed in terms of varieties of quantities, but finally they must be expressed in the money units eg Tanzania's shillings. For example, purchase and production budgets will involve units of raw material and finished products respectively; the labour budget will be in labour hours. But the coordinated and comprehensive budget can be developed only when all these budgets are expressed in some common denominator; the money unit undoubtedly serves as a common denominator.

8.3.3 Operation and Resources

A budget is a mechanism to plan for the firm's all operations or activities. Two aspects of every operation are: revenues and expenses. The budget must plan for and quantify revenues and expenses related to a specific operation. Planning should not only be done for revenues and expenses, but the resources necessary to carry out operations should also be planned. The planning of resources will include planning for assets and sources of funds.

8.3.4 Time Element

Time dimensions must be added to a budget is meaningful only when it is related to a specified period of time; the budget estimates will be relevant only for a specified period. The firm will have its long-range, broad objectives, such as a long-run survival, maximum sales, maximum long-run profits, employee satisfaction, customer satisfaction, social responsibilities, etc. expressed in vague, qualitative terms. But to achieve these qualitative expectations of the firm, the short-term objectives or goals, expressed in quantitative terms, must be related to the time period within which they have to be achieved.

8.4 PURPOSES OF BUDGETING

The process of preparing and using budgets to achieve management objectives is called budgeting. The major purposes of budgets or budgeting are[17]:

- To state the firm's expectation (goal) in clear, formal terms to avoid confusion and to facilitate their attainability.
- To communicate expectations to all concerned with the management of the firm so that they are understood, supported and implemented.
- To provide a detailed plan of action for reducing uncertainty and for the proper direction of individual and group efforts to achieve goals.
- To coordinate the activities and efforts in such a way that the use of resources is maximized.

[17] D.T. DecCoster and Schafer E.L. (1985: chapter 10.)

- To provide a means of measuring and controlling the performance of individuals and units and to supply information on the basis of which the necessary corrective action can be undertaken.

8.5 ESSENTIALS OF BUDGETING

A successful and sound budgeting system is based upon certain prerequisites. These prerequisites represent management attitude, organisational structure and managerial approaches necessary for the effective and efficient application of the budgeting system. The following are some of the important essentials of a successful budgeting [18]:

- ***Top management support***
- ***Clear and realist goals.***
- ***Assignment of authority and responsibility.***
- ***Creation of responsibility centres.***
- ***Adaptation of the accounting system.***
- ***Full participation.***
- ***Effective communication.***
- ***Budget education***
- ***Flexibility***.

8.5.1 Top Management Support

A budgeting system will be an utter failure if it is not initiated and supported by top management. Top management should realise that budgeting is not merely an accounting tool, but it is an important management tool. Top management must:

- ***Understand the nature and characteristics of budgeting;***
- ***Be convinced that this particular approach to managing is preferable for their situation;***
- ***Be willing to devote the effort required to make it operative;***
- ***Support the programme in all its ramification;***

[18] A.M. Mwisho (2000)

- ***View the results of the planning process as performance commitments.***

The firm will be able to implement the budget plans proficiently and effectively if top management has a positive attitude towards budgeting and gives directions for budget implementations. Note that top management should not only have a positive attitude towards budgeting but should also devote necessary time and resources to the preparation and implementation of budgets. The line managers generally prepare budget estimates, but top management has the responsibility of coordinating budgets of different departments and approving them finally.

8.5.2 Clear and Realistic Goals

Budgeting is a means to achieve goals and objectives. All planning presupposes that objectives and goals have been clearly and unambiguously established. Budgeting will not succeed if the goals to be achieved are not clear; budget implementation will not be systematic. In the absence of goal clarity, employees will lack a proper direction; the efforts of management will be wasted. The financial manager, therefore, must ensure that objectives and goals have been properly laid down. As far as possible, objectives and goals should be written in formal terms. But too much formality should be avoided as it can make budgeting system inflexible. The firm's objectives and budget goals must provide a real challenge and should be capable of motivating employees.

8.5.4 Assignment of Authority and Responsibility

A sound organisational structure is essential for the success of a budgetary system. Authorities and responsibilities of each manager should be clearly identified and established. A sound organisational structure and clear-cut assignment of authorities and responsibilities provide an effective means to achieve the firm's objectives and budget goals in a coordinated and efficient manner. The budgetary system should be established in terms of the assigned authorities and responsibilities; the performance of each manager should be evaluated accordingly. If there is no synchronisation between the budgeting system and the organisation structure of the firm, the planning and control system would not be effective. In the absence of clear-cut assignment of

authorities and responsibilities, managers cannot be held accountable; otherwise they will be held accountable for those activities for which they are not responsible.

8.5.4 Creation of Responsibility Centres

For effective control of all activities, a firm is divided into meaningful segments or divisions. Each division has certain activities to perform and its manager is assigned specific authority and responsibility to carry out those activities, and is held responsible for his decisions affecting those activities. ***The division of a firm for the purpose of control are called responsibility centres or decision centres***. The important criteria for creating a responsibility centre are that the unit of the firm should be separable and identifiable for operating purposes, and that the performance measurement should be possible.

For planning and control purposes, responsibility centres are usually classified into:

Cost centre: The cost centre is a responsibility centre where the manager is responsible only for costs incurred in his division. He is not responsible for profit or investment. Thus, cost are the primary planning and control data in a cost centre. The performance of the managers is evaluated by comparing the actual expenses incurred with the budgeted expenses for the cost centre.

Profit centre: The profit centre is a responsibility centre where the manager is responsible for both costs and revenues, thus, profit. A profit centre provided more effective assessment of performance as both cost and revenues are measured in financial terms. A profit centre is more relevant for profit planning and control as it allows the measurement of both output and input of the centre.

Investment centre: An investment centre is a responsibility centre where a manager is responsible for costs and revenues as well as for investment in assets used by the centre. In an investment centre, performance is assessed not only by profit, but also by relating profit to investment. Thus, return on investment is used as the performance-evaluation criterion in an investment centre.

8.5.5 Adaptation of the Accounting System

The accounting system catering only to the needs of external users is not adequate for the purpose of profit planning and control and internal management. Budgeting is based on the data generated by the accounting system. Control of performance involves the comparison of actual performance (results) with the planned performance (budgeted). Therefore the accounting system should be suitably adapted to facilitate the planning and control process; it should be structured around the areas of responsibility. In fact, a sound budgetary system needs the creation of a responsibility accounting system. A responsibility accounting system is primarily oriented towards the organisational responsibilities and is a means to achieving effective control. The accounts are classified and prepared by responsibility centres. An accounting system, tailored to the responsibility structure of the firm, generates data that are relevant to the planning and control system.

8.5.6 Full Participation

Full participation of managers and their subordinates at all levels should be sought in developing the budgeting system. The participation should be meaningful and real. If employees have effectively participated in developing the budget goals and targets, they will make special efforts to see that the budgeting process succeeds. A meaningful participation creates a positive motivation. "***Participation tends to increase commitment; commitment tends to heighten motivation; motivation which is job-oriented tends to make managers work harder and more productively; and harder and more productive work of managers tends to enhance the firm's prosperity; therefore participation is good.***" To re-emphasise, it is the real and meaningful participation that is good. A non-serious effort on the part of top management to seek the participation of managers and their subordinates will not motivate them; rather, at times, it produces negative motivation and makes employees less productive.

8.5.7 Effective Communication

Communication is the process of transmitting ideas or information from one person to another. The basic purpose of communication is to instil mutual trust between two or more persons by creating similar understanding of ideas or thoughts. It is a device to bring people together in the firm. A sound

budgeting system requires effective communication of firm's objectives and budget goals and means of implementing budgets through the organisation so that a unified effort may be directed to accomplish those objectives and goals.

8.5.8 Budget Education

The line managers, who actually prepare the budgets, should not only be confident to their ability to plan for the future with reasonable precision, but should understand the technicalities of budgeting. They should know how to re-adjust budgets when the circumstances change. They should be able to ***"sell"*** the idea of budgeting to their subordinates in order to seek their meaningful participation and involvement. This requires a continuous budget education. The employees of the firms must be educated about the nature, characteristics, value and methods of budgeting. They should also be taught how to interpret the budgets results and how the performance is evaluated through budgets. Written material should also be distributed.

8.5.9 Flexibility

The budgeting system should be flexible enough to take advantage of all opportunities that arise from time to time. Inflexibility impairs the initiative and freedom of managers and subordinates in making decisions. A rigidly administered budgeting programme causes tension and anxiety and imposes "strait jackets" in implementing the budgets. On the other hand, if the budgeting programme is administered in a flexible way, managers feel free and relaxed in implementing the budgets. Budgeting allows more freedom to management at lower levels; within the broad framework of budgets they are free to make decisions. Top management would exercise a tight control over lower levels of management and would put restrictions on them to make decisions in the absence of a sophisticated budgeting system. A flexible and comprehensive budgeting permits management to re-adjust plans when a new situation arises.

8.6 ADVANTAGES OF BUDGETING

Budgeting is a management tool; it is a way of managing. Many benefits are derived from budgeting, although it is a means not an end in itself. Budgeting is a feed-forward process; it makes an evaluation of the variables likely to

affect future operations of the firm. It predicts future with reasonable precision and removes uncertainty to a great extent. The following are some of the more significant advantages of budgeting:

Forced planning: Budgeting compels management to plan for future. The budgeting process forces management to look ahead and become more effective and efficient in administering the business operations. It instils into managers the habit of evaluating carefully their problems and related variables before making any decisions.

Coordinated operations: Budgeting helps to coordinate, integrate and balance the efforts of various departments in the right of the overall objectives of the firm. This results in goal congruency and harmony among the departments.

Performance evaluation and control: Budgeting facilitates control by providing definite expectations in the planning phase that can be used as a frame of reference for judging the subsequent performance. Undoubtedly, budgeted performance is a more relevant standard for comparison than past performance, since past performance is based on historical factors, which are constantly changing.

Effective communication: Budgeting improves the quality of communication. The firm's objectives, budget goals, plans, authority and responsibility and procedures to implement plans are clearly written and communicated through budgets to all individuals in the firm. This results in better understanding and harmonious relations among managers and subordinates.

Optimum utilization of resources: Budgeting helps to optimise the use of the firm's resources-capital and human; it aids in directing the total efforts of the firm into the most profitable channels.

Productivity improvement: Budgeting increases the morale and thus, the productivity of the employees by seeking their meaningful participation in the formulation of plans and policies, bringing the

harmony between individual goals and the firm's objectives and by providing incentives to perform more effectively.

Profit-mindedness: Budgeting develops an atmosphere of profit-mindedness and cost-consciousness.

Management by exception: Budgeting permits to focus the management's attention on significant matters through budgetary reports, thus, it facilitates management by exception and thereby saves management time and energy considerably.

Efficiency: Budgeting measures efficient, permits management self-evaluation and indicates the progress in attaining the firm's objectives.

8.7 PROBLEMS AND DANGERS OF BUDGETING

Budgeting is a systematic approach to the solution of problems. But it suffers from certain problems and limitations. The major ***problems*** in developing a budgeting system are:

Seeking the support and involvement of all levels of management.

Developing meaningful forecast and plans, especially the sales plan.

Educating all individuals to be involved in the budgeting process and gaining their full participation.

Establishing realistic objectives, policies, procedures and standards of desired performance.

Applying the budgeting system in a flexible manner.

Maintaining effective follow-up procedures and adapting the budgeting system whenever the circumstances change.

Management must consider the following limitations in using the budgeting system as a device to solve managerial problems:

Management judgement: Budgeting is not an exact science; its success hinges upon the precision of estimates. Estimates are based on facts and managerial judgement. Managerial judgement can suffer from subjectivism and personal biases. The adequacy of budgeting, thus, depends upon the adequacy of managerial judgement.

Continuous adaptation: The installation of a perfect system of budgeting is not possible in a short period. Business conditions change rapidly; therefore. Budgeting programme should be continuously adapted. Budgeting has to be a continuous exercise; it is a dynamic process. Management should not lose patience; they should go on trying various techniques and procedures in developing and using the budgeting system. Ultimately, they will achieve the success and reap the benefits of budgeting.

Implementation: A skilfully prepared budgetary programme will not itself improve the management of the firm unless it is properly implemented. For the success of the budgetary programme it is essential that all, and that the managers and subordinates understand it and put concerted effort for accomplishing the budget goals. All persons in the firm must have full involvement in the preparation and execution of budgets, otherwise budgeting will not be effective.

Management complacency: Budgeting is a management tool-a way of managing; not the management. The presence of a budgetary system should not make management complacent. To get the best results of managing, management should use budgeting with intelligence and foresight, along with other managerial techniques. Budgeting assists management; it cannot replace management.

Unnecessary details: Budgeting will be ineffective and expensive if it unnecessarily detailed and complicated. A budget should be precise in format and simple to understand; it should be flexible, not rigid in application.

Goal conflict: The purpose of budgeting will be defeated if carelessly set budget goals conflict with the firm's objectives. Budget goals are the definite targets to achieve the overall firm's objectives. They must be in harmony with the firm's objectives. Evaluation deficiencies: Budgeting will hide inefficiencies instead of revealing them, if a proper evaluation system is lacking. There should be a continuous evaluation of the actual performance. Standards also should be re-examined regularly.

Unrealistic targets: Budgeting will lower morale and productivity if unrealistic targets are set and if it is used as a pressure tactic. To some extent budgeting may be used as a pressure device, but its extent must be carefully determined.

8.8 CASH BUDGETING

A cash budget involves a projection of future cash receipts and cash disbursements a firm over various interval of time. It reveals to the financial manager the timing and amount of expected cash inflow and outflows over the period studied. With this information the financial manager is better able to determine the future cash needs of the firm, plan for the financing of these needs, and exercise control over the cash and liquidity of the firm.

Cash budget may be for almost any period of time. For near-term forecasts, monthly periods probably are the ones used most frequently, because they take into account seasonal variations in cash flows. When cash flows are extremely volatile but predictable, budgets at more frequent intervals may be necessary for determining peak cash requirements. By the same token, when cash flows are relatively stable, budgeting at quarterly or even longer intervals are justified. Generally, the further in the future the period for which one is trying to predict cash flows, the more uncertain the forecast. The expense of preparing monthly cash budgets usually is warranted only for predictions concerning the near future.

The cash budget is only as useful as the accuracy of the forecasts that are used in its preparation. Moreover, the greater the possible dispersion of actual results from those estimated, the more the allowance that must be

made for unexpected swings in cash flows. A firm whose cash flows are subject to much uncertainty should provide for either the cash cushion, ready borrowing power, or both to tide it over in periods of adverse cash developments.

8.8.1 Preparation of the Cash Budget

1. *Receipts:* The key to the accuracy of the most cash budgets is the forecast of sales revenues. ***This forecast can be based on internal analysis, an external one, or both.*** With the internal approach, sales men are asked to project sales for the forthcoming period. The product sales managers screen these estimates and consolidate them into sales estimates for product lines. The estimates for the various product lines then are combined into an overall sales estimate for the firm. ***The basic problem with an internal approach is that it can be too myopic.*** Often, important trends in the economy and in the industry are overlooked.

   For the above reason, many firms use an external analysis as well. With an external approach, economic analysts make forecasts of the economy and of the industry sales for several years to come. In this regard, regression analysis may be used to estimate the association between industry sales and the economy in general. Given these basic predictions of business conditions and industry sales, the next step is to estimate market share by individual products, prices that are likely to prevail, and the expected reception of new products. Usually, these estimates are made in conjunction with marketing managers. However, the ultimate responsibility should lie with the economic forecasting department. Given this information, an external forecast of sales can be prepared.

   When the internal forecast of sales differs from the external one, as it is likely to do, a compromise must be reached. In most cases, the external forecast should serve as the foundation for the final sales forecast. However, it often needs to be modified by the internal forecast. By basing the final sales forecast on both internal and external analysis, it is usually more accurate than is either an

internal or external forecast by itself. The final sales forecast should be based on prospective demand and not be modified initially by internal constraints such as physical capacity. The decision to remove these constraints will depend on the forecast. The importance of accurate sales forecast cannot be overestimated, for most of the other forecast, in same measure are based on expected sales.

Given the sales forecast, the next job is to determine the cash receipts from these sales. With cash sales, cash is received at the time of sale; with credit sales, however, the receipts do not come until later. How much later will depend on the billing terms given, the type of a customer, and the credit and collection policies of the firm.

Illustration: Suppose, that the terms offered by Hilda Company are net 30, meaning that payment is due within 30 days after the invoice date. Assume also that in the company's experience, 90% of receivables collected, on the average, one month from the date of the sale, and that 10% are collected two months from the date of the sale, with no bad-debt losses. Moreover, on average, 10% of total sales are cash sales. The sales forecast is shown below:

November	= shs.300,000,000
December	= shs.350,000,000
January	= shs.250,000,000
February	= shs.200,000,000
March	= shs.250,000,000

Required: Prepare the Schedule of Sales Receipts.

Solution: Schedule of Sales Receipts (in Millions)

	Nov.	*Dec.*	*Jan.*	*Feb.*	*March*
March					
Total sales	300.0	350.0	250.0	200.0	250.0
Credit sales	270.0	315.0	225.0	180.0	225.0
Collections- one month		243.0	283.5	202.5	162.0
- two months			27.0	31.5	22.5
Total collection		243.0	310.5	234.0	184.5
Cash sales	30.0	35.0	25.0	20.0	25.0
Total sales receipts	***30.0***	***278.0***	***335.5***	***254.0***	***209.5***

Cash receipts may arise from the sale of assets as well as from sales of the product. Suppose, for example, that Hilda Company intends to sell shs.40,000,000 in fixed assets in February. Total cash receipts in February, then, would be shs.294,000,000 (shs.40,000,000 + shs.254,000,000).

2. ***Disbursements:*** Next comes a forecast of cash disbursements. Given the sales forecast, a production schedule may be established. Management may choose either to gear production closely to sales or to produce at a relatively constant rate over time. With the former production strategy, inventory-carrying costs generally are lower, but total production costs are higher than with the latter strategy. With the steady production, the opposite usually occurs. If sales fluctuate, finished goods inventories build up during certain periods and require storage. Because storage is unevenly throughout the year, inventory-carrying costs are generally higher than they would be if production were geared to sales. On the other hand, production typically is more efficient. Which alternative is best will depend on the added cost of carrying inventory when production is geared to sales relative to the savings available if production is steady.

Illustration: Continued from the above illustration of Hilda Mwisho Company, assume that the company manufacture of goods in the month preceding forecasted sales and there is one-month lag between the time of purchase and the payment of purchase.

Schedule of Expenses (in Millions)

	Dec.	*Jan.*	*Feb.*	*March*
Purchases	100.0	80.0	100.0	120.0
Cash payment for purchase		100.0	80.0	100.0
Wages paid		80.0	80.0	90.0
Other expenses		50.0	50.0	50.0
Total cash expenses		***230.0***	***210.0***	***240.0***

Schedule of Cash disbursements (in Millions)

	Dec.	Jan.	Feb.	March
Total cash payments		230.0	210.0	240.0
Capital expenditures			150.0	50.0
Dividend payments				20.0
Total cash disbursements		***230.0***	***360.0***	***310.0***

Required: Prepared the Cash Budget for the months of January to March.

Net Cash Flow and Cash Balance [Cash Budget] (in Millions)

	Jan.	Feb.	March
Total cash receipts	335.5	204.0*	209.5
Total cash disbursements	260.0	360.0	310.0
Net cash flow	75.5	(66.0)	(100.5)
Beginning cash without financ.	100.0	175.5	109.5
Ending cash without financing	175.5	109.5	9.0

* includes sales receipts of shs.254 million and cash sale of assets of shs.40 million

8.9. PREPARATION OF PROFORMA FINANCIAL STATEMENTS

In addition to projecting the cash flow of a firm over time as discussed earlier, it is often useful to prepare projected or pro forma financial statements (pro forma balance sheet and pro forma income statement). A cash budget gives us information only as to the prospective future cash positions of the firm whereas pro forma financial statements embody forecast of all assets and liabilities as well as of income statement items. Much of the information that goes into the preparation of the cash budget, however, can be used to derive pro forma financial statements. As discussed earlier, the key to accuracy is the sales forecast.

8.9.1 Preparation of Profoma Balance Sheet

A number of simplified approaches are available for preparing the pro forma balance sheet. Probably the best and most popular is the ***judgemental approach.*** Under the judgemental approach for developing the pro forma

balance sheet, the values of certain balance sheet accounts are estimated while others are calculated. When this approach is applied, the firm's external financing is used as a balancing, or "plug," figure.

Illustration: Prepare Kenneth Mwisho Manufacturing Company's 2001 pro forma balance sheet, a number of assumptions must be made:

1. A minimum cash balance of shs.6,000,000 is desired.
2. Marketable securities are assumed to remain unchanged from their current level of shs.4,000,000.
3. Accounts receivable will on average represent 45 days of sales. Since Kenneth Mwisho Company's annual sales are projected to be shs.135,000,000, accounts receivable should average shs.16,875,000 [(45/360) x shs.135,000,000].
4. The ending inventory should remain at a level of about shs.16,000,000, of which 25% (approximately shs.4,000,000) should be raw materials, while the remaining 75% (approximately shs.12,000,000) should consist of finished goods.
5. A new machine costing shs.20,000,000 will be purchased. Total depreciation for the year will be shs.8,000,000. Adding the shs.20,000,000 acquisition to the existing net fixed assets of shs.51,000,000 and subtracting the depreciation of shs.8,000,000 will yield net fixed assets of shs.63,000,000.
6. Purchases are expected to represent approximately 30% of the annual sales, which in this case would be approximately shs.40,500,000 (0.30 x shs.135,000,000). The company estimates it can take 72 days on average to satisfy its accounts payable. Thus accounts payable should equal one-fifth (72days/ 360days) of the firm's purchases, or shs.8,100,000 (0.20 x shs.40,500,000).
7. Taxes payable are expected to equal one-fourth of the current year's liability, which would equal about shs.455,000 (one-fourth of the tax liability of shs.1,823,000 to be shown in the pro forma income statement.
8. Notes payable are assumed to remain unchanged from their current level of shs.8,300,000.
9. No change in other current liabilities is expected. They will remain at the level of the previous year: shs.3,400,000.

10. The company's long-term debts and its common stock are expected to remain unchanged, at shs.18,000,000 and shs.30,000,000, respectively, since no issues, retirements, or repurchases of bonds or stocks are planned.
11. Retained earnings will increase from the beginning level of shs.23,000,000 to shs.29,327,000.

Solution: A Pro forma Balance Sheet, Using the Judgemental Approach

ASSETS:		
Cash		shs. 6,000
Marketable securities		4,000
Accounts receivable		16,875
Inventories:		
Raw materials	shs.4,000	
Finished goods	12,000	
Total inventories		16,000
Total current assets		42,875
Net fixed assets		63,000
Total assets		***105,875***
LIABILITIES AND EQUITIES:		
Accounts payable		shs. 8,100
Taxes payable		455
Note payable		8,300
Other current debt		3,400
Total current liabilities		20,255
Long-term debts		18,000
Common stock		30,000
Retained earnings		29,327
Total		97,582
External funds required*		8,293
Total equities and liabilities		***105,875***

*The amount of external funds needed to force the company's balance sheet to balance. Due to the nature of the judgemental approach to preparing the pro forma balance sheet, the balance sheet is not expected to balance without some type of adjustment.

8.9.2 Preparation of Proforma Income Statement

The pro forma income statement is the projection of income for the period of time in the future. The sales forecast is the key input when preparing the pro forma income statement. Given the sales forecast, production schedules can be formulated and estimates made of production costs for the product or products. The analyst may wish to evaluate each component of the cost of goods sold. A detailed analysis of the purchases, production wages, and overheads costs is likely to produce the most accurate forecasts. Often, however, cost of goods sold is estimated on the basis of the past ratios of cost of goods sold to sales.

Selling and administrative expenses are estimated next. Because both of these expenses usually are budgeted in advance, estimates of them are fairly accurate. Typically, these expenses are not overly sensitive to changes in sales in the very short run, particularly to reduction in sales. Next, we estimate other incomes and expenses as well as interest expenses to obtain net income before taxes. Income taxes are then computed based on the applicable tax rate and then deducted, to arrive at estimated net income after taxes. All these estimates are then combined into an income statement.

Another method for developing a pro forma income statement is to use the ***percent-of sales method, which forecasts sales and then expresses the cost of goods sold, operating expenses, and interest expense as a percentage of projected sales.*** The percentages used are likely to be the percentage of sales for these items in the immediate preceding year.

REVISION QUESTIONS

Question 1. The process of preparing and using budgets to achieve management objectives is called budgeting.

Required: Discuss the major purposes of budgets or budgeting.

Question 2. "A budget is a comprehensive and coordinated plan, expressed in financial terms, for the operations and resources of firm for some specific period in future." In light of this definition, explain the attributes of a budget.

Question 3. A cash budget involves a projection of future cash receipts and cash disbursements a firm over various interval of time.

Required: Discuss the benefits, which can be derived by the firm from cash budgeting.

Question 4. What is financial planning? How does it differ from financial forecasting?

Question 5. A budget is a short-term financial plan or an action plan to guide managers in achieving the objectives of the firm or it may be defined as a comprehensive and coordinated plan, expressed in financial terms, for the operations and resources of the firm for some specific period of time.

Required: Explain the advantages and limitations of Budgeting.

Question 6. Explain the steps involved in preparing a financial plan. What are the merits of financial planning?

Question 7. Given the information that follows, prepare a cash budget for Emmanuel Mwisho company for the six months of 2000.

1. All prices and costs remain constant.

2. Sales are 75% for credit and 25% for cash.

3. In terms of credit sales, 60% are collected in the month after the sale, 30% in the second month, and 10% in the third. Bad-debt losses are insignificant.

4. Sales, actual and estimated, are

October, 2000	shs.300,000,000
November, 2000	350,000,000
December, 2000	400,000,000
January, 2001	150,000,000
February, 2001	200,000,000
March, 2001	200,000,000
April, 2001	300,000,000
May, 2001	250,000,000
June, 2001	200,000,000
July, 2001	300,000,000

5. The store has a gross margin of 20%, and pays for each month's anticipated sales in the preceding month.

6. Wages and salaries are:

January, 2001	30,000,000
February, 2001	40,000,000
March, 2001	50,000,000
April, 2001	50,000,000
May, 2001	40,000,000
June, 2001	35,000,000

7. Rent is shs.2,000,000 a month.

8. Interest on shs.500,000,000 of 6% bonds is due on the calendar quarter.

9. A tax prepayment on 2001 income of shs.50,000,000 is due in April.

10. A capital addition of shs.30,000,000 is planned in June.

11. The company has a cash balance of shs.100,000,000 at December 31st 2000 which is a minimum desired amount. Funds can be borrowed in multiples of shs.5,000,000 on a monthly basis at 6% per annum. Interest is payable on the first of the month following the borrowing and is not accrued.

Question 8. Use the cash budget worked out in Question 7 and the following additional information to prepare a pro forma income statement for the first half of 2001.

1. Inventory on March 12, 2000 was shs.200,000,000

2. Depreciation is shs.12,500,000 for the first half of 2001

3. The tax rate is 50%.

Question 9. Given the following information and that contained in Question 7 and 8, construct a pro forma balance sheet as of June 30, 2001 for the Emmanuel Mwisho Company.

Balance sheet at December 31st 2000

Assets: Cash		shs.100,000,000
Accounts receivable		427,500,000
Inventory		200,000,000
Net fixed assets		250,000,000
Total assets		977,500,000
Liabilities and equities:		
Accounts payable		shs.130,000,000
Notes payable		500,000,000
Equities		347,500,000
Total debts and equities		Shs.977,500,000

CHAPTER NINE

9.0 VALUATION OF SECURITIES

9.1 VALUATION FUNDAMENTALS

Valuation is the process that kinks risk and return in order to determine the worth of any asset. It is relatively simple process that can be applied to expected steams of benefits from bonds, stocks, income properties, and so on in order to determine their worth at a given point in time. To do this, the financial manager uses the time value of money techniques and the concepts of return and risk.

9.2 KEY INPUTS TO VALUATION

The key inputs to the valuation process include ***cash flows (returns), timing, and the discount rate (risk).***

9.2.1 Cash Flows (Returns)

The value of any asset depends on the cash flow(s) it is expected to provide over the ownership period. To have value an asset does not have to provide an annual cash flow; it can provide an intermittent cash flow or even a single cash flow over the period.

Example: Flora Kauzen, the financial analyst for Hilda Mwisho Company, wishes to estimate the value of three assets: common stock in Michael Enterprises, an interest in an oil well, and an original painting by a well known- artist. Her cash flows estimates for each were:

Common stock in Michael Enterprises: Expected to receive cash dividends of shs.300 per year indefinitely.

Oil well: Expect to receive cash flow of shs.2,000,000 at the end of year one, shs.4,000,000 at the end of two years, and shs.10,000,000 at the end of four years, when the well is to be sold.

Original painting: Expected to be able to sell the painting in five years for shs.85,000,000.

Having developed these cash flows estimates, Flora Kauzen has taken the first step toward placing a value on each of these assets.

9.2.2 Timing of Cash Flows

In addition to making cash flow estimates, the timing of the cash flows must be specified. Although cash flows can occur at any time during the year, for computational convenience as well as custom, we will assume they occur at the end of the year unless otherwise noted. For example, the cash flows of shs.2,000,000, shs.4,000,000 and shs.10,000,000 for the oil well in the above example were scheduled to occur at the end of years 1, 2, and 4, respectively.

9.2.3 Discount Rate (Risk)

Risk can be ***defined as the chance that an expected outcome will not be realized.*** The level of risk associated with a given cash flow can significantly affect its value. In general, the greater the risk of (or the less certain) a cash flows, the lower its value. In terms of present value, greater risk can be incorporated into an analysis by using a higher discount rate or required return.

Example: Consider two scenarios, under the original painting, which is expected to provide a single cash flow of shs.85,000,000 from its sale at the end of five years.

Scenario 1. – Certainty: A major art gallery has contracted to buy the painting for shs.85,000,000 at the end of five years. Because this is considered a certain situation, Flora Kauzen views this asset as "money in the bank" and would use the prevailing risk-free rate, Rf, of 9% as a discount rate when calculating the value of the painting.

Scenario 2. – High Risk: The value of original painting by this artist has fluctuated widely over the past 10 years, and although she expects to be able to get shs.85,000,000 for the painting she realizes its sales price in five years could range between shs.30,000,000 and shs.140,000,000. Due to the high

uncertainty surrounding the painting's value, she believes a 15% discount rate is appropriate.

9.3 THE BASIC VALUATION MODEL

The value of any asset (or security) ***is the present value of all future cash flows it is expected to provide over the relevant time period***. The time period can be as short as one year or as long as infinity. The value of an asset (or security) is therefore determined by discounting the expected cash flows back to their present value, using the discount rate commensurate with the asset's risk. The value of an asset (or security) at time zero, V_0, can be expressed as:

$$V_0 = CF_1 / (1+k)^1 + CF_2 / (1+k)^2 + \text{----------} + CF_n / (1+k)^n$$

Where V_0 = Value of the asset(or security) at time zero

CF_t = Cash flow expected at the end of year t.

k = Appropriate discount rate.

n = Relevant time period.

Using present-value interest factor notation, the above equation can be rewritten as: $V_0 = [CF_1 \times (PVIFk, 1)] + [CF_2 \times (PVIFk, 2)] + \text{-----} + [CF_n \times (PVIFk, n)]$

Valuation of Hilda Mwisho Company's Assets by Flora Kauzen:

1. Michael Enterprises Common Stock

   . Shs.300 per year will be received indefinitely (a perpetuity)

   . Appropriate discount rate = 12%

   ∴ Value of the stock = shs.300 x (PVIFA, 12%, ∞)

   = ***shs.300 ÷ 0.12 = <u>shs.2,500</u>***

2. Oil well

The cash inflows is a mixed stream, thereby it requires the PVIF table.

Year (t)	*Cash flow*	*PVIF, (20%)*	*PV (present value)*
1	shs.2,000	0.833	shs.1,666
2	4,000	0.694	2,776
3	0	0.579	0
4	10,000	0.482	4,820
	Present value		*shs.9,262*

(N.B. All the calculations are in thousands)

3. Original painting

. The cash inflow is at the end of year 5

. Appropriate discount rate = 15%

∴ The value of the painting = shs.85,000,000 x (PVIF, 15%, 5years)

= shs.85,000,000 x (0.497)

= shs.42,245,000

(N.B. This is a lump-sum cash flow and therefore requires a single PVIF.)

9.4 BOND VALUATION

The basic valuation equation can be customized for use in valuing specific securities-bonds, preferred shares, and common stock. ***Bonds and preferred stock are similar since they have stated contractual interest and dividend cash flows***. The dividends on common stock, on the other hand are not known in advance. The value of the bond is the present value of the contractual payments its issuer is obligated to make from the current time until it matures. The appropriate discount rate would be the required return, ***kd,*** which depends on the prevailing interest rates and risk. The basic equation for the value, ***B0***, of a bond that pays annual interest of ***I*** shillings, has ***n*** years to maturity, has an ***M*** shilling par value, and for which the required return is ***kd***, is given by the equation:

$$B_0 = I \times [\Sigma 1/(1+kd)^t] + M \times [1/(1+(I+kd)^n]$$

$$= I \times (PVIFA, k_d, n) + M \times (PVIF, k_d, n)$$

Illustration: The Intercontinental Company issued new bonds having the interest amount payable of shs.100,000, interest rate of 10%, years to maturity is 10 years and the par value of the bond is shs.1,000,000.

Required: What is the value of the bond?

Solution:

Value = shs.100,000 x (PVIFA, 10years, 10%) +shs.1,000,000 x (PVIF, 10years,10%)

= shs.100,000 x (6.145) + shs.1,000,000 x (0.386)

= shs.614,500 + shs.386,000

= ***shs.1,000,500.***

9.4.1 Bond Value Behaviour

The value of a bond in the market place is rarely constant over its life. A variety of forces in the economy as well as the mere passage of time tend to affect value. Since these external forces are really in no way controlled by bond issuers and investors. It is useful to understand the impact that required return and time to maturity have on bond value.

Whenever ***the required rate of return on a bond differs from the bond's coupon interest rate, the bond's value will differ from its par, or face value***. The required rate of return on the bond is likely to differ from the stated interest rate either (1) because economic conditions have changed, causing a shift in the basic cost of the long-tern funds, or (2) the firm's risk has changed. Increases in the basic cost of long-term funds or risk will raise the required return, and vice versa.

Whenever the required return is different from the coupon interest rate, the amount of time to maturity affects bond value, even if the required return remains constant until maturity.

9.5 COMMON STOCK VALUATION

Common stockholders expect to be rewarded through the receipt of periodic cash dividend and an increasing-or at least non declining-share value. Like current owners, potential investors and security analyst frequently estimate the firm's value. They choose to purchase the stock when they believe it is undervalued and to sell it when they feel it is overvalued.

9.5.1 Popular Approaches

Many popular approaches for measuring value exist. These *approaches include the use of book value, liquidation value, or some type of a price/ earnings multiple.*

9.5.1.1 Book Value

Book value per share is the amount per share of common stock to be received if all assets are liquidated for their exact book (accounting) value and if the proceeds remaining after paying all liabilities (including preferred stock) are divided among the common stockholders. This method lacks sophistication and can be criticized on the basis of its reliance on historical balance sheet data. It ignores the firm's expected earnings potential and generally lacks any true relationship to the firm's value in the market place

Illustration: The Simon Njovu Company currently (December, 2000) has a total assets of shs.60,000,000, total liabilities including preferred stock of shs.45,000,000, and 100,000 shares of common stock outstanding.

Required: Calculate the book value of Simon Njovu Company.

Solution:

Book value = (shs.60,000,000 – shs.45,000,000) ÷ 100,000
= *shs.150 per share*

(N.B. Since the value assumes that assets are liquidated for the book value, it may not represent the minimum share value.)

9.5.1.2 Liquidation Value

Liquidation value per share is the actual amount per share of common stock to be received if all the firm's assets are sold, liabilities (including preferred stock) are paid, and the remaining money is divided among the common stockholders[19]. This measure is more realistic than book value, but it still fail to consider the earning power of the firm's assets.

Illustration: The Simon Njovu Company found upon investigation that it would obtain only shs.52,500,000 if it is liquidated its assets today

Required: Calculate the Company's liquidation value per share

Solution:

Liquidation value = (shs.52,500,000 – shs.45,000,000) ÷ 100,000
= *shs.75 per share.*

9.5.1.3 Price/Earnings Multiples

Price/earning (P/E) ratio, were introduced in chapter 2. The average P/E ratio in of particular industry can be used as a guide to a firm's value if it is assumed that investors value the earnings of a given firm in the same manner as they do the "average" firm in that industry. The price/earning multiple approach to value is a popular technique whereby the firm's expected earnings per share (EPS) are multiplied by the average price/earnings (P/E) ratio for the industry to estimate the firm's share value. The average P/E ratio for the industry can be obtained from other sources other than the firm's financial statements. The price/earnings multiple approaches are considered superior to the use of liquidation or book values since it considers expected earnings[20].

[19] In the event of liquidation, creditors' claim must be satisfied first, than those of the preferred stockholders. Anything left goes to common stockholders.

[20] ThePrice/earnings multiple approach to valuation does have a theoretical explanation. If we view one divided by the price/arning ratio, as the rate at which investors discount their earnings, and if we assume that the projectd earnings per share will be earned indefinitely, the price/earnings multiple approach can be looked on as a method of finding the present value of a perpetuity of projected earnings per share at a rate equal to the earnings/price ratio.

Illustration: Assume that Simon Njovu Company is expected to earn shs.26 per share next year (2001). This expectation is based on an analysis of the firm's historical earnings trend and expected economic and industry conditions. The average price/earnings ratio for firms in the same industry is 7.

Required: Calculate the value of stock.

Solution: shs.26 x 7 = shs.182

9.6 THE BASIC EQUATION FOR COMMON STOCK

Like bonds, the value of a share of common stock is equal to the present value of all future benefits it is expected to provide ***(the value of a share of common stock is equal to the present value of all future dividends it is expected to provide over an infinite time horizon)***. Although by selling stock at a price above that originally paid, a stockholder can earn capital gains in addition to dividends, what is really sold is the right to all future dividends. Therefore, from a valuation viewpoint only dividends are relevant.

The basic equation for common stock is as follows:

$$P_0 = D_1/(1+k_s)^1 + D_2/(1+k_s)^2 + \text{------} + D_\infty/(1+k_s)^\infty$$

Where P_0 = value of the share

D_t = per-share dividend expected at the end of year t.

K_s = required rate on common stock

We shall calculate the value of the common stock under two main assumptions, which are no growth in dividends and constant growth in dividends.

9.6.1 Zero Growth Model

The simplest approach to dividend valuation, the ***zero growth models***, assumes a constant, non-growing dividend stream. Therefore the equation for calculating the value of a share under the non-growing dividend stream is as follows:

$$P_0 = D_1 / k_s$$

Illustration: The Ezra Company's dividend is expected to remain constant at shs.300 per share indefinitely. The required rate of return on its stock is 15%.

Required: What is the value of the share?

Solution:

$$P_0 = D_1 / k_s$$

$$= \text{shs.}300 \div 0.15 = \underline{\textbf{shs.2,000}}$$

Since preferred stock typically provides its holder with a fixed annual dividend over its assumed infinite life, the equation ($P_0 = D_1 / k_s$) can be used to find the value of preferred share.

9.6.2 Constant Growth

The most widely cited dividend valuation approach, the constant growth model, assumes that dividends will grow at a constant rate, g, which is less than the required return, k ($g < k$). The constant growth model is common called the *Gordon model*, and its formula is as follows:

$$P_0 = D_1 / (k_s - g)$$ where g is the growth rate.

Illustration: Kenneth Company that it is going to pay a dividend of shs.150 next year and the company's required rate of return is 15%. The dividends have been growing at the rate of 7%.

Required: Calculate the value of the stock?

Solution:

$$P_0 = \text{shs.}150 \div (0.15 - 0.07)$$

$$= \text{shs.}150 \div 0.08 = \underline{\textbf{shs.1,875}}$$

REVISION QUESTIONS

Question 1. Define valuation and explain why it is important for the financial manager to understand the valuation process.

Question 2. If the required return on a bond differs from its coupon interest rate and is assumed constant until maturity, describe the behaviour of the bond value as the passage of time moves the bond toward its maturity.

Question 3. If you were a risk-averse investor, to protect against the potential impact of rising interest rates on bond value, would you prefer bonds with short or long periods until maturity? Explain.

Question 4. Explain each of the three popular approaches- **(a)** book value, **(b)** liquidation value, and **(c)** price /earnings multiples-for estimating common stock value. Which of these is considered best. Why.

Question 5. Calculate the value of a shs.5,000,000-par-value bond paying annual interest rate of 10% and having 10 years until maturity if the required rate of return on similar-risk bonds is currently a 12% annual rate..

Question 6. The balance sheet of Neri Industries follows:

Balance sheet as at 31st December, 2000 (in thousands)

Assets:	Cash	shs.40,000
	Marketable securities	60,000
	Accounts receivables	120,000
	Inventories	160,000
	Net fixed assets	400,000
	Total assets	*780,000*
Debts and equities:		
	Accounts payable	shs.100,000
	Notes payable	30,000
	Accrued wages	30,000
	Long-term debt	180,000
	Preferred stock	80,000
	Common stock (5,000 shares)	360,000
	Total debts and equities	*shs.780,000*

Additional information with respect to the firm is available:

1. Preferred stock can be liquidated for its book value
2. Accounts receivable and inventories can be liquidated at 90% of book value
3. All interest and dividends are currently paid up.
4. The firm has 5,000 shares of common stock outstanding.
5. Fixed assets can be liquidated at 70% of book value.
6. Cash and marketable securities can be liquidated at book value

Required:

a. What is the industries' book value per share?
b. What is the liquidation value?
c. Compare, contrast, and discuss the values found in (a) and (b).

Question 7. For each of the following firms, use the data given to estimate their common stock value employing price/earnings (P/E) multiples.

Firm	*Expected EPS(shs)*	*Price/earnings multiples*
A	300.00	6.2
B	450.00	10.0
C	180.00	12.6
D	240.00	8.5
E	510.00	15.0

Question 8. Emmanuel Mwisho wishes to estimate the value of its outstanding preferred stock. The preferred issue has an shs.8,000 par value and pays an annual dividend of shs.640 per share. Similar risk preferred stocks are currently earning a 9.3% annual rate of return.

Required:

1. What is the market value of the outstanding preferred shares?
2. If an investor purchases the preferred stock at the value calculated in (a), how much would he gain or lose per share if he sells the stock when the required rate of return on similar-risk preferred stocks has risen to 10.5%? Explain.

Question 9. Queen Malo Company has paid the following dividends over the past six years:

Year	*Dividend per share (shs)*
2000	287.00
1999	276.00
1998	260.00
1997	246.00
1996	237.00
1995	225.00

The company's dividend per share next year is expected to be shs.302.00

Required:

1. If you can earn 13% on similar-risk investments, what is the most you would pay per share for this firm?
2. If you can earn only 10% on similar-risk investments, what is the most you would be willing to pay per share?
3. Compare and contrast your findings in (a) and (b) and discuss the impact of changing risk on the share value.

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