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 CHAPTER 1.

NATURE OF BUSINESS FINANCE

Objectives

At the end of this lecture students should be able to:

1.   Define finance and discuss the scope and decision areas in financial management.

2.   Discuss the goals of financial management.

3. Explain the shareholder/management (agency) conflicts and possible solutions.
4. Describe the types of Business Organizations
5. Describe Risk and required rate of return.
6. Describe investor's risk profile.

Introduction

What is finance?

Finance is derived from the Latin word which implies to complete a contract. Hence we can define finance as the application of and optimal utilization of scarce resources. The discipline of finance applies economic principles and concepts in solving business problems.

Financial management: involves raising and allocating funds to the most productive end user so as to achieve the objectives of a business or firm.

The following are the decision areas in finance:

Financing /Capital structure decision

The financial manager needs to understand the firms capital requirements whether short, medium or long term. To this end he will ask himself this question "where will we get the financing to pay for investments?"

The capital structure refers to the mix of long term debt, such as debentures, and equity such as reserves and retained earnings. The financial manager aims at employing the source of funds that will result in the lowest possible cost to the company.

/Capital budgeting decision

In capital budgeting the financial manager tries to identify investment opportunities that are worth more (benefits) than they cost to acquire. The essence of capital budgeting is evaluation of investments' size, risk, and return the funds raised in the financing decision have to be allocated to a viable investment.

Working capital management

The term Working capital refers to a firm's current assets and current liabilities. The financial manager has to ensure that the firm has adequate funds to continue with its operations and meet any day to day obligations. Maintaining an optimal level is therefore important.

Distribution decision

This involves the distribution of dividend which is payment of a share of the earnings of the company to ordinary shareholders.

Further details of the above decisions will be discussed later in the text.

The goal of the firm from a financial management perspective could be broadly classified in two;

      a. Financial goals.

       b. Non-financial goals

Financial goals could be either profit maximization goal or wealth maximization.

Non-financial goals include survival, service provision, growth, or the welfare of employees.

Financial goals of the firm.

➤ Profit-Maximization

Microeconomic theory of the firm is founded on profit maximization as the principal decision criterion: markets managers of firms direct their efforts toward areas of attractive profit potential using market prices as their signals. Choices and actions that increase the firm's profit are undertaken while those that decrease profits are avoided. To maximize profits the firm must maximize output for a given set of scarce resources, or equivalently, minimize the cost of producing a given output.

Applying Profit-Maximization Criterion in Financial Management

Financial management is concerned with the efficient use of one economic resource, namely, capital funds. The goal of profit maximization in many cases serves as the basic decision criterion for the financial manager but needs transformation before it can provide the financial manger with an operationally useful guideline. As a benchmark to be aimed at in practice, profit maximization has at least four shortcomings: it does not take account of risk; it does not take account of time value of money; it is ambiguous and sometimes arbitrary in its measurement; and it does not incorporate the impact of non-quantifiable events.

Uncertainty (Risk) The microeconomic theory of the firm assumes away the problem of uncertainty: When, as is normal, future profits are uncertain, the criteria of maximizing profits loses meaning as for it is no longer clear what is to be maximized. When faced with uncertainty (risk), most investors

providing capital are risk averse. A good decision criterion must take into consideration such risk.

Timing Another major shortcoming of simple profit maximization criterion is that it does not take into account of the fact that the timing of benefits expected from investments varies widely. Simply aggregating the cash flows over time and picking the alternative with the highest cash flows would be misleading because money has time value. This is the idea that since money can be put to work to earn a return, cash flows in early years of a project's life are valued more highly than equivalent cash flows in later years. Therefore the profit maximization criterion must be adjusted to account for timing of cash flows and the time value of money.

Subjectivity and ambiguity A third difficulty with profit maximization concerns the subjectivity and ambiguity surrounding the measurement of the profit figure. The accounting profit is a function of many, some subjective, choices of accounting standards and methods with the result that profit figure produced from a given data base could vary widely.

Qualitative information Finally many events relevant to the firms may not be captured by the profit number. Such events include the death of a CEO, political development, and dividend policy changes. The profit figure is simply not responsive to events that affect the value of the investment in the firm. In contrast, the price of the firms share (which measures wealth of the shareholders of the company) will adjust rapidly to incorporate the likely impact of such events long before they are their effects are seen in profits.

➢ Value Maximization

Because of the reasons stated above, Value-maximization has replaced profit-maximization as the operational goal of the firm. By measuring benefits in terms of cash flows value maximization avoids much of the ambiguity of profits. By discounting cash flows over time using the concepts of compound interest, Value maximization takes account of both risk and the time value of money. By using the market price as a measure of value the value maximization criterion ensures that (in an efficient market) its metric is all encompassing of all relevant information qualitative and quantitative, micro and macro. Let us note here that value maximization is with respect to the interests of the providers of capital, who ultimately are the owners of the firm. – The maximization of owners' wealth is the principal goal to be aimed at by the financial manager.

In many cases the wealth of owners will be represented by the market value of the firm's shares - that is the reason why maximization of shareholders wealth has become synonymous with

maximizing the price of the company's stock. The market price of a firms stocks represent the judgment of all market participants as to the values of that firm - it takes into account present and expected future profits, the timing, duration and risk of these earnings, the dividend policy of the firm; and other factors that bear on the viability and health of the firm. Management must focus on creating value for shareholders. This requires Management to judge alternative investments, financing and assets management strategies in terms of their effects on shareholders value (share prices).

Non-financial goals

➢ Social Responsibility and Ethics

It has been argued that the unbridled pursuit of shareholders wealth maximization makes companies unscrupulous, anti social, enhances wealth inequalities and harms the environment. The proponents of this position argue that maximizing shareholders wealth should not be pursued without regard to a firm's corporate social responsibility. The argument goes that the interest of stakeholders other than just shareholders should be taken care of. The other stakeholders include creditors, employees, consumers, communities in which the firm operates and others. The firm will protect the consumer; pay fair wages to employees while maintaining safe working conditions, support education and be sensitive to the environment concerns such as clean air and water. A firm must also conduct itself ethically (high moral standards) in its commercial transactions.

 Being socially responsible and ethical cost money and may detract from the pursuit of shareholders wealth maximization. So the question frequently posed is: is ethical behavior and corporate social responsibility inconsistent with shareholder wealth maximization?

In the long run, the firm has no choice but to act in socially responsible ways. It is argued that the corporation's very survival depend on it being socially responsible. The implementation of a pro-active ethics ad corporate social responsibility (CSR) program is believed to enhance corporate value. Such a program can reduce potential litigation costs, maintain a positive corporate image, build shareholder confidence, and gain the loyalty, commitment and respect of firm's stakeholders. Such actions conserve firm's cash flows and reduce perceived risk, thus positively effecting firm share price. It becomes evident that behavior that is ethical and socially responsible helps achieve firm's goal of owner wealth maximization.

➢ Growth and expansion.

This is a major objective for small companies which seek to expand operations so as to enjoy economies of scale.

Difficulty of Achieving Shareholders Wealth Maximization

Two difficulties complicate the achievement of the goal of shareholder wealth maximization in modern corporations. These are caused by the agency relationships in a firm and the requirements of corporate social responsibility (As discussed above).

AGENCY THEORY.

An agency relationship is created when one party (principal) appoints another party (agent) to act on their (principals) behalf. The principal delegates decision making authority to the agent. In a firm agency relationship exists between;

1   Shareholders and management
2   Shareholders and creditors
3   Shareholders and the government
4   Shareholders and auditors

Shareholders and management

The separation of ownership and control in most modern corporations' causes a conflict of interest between the personal interest of appointed managers (agent) and the interests of the owners of the firms (principals).this conflict is known as the agency conflict.

The following are some decisions by managers which would result in a conflict with shareholders:

1. Managers may use corporate resources for personal use.
2. Managers may award themselves hefty pay rises
3. Managers may organize mergers which are intended for their benefit only and not for the benefit of shareholders.
4. Managers may take holidays and spend huge sums of company money.
5. Managers may use confidential information for their benefit(insider trading)

Resolution of conflict

1. Performance based remuneration

This will involve remunerating managers for actions they take that maximize shareholders wealth.

The remuneration scheme should be restructured in order to enhance the harmonization of the interest of shareholders with those of management. Managers could be given bonuses, commissions for superior performance in certain periods.

2. Incurring agency costs

Agency costs refer to costs incurred by shareholders in trying to control management behavior and actions and therefore minimize agency conflicts.

These costs include:

a) Monitoring costs. They arise as a result of mechanisms put in place to ensure interests of shareholders are met. They include cost of hiring external auditors, bonding assurance which is insurance taken out where the firm is compensated if manager commits an infringement, internal control system implementation.

b) Opportunity costs which are incurred either because of the benefit foregone from not investing in a riskier but more profitable investment or in the due to the delay in decision making as procedures have to be followed(hence, a timely decision will not be made)

c) Restructuring costs are those costs incurred in changing or altering an organizations structure so as to prevent undesirable management activities.

d) Board of directors- a properly constituted board plays the oversight role on management for the shareholders.

3. Threat of corporate takeover

When management of a firm under performs this result in the shares of that firm being undervalued there is the threat of a hostile takeover. This threat acts to force managers to perform since should the firm be taken over they will be replaced.

4. Shareholders intervention

The shareholders as owners of the company have a right to vote. Hence, during the company's AGM the shareholders can unite to form a bloc that will vote as one for or against decisions by managers that hurt the company. This voting power can be exercised even when voting for directors. Shareholders could demand for an independent board of directors.

5. Legal protection

 The companies act and bodies such as the capital markets authority have played their role in ensuring trying to minimize the agency conflict. Under the companies act, management and board of

directors owe a duty of care to shareholders and as such can face legal liability for their acts of omission or commission that are in conflict with shareholders interests. The capital market authority also has corporate governance guidelines.

6. Use of corporate governance principles which specify the manner in which organizations are controlled and managed. The duties and rights of all stakeholders are outlined.

7. Stock option schemes for managers could be introduced. These entitle a manager to purchase from the company a specified number of common shares at a price below market price over duration. The incentive for managers to look at shareholders interests and not their own is that, if they deliver and the company's share price appreciates in the stock market then they will make a profit from the sale.

8. Labour market actions such as hiring tried and tested professional managers and firing poor performers could be used. The concept of 'head hunting' is fast catching on in Kenya as a way of getting the best professional managers and executives in the market but at a fee of course.

 Shareholders vs. creditors

In this relationship the shareholders (agent) are expected to manage the credit funds provided by the creditors (principal). The shareholders manage these funds through management.

Debt providers/creditors are those who provide loan and credit facilities to the firm. They do this after gauging the riskiness of the firm.

The following actions by shareholders through management could lead to a conflict between them and creditors

1. Shareholders could invest in very risky projects

The management under the directive of the shareholders may undertake highly risky investments than those anticipated by the providers of long term debt finance. The creditors would not be interested in highly risky projects because they stand to lose their funds when the investments collapse. Even if the risky projects succeed they would not benefit because they only get a fixed rate of return.

2. The dividend payments to shareholders could be very high

An increase in the dividend rate in most cases is financed by a decrease in investments. This in turn reduces the value of bonds. If the firm is liquidating and it pays a liquidating dividend to its shareholders, the providers of capital could be left with worthless claims.

3. Default on interest payments to bondholders

4. Shareholders could organize mergers which are not beneficial to creditors

5. Shareholders could acquire additional debt that increases the financial risk of the firm

6. Manipulation of financial statements so as to mislead creditors

7. Shareholders could dispose of assets which are security for the credit given

8. Under investments

The shareholders may invest in projects with a negative net present value.

9. The shareholders may adopt an aggressive management of working capital. This may bring conflicts in liquidity position of the firm and would not be in the interest of the debt holders

Resolution of this conflict

1. Restrictive covenants- these are agreements entered into between the firm and the creditors to protect the creditor's interests.

These covenants may provide restrictions/control over:

i. Asset based covenants- These states that the minimum asset base to be maintained by the firm.

ii. Liability based covenant- This limits the firm's ability to incur more debt.

iii. Cashflow based covenant- States minimum working capital to be held by the firm. This may restrict the amount of dividends to be paid in future.

iv. Control based covenant – Limits management ability to make various decisions e.g. providers of debt fund may require to be represented in the BOD meetings.

2. Creditors could also offer loans but at above normal interest rates so as to encourage prompt payment

3. Having a callability clause to the effect that a loan could be re-called if the conflict of interest is severe

4. Legal action could also be taken against a company

5. Incurring agency costs such as hiring external auditors

6. Use of corporate governance principles so as to minimize the conflict.

3. Shareholders and the government

The shareholders operate in an environment using the license given by the government. The

government expects the shareholders to conduct their business in a manner which is beneficial to the government and the society at large.

The government in this agency relationship is the principal and the company is the agent. The company has to collect and remit the taxes to the government. The government on the other hand creates a conducive investment environment for the company and then shares in the profits of the company in form of taxes. The shareholders may take some actions which may conflict the interest of the government as the principal. These may include;

(a) The company may involve itself in illegal business activities

(b) The shareholders may not create a clear picture of the earnings or the profits it generates in order to minimize its tax liability.(tax evasion)

(c) The business may not response to social responsibility activities initiated by the government

(d) The company fails to ensure the safety of its employees. It may also produce sub standard products and services that may cause health concerns to their consumers.

(e) The shareholders may avoid certain types of investment that the government covets.

Solutions to this agency problem

(i) The government may incur costs associated with statutory audit, it may also order investigations under the company's act, the government may also issue VAT refund audits and back duty investigation costs to recover taxes evaded in the past.

(ii) The government may insure incentives in the form of capital allowances in some given areas and locations.

(iii) Legislations: the government issues a regulatory framework that governs the operations of the company and provides protection to employees and customers and the society at large.ie laws regarding environmental protection, employee safety and minimum wages and salaries for workers.

(iv) The government encourages the spirit of social responsibility on the activities of the company.

(v) The government may also lobby for the directorship in the companies that it may have interest in. i.e. directorship in companies such as KPLC, Kenya Re. etc

Shareholders and auditors

Auditors are appointed by shareholders to monitor the performance of management. They are expected to give an opinion as to the true and fair view of the company's financial position as reflected in the financial statements that managers prepare. The agency conflict arises if auditors collude with management to give an unqualified opinion (claim that the financial statements show a true and fair view of the financial position of the firm) when in fact they should have given a qualified opinion (that the financial statements do not show a true and fair view). The resolution of this conflict could be through legal action, removal from office, use of disciplinary actions provided for by regulatory bodies such as ICPAK.

Types of Business Organizations

The three basic forms of business organizations are a proprietorship, a partnership and a corporation (limited liability companies)

Sole Proprietorship

A proprietorship is an organization in which a single person owns the business, holds title to all the assets and is personally responsible for all liabilities. The main virtue of a proprietorship is that it can be easily established and is subject to minimum government regulation and supervision. The proprietorship's shortcomings include the owner's unlimited liability for the all business debts, the limitations in raising capital, and the difficulty in transferring ownership.

The proprietorship pays no separate income taxes.   Rather the income or losses from the proprietorship are included on the owner's personal tax return.

Partnership

A partnership is similar to a proprietorship, except that it is owned by two or more persons. The profit of the partnership is taxed on the individual partners after sharing.

A potential advantage of a partnership compared to a proprietorship is that a greater amount of capital can be raised.

In a *general* partnership each partner is personally responsible for the obligations of the business. A formal agreement (partnership deed) is necessary to set forth the privileges and duties of each

partner, the distribution of profits, capital contributions, procedures for admitting new partners and modalities of reconstitutions of the partners in the event of death or withdrawal of a partner.

In a limited partnership, limited partners contribute capital and their liability is confined to that amount of capital. There must be however, at least one general partner in the partnership who manages the firm and his liability is unlimited.

Types of partners

1. General partners- they have an unlimited liability and take active participation the running of the business.

2. Limited partners- they have a limited liability and do not take part in the management of the partnerships.

3. Sleeping partners- they have no active role, but they contribute in the capital of the business and will participate in the profits although at a lower proportion.

Joint stock company/ Corporation

Joint stock companies/Corporation A corporation is an "artificial entity" created by law. A corporation is empowered to own assets, to incur liabilities, engage in certain specified activities, and to sue and be sued. The principal features of this form of business organization are that the owner's liability is limited; there is ease of transfer of ownership through sale of shares; the corporation has unlimited life apart from its owners and; the corporation has the ability to raise large amounts of capital.

A possible disadvantage is that corporation profits are subject to double taxation. A minor disadvantage is the difficulties and expenses encountered in the formation. Corporation are owned by shareholders whose ownership is evidenced by ordinary stocks shareholders expect earn a return by receiving a dividend or gain decisions.

Corporations are formed under the provisions of the Companies Act (CAP486). A Board of Directors, elected by the owners, has ultimate authority in guiding the corporate affairs and in making strategic policy decisions. The directors appoint the executive officers (often referred to as management) of the company, who run the company on a day-to-day basis and implement the policies established by the directors. The chief executive officer (CEO) is responsible for managing day-to-day operations and

carrying out the policies established by the board. The CEO is required to report periodically *to* the firm's directors.

The following are Strengths and weaknesses of the basic forms of business organizations

	Sole proprietorship	Partnership	Corporation
Strengths			
	1. Owner receives all profits (as well as losses)	1. Can raise more capital than a sole proprietorship	1. Owners have limited liability which guarantees they cannot lose more than they invest.
	2.Low organizational costs	2. Borrowing power enhanced by more owners	2. Growth is not restricted by lack of funds. (can see shares)
	3. Not taxed separately: rather income included on proprietor's return.	3. More available brainpower and managerial skills	3. Ownership (shares) is readily transferable
	4. A high degree of independence	4. Not taxed separately. The partners are taxed after receiving share of profits	4. Endless life of firm (does not depend on life of owners)
	5. A degree of secrecy is achievable		5. Can hire professional managers (separation of ownership from control)
	6. There is ease of dissolution		6. Can raise funds more easily

	Sole proprietorship	Partnership	Corporation
Weaknesses			
	1. owner has *unlimited liability* – total wealth can be taken to satisfy debts	1.Owners have *unlimited liability* and may have to cover the debts of other partners	1. Taxes generally higher due to double taxation- on dividends and corporate profits
	2. Limited fund raising ability tends to inhibit growth	2. Partnership is dissolved on the death or withdrawal of a partner	2. More expensive to organize
	3. proprietor must be a jack-of-all-trades	3. Difficult to liquidate or transfer partnership interest	3. Subject to greater regulation
	4.Difficult to motivate employees' career prospects		4. Lacks secrecy, because stockholders must receive financial report
	5. Continuity dependent on presence of proprietor		

RISK AND REQUIRED RATE OF RETURN

Risk

The term risk is used interchangeably with the term uncertainty to refer to the variability of actual returns from those expected from a given asset. It is the chance of an unexpected financial loss (or gain). The greater the variability the higher risk.

Risk can be divided into financial risk and business risk.

<u>Financial risk</u>

This is the likelihood that the firm will be unable to meet its short term maturity obligations caused by use of non owner supplied funds. Financial risk can be measured by use of liquidity ratio and leverage ratios.

<u>Business risk</u>

This is the variability or volatility of future cash flows caused by uncertainty in factors affecting the cashflows. Business risk can be measured by standard deviation. Business risk can be divided into; Systematic and unsystematic risk.

Business risk =unsystematic risk + systematic risk

Efficient portfolio
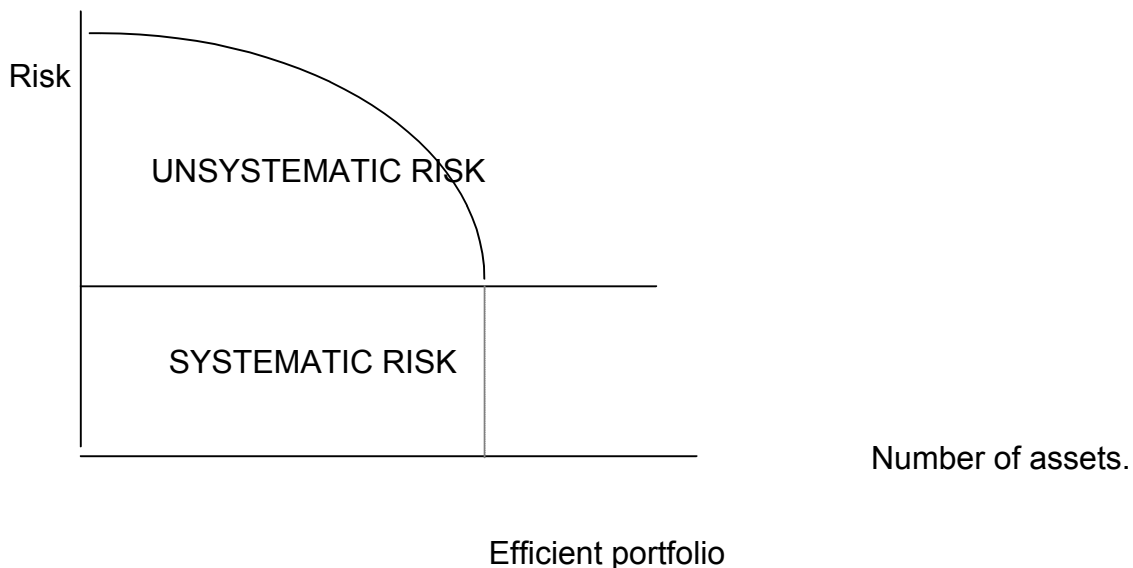
Unsystematic (Diversifiable) Risk

This is that part of total risk that can be diversified away by holding the investment in a suitably wide portfolio. Research has shown that on average, most of the reduction benefits of diversification can be gained by forming portfolios containing 15 -20 randomly selected securities. Diversifiable risk is the portion of total risk that is associated with random (idiosyncratic causes which can be eliminated through diversification. At the limit the market portfolio, comprising an appropriate portion of each

asset in the market has no undiversifiable risk. The causes are firm-specific and include labour unrests, law suits, regulatory action, competition, loss of a key customer etc.

Non-diversifiable (Systematic) Risk

This is the risk inherent in the market as a whole and is attributable to market wide factors. This risk component is not diversifiable and must thus be accepted by any investor who chooses to hold the asset. Factors such as war, inflation, international incidents, government macroeconomic policies and political events account for non-diversifiable risk.

Because any investor can costlesly create a portfolio of assets that will eliminate virtually all diversifiable risk, *the only risk relevant in determination of the prices and returns of an asset is its non-diversifiable risk.*

Capital Asset Pricing Model.

The CAPM links together non-diversifiable risk and the return for all assets. The model is concerned with: (1) how systematic risk is measured , and (2) how systematic risk affects required returns and share values. The CAPM theory includes the following propositions:

    a. Investors require a return in excess of the risk-free rate to compensate them for systematic risk.

    b. Investors require no premium for unsystematic risk because it can be diversified away.

    c. Because systematic risk varies between companies, investors will require a higher return from investments where systematic risk is greater.

The Formula

The CAPM can be stated as follows.

$$R_i = R_f + \beta_i (R_m - R_f)$$

Where: R_i is the expected return from asset *i.*

          R_f is the risk-free rate of return (return on the 91-day treasury bill

R_m is the return from the market as a whole: The market portfolio will , by definition be fully diversified as it comprises all marketable assets.

β_i is the beta factor of asset *i*..

$R_m - R_f$ is the market premium

The Beta Coefficient and the Market Premium

The beta coefficient, β_i, measures the non-diversifiable risk. It is an index of the degree of volatility of asset returns in terms of the volatility of the returns of the market portfolio (market's risk) The beta factor for the market portfolio is 1.0: the risk free asset will have a beta of 0. Assets that are riskier than the market will have betas > 1.0 while those which are less risky will have betas less than 1.0.

Example

ABC Ltd. wishes to determine the required return on asset Z which has a beta of 1,5 > The risk-free rate of return is found to be 7%; the return on the market portfolio is 11%. Find the required rate of return on asset Z.

Using the CAPM formula,

$$R_z = R_f + \beta_z (R_m - R_f)$$

= 7% + 1.5(11% - 7%) =7% + 6% = 13%

The markets risk premium of 4% (11% - 7%), when adjusted for asset Z's index of risk (beta) of 1.5 results in the asset's risk premium of 6% (1.5 * 4%). That risk premium when added to 7% risk-free rate, results in a 13% required rate.

Security Market Line (SML)

When the CAPM is depicted graphically it is called the security market line (SML). In the graph, risk, as measured by beta, is plotted on the X-axis and the required return are shown on the Y-axis. The risk-return trade-off is clearly shown by the SML

Return

The return on an asset is the total gain or loss experienced on an investment over a given period of time. It is commonly measured as the change in value plus any cash distribution during the period, expressed as a percentage of the beginning of the period investment value.

The following equation captures the essence of this value.

$$k_t = (C_t + [P_t – P_{t-1}])/ P_{t-1} \qquad (3.1)$$

Where k_t = actual, expected, or required rate of return during period t

P_t = Price (value) of asset at time t

P_{t-1} = Price value of asset at time t-1

C_t = Cash (flow) received from the asset investment in the time period t-1 to t.

t may be one day, 10 years or one year. When it is one year k_t represents an annual rate of return. The return could be positive or negative in the event of a loss.

Risk Profile.

The three basic risk preference behaviors among managers are – risk-aversion, risk-indifference and risk-seeking.

Risk-indifference, is the attitude toward risk in which no change in return would be required for an increment risk

Risk-aversion is the attitude toward risk in which an increased return would be required for an increase in risk.

Risk seeking is the attitude toward risk in which a decreased return would be accepted for an increase in risk.

Graphically illustrates the three risk preferences.

Return

Risk averse

Risk indifference

Risk seeking
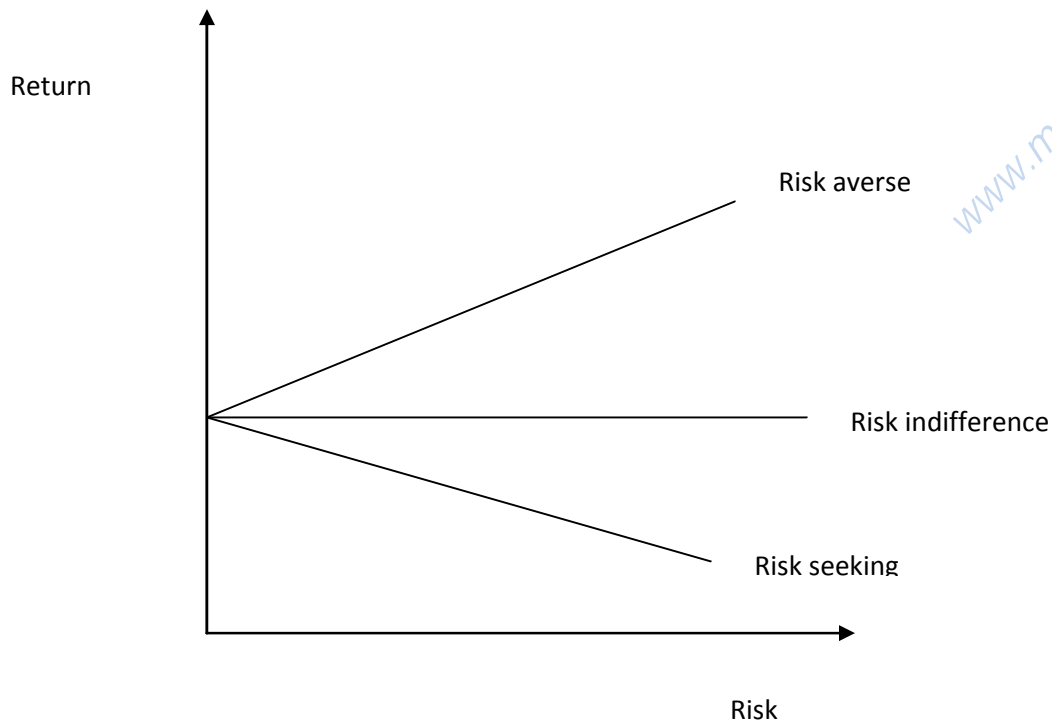
Risk

Most managers and investors are risk-averse; for an increase in risk they require an, increase in returns. Consequently, managers and investors tend to be conservative rather than aggressive in accepting risk. Accordingly, unless specified otherwise, a risk adverse financial behavior will be assumed.

Reinforcing questions

1. (a) Define agency relationship from the context of a public limited company and briefly explain how this arises. (6 marks)

(b) Highlight the various measures that would minimize agency problems between the owners and the management.

2. In a company, an agency problem may exist between management and shareholders on one hand and the debt holders (creditors and lenders) on the other because management and shareholders, who own and control the company, have the incentive to enter into transactions that

may transfer wealth from debt holders to shareholders. Hence the need for agreements by debt holders in lending contracts.

a)   State and explain any four actions or transactions by management and shareholders that could be harmful to the interests of debt holders (sources of conflict).   (8 marks)

(b)   Write short notes on any four restrictive covenants that debt holders may use to protect their wealth from management and shareholder raids.   (10 marks)

3. (a) Explain the term "agency costs" and give any three examples of such costs.   (5 marks

4. (a) Identify and briefly explain the three main forms of agency relationship in a firm.

b)   Although profit maximization has long been considered as the main goal of a firm, shareholder wealth maximization is gaining acceptance amongst most companies as the key goal of a firm.

Required:

(i)   Distinguish between the goals of profit maximization and shareholder wealth maximization.   (4 marks)

(ii)   Explain three limitations of the goal of profit maximization.   (6 marks)

5. (a) Describe four non-financial objectives that a company might pursue that have the effect of limiting the achievement of the financial objectives.   (8 marks)

(b) List three advantages to the management of a company for knowing who their shareholders are.   (3 marks)

(c) State any 5 stakeholders of the firm and identify their financial objectives.   (10 marks

CHAPTER 2

FINANCIAL STATEMENTS ANALYSIS

Objectives

At the end of this chapter you should be able to:

1.   Describe the meaning and relevance of financial analysis.

2.   Discuss the users of financial statements.

3.   Describe sources of financial statements.

4.   Describe in detail financial ratios.

5.   Define financial forecasting.

6.   Discuss the types of comparison used in financial statement analysis

7.   Compute financial ratios and use them to evaluate financial strengths and weaknesses.

8.   Discuss the limitations of financial statement analysis

Financial analysis is the process or critically examining in detail, accounting information given in financial statements and reports. It is a process of evaluating relationship between component parts of financial statements to obtain a better understanding of a firm's performance. The measurement and interpretation of business performance is done through the use of ratios. The financial statements published by companies are too general to be used by the various of stakeholders and hence ratios are used to highlight the different aspects of business operations.

 A ratio is simply a mathematical expression of an amount or amounts in terms of another or others. A ratio may be expressed as a percentage, as a fraction, or a stated comparison between two amounts. The computation of a ratio does not add any information not already existing in the amount or amounts under study. A useful ratio may be computed only when a *significant relationship* exists between two amounts. A ratio of two unrelated amounts is meaningless. It should be re-emphasized that a ratio by itself is useless, unless compared with the same ratio over a period of time and/or a similar ratio for a different company and the industry. Ratios focus attention on relationships which are significant but the full interpretation of a ratio usually requires, further investigation of the underlying data. Thus ratios are an aid to analysis and   interpretation and not a substitute for sound thinking.

 These ratios act as a guide for decision making of the various potential and actual users of the financial information.
These users include:

1. Shareholders- they have invested in the firm and are the owners. Shareholders are interested in the profitability and survival of the firm. They are typically concerned with the allocation of

earnings for investment and the residual earnings which may be paid to them as dividends.

2. lenders-lenders could be long-term or short-term lenders. They could be trade creditors, banks or bondholders. They are interested in the liquidity of the firm which affects the perceived risk of the firm.

3. Potential investors-an analysis of the firms profitability and risk would influence the decision on whether to invest in a company's stock or not they will make this decision by gauging the expected return on their investment whether its in terms of a share price gain(capital gain) or dividends.

4. The government-the government is mostly interested in a company's tax liability. In the case of government owned corporations, it will be concerned in the survival and the continued ability of the company to provide the services it's charged with providing especially for public utilities.

5. The company's management-they are interested in the efficiency of the company in generating profits. The company's general performance is often regarded as a reflection of the management's effectiveness. The gearing ratios, profitability, liquidity and investor ratios are important for decision making.

6. Competitors-they use financial statements for comparison to see their competitive strength.

7. Consumers and potential consumers-they are interested in the company's ability to continue providing for them the goods or services they require.

Hence the financial statement analysis serves to aid the above groups of people in decision making.

Sources of Information

The first procedure in financial statement analysis is to obtain useful information. The main sources of financial information include, but are not limited to, the following;

Published reports

Quoted companies normally issue both interim and annual reports, which contain comparative financial statements and notes thereto. Supplementary financial information and management discussion as well as analysis of the comparative years' operations and prospects for the future will also be available. These reports are normally made available to the public as well as the shareholders of the company.

Registrar of Companies

Public companies are required by law to file annual reports with the registrar of companies. These reports are available for perusal upon payment of a minimum fee.

Credit and Investment Advisory Agencies

Some firms specialize in compiling financial information for investors in annual supplements. Many trade associations also collect and publish financial information for enterprises in various industries. Major stock brokerage firms and investment advisory services compile financial information about public enterprises and make it available to their customers. Some brokerage firms maintain a staff or research analysis department that study business conditions, review published financial statements, meet with chief executives of enterprises to obtain information on new products, industry trends, negative changes and interpret the information for their clients.

Audit Reports

When an independent auditor performs an audit the audit report-is usually addressed to the shareholders of the audited enterprise. The audit firms frequently also prepare a management report, which deals with a wide variety of Issues encountered in the course of the audit Such a management report is not a public document, however, it is a useful source of financial information.

Use of financial ratios

1. for evaluating the ability of the firm to meet its short term financial obligation as and when they fall due

2. To interpret the performance of the firm over the period covered by the financial statements.

3. For comparison of the performance of the firm this can be done in the following ways

   a) Cross sectional analysis-the performance of the firm in question is compared with that of individual competitive firms in the same industry.

   b) Trend/time series analysis-the firm's performance is evaluated over time.

4. For predicting future performance of the firm.

5. To establish the efficiency of assets utilization to generate sales revenue

6. To establish the extent which the assets of the firm has been financed by fixed charge capital.

Limitations of financial ratios

1. Ratios are computed at a specific point in time.

2. Ratios ignore the effect of inflation in performance which is a vital part in the daily business management

3. The comparison between firms is often done even for firms with differences in size and technology

4. Ratio analysis engages the use of historical data contained in financial statements which may be irrelevant in decision making.

5. The different accounting policies applied by firms in similar industries say in depreciation calculation is a hindrance to comparison.

Types of ratios

Ratios are broadly classified into 5 categories

• Liquidity ratios

• Efficiency/turnover ratios

• Profitability ratios

• Gearing ratios

• Investor ratios

1. Liquidity ratios

Liquidity refers to an enterprise's ability to meet its short-term obligations as and when they fall due. Liquidity ratios are used to assess the adequacy of a firm's working capital. Shortfalls in working capital may lead to inability to pay bills and disruptions in operations, which may be the forerunner to bankruptcy. They are also known as working capital ratios. They are;

a) Current ratio =   Current assets
                     Current liabilities

This ratio indicates the number of times the current liabilities can be paid from current assets before these assets are exhausted. It is recommended that the ratio be at least 2.0 i.e. the current assets must be at least twice as high as current liabilities.

Example

	2004	2003
	Sh.000	Sh.000
Current assets	26,400	15,600
Current liabilities	(13,160)	(6,400)
Net working capital	13,240	9,200.

Compute the Current liquidity ratio for the company. And analyze the ratios.

Solution

In the year 2003 Sh.9.2 million of working capital is available to repay Sh.6.4 million of current liabilities and in 2004 Sh.13.24 million is available of working capital to pay sh.l3.16 million of current liabilities. This reflects a strong liquidity position in the years. This can be further explained using a current liquidity ratio.

Current ratio = Current assets / Current liabilities

2004	2003
26400 /13,160	15600/6400
= 2: 1	= 2.4: 1

Observation

The enterprise appears to nave a strong liquidity position. There has been, however, a slight drop from year 2003 to year 2004.

For every shilling that is owed in 2004, the firm has Sh.2 to pay the debt and for every shilling owed in 2003 , the firm has Sh.2.40 available to meet the liability. If the firm's current ratio is divided into 1.0

and the resulting value is subtracted from 1.0, the difference when multiplied by 100 represents the percent by which the firm's current assets can shrink without making it impossible for the firm to cover its current liabilities. A current ratio of 2 means that the firm can still cover its current liabilities even if its current assets shrink by 50 percent ([1.0 – (1.0/2.0)]× 100).

b) Quick/acid test ratio = current assets- stock

Current liabilities

It is a more refined ratio than the current ratio in which the stocks are excluded as they may not be easily converted to cash. the ratio indicates the firms ability to pay the current liabilities from the more liquid assets of the firm.

c) Cash ratio = cash + short term marketable securities

Current liabilities

This is a refinement of the quick ratio indicating the ability of the firm to meet its current liabilities from its most liquid resources. Short term marketable securities include commercial paper and treasury bills and other short term investments.

2. Turnover ratios

They are also known as *efficiency or activity ratios*. They indicate the efficiency with which the firm has utilized the assets or resources to generate sales revenue/turnover. Activity ratios can be categorized into two groups: The first group measures the activity of the most important current accounts, which include inventory, accounts receivable, and accounts payable[1]. The second group measures the efficiency of utilization of total assets and fixed assets.

a) Stock/inventory turnover = cost of sales

Average stock

It indicates the number of times the stock was turned into sales in the year. The higher the ratio, the better the firm and the higher the sales. A low stock turnover ratio indicates that the stock levels are either very high or they are slow moving this leads to a reduction in the firms profitability.

Note: the average stock is the average of the opening and closing stock.

b) Stock holding period = $\dfrac{360 \text{ Days}}{\text{Cost of sales}}$ x average stock

Indicates the number of days the stock was held in the warehouse before being sold.

c) Debtors turnover = $\dfrac{\text{Annual credit sales}}{\text{Average debtor}}$

This ratio indicates the number of times debtors come to buy on credit after paying their dues to the firm. If the rate is high the better the firm as it means they bought many times hence meaning they paid within a shorter time. The average debtor is the average of the opening and closing debtor balances. If no opening debtors are given use the closing debtors to represent average debtors.

d) Debtors or average collection period = $\dfrac{360 \text{ Days}}{\text{Debtor's turnover}}$

This refers to the credit period that was granted to the debtors on the period within which they were to pay their dues to the firm.

e) Creditors/ accounts payable turnover = $\dfrac{\text{Annual credit purchases}}{\text{Annual creditors}}$

It indicates the number of times the firm bought goods on credit after paying its suppliers. if its high then payment was made within a short period of time.

f) Creditors payment period = $\dfrac{360}{\text{Creditor's turnover}}$

$= \dfrac{360}{\text{Annual credit purchases}}$ x Average creditors

This ratio indicates the credit period granted by suppliers.

g) Total assets turnover = <u>Annual sales</u>

　　　　　　　　　　　Total assets

This ratio indicates the amount of sales revenue generated from utilization of one shilling of total assets.

3. <u>Profitability ratios</u>

Profitability ratios evaluate the firm's earnings with respect to a given level of sales, a certain level of assets, the owner's investment, or share value. Evaluating the future profitability potential of the firm is crucial since in the long run, the firm has to operate profitably in order to survive. The ratios are of importance to long term creditors, shareholders, suppliers, employee's and their representative groups. All these parties are interested in the financial soundness of an enterprise. The ratios commonly used to measure profitability include:

a) Gross profit margin = <u>Gross profit</u>   x 100

　　　　　　　　　　　Sales

It indicates the efficiency with which management produces each unit of a product i.e. by controlling the cost of sales.

b) Net profit margin　　 = <u>Profit after tax</u>   x100

　　　　　　　　　　Sales

It indicates the ability of the firm to control financing expenses in particular interest expense

c) Operating profit margin = <u>Operating profit/earning before interest and tax</u>   x 100

　　　　　　　　　　　　　　　Sales

This ratio indicates the firm's ability to control its operating expenses such as electricity, rent, rates and other costs.

d) Return on investment/return on total assets = <u>Net profit</u>   x 100

　　　　　　　　　　　　　　　Total assets

This ratio indicates the return on profit from investment of one shilling in total assets

e) Return on equity = <u>net profit</u>   x 100

<div align="center">Equity</div>

This ratio indicates the return of profitability on one shilling of equity capital contributed by shareholders.

f)   Return on capital employed (ROCE) = <u>net profit</u>   x 100

<div align="center">Net assets (capital employed)</div>

4. Gearing/ leverage ratios

These ratios are used as a measure of the extent to which the company is financed by borrowed and owners' funds.

a) Debt to equity ratio = <u>long term debt</u> x 100

<div align="center">Common equity capital</div>

Long term debt is sometimes referred to as fixed charge capital.

b) Debt to total capital ratio = <u>long term debt</u>   x 100

<div align="center">Total capital</div>

c) Debt ratio = <u>Total debt(current plus long term liabilities)</u>

<div align="center">Total assets</div>

This ratio indicates the proportion of total assets that has been financed using long term and current liabilities.

d) Times interest earned ratio = <u>Profit before interest and tax</u>

<div align="center">Interest charges</div>

The interest coverage ratio shows the number of times that interest can be paid from the firm's earnings.

e)   Equity ratio = <u>capital employed</u>

Common equity capital

5. Investor ratios

They are also known as market or valuation ratios. We will cover these types of ratios by giving an illustration.

Marine centre ltd has the following data.

Profit after tax   Shs.30, 000,000

Total dividend for the year   Shs.18, 000,000

Market price per share (MPS) shs.20

Number of ordinary shares   6,000,000

Using this data, determine the following investor ratios and explain their significance:

a) Earnings per share (EPS)

b) Dividend per share (DPS)

c) Price earnings ratio (P/E)

d) Dividend payout ratio

e) Retention ratio

f) Dividend yield

g) Earnings yield

h) Dividend covers

 Solution

a) EPS = profit after interest, tax and preferred dividend

          No. of ordinary shares issued

     = 30,000,000   =shs 5

        6,000,000

This ratio indicates the earnings power of the firm i.e. how much earnings or profits are attributed to every share held by an investor. The higher the ratio, the better the firm.

b) DPS = $\dfrac{\text{dividend paid}}{\text{No. of ordinary shares issued}}$

$= \dfrac{18,000,000}{6,000,000}$ =Shs. 3

It indicates the cash dividend received for every share held by an investor. if all earning attributable to ordinary shareholders were paid out as dividends then, EPS=DPS

c) P/E ratio = $\dfrac{\text{MPS}}{\text{EPS}}$

$= \dfrac{20}{5}$ =shs.4

The MPS is the price at which a new share can be bought. EPS is the annual income from each share. Hence, P/E ratio indicates the number of years it will take to recover MPS from the annual EPS of the firm. As will be observed in the earnings yield (EY) the price earnings ratio is a reciprocal of EY.

d) Dividend payout ratio = $\dfrac{\text{DPS}}{\text{EPS}} \times 100$

$= \dfrac{3}{5} \times 100 = 0.6$

It represents the proportion of earnings that was paid out as dividend.

e) Retention ratio =1- dividend payout ratio (DPR)

= 1-0.6

=0.4

f) Dividend yield = $\underline{\text{DPS}}$ x 100

MPS

$$= \frac{3}{20} \times 100$$

=15%

g) Earnings yield $= \dfrac{EPS}{MPS} \times 100$

$$= \frac{5}{18} \times 100$$

=27.8%

It shows the investors total return on his investment.

h) Dividend cover $= \dfrac{EPS}{DPS}$

$$= \frac{5}{3}$$

= 1.67 times

It shows the number of times that the dividend can be paid from current year earnings.

Financial forecasting.

It involves determining the future financial requirements of the firm. This requires financial planning using budgets.

Importance of financial forecasting.

- Facilitates financial planning i.e. determination of cash surplus or deficit that are likely to occur in future.
- Facilitates control of expenditure so as to minimize wastage of financial resources.
- Forecasting using targets and budgets acts as a motivation to employees who aim at achieving targets set

Methods used in financial forecasting.

1. Use of cash budgets

A cash budget is a financial statement indicating sources of revenue, the expected expenditure and any anticipated cash deficit/ surplus.

2. Regression analysis

It is a statistical method which involves identification of dependent and independent variables to form a regression equation y=a + bx on which forecasting is based.

3. Percentage of sales method

One of the items that have a great influence on forecasting is sales. Hence items in the balance sheet which re related to sales are expressed as a percentage of sales. The following steps are involved:

a) Identify balance sheet items that are directly related to sales

 -net fixed assets-say acquisition of new machinery which increase production hence increase sales.

 -Current assets-an increase in sales due to increased in stock raw materials, work in progress and finished goods. Increased credit sales will increase debtors while more cash will be required to buy more raw materials in cash.

 -current liabilities-increased sales will lead to purchase of more raw materials.

 -Retained earnings-this will increase with sales if and only if, the firm is operating at a profit. Long term capital items such as ordinary share capital, preference share capital and debentures are not directly impacted by an increase in sales as they are used to finance long term projects.

b) Express the above identified items as a percentage of sales i.e determine the relationship between the item and current sales.

c) Determine the increase in total assets as a result of increase in sales.

d) Determine total increase in spontaneous sources of finance (current liabilities) and increase in retained earnings.

Retained earnings = net profit - dividend paid

Net profit margin = <u>Net profit</u>

                                    Sales

Therefore net profit = net profit margin x sales

e) Get the external financing needed which is the difference between increase in users of funds(c) and (d)

f) Prepare the proforma financial statements- these are projected statements at the end of the forecasting period.

Note: information could be given which necessitates the determination of forecast sales, this will be determined using the following formula:

$$S_n = S_o(1+ g)^n$$

Where: S_n = sales n years from now

S_o = current sales

g = growth rate

n = forecasting period

Assumptions of percentage of sales method.

- The fundamental assumption is that there's no inflation in the economy .i.e. the increase in sales is caused by an increase production and not increase in selling price.

- The firm is operating at full capacity. hence, the increase in production will require an increase infixed assets

- The capital remains constant during the forecasting period i.e. no issue of ordinary or preference shares and debentures

- That the relationship between the balance sheet items and sales remains the same during the forecasting period.

- The net profit margin will be achieved and shall remain constant during the forecasting period

Comparisons in Financial Analysis

The figures in the financial statements are rarely significant or important in themselves. It is their relationships to other quantities, amounts and the direction of change from one point in time to another point in time that is of importance. It is only through comparison of data that one can gain insight and make intelligent judgments. Analysis thus involves establishing significant relationships

that point to changes as well as trends. We thus can apply the ratios above in comparison of financial statements.

The two comparisons widely used for analytical purpose involve trend and cross-sectional analyses.

Trend Analysis

This is also known as time series analysis, horizontal analysis or temporally analysis. It involves the comparison of the present performance with the result of previous periods for the same enterprise. Trend analysis is therefore usually employed when financial data is available for three or more periods. Developing trends can be seen by using multiyear comparisons and knowledge of these trends can assist in controlling current operations and planning for the future. It can be carried out by computing percentages for the element of the financial statement that is under observation. Trend percentage analysis states several years' financial data in terms of a base year, which is set to be equal to 100%.

In conducting trend analysis the following need to be taken into account:

(i)   Accounting principles and policies employed in the preparation of financial

         Statement must be followed consistently for the periods for which an analysis is

         Being made to allow comparability.

(ii)   The base year selected must be normal and a representative year.
(iii)   Trend percentages should be calculated only for these items, which have logical relationship.
(iv)   Trend percentages should be carefully studied after considering the absolute figures; otherwise they may lead to misleading conclusions.
(v)   To make meaningful comparisons, trend percentage should be adjusted in light of price changes to the base year.

Example

Assume that the following data is extracted from the books of ABC Ltd.

	2004	2003	2002	2001	2000
	sh. 'M'	sh. 'M'	sh. 'M'	sh. 'M'	sh. 'M'
Sales	725	700	650	575	500
Net Income	99	97.5	93.75	86.25	75

From the above absolute figures, there appears to be a general increase in sales and income over the years. When expressing the above date in terms of percentages with 2000 being the base year, the following trend percentage is observed.

	2004	2003	2002	2001	2000
Sales	145%	140%	130%	115%	100%
Net Income	132%	130%	125%	115%	100%
Net income/Sales	13.70%	13.90%	14.40%	15%	15%

From the above table it can be observed that:

i)   Sales and net income have grown over the years but at a 'increasing rate,

ii)   Net income has not kept pace with growth in sates. When net income is expressed as a percentage of rates,

iii)   It is further observed that net income as a percentage of sates is decreasing over the years and this needs to be investigated.

Financial statement analysis is not an end by itself; rather the analyses enable the right questions, for which management has to look for answers.

Problems of Trend analysis

1. To ensure comparability of figures, the results of each year will have to be adjusted using consistent accounting policies. The task of adjusting statements to bring them to a common basis could be taunting.

2. Comparison becomes difficult when the unit of measurement changes in value due to general inflation. Comparisons become quite difficult over time.

3. If the enterprise's environment changes over time with the result that performance that was considered satisfactory in the past may no longer be considered so. More specific measures rather than general trends may be preferred in such instances.

Cross Sectional Analysis

This involves the comparison of the financial performance of a company against other companies within its industry or industry averages at the same point in time. It may simply involve comparison of the present performance or a trend of the past performance. The idea under this approach is to use *bench-marking*, whereby areas in which the company excels *benchmark companies* are identified, and more importantly areas that need improvement highlighted. The typical bench-marks used in cross-sectional analysis may be a comparable company, a leader in the industry, an average firm or industry norms (averages).

Problems of Cross Sectional Analysis

1. It is difficult to find a comparable firm within the same industry. This is because firms may have businesses which are diversified to a greater or lesser extent. Further, industry averages are not particularly useful when analyzing firms with multi-product lines. The choice of the appropriate benchmark industry for such firms is a difficult task.

2. Businesses operating in the same Industry may be substantially different in that, they may manufacture tile same product but one may be using rented equipment while the uses its own making comparison difficult.

3. Two firms may use accounting policies, which are quite different resulting in difference in financial statements. It is usually very difficult for an external user to identify differences in accounting policies yet one must bear them in mind when interpreting two sets of accounts.

4. The analyst must recognize that ratios with large deviations from the norm are only the symptoms of a problem. Once the reason for the problem is known management must develop prescriptive actions for eliminating it. The point to keep in mind is that ratio analysis merely directs attention to potential areas of concern; it does not provide conclusive evidence as to the existence of a problem.

Reinforcing questions

1. (a) Outline four limitations of the use of ratios as a basis of financial analysis.

(b)　　The following information represents the financial position and financial results of AMETEX Limited for the year ended 31 December 2002.

AMETEX Limited

Trading, profit and loss account for the year ended 31 December 2002

	Sh."000"	Sh."000"
Sales – Cash		300,000
- Credit		600,000
		900,000
Less: cost of sales		
Opening stock	210,000	
Purchases	660,000	
	870,000	
Less: closing stock	(150,000)	720,000
Gross profit		180,000

Less expenses:

Depreciation	13,100	
Directors' emoluments	15,000	
General expenses	20,900	
Interest on loan	4,000	
		(53,000)
Net profit before tax		127,000
Corporation tax at 30%		(38,100)
Net profit after tax		88,900
Preference dividend	4,800	
		14,800
Ordinary dividend	10,000	
		74,100
Retained profit for the year		

AMETEX Limited

Balance Sheet as at 31 December 2002

	Sh."000"	Sh."000"	Sh."000"
Fixed Assets			213,900
Current Assets:			
Stocks	150,000		
Debtors	35,900		
Cash	20,000	205,900	

Current Liabilities:

Trade creditors	60,000		
Corporation tax payable	63,500		
Proposed dividend	14,800	138,300	67,600
			281,500

Financed by:

Ordinary share capital (Sh.10 par value)	100,000	
8% preference share capital	60,000	
Revenue reserves	81,500	
10% bank loan	40,000	
		281,500

Additional information:

1. The company's ordinary shares are selling at Sh.20 in the stock market.

2. The company has a constant dividend pay out of 10%.

Required:

Determine the following financial ratios:

(i) Acid test ratio. (2 marks)

(ii) Operating ratio (2 marks)

(iii) Return on total capital employed (2 marks)

(iv) Price earnings ratio. (2 marks)

(v) Interest coverage ratio (2 marks)

(vi) Total assets turnover (2 marks)

(c) Determine the working capital cycle for the company. (4 marks)

(Total: 20 marks)

2. (b) Rafiki Hardware Tools Company Limited sells plumbing fixtures on terms of 2/10 net 30. Its financial statements for the last three years are as follows:

	1998	1999	2000
	Sh.'000'	Sh.'000'	Sh.'000'
Cash	30,000	20,000	5,000
Accounts receivable	200,000	260,000	290,000
Inventory	400,000	480,000	600,000
Net fixed assets	800,000	800,000	800,000
	1,430,000	1,560,000	1,695,000
Accounts payable	230,000	300,000	380,000

Accruals	200,000	210,000	225,000
Bank loan, short term	100,000	100,000	140,000
Long term debt	300,000	300,000	300,000
Common stock	100,000	100,000	100,000
Retained earnings	500,000	550,000	550,000
	1,430,000	1,560,000	1,695,000

Additional information:

Sales	4,000,000	4,300,000	3,800,000
Cost of goods sold	3,200,000	3,600,000	3,300,000
Net profit	300,000	200,000	100,000

Required:

(a) For each of the three years, calculate the following ratios:

Acid test ratio, Average collection period, inventory turnover, total debt/equity, Net profit margin and return on assets.

(b) From the ratios calculated above, comment on the liquidity, profitability and gearing positions of the company.

3. The following financial statements relate to the ABC Company:

Assets	Shs.	Liabilities & Net worth	Shs.
Cash	28,500	Trade creditors	116,250

Debtors	270,000	Notes payable (9%)	54,000
Stock	649,500	Other current liabilities	100,500
Total current assets	948,800	Long term debt (10%)	300,000
Net fixed assets	285,750	Net worth	663,000
	1,233,750		1,233,750

Income Statement for the year ended 31 March 1995

	Shs.
Sales	1,972,500
Less cost of sales	1,368,000
Gross profit	604,500
Selling and administration expenses	498,750
	105,750
Earning before interest and tax	
	34,500
Interest expense	
	71,250
	28,500
Estimated taxation (40%)	
	42,750
Earnings after interest and tax	

Required:

a)   Calculate:

i)   Inventory turnover ratio;   (3 marks)

ii)   Times interest earned ratio;   (3 marks)

iii)   Total assets turnover;   (3 marks)

iv)   Net profit margin   (3 marks)

(Note: Round your ratios to one decimal place)

b)   The ABC Company operates in an industry whose norms are as follows:

Ratio	Industry Norm
Inventory turnover	6.2 times
Times interest earned ratio	5.3 times
Total assets turnover	2.2 times
Net profit margin	3%

Required:

Comment on the revelation made by the ratios you have computed in part (a) above when compared with the industry average.

Discussion questions.

1. Explain what is meant by capital gearing. What are the advantages and disadvantages of a highly geared company to: - (i) its shareholders

        (ii) Its debenture holders

2. Write explanatory notes on the following;- (i) price earnings ratio

                (ii) The importance of dividend cover

CHAPTER 3:

TIME VALUE OF MONEY.

Objectives

At the end of this chapter you should be able to:

1. Explain meaning of time value of money and its role in finance.
2. Explain the concept of future value and perform compounding calculations.
3. Explain the concept of present value and perform discounting calculations.
4. Apply the mathematics of finance to accumulate a future sum, preparing loan amortization schedules, and determining interest or growth rates.

Introduction .

A shilling today is worth more than a shilling tomorrow. An individual would thus prefer to receive money now rather than that same amount later. A shilling in ones possession today is more valuable than a shilling to be received in future because, first, the shilling in hand can be put to immediate productive use, and, secondly, a shilling in hand is free from the uncertainties of future expectations (It is a *sure shilling)*.

Financial values and decisions can be assessed by using either future value (FV) or present value (PV) techniques. These techniques result in the same decisions, but adopt different approaches to the decision.

Future value techniques

Measure cash flow at the some future point in time – typically at the end of a projects life. The Future Value (FV), or terminal value, is the value at some time in future of a present sum of money, or a series of payments or receipts. In other words the FV refers to the amount of money an investment will grow to over some period of time at some given interest rate. FV techniques use compounding to find the future value of each cash flow at the given future date and the sums those values to find the value of cash flows.

Present value techniques

Measure each cash flows at the start of a projects life (time zero).The Present Value (PV) is the current value of a future amount of money, or a series of future payments or receipts. Present value is just like cash in hand today. PV techniques use discounting to find the PV of each cash flow at time zero and then sums these values to find the total value of the cash flows.

Although FV and PV techniques result in the same decisions, since financial managers make decisions in the present, they tend to rely primarily on PV techniques.

COMPOUNDING

 Two forms of treatment of interest are possible. In the case of Simple interest, interest is paid (earned) only on the original amount (principal) borrowed. In the case of Compound interest, interest is paid (earned) on any previous interest earned as well as on the principal borrowed (lent).

Compound interest is crucial to the understanding of the mathematics of finance. In most situations involving the time value of money compounding of interest is assumed. The future value of present amount is found by applying compound interest over a specified period of time

The Equation for finding future values of a single amount is derived as follows:

Let FV_n = future value at the end of period n

    PV (P_o) =Initial principal, or present value

    k= annual rate of interest

    n = number of periods the money is left on deposit.

The future value (FV), or compound value, of a present amount, Po, is found as follows.

At end of Year 1, FV_1 $=P_o(1+k)$ $= Po(1+k)^1$

At end of Year 2, FV_2 $=FV_1(1+k) = P_o(1+k)(1+k)$ $= Po(1+k)^2$

At end of Year 3, FV_3 $= FV_2(1+k) = Po(1+k)(1+k)(1+k)$ $= Po(1+k)^3$

A general equation for the future value at end of *n* periods can therefore be formulated as,

$$FV_n = Po(1+k)^n$$

Example:

Assume that you have just invested Ksh100, 000. The investment is expected to earn interest at a rate of 20% compounded annually. Determine the future value of the investment after 3 years.

Solution:

At end of Year 1, FV_1 $=100,000(1+0.2) =120,000$

At end of Year 2, FV_2 $=120,000(1+0.2)$ OR $\{100,000(1+0.2)(1+0.2)\}=144,000$

At end of Year 3, FV_3 $= 144,000(1+0.2) =100,000(1+0.2)(1+0.2)(1+0.2) = 172,800$

Alternatively,

At the end of 3 years, $FV_3 = 100,000 (1+0.2)^3 = Sh.172,800$

Using Tables to Find Future Values

Unless you have financial calculator at hand, solving for future values using the above equation can be quite time consuming because you will have to raise $(1+k)$ to the nth power.

Thus we introduce tables giving values of $(1+k)^n$ for various values of k and n. Table A-3 at the back of this book contains a set of these interest rate tables. Table A-3 Future Value of $1 at the End of n Periods1 gives the future value interest factors. These factors are the multipliers used to calculate at a specified interest rate the future values of a present amount as of a given date. The future value interest factor for an initial investment of Sh.1 compounded at k percent for n periods is referred to as $FVIF_{k\,n.}$

$$\text{Future value interest factors} = FVIF_{k\,n.} = (1+k)^n .$$

$$FV_n = Po * FVIF_{k,n}$$

A general equation for the future value at end of n periods using tables can therefore be formulated as,

$$FV_n = Po \times FVIF_{k,n}$$

The FVIF for an initial principal of Sh.1 compounded at k percent for n periods can be found in Appendix Table A-3 by looking for the intersection of the nth row an the k % column. A future value interest factor is the multiplier used to calculate at the specified rate the future value of a present amount as of a given date.

From the example above,

$FV_3 = 100,000 \times FVIF_{20\%,3\ years}$

    $=100,000 \times 1.7280$

    $=sh.172, 800$

Future value of an annuity

So far we have been looking at the future value of a simple, single amount which grows over a given period at a given rate. We will now consider annuities.

An annuity is a series of payments or receipts of equal amounts (i.e. a pensioner receiving Sh.100,000 per year for ten years after his retirement). The two basic types of annuities are the ordinary annuity and the annuity due. An *ordinary annuity* is an annuity where the cash flow occurs at the end of each period. In an *annuity due* the cash flows occur at the beginning of each period. This means that cash flows are sooner received with an annuity due than for a similar ordinary annuity. Consequently, the future value of an annuity due is higher than that of an ordinary annuity because the annuity due's cash flows earn interest for one more year.

Example:

Determine the future value of a shs100, 000 investment made *at the end* of every year for 5 years assume the required rate of return is 12% compounded annually.

Solution.

The future value interest factor for an n-year, k%, ordinary annuity (FVIFA) can be found by adding the sum of the first n-1 FVIFs to 1.000, as follows;

End of year	Amount deposited	Number of years companied	Future value interest factor (FVIF) from discount tables(12%)	Future value at end of year
1	100,000	4	1.5735	157350
2	100,000	3	1.4049	140490
3	100,000	2	1.2544	125440
4	100,000	1	1.12	112000
5	100,000	0	1	100000
FV after 5 years.				635280

The Time line and Table below shows the future value of a Sh.100,000 5-year annuity (ordinary annuity) compounded at 12%.

Timeline

```
                                                              157350

                                                              140490

                                                              125440

                                                              125440

                                                              100000

                                                              635280


    0         1         2         3        4     5
          100,000   100,000   100,000   100,000 100,000
```
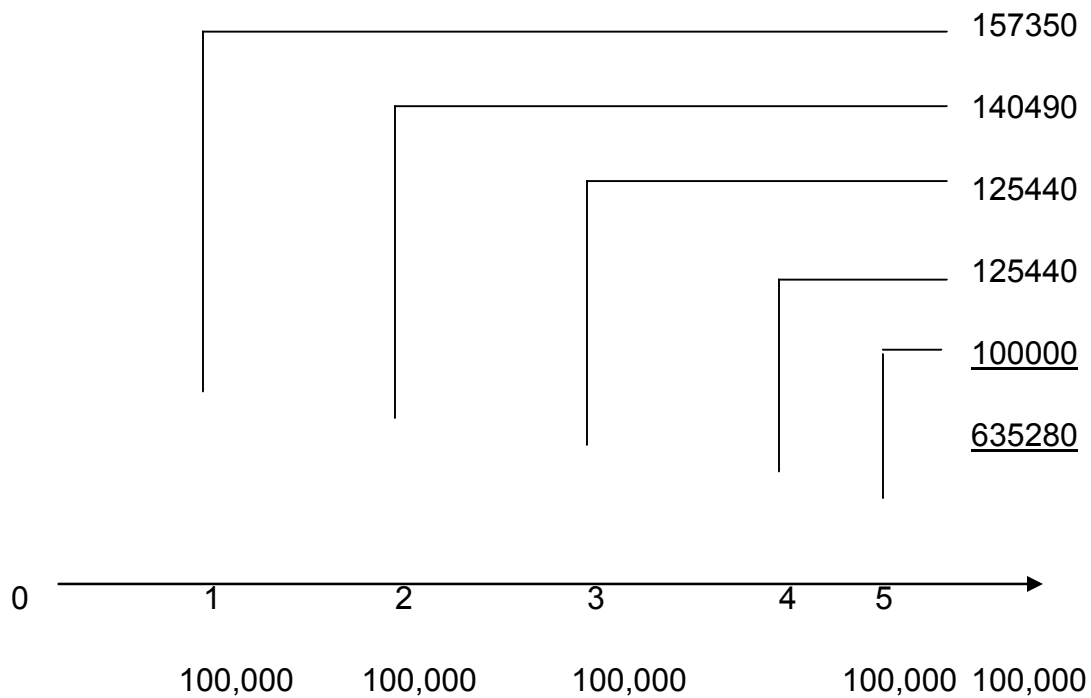
The formula for the future value interest factor for an annuity when interest is compounded annually at *k* percent for *n* periods (years) is;

$$FVIFA_{k,n} = \sum_{t=1}^{n}(1+k)^{t-1} = \frac{[(1+k)^{n}-1]}{k}$$

Using Tables to Find Future Value of an Ordinary Annuity

Annuity calculations can be simplified by using an interest table. Table A-4 Future Value of Annuity The value of an annuity is founding by multiplying the annuity with an appropriate multiplier called the future value interest factor for an annuity (FVIFA) which expresses the value at the end of a given number of periods of an annuity of Sh.1 per period invested at a stated interest rate.

The future value of an annuity (PMT) can be found by,

$$FVA_n = PMT \times (FVIFA_{k\ n})$$

Where FVA_n is the future value of an n-period annuity, PMT is the periodic payment or cash flow, and $FVIFA_{k,n}$ is the future value interest factor of an annuity. The value $FVIFA_{k,n}$ can be accessed in appropriate annuity tables using *k* and *n.* The Table A-4 gives the PVIFA for an ordinary annuity given the appropriate *k* percent and *n*-periods.

From the above example,

$FVA_5 = 100,000 \times FVIFA_{12\%,\ 5\ years}$

   $= 100,000 \times 6.35280$
   $= sh.635280$

Finding Value of an Annuity Due.

Assuming in the above example the investment is made at the beginning of the year rather than at the end.

What is the value of Sh.100,000 investment annually *at the beginning* of each of the next 5 years at an interest of 12%.

Beginning of year deposit	Amount deposited	Number of years companied	Future value interest factor (FVIF) from discount tables 12%	Future value at end of year
1	100,000	5	1.7623	176230
2	100,000	4	1.5735	157350
3	100,000	3	1.4049	140490
4	100,000	2	1.2544	125440
5	100,000	1	1.12	112000
FV after 5 years.				711510

The Time line and Table below shows the future value of a Sh.100,000 5-year annuity due compounded at 12%.

Timeline


```
                                                        176230

                                                        157350

                                                        140490

                                                        125440

                                                        112000

                                                        711510

        0        1         2          3        4
 ───────────────────────────────────────────────────►
    100,000   100,000   100,000   100,000  100,000
```
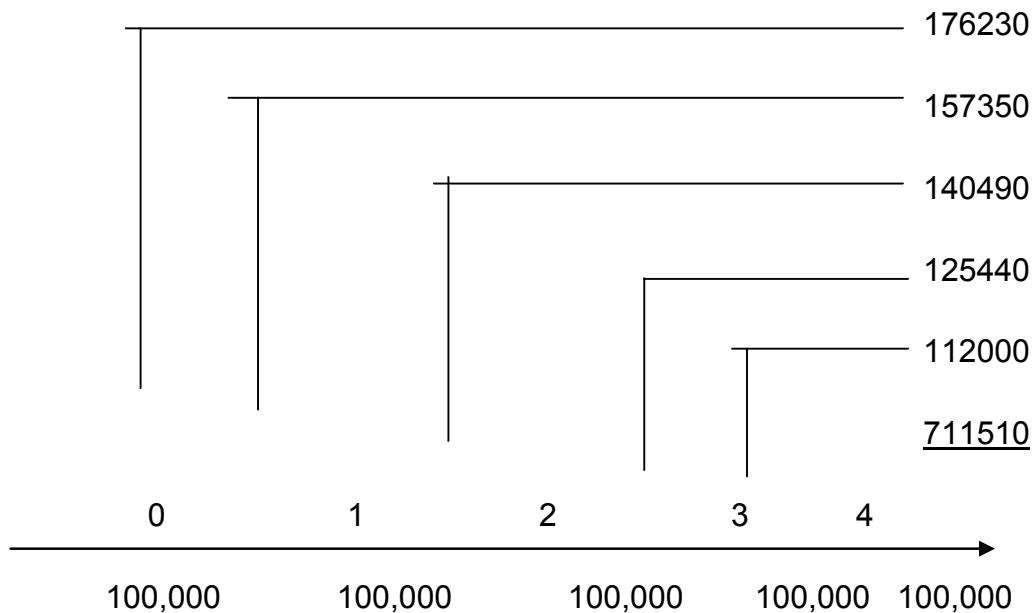
Using Tables to Find Future Value of an Annuity Due

A simple conversion can be applied to use the FVIFA (ordinary annuity)in Table A-4 with annuities due. The Conversion is represented by Equation below.

$$FVIF_{k,n}(\text{annuity due}) = FVIF_{k,n}(\text{ordinary annuity}) \times (1+k)$$

From the above example,

$$FVIFA_{12\%,5yrs}(\text{annuity due}) = FVIFA_{12\%,5yrs}(\text{ordinary}) \times (1+k)$$

$$= 6.35280 \times (1+.12)$$

$$= 7.115136$$

Therefore future value of the annuity due = 100, 000 x 7.115136

$$= sh.711, 511.36$$

Compounding More Frequently.

Interest is often compounded more frequently than once a year. Financial institutions compound interest semi-annually, quarterly, monthly, weekly, daily or even continuously.

Semi Annual Compounding

This involves the compounding of interest over two periods of six months each within a year. Instead of stated interest rate being paid once a year one half of the stated interest is paid twice a year..

Example

Sharon decided to invest Sh.100,000 in savings account paying 8% interest compounded semi annually. If she leaves the money in the account for 2 years how much will she have at the end of the two years?

She will be paid 4% interest for each 6-months period. Thus her money will amount to.

$$FV_4 = 100,000 (1+.08/2)^{2*2} = 100,000(1+.04)^4 = Sh.116,990$$

Or

Using tables = 100,000 x $FVIF_{4\%,4periods}$ = 100,000 x 1.17 = Sh.117,000

Quarterly Compounding

This involves compounding of interest over four periods of three months each at one fourth of stated annual interest rate.

Example

Suppose Jane found an institution that will pay her 8% interest compounded quarterly. How much will she have in the account at the end of 2 years?

$$FV_8 = 100,000(1+.08/4)^{4*2} = 100,000(1+.02)^8 = 100,000 \times 1.1716 = \quad 117,160$$

Or,

Using tables $100,000 \times FVIF_{2\%, 8periods} = 100,000 * 1.172 = 117,200$

As shown by the calculations in the two preceding examples of semi-annual and quarterly compounding, the more frequently interest is compounded ,the greater the rate of growth of an initial deposit. This holds for any interest rate and any period.

General Equation for Compounding more Frequently than Annually.

Let;

m = the number of times per year interest is compounded

n= number of years deposit is held.

k= annual interest rate.

$$FV_{n,k} = P_0\left(1+\frac{k}{m}\right)^{m*n} \qquad\qquad (2.4)$$

Continuous Compounding.

This involves compounding of interest an infinite number of times per year, at intervals of microseconds - the smallest time period imaginable. In this case m approaches infinity and through calculus the Future Value equation 2.1 would become,

FV_n (continuous compounding) = Po x $e^{k \times n}$ \qquad\qquad (2.5)

Where e is the exponential function, which has a value of 2.7183. The FVIFk,n (continuous compounding) is therefore e^{kn} , which can be found on calculators.

Example

If Jane deposited her 100,000/= in an institution that pays 8% compounded continuously, what would be the amount on the account after 2 years?

Amount = 100,000 x $2.718^{.08*2}$ = 100,000 x $2.718^{0.16}$ =100,000*1.1735 =117,350

2.   DISCOUNTING

The process of finding present values is referred to as discounting. It is the inverse of compounding and seeks to answer the question. "If I can earn k% on my money, what is the most I will be willing to pay now for an opportunity to receive FV shillings n periods from now?" The annual rate of return k% is referred to as the discount rate, required rate of return, cost of capital, or opportunity cost.

The present value as the name suggests, is the value today of a given future amount. Recall the basic compounding formula for a lump sum;

$FV_n = P_o (1+k)^1$ Therefore making P the subject

$P_o = \dfrac{FV_n}{(1+k)^n}$

$$PV_{k,n} = \frac{FV_n}{(1+k)^n} = FV_n \times \frac{1}{(1+k)^n}$$

Example:

Assume you were to receive sh. 172,800 three years from now on an investment and the required rate of return is 20 %. What amount   would you receive today to be indifferent?

Solution.

Recall previous example on FV

$PV_{20\%,3yrs}$= 172,800/$(1 + 0.20)^3$ =172,800/1.728 = Sh.100,000

PV=Sh.100,000

FV_5 = Sh.172800

Using Present Value Interest Factor (PVIF) Tables

The factor denoted by $\dfrac{1}{(1+k)^n}, or (1+K)^{-n}$ as above is called the present value interest factor

(PVIF). The PVIF is the multiplier used to calculate at a specified discount rate the present value of an amount to be received at a future date. The $PVIF_{k,n}$ is the present value of one shilling discounted at k% for n-periods.

Therefore the present value (PV) of a future sum (FV_n) can be found by

$$PV = FV_n \times (PVIF_{k, n}).$$

In the preceding example the PV could be found by multiplying Sh. 172,800 by the relevant PVIF. Table A - 1 Present Value of \$1 Due at the End of n Periods gives a factor of 0.5787for 20% and 3 years.

PV = 172800 x 0.5787 = Sh.99, 999.36

= sh. 100,000

Present Value of a Mixed Cashflows

We determine the PV of each future amount and then add together all the individual PVs

Example

The following is a mixed stream of cash flows occurring at the end of year

Year	Cash flow
	sh.000
1	400
2	800
3	500
4	400
5	300

If a firm has been offered the opportunity to receive the above amounts and if it's required rate of return is 9% what is the most it should pay for this opportunities?

Solution.

Year (n)	Cash flow	PVIF$_{9\%, n}$	PV
1	400,000	0.917	366,800
2	800,000	0.842	673,600
3	500,000	0.775	386, 000
4	400,000	0.708	283,200
5	300,000	0.65	195,000
		PV	<u>1,904,600</u>

Present Value of an Annuity

The method for finding the PV of an annuity is similar for that of a mixed stream but can be simplified using present value interest factor of an annuity (PVIFA) tables.

The present value interest factor of an annuity with end–of-year cash flows that are discounted at k per cent for n period are

$$PVIFA_{K,n} = \sum_{t=1}^{n} \frac{1}{(1+k)^n} = \frac{1}{k}\left[1-\left(\frac{1}{1+k}\right)^n\right]$$

Table A - 2 Present Value of an Annuity provides the PVIFA$_{k,n}$, which can be used in calculating the present value of an annuity (PVA) as follows:

PVA = PMT × PVIFA$_{k n}$

Example

Assume that a project will give you sh. 1000 at the end of each year for 4 years .What is the maximum amount would you be willing to pay for that project if the required rate of return is 10%.

Solution

The PVIFA at 10% for 4 years (PVIFA$_{10\%,4yrs}$) from Table A-2 is 3.1699.

Therefore, PVA = 3.1699X 1000 = Sh.3, 169.9

(Confirm the answer with the above equation).

Present Value of an Annuity Due.

From the above example, assume that the project gives you sh. 1000 *at the beginning* of each year for 4 years.

PVIFA$_{k,n}$(annuity due) = PVIF$_{k,n}$(ordinary annuity) x (1 +k)

$$= 3.1699 \times (1+0.1)$$

$$=3.48689$$

Therefore future value of the annuity due   = 1000 x 3.48689

$$=Sh.3, 486.89$$

Present Value of Perpetuity

Perpetuity is an annuity with an infinite life – never stops producing a cash flow at the end of each year forever.

The PVIF for a perpetuity discounted at the rate k is

$$PVIFA_{k, \alpha} \quad = \quad 1/k$$

Example

Wetika wishes to determine the PV of a Sh.1000 perpetuity discounted at 10%.

The present value of the perpetuity is 1000 x $PVIFA_{k,\alpha}$ = 1000 x 1/0.1= Sh.10, 000.

This implies that the receipt of Sh.1,000 for an indefinite period is worth only Sh .10,000 today if Wetika can earn 10% on her investments (If she had Sh.10,000 and earned 10% interest on it each year, she could withdraw Sh.1000 annually without touching the initial Sh.10,000).

Deposits to Accumulate a Future Sum.

It may be necessary to find out the periodic deposits that should lead to the built of a needed sum of money in future.

We can use the expression below, which is a rewriting of FV_n = Po × $FVIF_{k,n}$.

PMT = $FVA_n/FVIFA_{k\,n}$

Where PMT is the periodic deposit, FVA_n is the future sum to be accumulated, and $FVIFA_{k\,n}$ is the future value interest factor of an n-year annuity discounted at k%.

Example
Ben needs to accumulate Sh. 5 million at the end of 5 years to purchase a company. He can make deposits in an account that pays 10% interest compounded annually. How much should he deposit in his account annually to accumulate this sum?

Solution

PMT = $FVA_n/FVIFA_{k\,n}$ = 5,000,000/6.105 = Sh.819,000

Example
Suppose you want to buy a house in 5 years from now and estimate that the initial down payment of Sh. 2 million will be required at that time. You wish to make equal annual end of year deposits in an account paying annual interest of 6%. Determine the size of the annual deposit.

FVA_N = PMT X $FVIFA_{K,N}$

PMT = $FVA_n/FVIFA_{k\,n}$

PMT = 2,000,000/5.637= Sh.354,799

Finding unknown Interest Rate

A situation may arise in which we know the future value of a present sum as well as the number of time periods involved but do not know the compound interest rate implicit in the situation. The following example illustrates how the interest rate can be determined.

Example

Suppose you are offered an opportunity to invest Sh.100'000 today with an assurance of receiving exactly Sh.300,000 in eight years. The interest rate implicit in this question can be found by rearranging $FV_n = Po \times FVIF_{k,n}$ as follows.

$$FV_8 = P_0 (FVIF_{k, 8})$$

$$300,000 = 100,000 (FVIFK_{k,8})$$

$$FVIF_{k, 8} = 300,000 / 100,000 = 3.000$$

Reading across the *8*-period row in the FVIFs table (Table A-3) we find the factor that comes closest to our value of 3 is 3.059 and is found in the 15% column. Because 3.059 is slightly larger than 3 we conclude that the implicit interest rate is slightly less than 15 percent.

To be more accurate, recognize that

$FVIF_{k,8} = (1+k)^8$

$(1+k)^8 = 3$

$(1+k) = 3^{1/8} = 3^{0.125}$

$1+k = 1.1472$

$k = 0.1472 = 14.72\%$

Amortizing a Loan

An important application of discounting and compounding concepts is in determining the payments required for an installment – type loan. The distinguishing features of this loan is that it is repaid in equal periodic (monthly, quarterly, semiannually or annually) payments that include both interest and principal. Such arrangements are prevalent in mortgage loans, auto loans, consumer loans etc.

Amortization Schedule.

An amortization schedule is a table showing the timing of payment of interest and principal necessary to pay off a loan by maturity.

Example

Determine the equal end of the year payment necessary to amortize fully a Sh.600,000, 10% loan over 4 years. Assume payment is to be rendered (i) annually, (ii) semi-annually.

Solution

(i) Annual repayments

First compute the periodic payment using Equation

PMT = $PVA_n / PVIFA_{k,n}$.

Using tables we find the $PVIFA_{10\%, 4yrs}$ = 3.170, and we know that PVA_n = Sh.600,000

PMT = 600,000/3.170 = Sh.189, 274 per year.

Loan Amortization   schedule

			Payments		
End of year	Loan payment	Beg. Of year principal	Interest	Principal	End of year principal.
			[10%x (2)]	[(1) – (3)]	[(2) – (4)]
	(1)	(2)	(3)	(4)	(5)
1	189,274	600,000	60,000	129,274	470,726
2	189,274	470726	47,073	142,201	328,525
3	189,274	328525	32,853	156,421	172,104
4	189,274	172104	17,210	172,064	-

(ii) Semi-annual repayments

For semi-annual repayments the number of periods, *n,* is 8 and the discount rate is 5%.

Lets compute the periodic payment using Equation

PMT = $PVA_n / PVIFA_{k,n}$.

Using tables we find the $PVIFA_{5\%, 8periods}$ =6.4632, and we know that PVA_n = Sh.600,000

PMT = 600,000/6.4632 = Sh.92,833 per year.

Loan Amortization   schedule

End of period (6months)	Loan payment	Beg. Of year principal	Payments		
			Interest	Principal	End of period principal.
			[5%x (2)]	[(1) – (3)	[(2) – (4)]
	(1)	(2)	(3)	(4)	(5)
1	92833	600,000	30,000	62,833	537,167
2	92,833	537,167	26,858	65,975	471,192
3	92,833	471,192	23,559	69,274	401918
4	92,833	401, 918	20,096	72,737	329,181
5	92,833	329,181	16,459	76,374	252,807
6	92,833	252,807	12,481	80,192	172,615
7	92,833	172,615	8,631	84,202	88,413
8	92,833	88,413	4,421	88,412	-0-

Determining Interest or Growth Rate

It is often necessary to calculate the compound annual interest or growth rate implicit in a series of cash flows. We can use either PVIFs or FVIFs tables. Let's proceed by way of the following illustration.

Example

Roy wishes to find the rate of interest or growth rate of the following series of cash flows

Year	Cash flow (Sh.)
2004	1,520,000
2003	1,440,000
2002	1,370,000
2001	1,300,000

2000	1,250,000

Solution

Using 2000 as base year, and noting that interest has been earned for 4 years, we proceed as follows:

Divide amounts received in the earliest year by amount received in the latest year.

1,250,000/1,520,000   =   0.822. This is the $PVIF_{k,4yrs}$. We read across row for 4 years for the interest rate corresponding to factor 0.822. In the row for 4 year in table of Table A-3 of PVIFs, the factor for 5% is .823, almost equal to 0.822. Therefore interest or growth rate is approximately 5%.

Note that the $FVIF_{k,4yrs}$ (1,520,000/1,250,000) is 1.216. . In the row for 4 year in table of Table A-1 of FVIFs, the factor for 5% is 1.2155 almost equal to 1.216.We estimate the growth rate to be 5% as before.

Discussion Questions

1. Why does money have time value?
2. What is a deferred annuity (annuity due)?
3. List five different applications of time value of money.
4. If, as an investor, you had a choice of daily, monthly, or quarterly compounding, which would you choose? Why?
5. Describe the procedure used to amortize a loan into a series of equal annual payments. What is a loan amortization schedule?
6. What is perpetuity?

Problems

2-1.   If you invest Sh.12,000 today, how much will you have :

   i. In 6 years at 7%.

   ii. In 15 years at 12 %.

   iii. In 25 years at 10 %.

   iv. In 25 years at 10 % compounded semi-annually.

2-2.   How much would you have to invest today to get:
   v. Sh.12, 000 in 6 years at 12%.

vi.   Sh.8,000 in 5 years at 20%

vii.   Sh.15, 000 in 15 years at 8%.

viii. Sh.30, 000 each year for 20 years at 6%.

ix.   Sh.40, 000 each year for 40 years at 5%.

2-3. William Kimilu borrows Sh.7, 000,000 at 12% interest rate toward the purchase of a new house. His mortgage is for 30 years.
a.   How much will his annual payments be?
b.   How much interest will he pay over the life of the loan?
c.   How much should he be willing to pay to get out of a 12% mortgage and into a 10% mortgage with 30 years remaining on the mortgage?

2-4. Your younger sister, Agnes will start college in one year's time. The college fees will amount to Sh.80, 000 per year for four years payable at the beginning of each year. Anticipating Agnes's ambition, your parents started investing Sh.10, 000 per year five years ago and will continue to do so for five more years. How much more will your parents have to invest for the next five years to have the necessary funds for Agnes's education? Use 10% as the appropriate interest rate throughout the question.

2-5. You are the chairperson of the investment retirement fund for Actors Fund. You are asked to set up a fund of semi-annual payments to be compounded semi-annually to accumulate a sum of Sh.5, 000,000 after 10 years at 8% annual rate (20 payments). The first payment into the fund is to take place 6 months from now, and the last payment is to take place at the end of the tenth year.
a.   Determine how much the semi-annual payment should be.
On the day after the sixth payment is made (the beginning of the fourth year), the interest rate goes up to 10% annual rate, and you can earn 10% on the funds that have accumulated as well as on all future payments into the fund. Interest is to be compounded semi-annually on all funds.

b.   Determine how much the revised semi-annual payments should be after this rate change (there are 14 semi-annual payments remaining). The next payment will be in the middle of the fourth year.

2-6. You can deposit Sh. 100,000 into an account paying 9% annual interest either today or exactly 10 years from today. How much better off would you be at the end of 40 years if you decide to make the initial deposit today rather than 10 years from today?

2-7. Lumumba needs to have Sh.1, 500,000 at the end of 5 years in order to fulfill his goal of purchasing a sports car. He is willing to invest the amount as a lump sum today but wonders what type of investment return he will need to earn. Figure out the annual compound rate of return needed in each of the following cases.

a.   Lumumba can invest Sh.1
b.   , 020,000 today.
c.   Lumumba can invest Sh.815,000 today
d.   Lumumba can invest Sh.715,000 today

2.8   Lucas   wishes to determine the future value at the end of two years 0f a Sh.150, 000 deposit made today into an account paying a nominal interest rate of 12%.

a.   Find the future value of Lucas' deposit assuming that interest rate is compounded:

1)   Annually

2)   Quarterly

3)   Monthly

b.   Using your findings in a demonstrate the relationship between compounding frequency and future value

c.   What is the maximum future value obtainable give the Sh.150,000 deposit, 2-year time period, and 12% nominal rate? Using your findings in a to explain.

2-9   Rita Wanda wishes to select the better of two ten-year annuities.

Annuity X is an ordinary annuity of Sh.250, 000 per for 10 years.

Annuity Y is an annuity due of Sh.220, 000 per for ten years.

a. Find the future value of both annuities assuming that Rita can earn (1) 10% annual interest, (2) 20% annual interest.
b. Briefly explain the differences between the values

2-10. You plan to retire in exactly 20 years. Your goal is to create a fund that will allow you to draw Sh.200, 000 per for 30 years between retirement and probable death. You will be able to earn 11% during the retirement period.

a.   How large a fund will you need when you retire in 20 years to provide the 30-year Sh.200, 000 annuities.
b.   How much would you need today as a lump sum to provide the amount calculated in a) above if you earn only 9% during the 20 years preceding retirement?

2-11. While vacationing in Lamu Island Chris Musundi saw the vacation home of his dreams. It was listed with a sale price of Sh.20, 000,000. The only catch is that Chris is 40 and plans to continue working till he is 65. Chris expects property values to increase at the general rate of inflation. Chris can earn a return of 9% annually on his funds and is willing to invest a fixed amount for the 25 years to fund the cash purchase of such a house when he retires.

    a.   If inflation is expected to average 5% for the next 25 years what will Chris dream house cost when he retires?

    b.   How much must Chris invest at the end of each of the 25 years in order to have the cash purchase price of the house when he retires?

    c.   If Chris invests at the beginning instead of at the end of teach of the 25 years, how much must he invest each year?

2-12 Rodgers Masengo just closed a Sh.2, 000,000 business loan that is to be repaid in 3 equal end-of year repayments. The interest rate on the loan is 13%.
Prepare an amortization schedule for the loan.

CHAPTER 4

COST OF CAPITAL

Objectives
At the end of the chapter you should be conversant with:

1. Meaning and application of cost of capital.

2. Computation of specific cost of capital.

3. Weighted average cost of capital (WACC) and weighted marginal cost of capital (WMCC)

4. Term structure of interest rates.

Introduction.

The cost of capital of a project is the minimum required rate of return expected on funds committed to the project. It is the required rate of return by the providers of funds.

Significance of cost of capital

a) It is useful in long term investment decisions so as to determine which project should be undertaken. The techniques used to make this decision include net present value and IRR.

b) It is also used in capital structure decisions to determine the mix of various components in the capital structure. The cost of capital of each component is determined.

c) Used for performance appraisal. A high cost of capital is an indicator of high risk attached to the firm usually attributed to the performance of the management of a firm

d) In making lease or buy decisions. In lease or buy decisions the cost of debt is used as the discounting rate.

SPECIFIC COSTS OF CAPITAL

Specific costs of capital are the costs of capital of each source of capital such as debt, preference shares and equity.

a) Cost of debt (kd)

The cost of debt for a perpetual debenture will be;

$$K_d = \frac{I}{P_b}$$

I   is the annual interest

P_b is the current market value of a debenture

If the debenture is redeemable after a certain period of time/it has a maturity period the following formula will be applied to get the cost of debt or yield to maturity;

$$k_d = I + \frac{\dfrac{M - P_b}{n}}{\dfrac{M + P_b}{2}}$$

I is the annual interest

M is the par value of the debenture

P_b is the current market value of the debenture

n is the period to maturity

The above formula gives the pre-tax cost of debt the after tax cost of debt for which interest paid on debentures is an allowable expense for tax purposes will therefore be;

K_d (1-T) T being the tax rate.

b) Cost of preference shares (k_p)

The required return to the preference shareholders with perpetual preference share capital will be;

$$K_p = \frac{d_p}{P_p}$$

d_p is the preference dividend per share

P_p is the market price per preference share

Where the company incurred floatation cost the kp $= \dfrac{dp}{P_p - Fc}$

Fc is the floatation cost

c) Cost of ordinary shares/equity (k_e)

Equity can be either internally generated (from retained earnings) or externally generated (the common share capital).

The cost of retained earnings (k_r). Retained earnings are an internal financing received without incurring floatation costs. It can be calculated as follows;

$$k_r = \frac{d_1}{} + g$$

P_o

The cost of external equity (k_s) can be calculated as follows;

$$k_s = \frac{d_1}{P_0 - Fc} + g$$

Where Fc is the floatation cost which may be given as the percentage of the price or in shilling value.

Weighted average cost of capital (WACC)

This is the overall/composite cost of capital that a firm is currently using. It is calculated by determining the weighted average cost of each source of capital in the firm's capital structure.

$$WACC(k_o) = k_d\left(\frac{D}{V}\right) + k_p\left(\frac{P}{V}\right) + k_r\left(\frac{R}{V}\right) + k_s\left(\frac{S}{V}\right)$$

Where;

k_d, k_p, k_r, k_s =percentage cost of debt, preference share capital, retained earnings and external equity respectively

D, P, R, S   =total debt, preference, retained and ordinary share capital respectively

V=   total value/capital of the firm

Hence, $\frac{D}{V}, \frac{P}{V}, \frac{R}{V}, \frac{S}{V}$ are the proportions or weights of debt, preference capital, retained earnings and external equity in the capital structure respectively

Example.

Bahati Company has the following capital structure.

Source	amount
Debentures	8,000,000
Preference capital	2,000,000
Retained earnings	4,000,000
Ordinary share capital	6,000,000
	20,000,000

The component costs of capital are; kd is 6%, kp is10.5%, kr is 14%,ks is 17.2%

Compute the WACC.

$K_o = w_d k_d + w_p k_p + w_r k_r + w_s k_s$

The w_d, w_p, w_r, w_s are the weights of the specific sources of capital whose sum is 1.

$k_o = 6 (\dfrac{8m}{20m}) + 10.5(\dfrac{2m}{20m}) + 14(\dfrac{4m}{20m}) + 17.2(\dfrac{6m}{20m})$

Ko = 11.41%

The weighted average cost of capital can be used to evaluate the performance of management. Since it is a historic cost it is not useful in investment decisions as it is irrelevant. In making decisions the future costs are considered and hence the need for the marginal cost of capital (MCC).

Marginal cost of capital (MCC)

This is the cost of raising an additional shilling. It considers the cost of raising additional or future financing. An increase in the level of financing increases the cost of various types of finances. As retained earnings are exhausted there may be a need to issue new ordinary shares which comes with high floatation costs hence a higher marginal cost of capital.

Example.

Mina ltd has 300,000 of retained earnings available. The kr is 13%. If the company exhausts the retained earnings it can issue equity whose cost is 14%. The firm expects that it can borrow up to 400,000 at 5.6%, beyond that additional debt will have an after tax cost of 8.4%

Unlimited amounts of funds can be raised by issuing preference stock at a current cost of 10.6%.Mina Ltds capital structure is 40% debt, 50% equity,10% preference.

Calculate the marginal cost of capital of the various ranges of total financing.

The Break point reflects the level of total new financing at which the cost of one of the financing components rises.

$BPj = \dfrac{AF}{Wj}$

Where; AF is the amount of funds available from source j at a given cost before braking point.

Wj is the capital structure weight of source j

BP of equity $= \dfrac{300,000}{} = 600,000$

BP of debt = $\dfrac{400,000}{0.4}$ = 1,000,000

(0.5 above 400,000; 0.4 below)

Breaking point	MCC
0- 600,000	0.4(5.6)+ 0.1(10.6) +0.5(13) = 9.8%
600,001- 1,000,000	0.4(5.6) + 0.1(10.6) + 0.5(14)=10.8%
Over 1m	0.4(8.4) +0.1(10.6) + 0.5(14)=11.5%

Preference share capital cost does not change with the breaking points as we are told we can raise unlimited funds at the same cost. The retained earnings are exhausted at the 600,001 shilling so the cost increases as new equity is issued at 14%.

The marginal cost of capital schedule shows the relationship between the MCC and the amount of funds raised by the company.

Weaknesses of WACC as a discounting rate.

- It is an historical cost and therefore would not be appropriate t use in investments decision as only future cash flows should be used. When calculating cost of equity the dividend is used and so is the growth rate which is gotten from past stream of dividends.
- It assumes that the capital structure is optimal which is not achievable in the real world.
- It can only be use das a discounting rate assuming that the risk of the project is equal to the business risk of the firm. if the project has higher risk then a percentage premium will be added to WACC to determine the appropriate discounting rate.

WEIGHTED MARGINAL COST OF CAPITAL (WMCC) SCHEDULE.

This is a schedule that shows the relationship between the marginal cost of capital; and the amount of funds raise d by a company. The marginal cost of capital can either be constant or have breaks or breaking points.

cost

Cost

K_d K_p K_r and K_s are constant.

Amount

Constant
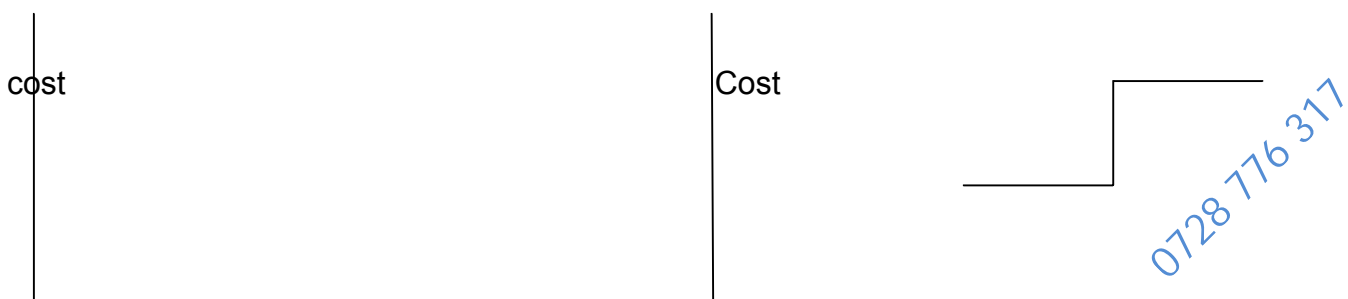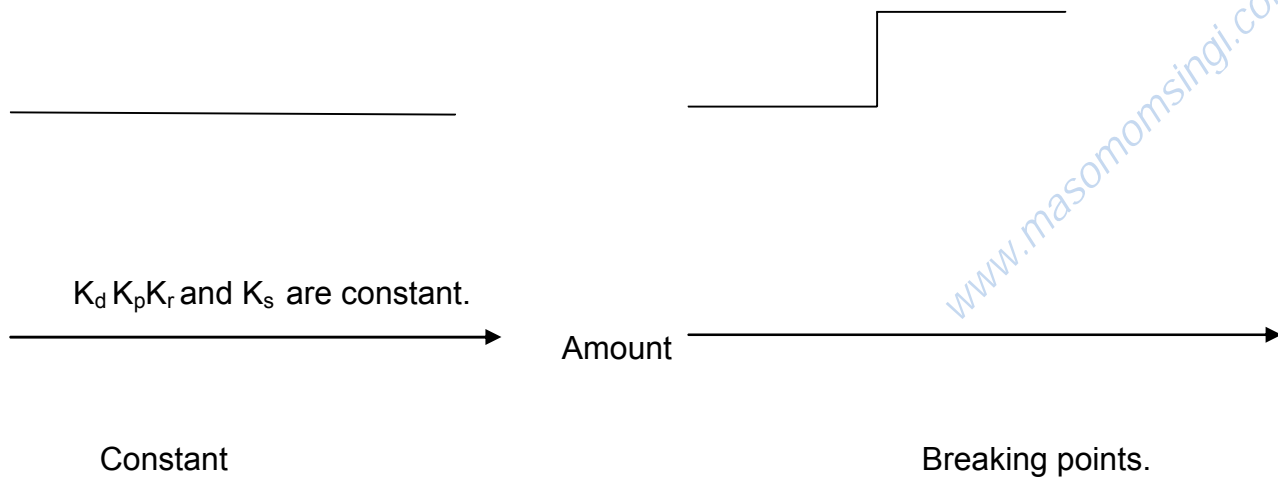
Breaking points.

Constant cost of capital schedule occurs if it is possible to raise a limited amount of funds from each of the sources at the same cost. A breaking point MCC occurs if additional funds from any of the sources can only be raised at a higher cost. The most common MCC schedule is one with a break when retained earnings are exhausted.

Breaking Point = Total cheaper funds from a given source

Proportion of that source in the capital structure.

Example

Makueni Investments Ltd. wishes to raise funds amounting to Sh.10 million to finance a project in the following manner:

Sh.6 million from debt; and

Sh.4 million from floating new ordinary shares.

The present capital structure of the company is made up as follows:

1.   600,000 fully paid ordinary shares of Sh.10 each
2.   Retained earnings of Sh.4 million
3.   200,000, 10% preference shares of Sh.20 each.
4.   40,000 6% long term debentures of Sh.150 each.

The current market value of the company's ordinary shares is Sh.60 per share. The expected ordinary share dividends in a year's time is Sh.2.40 per share. The average growth rate in both dividends and earnings has been 10% over the past ten years and this growth rate is expected to be maintained in the foreseeable future.

The company's long term debentures currently change hands for Sh.100 each. The debentures will mature in 100 years. The preference shares were issued four years ago and still change hands at face value.

Required:

(i) Compute the component cost of:
- Ordinary share capital;
- Debt capital
- Preference share capital.

(ii) Compute the company's current weighted average cost of capital.

(iii) Compute the company's marginal cost of capital if it raised the additional Sh.10 million as envisaged. (Assume a tax rate of 30%).

Solution

(b) (i) Cost of equity

$$Ke = \frac{do(1 + g)}{Po} + g$$

do(1+g) = Sh2.40

Po = Sh60

g   =   10%

$$Ke = \frac{2.40}{60} + 0.10 = 0.14 = 14\%$$

Cost of debt capital (Kd)

Since the debenture has 100years maturity period then Kd = yield to maturity = redemption.

$$Kd = \frac{Int(1-T) + (m-vd)\dfrac{1}{n}}{(m+vd)\dfrac{1}{2}}$$

m   =   Maturity/per value = sh 150

vd   =   market value = Sh. 100

n   =   number of years to maturity =100

Int   =   Interest = 6% x Sh. 150 = Sh.9 p.a

T   =   Tax rate = 30%

$$Kd = \frac{9(1-0.3) + (150-100)\dfrac{1}{100}}{(150+100)\dfrac{1}{2}} = \frac{6.8}{125} \times 100 = 5.441\%$$

Cost of preference share capital Kp

Kp   =   Coupon rate = 10% since MPS = par value

(ii)   WACC or overall cost of capital Ko

M.V of equity = 600,000 shares x sh 60 MPS   36

M.V of debt = 40,000 debentures x Sh 100   4

M.V of preference shares = 200,000 shares x Sh 20 $\dfrac{4}{44}$

Ke = 14%   Kd = 5.44%   Kp = 10%

$$Ko = WACC = 14\%\left(\dfrac{36}{44}\right) + 5.44\%\left(\dfrac{4}{44}\right) + 10\%\left(\dfrac{4}{44}\right) = \underline{12.86\%}$$

The Sh 10M will be raised as follows:

Sh 6M from debt

Sh 4M from shares

Since there are no floatation costs involved then:

Marginal cost of debt = 5.4%

Marginal cost of ordinary share capital = 14%

$$\text{Therefore marginal cost of capital} = 14\%\left(\dfrac{4}{10}\right) + 5.55\%\left(\dfrac{6}{10}\right) = \underline{8.86\%}$$

Term structure of interest rates.

The term structure of interest rates describes the relationship between interest rates and the term to maturity and the differences between the short term and long term interest rates.

Theories which have been advanced to explain the nature if he yield curve –which is a graph of the term structure of interest rates depicting the relationship between yield to maturity of a security-on the y-axis and the time to maturity-on the x-axis.

Theories of term structure.

1. Liquidity preference theory.

This theory states that short term bonds are more favourable than long term bonds because;

Investors perceive less risk in short term securities because they are more liquid. Hence they can accept lower yields to avoid the risk.

Borrowers on the other hand, will prefer longer tem bonds so as to delay repayment of the debt. They are thus willing too pay a higher rate for longer term bonds.

These preferences result in a premium being paid which increases as the time to maturity increases. Hence this explains an upward sloping yield curve.

2. Expectations hypothesis

This theory states that the yield curve depends on the expectations about the future inflation rate. If the inflation rate is expected to rise, then the rate on long term bonds will exceed that of short term loan. In this case the yield curve would be upward sloping, the reverse is true. The expected future interest rates are equal to forward rates computed from the expectations with regard to the future interest rates.

The following conditions are necessary for the expectations hypothesis to hold;

- There's a perfect capital market with many buyers and sellers.
- Investors are assumed to be rational. Are wealth maximizers
- Investors have homogeneous expectations about future interest rates and return on investment.
- The bankruptcy of firms due to the use of borrowing is unlikely.

3. Market segmentation theory

It state that the market for loans is segmented on the basis of maturity and are confined to a segment of the market and will not change even if the forecast of the likely future interest changes.

The supply and demand for loans in each segment will determine the prevailing rates in that segment. Take an example of someone borrowing to build a house they would most likely prefer a long term loan. The lower rates say in the short term segment and high rates in the long term segment would result in an upward sloping curve.

<u>Reinforcing questions</u>

1. (a) Explain the meaning of the term "cost of capital" and explain why a company should calculate its cost of capital with care.   (4 marks)

(b)   Identify and briefly explain three conditions which have to be satisfied before the use of the weighted average cost of capital (WACC) can be justified.   (6 marks

2. Vitabu Ltd. is a merchandising firm. The following information relates to the capital structure of the company:

1.   The current capital structure of the company which is considered optimal, comprises:

Ordinary share capital – 50%, preference share capital – 10% and debt – 40%.

2.   The firm can raise an unlimited amount of debt by selling Sh.1,000 par value, 10 year 10% debentures on which annual interest payments will be made. To sell the issue it will have to grant an average discount of 3% on the par value and meet flotation costs of Sh.20 per debenture.

3.   The firm can sell 11% preference shares at the par value of Sh.100. However,, the issue and selling costs are expected to amount to Sh.4 per share. An unlimited amount of preference share capital can be raised under these terms.

4.   The firm's ordinary shares are currently selling at Sh.80 per share. The company expects to pay an ordinary dividend of Sh.6 per share in the coming year. Ordinary dividends have been growing at an annual rate of 6% and this growth rate is expected to be maintained into the

foreseeable future. The firm can sell unlimited amounts of new ordinary shares but this will require an under pricing of Sh.4 per share in addition to flotation costs of Sh.3 per share.

5. The firm expects to have Sh.225,000 of retained earnings available in the coming year. If the retained earnings are exhausted, new ordinary shares will have to be issued as the form of equity financing.

The company is in the 30% corporation tax bracket.

Required:

(a) The cost of each component of financing. (12 marks)

(b) The level of total financing at which a break in the marginal cost of capital (M.C.C) curve occurs. (2 marks)

(c) The weighted average cost of capital (W.A.C.C):

    (i) Before exhausting retained earnings. (3 marks)

    (ii) After exhausting retained earnings. (3 marks)

(d) Explain fully the effect of the use of debt capital on the weighted average cost of capital of a company. (6 marks)

3 .The Salima company is in the fast foods industry. The following is the company's balance sheet for the year ended 31 March 1995:

Assets	Sh.'000'	Liabilities and owners equity	Sh.'000'
Current Assets	65,000	Current liabilities	25,000
	85,000	16% Debentures (Sh.1,000 par)	31,250
Net fixed assets			12,500
		15% Preference shares	25,000
		Ordinary shares (Sh.10 par)	

	Retained profits	56,250
	150,000	150,000

Additional information:

1. The debenture issue was floated 10 years ago and will be due in the year 2005. A similar debenture issue would today be floated at Sh.950 net.

2. Last December the company declared an interim dividend of Sh.2.50 and has now declared a final dividend of Sh.3.00 per share. The company has a policy of 10% dividend growth rate which it hopes to maintain into the foreseeable future. Currently the company's shares are trading at Sh.75 per share in the local stock exchange.

3. A recent study of similar companies in the fast foods industry disclose their average beta as 1.1.

4. There has not been any significant change in the price of preference shares since they were floated in mid 1990.

5. Treasury Bills are currently paying 12% interest per annum and the company is in the 40% marginal tax rate.

6. The inflation rate for the current year has been estimated to average 8%.

Required:

(a) Determine the real rate of return. (2 marks)

(b) What is the minimum rate of return investors in the fast foods industry may expect to earn on their investment? Show your workings. (7 marks)

(c) Calculate Salina's overall cost of capital. (6 marks)

(d) Discuss the limitations of using a firm's overall cost of capital as an investment discount rate. (6 marks)

Discussion questions

1. (b) The total of the net working capital and fixed assets of Kandara Ltd as at 30 April 2003 was Sh.100,000,000. The company wishes to raise additional funds to finance a project within the next one year in the following manner.

Sh.30,000,000 from debt

Sh.20,000,000 from selling new ordinary shares.

The following items make up the equity of the company:

	Sh.
3,000,000 fully paid up ordinary shares	30,000,000
Accumulated retained earnings	20,000,000
1,000,000 10% preference shares	20,000,000
200,000 6% long term debentures	30,000,000

The current market value of the company's ordinary shares is Sh.30. The expected dividend on ordinary shares by 30 April 2004 is forecast at Sh.1.20 per share. The average growth rate in both earnings and dividends has been 10% over the last 10 years and this growth rate is expected to be maintained in the foreseeable future.

The debentures of the company have a face value of Sh.150. However, they currently sell for Sh.100. The debentures will mature in 100 years.

The preference shares were issued four years ago and still sell at their face value.

Assume a tax rate of 30%

Required:

(i)   The expected rate of return on ordinary shares.   (2 marks)

(ii)   The effective cost to the company of:

- Debt capital   (2 marks)
- Preference share capital   (2 marks)

(iii)   The company's existing weighted average cost of capital.   (4 marks)

(iv)   The company's marginal cost of capital if it raised the additional Sh.50,000,000 as intended.   (4 marks)

CHAPTER 5:

CAPITAL BUDGETING DECISIONS

Objectives

At the end of this chapter, you should be able to:

1. Define capital budgeting.
2. Describe and compute Cash flow components.
3. Critically evaluate the capital budgeting techniques.
4. Evaluate projects and rank them based on the budgeting techniques. Already learned.
4. Discuss the potential difficulties and   conflicts in using alternative discounted capital methods.

Introduction.

Capital budgeting decision is also known as the investment decision. The capital budgeting process involves a firms decision to invest its funds in the most viable and beneficial project. It is the process of evaluating and selecting long term investments consistent with the firm's goal of owner wealth maximization.

The firm expects to produce benefits to the firm over a long period of time and encompasses tangible and intangible assets. For a manufacturing firm, capital investment are mainly to acquire fixed assets- property, plant and equipment. Note that typically, we separate the investment decision from the financing decision: first make the investment decision then the finance manager chooses the best financing method.

These key motives for making capital expenditures are;

1. *Expansion:* The most common motive for capital expenditure is to expand the cause of operations – usually through acquisition of fixed assets. Growing firms need to acquire new fixed assets rapidly.

2. *Replacements* – As a firm's growth slows down and it reaches maturity, most capital expenditure will be made to replace obsolete or worn out assets. Outlays of repairing an old machine should be compared with net benefit of replacement.

3. *Renewal* – An alternative to replacement may involve rebuilding, overhauling or refitting an existing fixed asset.. A physical facility could be renewed by rewiring and adding air conditioning.

4. *Other purposes* – Some expenditure may involve long-term commitments of funds in expectations of future return i.e. advertising, R&D, management consulting and development of view products. Other expenditures include installation of pollution control and safety devises mandated by the government.

Features of investment decisions.

1. The investment requires a high outlay of capital which must be planned.

2. Capital budgeting decisions have an influence on the rate and direction of the growth of the organization unlike normal operation costs.

3. The investment has long-term implications. I.e. more than 1 year.

4. The decisions are irreversible. This implies that there might be no second hand market for the assets since it's usually tailor made for that particular firm.

5. The future expected cash flows from this project are uncertain thus these decisions involve a high degree of risk.

Steps in Capital Budgeting Process

The capital budgeting process consists of five distinct but interrelated steps. It begins with proposal generation, followed by review and analysis, decision making, implementation and follow-up. These six steps are briefly outlined below.

1. Proposal generation: Proposals for capital expenditure are made at all levels within a business organization. Many items in the capital budget originate as proposals from the plant and division management. Project recommendations may also come from top management, especially if a corporate strategic move is involved (for example, a major expansion or entry into a new market). A capital budgeting system where proposals originate with top management is referred to a top-down system, and one where proposals originate at the plant or division level is referred to as bottom-up system. In practice many firms use a mixture of the

two systems, though in modern times has seen a shift to decentralization and a greater use of the bottoms-up approach. Many firm offer cash rewards for proposal that are ultimately adopted.

2. Review and analysis: Capital expenditure proposals are formally reviewed for two reasons. First, to assess their appropriateness in light of firm's overall objectives, strategies and plans and secondly, to evaluate their economic viability. Review of a proposed project may involve lengthy discussions between senior management and those members of staff at the division and plant level who will be involved in the project if it is adopted. Benefits and costs are estimated and converted into a series of cash flows and various capital budgeting techniques applied to assess economic viability. The risks associated with the projects are also evaluated.

3. Decision making: Generally the board of directors reserves the right to make final decisions on the capital expenditures requiring outlays beyond a certain amount. Plant manager may be given the power to make decisions necessary to keep the production line moving (when the firm is constrained with time it cannot wait for decision of the board).

4. Implementation: Once approval has been received and funding availed implementation commences. For minor outlays the expenditure is made and payment is rendered: For major expenditures, payment may be phased, with each phase requiring approval of senior company officer.

5. Follow-up: involves monitoring results during the operation phase of the asset. Variances between actual performance and expectation are analyzed to help in future investment decision. Information on the performance of the firm's past investments is helpful in several respects. It pinpoints sectors of the firm's activities that may warrant further financial commitment; or it may call for retreat if a particular project becomes unprofitable. The outcome of an investment also reflects on the performance of those members of the management involved with it. Finally, past errors and successes provide clues on the strengths and weaknesses of the capital budgeting process itself.

This topic will majorly discuss on the second step: Review and analysis.

Estimation of cash flows is one of the most important and challenging step because decisions made depend on cashflows projected for each proposal. Cashflows must be relevant and therefore need to have the following criteria,

- They must be future cashflows because cashflows already received or paid are sunk costs hence irrelevant in decision making.
- Cashflows must be incremental. This enables the firm to analyze cashflows of the firm with or without the project.
- Cashflows must involve an actual inflow or outflow of cash. Thus expenses which do not involve a movement of cash e.g. Depreciation are not cashflows.

Cash flow components

The cash flows of any project can include three basic components:

 (1) An initial investment

(2) Operating cash flows

(3) Terminal cash flows.

All projects will have the first two; some however, lack the final components.

Initial Investment

The initial investment is the relevant cash outflow for a proposed project at time zero. It is found by subtracting all cash inflows occurring at time zero from all cash outflows occurring at time zero. Atypical format used to determine initial cash flow is shown below.

Cost on new asset		xx
Installation cost		xx
Installed cost of new asset		xx
	Proceeds from sale of old assets	xx
	+ Tax on sale of old assets	xx
	After-tax proceeds from sale of old asset	xx

+ Change in Net working capital   xx

Initial Investment   xx

The installed cost of new asset = cost of new asset (acquisition cost) + installation cost (additional cost necessary to put asset into operation) +After-tax proceeds from sale of old asset

Change in networking capital (NWC) Net working capital is the difference between current assets (CA) and current liabilities (CL) i.e. NWC = CA –CL. Changes in NWC often accompany capital expenditure decisions. If a company acquires a new machinery to expand its levels of operation, levels of cash, accounts receivables, inventories, accounts payable, accruals will increase. Increases in current assets are uses of cash while increases in current liabilities are sources of cash. As long as the expanded operations continue, the increased investment in current assets (cash, accounts receivables and inventory) and increased current liabilities (accounts payables and accruals) would be expected to continue.

Generally, current assets increase by more than the increase in current liabilities, resulting in an increase in NWC which would be treated as an initial outflow (This is an internal build up of accounts with no tax implications, and a tax adjustment is therefore unnecessary).

Operating Cash Flows

These are incremental after tax cash during its lifetime. Three points should be noted:-

- Benefits should be measured on after tax basis because the firm will not have the use of any benefits until it has satisfied the government's tax claims.
- All benefits must be measured on a cash flow basis by adding back any non-cash charges (depreciation)
- Concern is only with the incremental (relevant) cash flows. Focus should be only on the change in operating cash flows as a result of proposed project. The following income statement format is useful in the determination of the operating cash flows.

General format for estimating operating cash flows:

1.   Sh.

	Sh.
Incremental sales over the life of the project	xx
Less cost of sales	(xx)
Savings before depreciation and tax	xx
Less depreciation	(xx)
Savings before tax	xx
Less Tax(Savings before tax × Tax rate)	(xx)
Savings after tax	xx
Add back depreciation	(xx)
Net incremental cash flows	xx

2. OR

    (As above)

Savings before depreciation and tax	xx
Less tax(Savings before tax & dep. × Tax rate)	(xx)
Savings after tax	xx
Add depreciation tax shield(Depreciation ×Tax rate)	xx
Net incremental cash flows	(xx)

Terminal Cash Flows

The cash flows resulting from the termination and liquidation of a project at end of its economic life are its terminal cash flow. Terminal cash flow is determined as incremental after tax proceeds from sale or termination of a new asset or project. The format below can be used to determine terminal cash flows.

Proceeds from sale of new assets Project		xx
+ Tax on sale of new asset		<u>xx</u>
		xx
Proceeds from sale of old asset	xx	
+ Tax on sale of old asset	xx	xx
+ Change in NWC		xx
Terminal Cash Flow		xx

Note that for a replacement decision both the sale proceeds of the old asset and the new asset are considered. In the case of other decision (other than replacement), the proceeds of an old asset would be zero. Note also that with the termination of the project the need for the increased working capital is assumed to end. This will be shown as a cash inflow due to the release of the working capital to be used business needs. The amount recovered at termination will be equal to the amount shown in the calculation of the initial investment.

Basic terminologies in capital budgeting.

Independent Vs Mutually Exclusive Projects

Independent projects are those whose cash flows are unrelated or independent of one another; the acceptance of one does not eliminate the others from further considerations (if a firm has unlimited funds to invest, all independent project that meet it minimum acceptance criteria will be implemented i.e. installing a new computer system, purchasing a new computer system, and acquiring a new limousine for the CEO.

Mutually exclusive projects are projects that compete with one another, no that the acceptance of one eliminates the acceptance of one eliminate the others from further consideration. For example, a firm in need of increased production capacity could either, (1) Expand it plant (2) Acquire another company, or (3) contract with another company for production of required items.

Unlimited Funds Vs Capital Rationing

Unlimited funds- This is the financial situation in which a firm is able to accept all independent projects that provide an acceptable return (Capital budgeting decisions are simply a decision of whether or not the project clears the hurdle rate).

Capital rationing This is the financial situation in which the firm has only a fixed number of shillings to allocate among competing capital expenditures. A further decision as to which of the projects that meet the minimum requirements is to be invested in has to be taken.

Conventional Versus Non-Conventional Cash flows

Conventional cash flow pattern consists of an initial outflow followed by only a series of inflows. (For example a firm spends Sh.10 million and expects to receive equal annual cash inflows of Sh.2 million in each year for the next 8 years) The cash inflows could be unequal

Non-conventional cash flows This is a cash flow pattern in which an initial outflow is not followed only by a series of inflows, but with at least one cash outflow. For example the purchase of a machine may require Sh.20 million and may generate cash flows of Sh.5million for 4 years after which in the 5th

year an overhaul costing Sh.8million may be required. The machine would then generate Sh.5 million for the following 5 years.

Relevant Versus Incremental Cash flows

To evaluate capital expenditure alternatives, the firm must determine the relevant cash flows which are the incremental after-tax initial cash flow and the resulting subsequent inflows associated with a proposed capital expenditure. Incremental cash flows represent the additional cash flows (inflowing and outflows) expected to result from a proposed capital expenditure.

Sunk Costs Vs Opportunity Cost

Sunk costs are cash outlays that have already been made (past outlays) and therefore have no effect on the cash flows relevant to a current decision. Therefore sunk costs should not be included in a project's incremented cash flows.

Opportunity costs are cash flows that could be realized from the best alternative use of an owned asset. They represent cash flows that can therefore not be realized, by employing that asset in the proposed project. Therefore, any opportunity cost should be included as a cash outflow when determining a project's incremental cash outflows.

CAPITAL BUDGETING TECHNIQUES.
There are different methods of analyzing the viability of an investment. The preferred technique should consider time value procedures, risk and return considerations and valuation concepts to select capital expenditures that are consistent with the firm's goals of maximizing owner's wealth.

Capital budgeting techniques are grouped in two:

a) Non-discounted cash flow techniques (traditional methods)

      i. Pay back period method(PBP)
     ii. Accounting rate of return method(ARR)

b) Discounted cash flow techniques (modern methods)

    iii. Net present value method(NPV)

iv. Internal rate of return method(IRR)

v. Profitability index method(PI)

NON-DISCOUNTED CASH FLOW TECHNIQUES
PAY BACK PERIOD METHOD (PBP)

Pay back period refers to the number of periods/ years that a project will take to recoup its initial cash outlay.

This technique applies cash flows and not accounting profits.

I f the project generates constant annual cash inflows, the Pay back period will be given by,

PBP=Initial Investment

       Annual cash flow

Illustration:

Example

AQMW systems, a medium sized software engineering company that is currently contemplating two projects: project A requires an initial investment of Sh.42million and project B requires an initial investment of Sh.45million. The projected relevant cash flows for the two projects are shown below.

	PROJECT A	PROJECT B
Initial Investment (yr 0)	Sh.42 million	Sh.45 million
Operating cash flows		
Year 1	Sh.14 million	Sh.28 million
Year 2	Sh.14 million	Sh.12 million

Year3	Sh.14 million	Sh.10 million
Year 4	Sh.14 million	Sh.10 million
Year 5	Sh.14 million	Sh.10 million
Average	Sh.14 million	Sh.14 million

For project A, (Annuity cashflows)

Pay back period = $\dfrac{42}{14}$ = 3.0 years

For project B (a mixed cashflows), the initial investment of Sh.45million will be recovered between the 2nd and 3rd year-ends.

Year	Cash flow (Sh)	Cumulative cash flow (Sh.)
1	28million	28million
2	12million	40million
3	10million	50million
4	10million	60million
5	10million	70million

Pay back period = $2 + \dfrac{5}{10} = 2.5\,years$

Only 50% of year 3 cash inflows of Sh.10million are needed to complete the pay back period of the initial investment ofSh.45million. Therefore pay back period of project B is 2.5 years.

Decision Criteria

If AQMW systems maximum acceptable Pay back period was 2.75 years, Project A would be rejected and project B would be accepted. If projects were being ranked, Project B would be preferred.

Where the projects are independent the project with the lowest PBP should rank as the first as the initial outlay is recouped within a shorter time period.

For mutually exclusive projects the project with the lowest PBP should be accepted.

<u>Advantages of PBP</u>

1. It's simple to understand and use.
2. It's ideal under high risk investment as it identifies which project will payback as soon as possible
3. PBP is cost effective as it does not require use of computers and a lot of analysis
4. PBP emphasizes on liquidity hence funds which are released as early as possible can be reinvested elsewhere

<u>Weaknesses of PBP</u>

1. It does not consider all the cashflows in the entire life of the project.
2. It does not measure the profitability of a project but rather the time it will take to payback the initial outlay
3. PBP does not take into account the time value of money
4. It does not have clear decision criteria as a firm may face difficulty in determining the minimum acceptable payback period
5. It is inconsistent with the shareholders wealth maximization objective. Share values do not depend on the pay back period but on the total cashflows.

<u>ACCOUNTING RATE OF RETURN METHOD (ARR)</u>

This is the only method that does not use cashflows but instead uses accounting profits as shown in the financial statements of a company. It is also known as return on investment (ROI).

The ARR is given by:

ARR=   <u>Average annual profit after tax </u>×100

Average investment

Illustration:

Aqua ltd has a proposal for a project whose cost is Sh.50million and has an economic useful life of 5 years. It has a nil residual value. The earnings before depreciation and tax expected from the project are as follows:

Year	Earnings before depreciation and tax
	Sh.'000'
1	12000
2	15000
3	18000
4	20000
5	22000

The corporate tax rate is 30% and depreciation is on straight line basis.

Solution:

Depreciation = $\frac{50\,m - 0}{5}$ = 10m

Calculation of the average income,

Year

	1	2	3	4	5

Earnings before dep.	12000	15000	18000	20000	22000
Less depreciation	10000	10000	10000	10000	10000
Earnings after dep	2000	5000	8000	10000	12000
Tax @ 30%	-600	-1500	-2400	-3000	-3600
Profit after tax	1400	3500	5600	7000	8400

Average Income = $\dfrac{1400+3500+5600+7000+8400}{5}$

=Ksh. 5,180,000

Average investment = $\dfrac{\text{Initial investment + salvage value}}{2}$

Average investment = $\dfrac{50000000 + 0}{2}$

=2500000

ARR= $\dfrac{\text{Average income}}{\text{Average investment}} \times 100$

ARR = $\dfrac{5,180,000}{25,000,000} \times 100$

=20.72%

Decision criteria:

If the projects are mutually exclusive the project with the highest ARR is accepted. If projects are independent, they should be ranked from the one with the highest ARR which should come first to the one with the lowest as the last.

If the firm has a minimum acceptable ARR, then the decision will be based on the project with a higher ARR as per their preferred rate.

Advantages of ARR.

1. Simple to understand and use.
2. The accounting information used is readily available from the financial statements.
3. All the returns in the entire life of the project are used in determining the project's profitability.

Weaknesses of ARR.

1. Ignores time value of money.
2. Uses accounting profits instead of cashflows which could have been arbitrarily determined.
3. Growth companies earning very high rates of return on the existing assets may reject profitable projects as they have set a higher minimum acceptable ARR, the less profitable companies may set a very low acceptable ARR and may end up accepting bad projects.
4. Does not allow for the fact that profits can be reinvested.

Discounted cashflow techniques
NET PRESENT VALUE (NPV)

This is the difference between the present value of cash inflows and the present value of cash outflows of a project. To get the present values a discount rate is used which is the rate of return or the opportunity cost of capital. The opportunity cost of capital is the expected rate of return that an investor could earn if the money would have been invested in financial assets of equivalent risk. Hence it's the return that an investor would expect to earn.

When calculating the NPV the cashflows are used and this implies that any non-cash item such as depreciation if included in the cashflows should be adjusted for. In computing NPV the following steps should be followed:

Cashflows of the investment should be forecasted based on realistic assumptions. If sufficient information is given one should make the appropriate adjustments for non-cash items

Identify the appropriate discount rate. (It is usually provided)

Compute the present value of cashflows identified in step 1 using the discount rate in step2

The NPV is found by subtracting the present value of cash out flows from present value of cash inflows.

$$NPV = \left[\frac{C_1}{(1+k)} + \frac{C_2}{(1+k)^2} + \frac{C_3}{(1+k)^3} + \ldots + \frac{C_n}{(1+k)^n} \right] - C_0$$

$$NPV = \sum_{t=1}^{n} \frac{C_t}{(1+k)^t} - C_0$$

C_O Initial investment.

NPV= PV (inflows) –PV (outflows)

Decision Criteria

When NPV is used to make accept – reject decisions, the decision criteria are as follows:

- If the NPV is greater than 0, accept the project
- If the NPV is less than 0, reject the project.

If NPV > 0, the firm will earn a return greater than its cost of capital, thereby enhancing the market value of the firm and shareholders wealth.

Recall the previous illustration (AQMW systems)

Additional information; the firms required rate of return is 30%.

Compute the NPV of AQMW systems and advise the management of the company

Project A

Annual Cash inflow (annuity)	14million
PVIFA 10%, 5 years (tables)	3.791
PV of cashflows.	53.074million
Less initial Investment	42.million
Net Present Value	11.074million

Project B

Year	Cash Inflows	PVIF	PV
1	28million	0.909	25.452m
2	12m	0.826	9.912m
3	10m	0.751	7.510m
4	10m	0.683	6.830m
5	10m	0.621	6.210m
	Present Value		55.914m
	Less initial investment(C_O)		(45.000m)

NPV	10.912m

Decision criteria,

Both projects are acceptable as the NPV is positive.

Project A is preferable to project B as it has a higher NPV of 11million comparing to B of 10.9million.

PROFITABILITY INDEX.

It is defined as the ratio of the present value of the cashflows at the required rate of return to the initial cashout flow on the investment.

PI= Present value of cash inflow

      Initial cash outflow.

It is also called the benefit –cost ratio because it shows the present value of benefits per shilling of the cost. It is therefore a relative means of measuring a project's return. It thus can be used to compare projects of different sizes.

Decision criteria:

If   PI > 1   Accept project.

PI < 1 Reject project.

PI = 0 Indifferent.

For example from previous example,

PI= <u>18,368.98</u>

    15,000

  = 1.22

Profitability Index is +1.22 >1

Thus the project is viable as PI IS More than 1.

For example if you have two mutually exclusive independent projects with the following NPV and PI

Project	NPV	PI
A	6000	1.44
B	5000	1.22

Decision: Using PI, both projects are acceptable as their PI is greater than 1.

Since the projects are mutually exclusive, select Project A as it has a higher than that of B.

<u>Advantages of PI.</u>

1. It considers time value of money.
2. It considers all cash flows yielded by the project.
3. It ranks projects in order of the economic desirer ability.
4. It gives a unique decision criterion.
5. It is a relative measure of profitability and therefore can be used to compare projects of different sizes.

Weaknesses of PI.

1. It is not consistent with maximizing shareholders wealth.
2. It assumes the discount rate is known and consistency which might not be the case.

INTERNAL RATE OF RETURN.(IRR)

This is the discounting rate that equates present value of expected future cashflows to the cost of the investment .It is therefore the discounting rate that equates NPV to zero.

$$C_0 = \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \ldots + \frac{C_n}{(1+r)^n}$$

$$C_0 = \sum_{t=1}^{n} \frac{C_t}{(1+r)^t}$$

$$\sum_{t=1}^{n} \frac{C_t}{(1+r)^t} - C_0 = 0$$

Where: Co=initial investment

      C1/C2/C3/Cn=cashflow in year1, 2, 3… up to year n

      L =cash flows from period 3 to year n

      r = is the rate that equates the initial investment to the   present value of cash inflows over the life of the project.(IRR)

The IRR can be found by using the following methods:

      i)   trial and error

      ii)   interpolation

     i) Trial and error

Decision criteria:

    Accept the project when $r > k$.

    Reject the project when $r < k$.

    The investor is indifferent when $r = k$.

    In case of independent projects, IRR and NPV rules will give the same results if the firm has no shortage of funds.

POTENTIAL DIFFICULTIES IN USING DISCOUNTED CASH FLOW METHODS

1. For a single conventional, independent projects, the IRR, NPV and PI methods lead us to make similar accept/reject decision. Various types of circumstances and projects differences can cause ranking difficulties.Two situations that could cause inconsistencies arise when (1) When funds are

limited necessitating capital rationing and, (2) when ranking two or more project proposals are mutually exclusive.

Capital Rationing

Occurs any time there is a budget constraint or ceiling on the amount of money that can be invested during a specific period of time (For example, the company has to depend on internally-generated funds because of borrowing difficulties, or a division can make capital expenditures only up to a certain ceiling).

With capital rationing, the firm attempts to select the combination of investments that will provide the greatest increase in the firm of the value subject to the constraining limit.

Example

Assume your firm faces the following investment opportunities:

Project	Initial Cash Flows Shs.000	IRR	NPV Sh.000	PI
A	50,000	15%	12,000	1.24
B	35,000	19	15,000	1.43
C	30,000	28	42,000	2.40
D	25,000	26	1,000	1.04
E	15,000	20	10,000	1.67
F	10,000	37	11,000	2.10
G	10,000	25	13,000	2.30
H	1,000	18	100	1.10

If the budget ceiling for initial cash flows during the present period is Shs.65,000,000 and the proposals are independent of each other, your aim should be to select the combination projects that provide the highest in firm value the Shs.65 m can deliver.

Selecting projects in descending order of profitability according to various discounted cash flows methods, which exhausts Sh.65 million reveals the following:

Using the IRR

Project	IRR	NPV	Initial outlay
		Sh 000	Shs.000
A	37%	11,000	10,000
B	28	30,000	30,000
C	26	25,000	25,000
		54,000	65,000

Using the NPV

Project	NPV	Initial flow
	Sh 000	Sh.000
C	42,000	30,000
B	15.000	35,000
	57,000	65,000

Using the PI

Project	PI	NPV	Initial outlay
		Sh000	Sh000
C	2.40	42,000	30,000
G	2.30	13,000	10,000
F	2.10	11,000	10,000
E	1.67	10,000	15,000
		76,000	65,000

With capital rationing you would accept projects C,E,F and G which deliver an NPV of Sh.76million. The universal rule to follow is "When operating under a constraint, select the projects that deliver the highest return per shilling of the constraint (the initial investment outlay)". Put another way, select that mix of projects that gives you "the biggest bang for the buck". We achieve this buy employing the

profitability index which ranks projects on the basis of the return per shilling of initial investment outlay.

Under conditions of capital rationing it is evident that the investment policy is less than optimal – Optimal policy requires that no positive NPV projects be rejected.

Difficulties in Ranking

Conflicts in ranking may arise due to one or a combination of the following factors:

2. Capital rationing: funds are not adequate to undertake all positive NPV projects
3. Scale of investment: initial costs of projects differ.
4. Cash flows patterns: cash flows of one project may increase while those of another may decrease with time.

Project life: projects may have unequal useful lives.

Scale Differences

Example

Suppose a firm has two mutually exclusive projects that are expected to generate following Cash flows

End of Year	Project A	Project B
	Cash flows (Sh)	Cash flows (Sh)
0	-1000,000	-100,000,000
1	0	0
2	400,000	156,250,000

If the required rate of return is 10% the NPV, IRR and PI of the projects are as below:

	IRR	NPV	PI
		Sh000	

Project A	100%	231	3.31
Project B	25%	29,132	1.29

Ranking of projects based on our results

RANKING	IRR	NP	PI
1st	A	B	A
2nd	B	A	B

Using the IRR and PI shows preference for project A, while NPV indicates preference for Project B. Because IRR and PI are expressed as a proportion the scale of the project is ignored. In contrast results of NPV are expressed in absolute shilling increases in value of the firm. With regard to absolute increase in value of the firm, NPV is preferable.

Differences in Cash Flow Patterns (Multiple IRR)

Example

Assume a firm is facing two mutually exclusive projects with following cash flow patterns.

End of year	Project C Cash flows Sh000	Project D Cash flows Sh000
0	-1,200	-1,200
1	1,000	100
2	500	600
3	100	1,080

Note that project C's cash flows decrease while those of project D increase over time.

- The IRR for projects are as follows

    Project C - 33%

    Project D - 17%

- For every discount rate> 10% project C's NPV and PI will be> than project D's.
- For every discount rate < 10% project D's NPV and PI will > project C's.

	K<10%			K>10%	
RANKING	IRR	NPV	PI	NPV	PI
1st	C	D	D	C	C
2nd	D	C	C	D	D

When we examine the NPV profiles of the two projects, 10% represents the discount rate at which the two projects have identical NPVs. This discount rate is referred to as Fisher's rate of intersection. On one side of the Fisher's rate it will happen that the NPV and PI on one hand, and the IRR on the other give conflicting rankings.

We observed conflict is due to the different implicit assumption with respect to the reinvestment rate on intermediate cash flows released from the project. The IRR implicitly assumes that funds can be reinvested at the IRR over the remaining life of the project. With the IRR the implicit reinvestment rate will differ from project to project unless their IRRs are identical.

For the NPV and PI methods assume reinvestment at a rate equal to the required rate of return as the discounts factor. The rate will be the same for all projects.

Since the reinvestment rate represents the minimum return on opportunities available to the firm, the NPV ranking should be used. In this way, we identify the project that contributes most to shareholder wealth.

Differences in Project Life

When projects have different lives, a key question is what happens at the end of the short-lived project? Two alternatives assumptions can be considered. (1) Replace with (a) identical project or (b) a different project. (2) Do not replace. The Do not replace alternative is considered first.

Example

Suppose you are faced with choosing between 2 mutually exclusive investments X and Y that have the following Cash flows.

End of year	Project X Cash flows Sh. '000'	Project Y Cash flows Sh. '000'
0	- 1000	- 1000
1	0	2000
2	0	0
3	3,375	0

If the required rate of return is 10% we can summarize our investment appraisal results as follows:

	IRR	NPV Sh000	PI

X	50%	1536	2.54
Y	100%	818	1.82

RANKING

Rank	IRR	NPV	PI
1st	Y	X	X
2nd	X	Y	Y

Once again a conflict in ranking arises. Both the NPV and the PI prefer project X to Y, while The IRR criterion choose Y over X.

Again, in this case of no replacement, the NPV method should be used because it will choose projects that add the greatest absolute increment in value to the firm.

Replacement Chain When faced with a chose between mutually exclusive investments having unequal life that will require replacement, we can view the decision as one involving a series of replications – or a replacement chain – of respective alternatives over some common investment horizon.

Repeating each project until the earliest rate that we can terminate each project in the same year results in a multiple like-for-like replacement chains covering the shortest common life. We solve the NPV for each replacement chain as follows:

NPV chain =

Where n = single replication project life in years

NPV= singe replication NPV for a project with n- year

R = umber of replications needed

K= discount rate

The value of each replacement chain therefore is simply the PV of the sequenced of NPV, generated by the replacement chain.

Example

Assume the following regarding mutually exclusive investments alternatives A and B, both of which requires future replacement

	Project A	project B
Single replication life (n)	5 years	10 years
Single replication PV calculated at project		
Specific required rate of return (NPVn)	Sh. 5,328	Sh. 8000
Number of replication to provide shortest common life	2	1
Project specific discount rate	10%	10%

At first glance project B looks better than project A (8000 Vs 5328). However the need to make future replacements dictates that we consider values provided over same common life i.e. 10 years. The NPV can then be re-worked as follows

NPV for first 5 years $= 5328$

NPV for replicated project $= 5328 * PVIF_{10\%,5yrs}$ $= \underline{3303}$

NPV of chain $\underline{8638}$

The NPV of project B is already known i.e. Sh. 8000. Comparing with Sh. 8638 present value of the replacement chain, project A is preferred.

Reinforcement questions

1. (a) Briefly explain the importance of capital budgeting in a business organization. (4 marks)

   (b) Describe in brief the greatest difficulties faced in capital budgeting in the real world.

(c)   Several methods exist for evaluating investment projects under capital budgeting.

        Identify and explain three features of an ideal investment appraisal method.   (6 marks)

   (d) In evaluating investment decisions, cash flows are considered to be more relevant than profitability associated with the project.

        Explain why this is the case.   (3 marks)

(2.)   P. Muli was recently appointed to the post of investment manager of Masada Ltd. a quoted company. The company has raised Sh.8,000,000 through a rights issue.

P. Muli has the task of evaluating two mutually exclusive projects with unequal economic lives. Project X has 7 years and Project Y has 4 years of economic life. Both projects are expected to have zero salvage value. Their expected cash flows are as follows:

Project	X	Y
Year	Cash flows (Sh.)	Cash flows (Sh.)
1	2,000,000	4,000,000
2	2,200,000	3,000,000
3	2,080,000	4,800,000
4	2,240,000	800,000
5	2,760,000	-
6	3,200,000	-

| 7 | 3,600,000 | - |

The amount raised would be used to finance either of the projects. The company expects to pay a dividend per share of Sh.6.50 in one year's time. The current market price per share is Sh.50. Masada Ltd. expects the future earnings to grow by 7% per annum due to the undertaking of either of the projects. Masada Ltd. has no debt capital in its capital structure.

Required:

(a)   The cost of equity of the firm.   (3 marks)

(b)   The net present value of each project.   (6 marks)

(c)   The Internal Rate of return (IRR) of the projects. (Rediscount cash flows at 24%

         for project X and 25% for Project Y).   (6 marks)

(d)   Briefly comment on your results in (b) and (c) above.   (2 marks)

(e)   Identify and explain the circumstances under which the Net Present Value (NPV) and the Internal Rate of Return (IRR) methods could rank mutually exclusive projects in a conflicting way.

3. The Weka Company Ltd. has been considering the criteria that must be met before a capital expenditure proposal can be included in the capital expenditure programme. The screening criteria established by management are as follows:

1.   No project should involve a net commitment of funds for more than four years.

2. Accepted proposals must offer a time adjusted or discounted rate of return at least equal to the estimated cost of capital. Present estimates are that cost of capital as 15 percent per annum after tax.

3. Accepted proposals should average over the life time, an unadjusted rate of return on assets employed (calculated in the conventional accounting method) at least equal to the average rate of return on total assets shown by the statutory financial statements included in the annual report of the company.

A proposal to purchase a new lathe machine is to be subjected to these initial screening processes. The machine will cost Sh.2,200,000 and has an estimated useful life of five years at the end of which the disposal value will be zero. Sales revenue to be generated by the new machine is estimated as follows:

Year	Revenue (Sh.'000')
1	1,320
2	1,440
3	1,560
4	1,600
5	1,500

Additional operating costs are estimated to be Sh.700,000 per annum. Tax rates may be assumed to be 35% payable in the year in which revenue is received. For taxation purpose the machine is to be written off as a fixed annual rate of 20% on cost.

The financial accounting statements issued by the company in recent years shows that profits after tax have averaged 18% on total assets.

Required:

Present a report which will indicate to management whether or not the proposal to purchase the lathe machine meets each of the selection criteria. (19 marks)

4. The following six … have been submitted for inclusion in 1998 capital expenditure budget for Limuru Ltd.

	Year	A	B	C	D	E	F
		Sh.	Sh.	Sh.	Sh.	Sh.	Sh.
Investment	0(1998)	250,000	250,000	500,000	500,000	500,000	125,000
	1	0	50,000	175,000	0	12,500	57,500
	2	25,000	50,000	175,000	0	37,500	50,000
	3	50,000	50,000	175,000	0	75,000	25,000
	4	50,000	50,000	175,000	0	125,000	25,000
	5	50,000	50,000	175,000	0	125,000	
Per year	6 - 9	50,000	50,000		500,000	125,000	
	10	50,000	50,000			125,000	
Per year	11 – 15	50,000	50,000				
Internal rate of return		14%	?	?	?	12.6%	12.0%

Required:

(a)   Rates of return (to the nearest half percent) for projects B, C and D and a ranking of all projects in descending order.   (6 marks)

(b)   Compute the payback reciprocal for projects B and C.   (4 marks)

(c)   Compute the N.P.V of each project using 16% as discount rate and rank all projects.

(10 marks)

CHAPTER 6 :
BASIC VALUATION MODELS

Objectives
At the end of this chapter, you should be able to:

1.   Distinguish among the various valuation concepts.

2.   Describe the key inputs in, and the basic valuation model.

3.   Apply the basic valuation model to the valuation of bonds, preferred stock, and ordinary shares

Introduction.

The value of any asset is the present value of all future cash flows it is expected to provide over the relevant period.

$$V_0 = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \ldots + \frac{CF_n}{(1+k)^n} \qquad (4.1)$$

Where V_0 =   the current value of asset (at time 0)

CF_t =   Cash flow expected at end of time period t

k   =   required return

n   =   relevant time period

Using PVIF notation the basic valuation equation can be stated as;

$v_0 =$ CF_1 x $(PVIF_{k,1})$ + CF_2 x $(PVIF_{k,2})$ + ... + CF_n x $(PVIF_{k,n})$

Firm's long term securities include bonds, preferred stock and ordinary shares. This topic focuses on the mechanics of valuing each of these financial assets. We start first with bonds, followed by preference shares and end with the ordinary shares, which poses the most challenging valuation difficulties.

BOND VALUATION

Bonds are long-term debt instruments used by business and government to raise money. Most pay interest semi annually at a slated coupon interest rate, have an initial maturity of 10-30 years and have a par or face value of Sh.1000 that must be repaid at maturity.

The simplest and common type of bond is one that pays the bondholder two forms of cash flows if held to maturity i.e. periodic interest and the bonds face value at maturity. The interest is an annuity and the face value is a single payment received at a specified future date.

The basic equation for the value of a bond with *n* years to maturity and which pays interest ,*I* , annually is;

$$B_0 = \frac{I}{(1+k_d)^1} + \frac{I}{(1+k_d)^2} + \dots + \frac{I}{(1+k_d)^n} + \frac{M}{(1+k_d)^n}.$$

Where

B$_0$ =   current value of the bond (at time zero).

I   =   annual interest paid in shillings (coupon interest x face value)

n   =   number of years to maturity

M   =   par value (face value) in shillings

k_d =   required return on a bond

The interest payments can be discounted using PVIFA tables while the payment at maturity will be discounted using PVIF tables. The discounting notation is;

$$B_0 = I*(PVIFA_{k_d,n}) + M*(PVIF_{k_d,n})$$

Example

Mills Co has issued a 10% coupon interest rate, 10 year bond with a Sh. 1000 par value, which pays interest annually. The required rate of return of similar bonds is 10%. What is the value of the bond?

The values of the variables are;

I = per value x coupon rate = 1000*10% = Sh 100

M = 1000

k_d = 10%

n = 10 years

Substituting the values in the valuation formula for bonds leads to,

B_0 = 100 x (PVIFA$_{10\%,10yrs}$) + 1000x (PVIF$_{10\%,10yrs}$)

= 1000 x 6.145 + 1000 x .386 =Sh.1000.50.

The answer is the same as the par value of Sh.1000 except for rounding differences

In practice, however, the value of a bond in the market place is rarely equal to its par value. Some may be quoted above their par value, and some below: It all depends on the bond's required return and the time to maturity. We will discuss the effect of these two on the value of bonds.

Required Returns and Bond Values

Whenever the required return on bond differs from its coupon interest rate the bonds value will differ from its par value. (The required return may differ for two reasons:

1. Economic conditions may have changed since the bond was issued, causing a shift in cost of long term funds
2. The firm's risk class may change.

When the required return is greater the coupon interest rate, the bond value, B_0, will be less than its par value M, and the bond sells at a *discount* M-B_0. When the required return falls below the coupon interest rate, the bond value, B_0, will be greater than par, M, and the bond sells at a *premium* equal to B_0-M.

Example

In the preceding example of Mills Company, the required return equalled the coupon interest rate and the bonds value equalled its Sh.1000 par value.

If required return were greater than the coupon rate of 10% i.e. 12%, the value of the bond would be as follows;

B_0 = 100 x (PVIFA$_{12\%,10yrs}$) + 1000x (PVIF$_{12\%,10yrs}$)

= 100 x 5.650 + 1000 x .322 = Sh.887.00.

The bond will sell at a discount of Sh.113 (1000-887) and is said to be a *discount bond.* Conversely, if the bond's required return fell to say, 8%, the bond's value would be:

B_0 = 100 x (PVIFA$_{8\%,10yrs}$) + 1000x (PVIF$_{8\%,10yrs}$)

= 100 x 6.710 + 1000 x .463 = Sh.1134.00

The bond will sell at a premium of Sh.134 (1134 – 1000). The bond is called a *premium bond*
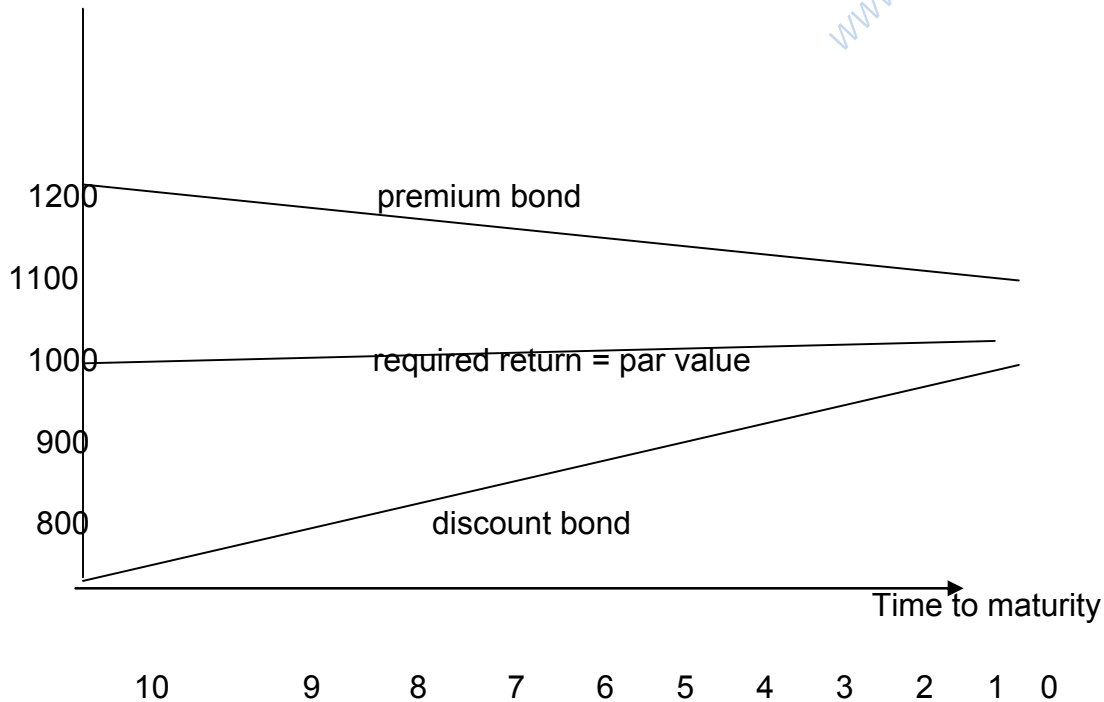
Figure 4.1 The relationship between value of a bond and the required rate of return. The graph is downward sloping, implying that bas interest rates rise bonds lose value.

Market value of bonds (Sh.)
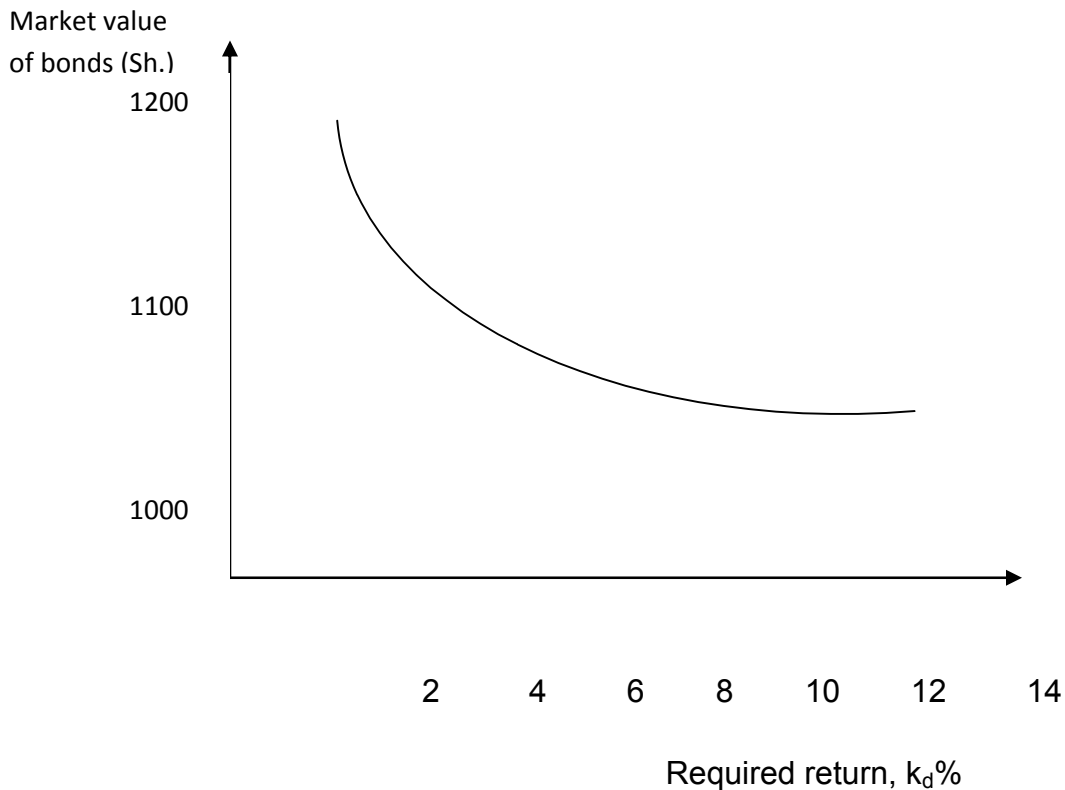
Required return, k_d%

Time to Maturity and Bond Values

The value of bond will approach par value as the message of time moves the bond's value closer to maturity (when required return equals the coupon rate the bond's value remains at par until it matures).

Market value of

bonds

Relationship between maturity and value of a bond

Interest Rate Risk

The chance that interest rate will change and thereby change the required return and bond value is called interest rate risk. How much interest rate risk a bond has depends on how sensitive its price is to changes in interest rates This sensitivity directly depends on two things: the time to maturity and the coupon rate. Investors in bonds should keep in mind the following;

1. All other things equal, the longer the time to maturity, the greater the interest rate risk.
2. All other things equal, the lower the coupon rate, the greater the interest rate risk.

Bondholders are more concerned with rising rates which decrease bond values. The shorter the amount of time until maturity the less responsive is the bonds market value to a given change in the required.

Also, if two bonds with different coupon rates have the same maturity, then the value of the one with lower coupon is more dependent on the face amount to be received at maturity. As a result its value will fluctuate more as interest rates change. In other words, the bond with the higher coupon has a larger cash flow early in its life, so its value is less sensitive to changes in the discount rate.

If time will return when interest rates are volatile financiers prefer lining shorter to hedge against interest rate risk.

Perpetual Bonds

This is a bond that never matures- a perpetuity. A consol is an example. The present value of a perpetual bond is equal to the capitalized value of an infinite stream of interest payments. If a bond promises, fixed annual interest payment, I, forever its value at investors required rate of return, k_d, is,

$$B_0 = \frac{I}{(1+k_d)^1} + \frac{I}{(1+k_d)^2} + \dots \frac{I}{(1+k_d)^\alpha}$$

This should reduce to

$$B_0 = \frac{I}{k_d} \qquad\qquad (4.3)$$

Example

You intend to buy a bond that pays Sh. 500 per year forever. If your required rate of return is 12%, what is the maximum you should pay for the bond?

The PV of the security would be

$$B_0 \quad = \quad 500/0.12 \quad = \quad Sh.4166.7$$

This is the amount you will be willing to pay for this bond.

Zero Coupon Rate Bonds

Zero coupon rate bonds make no periodic interest payment but instead the bond is sold at a deep discount from its face value. The bond is then redeemed at face value on its maturity. The valuation formula for a zero coupon bonds is truncated version of that used for normal interest paying bond. The present value of interest payment is loped off leaving only the payment at maturity.

Therefore,

$$B_0 = \frac{M}{(1+k_d)^n} \qquad\qquad (4.4)$$

$$= \quad M(PVIF_{k_d,n})$$

Example

ABC Ltd., issues a zero coupon bond having a 10 year maturity and a face value of Sh. 1000. Investors require a return of 12%. How much should an investor pay for the bond?

$$B_0 \qquad = \qquad 1000/(1.12)^{10}$$

$$= \qquad 1000 \, (PVIF_{12\%,10yrs})$$

$$= \qquad 1000 \times 0.322$$

$$= \qquad Sh \ 322$$

The bond is worth Sh.322.

Semi – Annual Compounding Interest

Most bonds pay interest twice a year. As a consequence the valuation equation changes

$$B_0 = \sum_{t=1}^{2n} \frac{I/2}{(1+k_d/2)^t} + \frac{M}{(1+k_d/2)^{2n}}$$ (4.5)

$$= B_0 = \frac{1}{2} I * PVIFA_{\frac{1}{2}k_d, 2n} + M * PVIF_{\frac{1}{2}k_d, 2n}$$

Notice that the assumption of semi- annual accounting once taken applies even to the maturity value.

Example

10% coupon bonds of ABC Ltd., have 12 years to maturity and annual required rate of return is 14%. What is the value of a Sh.1000 par value bond that pays interest semi-annually?

$$B_0 = \frac{I}{2} * (PVIFA_{7\%, 24}) + M * (PVIF_{7\%, 24})$$

$$= \quad 50\ (11.469) + 1000\ (.197) = Sh.770.4$$

Yield to Maturity (YTM)

When investors evaluate and trade bonds, they consider yield to maturity (YTM), which is the rate of return investors earn if they buy a bond at a specific price and hold it until maturity. The YTM is analogous to the Internal rate of return from an investment in the bond. The yield to maturity on a bond with current price equal to its par value (i.e. $B_0 = M$) will always equal the coupon rate. When the bond value differs from par, the yield to maturity will differ from the coupon rate.

The yield to maturity on a bond can found by sowing equation for k_d in the equation below.

$$B_0 = \sum_{t=1}^{n} \frac{I}{(1+k_d)^t} + \frac{M}{(1+k_d)^n}$$ (4.6)

The required return is the bond's yield to maturity. The YTM can be found by trial and error procedures.

Example

Mills Company bond which currently sells for Sh.1080, has a 10% coupon rate and Sh.1000 par value, pays interest annually and has 10 years to maturity. Find YTM of the bond.

$$1080 = \sum_{t=1}^{10} \frac{100}{(1+k_d)^t} + \frac{1000}{(1+k_d)^{10}} \quad \text{or,}$$

$$1080 = 100 * PVIFA_{k_d,10} + 1000 * PVIF_{k_d,10}$$

Trial and error

We know that when K_d = 10% (equal coupon rate), then B_0 = 1000. Thus the discount rate to result in 1080 must be less than 10%. (Try a lower rate if the PV of cash flows at a given rate is lower than the market price of the bond).

Try 9%   =   100 x 6.418 + 1000 x .422 = 1063.80 (The 9% rate is not low enough to get Sh.1080).

Next try 8% =   100 x 6.710 + 1000 x .463 = 1134

Because 1080 lies between 1063.80 and 1134 the YTM must be between 8% and 9%. Because 1080 is closer to 1063.80, the YTM to the nearest whole per cent is 9%.

By using interpolation, we find the more precise YTM value to be 8.77% as follows;

Interpolation

1134 – 1063.80	=	70.20
1080 – 1063.80	=	16.20

YTM = 9% - $\dfrac{16.20}{70.20}$ = 9% - 0.2307692

= 8.77%)

Using a financial calculator, we get 8.766%.

PREFERENCE SHARES VALUATION

This is a type of stock that promises a fixed dividend but at the discretion of the Board of directors. It has preference over ordinary shares in the payment of dividends and claims on the assets it has no maturity date (unless redeemable) and give the fixed nature of the dividend is similar to a perpetuity.

Thus the PV of a preferred stock, V_p, is

$$V_p = \frac{D_p}{k_p} \qquad (4.7)$$

Where D_p is the stated annual dividend, per share and k_p is the appropriate discount rate.

Example

A company had issued a 9% Sh.100 par value preference shares and an investors require a rate of return of 14% on this investment. Find the value of a preference share to investors.

$$D_p = 9\%*100 = Sh.9$$

$$k_p = 14$$

The value of the preference share is,

$$V_p = 9/0.14 = Sh.64.29$$

Example

A preferred stock paying a dividend of Sh. 5 and having a required return of 13% will have a value of Sh.38.46 (5÷0.13)

VALUATION OF ORDINARY SHARES

Common shareholders expect to be rewarded through periodic cash dividends and an increasing share value. It is the expectation of future to dividends and a future selling price (which itself is based on future dividends) that gives value to a share. Cash dividends are broadly defined to mean all cash distributions and are the foundation for valuation of shares.

Dividend discount models are designed to compute the intrinsic value of a share under specific assumptions as to the expected growth patterns of future dividends and the appropriate discount rate to apply.

Basic stock valuation equation

The value of a share is equal to the PV of all future dividends it is expected to provide over an infinite time horizon (from a valuation viewpoint only dividends are relevant).

$$P_0 = \frac{D_1}{(1+k_s)^1} + \frac{D_2}{(1+k_s)^2} \ldots \frac{D_\alpha}{(1+k_s)^\alpha} \qquad (4.7)$$

Where P_0 =   current value of ordinary share

        k_s =   required return on ordinary shares

        D_t =   per share dividend at end of year t.

We illustrate the use of this formula to estimate the value of ordinary stock under three dividend growth assumptions i.e. zero growth in dividends, constant growth in dividends, and variable growth phases.

Zero growth assumes a constant, non-growing dividend stream i.e. $D_1 = D_2 = \ldots = D_\alpha = D$. The dividend stream is a perpetuity and can be valued as such i.e.

$$P_0 = \frac{D}{k_s} \qquad (4.8)$$

Example

The dividend of Den Company is expected to remain constant at Sh. 3 indefinitely. If required return on its stock is 15% the value of its ordinary share would be Sh.20 (i.e. $\frac{3}{0.15} = 20$)

Constant Growth

The constant growth model, assumes that dividends will grow at a constant rate, g. If we let D_0 equal the most recent dividend, then

$$P_0 = \frac{D_0(1+g)^1}{(1+k_s)^1} + \frac{D_0(1+g)^2}{(1+k_s)^2} + ---+ \frac{D_0(1+g)^\alpha}{(1+k_s)^\alpha} \quad \text{or,} \qquad (4.9)$$

$$P_0 = \frac{D_1}{(1+k_s)^1} + \frac{D_2}{(1+k_s)^2} + - - - + \frac{D_\alpha}{(1+k_s)^\alpha}$$

The equation can be simplified and rewritten as

$$P_0 = \frac{D_1}{k_s - g} \qquad (4.10)$$

(D_1 is the coming year's dividend, k_s is the required return on the stock and g is the constant growth rate in dividends). Gordon's model is a common name for the constant growth model.

Example

Lama Company has paid the following dividends over the past years

Year	div per share
1999	1.00
2000	1.05
2001	1.12
2002	1.20
2003	1.29
2004	1.40

The average growth of dividends for the past five years is expected to persist in the foreseeable future. You are required to determine the value of the company's shares after payment of the dividend of 2004.

First find the average rate of growth in dividend over last five years. Let the average growth rate be g. Then the dividend of year 2004 denoted by D_{2004} is found by growing the dividend of year 1999 as follows:

D_{2004} = $D_{1999} \times (1+g)^5$

$(1+g)^5$ = D_{2004}/D_{1999}

$$FVIF_{g\%,5} = \frac{1.40}{1.00} \quad = \quad 1.40$$

By looking across the table for FVIFs (in the 5-year row) the factor closest to 1.40 for 5 years is 7%. Therefore, g is 0.07.

$$P_0 = \frac{D_1}{k_s - g} = \frac{1.50}{0.15 - 0.07} = Sh.18.75$$

The value of the stock is Sh.18.75

Variable Growth Model

The dividend valuation approach can be manipulated to allow for changes in the dividend growth rates. For instance the model could be based on the assumptions that dividends initially grow at a supernormal rate for a number of years followed by normal growth rate into the foreseeable future. In such a situation our dividend model can be modified as follows.

Let *gs* equal the initial growth rate (supernormal growth for *n* years),and *gn* equal the subsequent growth rate (normal growth to infinity) and D_t be the dividend paid at end of time period *t*

The formula for the value of the share, P_0, is

$$P_0 = \sum_{t=1}^{n} \frac{D_0(1+g_s)^t}{(1+k_s)^t} + \frac{D_{n+1}}{(k_s - g_n)} * \frac{1}{(1+k_s)^n} \qquad (4.11)$$

The first term on the left hand side, represents the present value of dividends during the initial phase of supernormal growth; the second term, $D_{n+1}/(k_s-g_s)*1/(1+k_s)$,represent the present value of the price of the stock at the end of the initial growth period.

   STEPS

   1. Find the value of dividends at the end of each year D_t, during the initial growth years 1 to n by

$$D_t \quad = \quad D_0 \times (1 + g_s)^t$$

   2. Find present value of the dividends expected during the initial growth phase i.e.

$$\sum_{t=1}^{n} \frac{D_0(1+g_s)^t}{(1+k_s)^t} = \sum_{t=1}^{n} D_t(PVIF_{k_s,t})$$

3. Find value of stock at the end of the initial growth phase i.e.

$$P_n = \frac{D_{n+1}}{k_s - g_n}$$ (Same as Gordon's constant growth model)

Next we discount P_n to the present i.e. $P_n * PVIF_{k_s,n}$

4. Add the PVs in 2 and 3 to find the value of stock.

Example

Weka Industries has just paid the 2004 annual dividend of Sh. 1.50 per share. The firm's financial manager expects that these dividends will increase at 10% annual rate over the next 3 years. At the end of the 3 years, (end of 2007) the growth rate will decline to 5% for the foreseeable future. The firm's required rate of return is 15%. Estimate the current value of Weka share i.e. the value at end of 2004 ($P_0 = P_{2004}$).

Solution

Find value of cash dividends in each of the next 3 years and their PVs at end of year 2004 as below:

Remember D_0 $= D_{2004} = $Sh.1.50

Year(t)	End of year	Dividend $= D_0 (1.1)^t$	$PVIF_{15\%,t}$	Present value
1	2005	1.65	0.870	1.44
2	2006	1.82	0.756	1.38
3	2007	2.00	0.658	1.32

Present value of dividends during initial growth phase	Sh.4.14

Next the price of the stock at the end of the initial growth phase (at the end of 2007) can be found first by calculating the dividend to be paid at end of the year 2008 ($D_{n+1} = D_{2008}$)

D$_{2008}$ = D$_{2007}$ x (1 + 0.05) = 2.00 x 1.05= Sh.2.10.

Using Gordon's constant growth model, the price of the stock at end of 2007 is calculated as follows;

$$P_{2007} = \frac{D_{20081}}{k_s - g_n} = \frac{2.10}{0.15 - 0.05} = Sh.21$$

The value of Sh.21 at end of year 2007 must be converted into PV (end of 2004). Using 15% as the required return, (PVIF $_{15\%,3yrs}$) x 21 = 0.658 x 21 = Sh.13.82.

Finally, we add the present values to get the value of the stock i.e.

P$_{2004}$ = 4.14 + 13.82 = Sh.17.96

REINFORCING QUESTIONS

1. a) The valuation of ordinary shares is more complicated than the valuation of bonds and preference shares. Explain the factors that complicate the valuation of ordinary shares.

b) The most recent financial data for the Rare Watts disclose the following:

Dividend per share   Sh.3.00

Expected annual dividend growth rate   6 percent

Current required rate of return   15 percent

The company is considering a variety of proposals in order to redirect the firm's activities. The following four alternatives have been suggested:

1.   Do nothing in which case the key financial variables will remain unchanged.

2.   Invest in venture that will increase the dividend growth rate to 7% and lower the required rate of return to 14%.

3.   Eliminate an unprofitable product line. The action will increase the dividend growth rate to 8% and raise the required rate of return to 17%.

4.   Acquire a subsidiary operation from another company. This action will increase the dividend growth rate to 9% and required rate of return to 18%.

Required:

For each of the proposed actions, determine the resulting impact price and recommend the best alternative.   (14 marks)

2. (a) State the circumstances under which it would be advantageous to lenders and to borrowers from the issue of:

(i)   Debentures with a floating rate of interest.   (4 marks)

(ii)   Zero-coupon bonds.   (4 marks)

        (Ignore taxation)

(b)   (i)   Briefly discuss the disadvantages of the constant growth dividend model as a valuation model.   (4 marks)

(ii)   The dividend per share of Mavazi Limited as at 31 December 2000 was Sh.2.50. The company's financial analyst has predicted that dividends would grow at 20% for five years after which growth would fall to a constant rate of 7%. The analyst has also projected a required rate of return of 10% for the equity market. Mavazi's shares have a similar risk to the typical equity market.

Required:

The intrinsic value of shares of Mavazi Ltd. As at 31 December 2000.

(8 marks)

(Total: 20 marks)

Other revision questions

1(a) Bima Company presently pays a dividend of shs 1.60 per share on its ordinary share capital. The company expects to increase the dividend at a 20% annual rate the first four years and then grow the dividend at 7% rate thereafter. This phased growth pattern is in keeping with the expected life cycle ear4nigs. You require a 16% return to invest in this stock. What value should you place on a share of this stock?

CHAPTER 7:
WORKING CAPITAL MANAGEMENT

Content.

- Introduction to Working capital management.
- Importance of working capital management.
- Determinants of working capital.
- Inventory, Cash and Accounts receivable and accounts payable management.
- Other sources of short term funds.

Introduction.

Gross working capital refers to total current assets and these are those assets that can be converted to cash within an accounting year e.g. stock receivables, cash short-term securities and so on.

Net working capital refers to current assets less current liabilities. Current liabilities are those claims of outsiders which are expected to mature for payment within an accounting year e.g. bank overdraft, payables, short term loans, accruals etc.

Management of working capital refers to management of cash, receivables, inventory and current liabilities.

The management of current assets is similar to that of fixed assets in the sense that in both cases, the firm analyses their effect on risk and return of currents fixed assets, however, differs in 3 important ways

a) In management of fixed assets, time is very important, the compounding and discounting effects play a major role in capital budgeting are a minor role in current assets.

b) The large holding of current assets, especially cash strengthens a firms liquidity position, however, it reduces profitability

c) Levels of fixed as well as current assets depend on expected sales but it is only current assets which can be adjusted with sales in the short term.

Working capital might therefore refer to the management of both current assets and current liabilities involve 2 major decisions.

1. Target levels of each category (optional current assets).

2. How these assets will be financial.

3.

1. Optional Current Assets

Optional investment in current assets i.e. liquidity management is important because current assets are non-earning assets.

- Current assets affect the firm's financial risk.
  The consideration of the level of investment in current assets should avoid 2danger point's i.e. excessive and inadequate investment in current assets.

  Excessive investment in current assets impairs profitability because idle cash earns nothing. Inadequate investment can threaten the solvency of the firm if it fails to meet its current obligations.

2. Financing Current Assets.

Current assets can either be financed by use of short-term on long-term finds. For every firm, there is a minimum level of net working capital that is permanent. The magnitude of current assets needed is not always the same. It increases and decreases with time but this are always a minimum level of current assets which is continuously required by the firm to carry on its business operational. This minimum level is referred to as permanent fixed current assets.
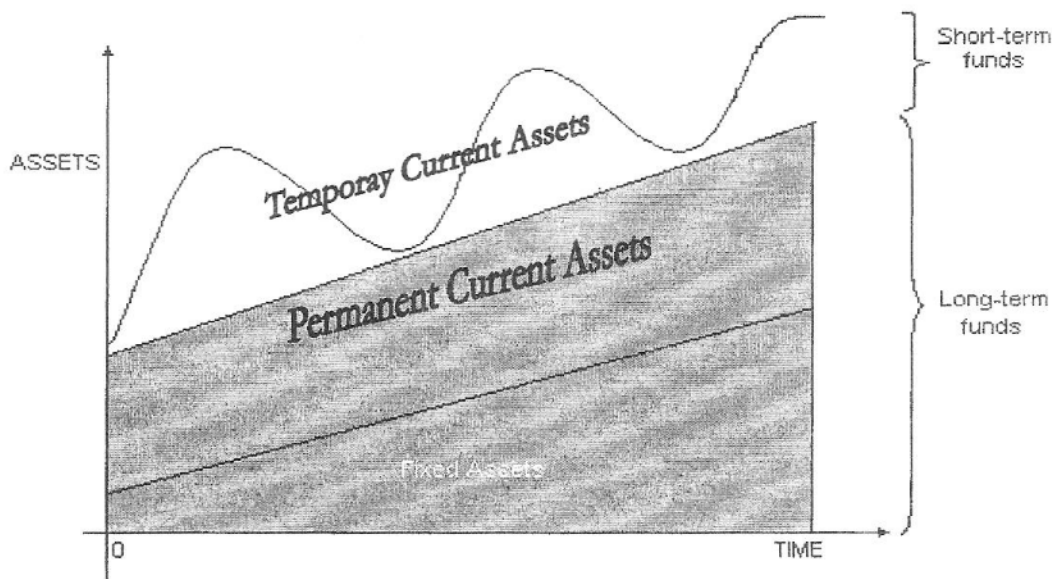
Approaches to Financing Current Assets.

There are 3 main approaches to financing current assets:

    (i)   Matching/hedging approach.

    (ii)   Aggressive approach

    (iii)   Conservative approach.

a) Matching/hedging Approach

In this approach the firm adapts a financial plan which involves the matching of the expected life of the asset with the expected life of the funds used such that short-term funds are used to finances temporary assets and long-term funds for long-term assets. This approach can be show be below

b) Aggressive Approach

Under this approach, the firm uses more of short-term finds in the financing mix such that short-term funds are used to finance all short-term plus a portion of permanent current assets.

And long –term finds used to finance a part of permanent current assets.

A very aggressive firm may finance all its current assets using short-term finds. This is especially the case for small firms which have united access to capital markets.

c) Conservative Approach

Under this approach, a firm uses more of its long-term funds for financing its needs. The firm uses long-term finds to finance fixed assets, permanent current assets and a part of the temporary current assets.

A firm using this approach has low risk and low return because it uses long-term finds to finance its short-term needs. At times, the firm may have excess liquidity which should be invested in marketable securities.

Example:

Nagaya Company is an investment group which has projected the following capital requirements for the next 12 months as follows;

Month	Amount	Month	Amount
	sh.000		sh.000
Jan	2,800	Jul	16,800
Feb	2,800	Aug	19,400
Mar	4,200	Sep	12,600
Apr	5,600	Oct	7,000
May	8,400	Nov	5,600
Jun	12,600	Dec	4,200

The cost of shorter and long-term funds per annum is projected at 20% and 25% respectively during the same period.

Required,

a. Prepare a schedule showing the amount of permanent and seasonal funds requirement each month.

b. What is the average amount of long-term and short-term financing that will be required each month?

c. Calculate the total cost of working capital financing if the firm adopts

    i.   An aggressive financing strategy.

    ii.   A conservative financing strategy.

Solution:

a.)

Month	Permanent Funds	Seasonal Funds
	sh.000	sh.000
Jan	2,800	0
Feb	2,800	0
Mar	2,800	1,400
Apr	2,800	2,800
May	2,800	5,600
Jun	2,800	9,800
Jul	2,800	14,000
Aug	2,800	16,600
Sep	2,800	9,800
Oct	2,800	4,200
Nov	2,800	2,800
Dec	2,800	1,400

b.) Average long-term financing = (2,800,000×12 months)/ 12

$$= Sh.\ 2,800,000$$

Average short-term financing =

(1,400+2,800+5,600+9,800+14,000+16,600+9,800+4,200+2,800+1,400)/ 12

=Sh.5, 700,000

c.)

MONTH	Short term (Aggressive)				MONTH	Long-term (Conservative)		
JAN	2800	x 20% ÷ 12 =	46.67		JAN	2800	x 25% ÷ 12=	58.33
FEB	2800	x 20% ÷ 12 =	46.67		FEB	2800	x 25% ÷ 12=	58.33
MAR	4200	x 20% ÷ 12 =	70		MAR	4200	x 25% ÷ 12=	87.5
APRIL	5600	x 20% ÷ 12 =	93.33		APRIL	5600	x 25% ÷ 12=	116.67
MAY	8400	x 20% ÷ 12 =	140		MAY	8400	x 25% ÷ 12=	175
JUNE	12600	x 20% ÷ 12 =	210		JUNE	12600	x 25% ÷ 12=	262.5
JULY	16800	x 20% ÷ 12	280		JULY	16800	x 25% ÷ 12=	350

		=				
AUG	19400	x 20% ÷ 12 =	323.33	AUG	19400	x 25% ÷ 12= 404.17
SEP	12600	x 20% ÷ 12 =	210	SEP	12600	x 25% ÷ 12= 262.5
OCT	7000	x 20% ÷ 12 =	116.67	OCT	7000	x 25% ÷ 12= 145.83
NOV	5600	x 20% ÷ 12 =	93.33	NOV	5600	x 25% ÷ 12= 116.67
DEC	4200	x 20% ÷ 12 =	70	DEC	4200	x 25% ÷ 12= 87.5
			1700			2125

(2.8+ 5.7) = 8.5m

short term = 8.5 x 20 % = 1.7 m

Long term = 8.5 x 20%= 2.125m.

Determinants of Working Capital Requirements of a firm

1. Nature of the Firm: A trading firm will usually require more working capital than a firm in the service industry e.g. a supermarket and a law firm

2. Size of the Firm: A larger firm would require comparatively more working capital than a smaller firm.

3. Business fluctuation : During times of high demand, affirm would require higher levels of working capital as compared to periods of low demand.

4. Growth stage of the firm: a mature firm requires less working capital than a firm in the infant stage.

5. Availability of credit from suppliers affects accounts payable.

6. The credit policy of the firm would affect accounts receivable.

Importance of Working capital Management.

The management of working capital is important because of the following reasons:

1. The time devoted to working capital management A large position of the finance manger's time is devoted to the day to day operations of the firm: a lot of this time is spent on working capital decisions.

2. Investment in current assets represents a large portion of the total assets of many business firms therefore these assets need to be properly managed as they can easily be misappropriated by the firm's employee's since they are relatively volatile assets.

3. Importance to small firms: A small firm can minimize its investments in fixed assets by renting or leasing these assts but these is no way they can avoid investments in current assets. A small firm has relatively limited access to capital markets and therefore must rely on short-term funds to finance these operations therefore management of small firms is equivalent to management of working capital.

4. Relationship between sales and currents assets. This is a direct relationship between sales and current assets such that changes in working capital affect sales revenue and therefore profitability of the firm.

Working Capital Management Strategies

Working capital management interrelated goals:

(1) How to accelerate the collection of cash

(2) How to control cash disbursements

(3) How the appropriate working balance is determined

(4)   How to invest any temporary idle funds in interest bearing marketable securities.

(5)   How to forecast and manage cash shortages.

(6)   Pay accounts payable as late as possible without damaging the firm's credit rating. The firm should, however, take advantage of any favorable cash discounts.

ACCELERATING COLLECTION OF CASH

Quick movement of remittances from dispersed locations to central management prevents the build up of idle or lazy cash balances. Good cash management practice would aim at reducing the time by between

(1) When payment is initiated by a debtor sending a cheque in payment and

(2) The time when funds become available for use in the recipients bank account.

Three contributors to a lengthy time lag, which need attention, are:

-        Transmission delay, when payment is sent through post.

-        Lodgment delay, by the payee in presenting, after receipt.

-        Clearance delay, by the bank after receipt of cash or cheque.

Measures to reduce the time lag will target these contributory factors and include

1   Payee setting up efficient cheque handling procedures to eliminate lodgment delays.

2   Automation; Facilities such as Bankers Automated Clearing Services (BACS) enable speedy computerized transfer of funds between banks.

3   For regular payments, standing orders or direct debits may be arranged.

4   Concentration Banking. Firms with regional sales outlets often designate certain of these offices as regional collection centers.   Customers within each region are instructed to remit payment to these offices, which deposit these receipts in local banks.   The funds are transferred later from these bank branches to a concentration or disbursing bank from which bill payments are dispatched.   The purpose is to limit mail time. Concentration banking also permits the firm to reduce the idle balances by storing its cash more efficiently in one (few) concentration account(s) rather than in many dispersed accounts. This reduces the requirement for large working balances.

5 Lock Box System The purpose is to eliminate the time between the receipt of remittances by the company and their deposit in the bank. In this system the customer sends the payments to a post office box, which is emptied at least daily by the firm's bank. The bank opens the payment envelopes, deposits the checks in the firm's account and sends deposit slip to the firm. The lock boxes are normally geographically dispersed and funds are ultimately transferred to a disbursing bank.

6 Personal collection of checks by messengers. A messenger shuttles around collecting checks from customers whose accounts are due.

7 Establishing good bank relations to expedite cheque clearance.

Operating and Cash Conversion Cycle (CCC)

Investment in working capital is needed because sales do not convert into cash instantaneously. There is always a cycle in conversion of sales into cash. An investment in current assets is realized within the operating year unlike fixed assets such as plant & machinery which may require many years to recover the initial investment. An operating cycle is the time duration required to convert sales after the conversion of resources into inventories, into cash. The conversion cycle of a manufacturing company involves three phases:

1. Acquisition of resources such as raw materials, power and labour.

2. Manufacture of the product which involves conversion of the raw material into Work-in-Progress and into finished goods.

3. Sale of the product either for cash or on credit. Credit sales create accounts receivable for collection.

The firm should therefore invest in current assets for a smooth un-interrupted functioning. It needs to maintain liquidity to purchase raw materials and pay expenses. Cash is also held to meet any future needs. Stocks of raw material and Work-in-Process are kept to ensure smooth production and to guard against shortage of raw materials and other components. The firm needs to hold stock of finished goods to meet the demands of customers continuously. Debtors arise due to sale of goods on credit for marketing and competitive reasons.

Calculation of Operating Cycle

The length of the operating cycle of a manufacturing firm is the sum of:

i) Inventory conversion period
ii) Receivables/debtors' conversion period

The inventory conversion period is the total time needed to produce and sell the product. It includes:

a) Raw material conversion period.

b) Work-in-Process conversion period.

c) Finished goods conversion period.

The debtors' conversion period is the time required to collect the outstanding amount from customers.

A firm may acquire resources on credit and defer payments. Payables may thus arise. The payables deferral period is the length of time the firm is able to defer payments on purchase of resources. The difference between the payables deferral period and the sum of the inventory conversion period and receivable conversion period is referred to as the operating/cash conversion cycle.

1. Inventory conversion period.

It is the sum of raw material conversion period, working in progress conversion period and finished goods conversion period.

Raw material conversion period. - It is the average time period taken to convert raw material into work in Process.

Formulae.

Raw material conversion period = Raw material inventory / (Raw material consumption/ 360)

Working in process conversion period. - It is the average time taken to complete the semi-finished or work in process.

Formulae.

Work in process conversion period = Working process inventory / (Cost of production /360)

Finished goods conversion period.- It is the time taken to sale the finished goods .

Formulae.

Finished goods conversion period = Finished goods inventory/ (cost of sales/ 360)

2. Debtors conversion period.

It is the time taken to convert the debtors to cash. It represents the average collection period.

Formulae.

Debtors conversion period = Debtors / (Credit sales/360)

3. Payables deferral period.

It is the average time taken by the firm to pay its suppliers / creditors.

Formulae.

Creditor deferral period = Creditors / (Credit purchase/ 360)

Summary

Inventory conversion period + Debtors conversion period – Creditors deferral period =Net operating cycle

Example

The following information relates to Mutongoi Limited.

	Sh.000
Purchase of raw material	6,700
Usage of raw material	6,500
Sale of finished goods (all on credit)	25,000
Cost of sales(Finished goods)	18,000
Average creditors	1,400
Average raw materials stock	1,200
Average work in progress	1,000
Average finished goods stock	2,100
Average debtors	4,700

Assume a 365 days year.

Required:
The length of the operating cash cycle.

Solution.

Raw material conversion period = Raw material inventory / (Raw material consumption/ 360)

$$= (1,200/6,500) \times 365$$

$$= 67 \text{days}$$

Work in process conversion period = Working process inventory / (Cost of production /360)

$$= (1000/18000) \times 365$$

$$= 20 \text{ days}$$

Finished goods conversion period = Finished goods inventory/ (cost of sales/ 360)

$$= (2100/18000) \times 365$$

$$= 43 \text{ days}$$

Debtors conversion period = Debtors / (Credit sales/360)

$$= (4700/25000) \times 365$$

$$= 69 \text{ days}$$

Creditor deferral period = Creditors / (Credit purchase/ 360)

$$= (1400/6700) \times 365$$

$$= 76 \text{ days}$$

Length of operating cycle.
Inventory conversion period.
Raw material conversion   67

period
Work in process conversion
period 20
Finished goods conversion

period	43	130
Debtors conversion period		69
Gross working capital cycle		199
Less: Creditor deferral period		-76
Net Cash Operating cycle		123

MANAGEMENT OF INVENTORY
There are three types of inventory:

- raw material
- work-in-progress
- Finished goods.

These are 4 types of costs associated with inventory management:

(i)   Holding (carrying) cost

(ii)   Ordering cost

(iii)   Purchase cost

(iv)   Stock out costs

i)   Holding Costs

These include warehousing costs, security, maintenance, administrative, insurance, cost of capital tied up in inventory and so on. Generally such costs increase in direct proportion to the amount of inventory held.

ii)   Ordering Costs

These are costs of placing an order which may include transport costs, clerical costs fo preparing and placing an order, insurance in transit, clearing and forwarding costs etc.

iii)   Purchase Cost

This is the cost of purchasing cash unit of stock.

Iv)   Stock out cost.

These include loss of customer goodwill, lost sales, cost of processing back orders and so on.

If we assume certainty, the relevant costs for decision making would be the holding and ordering costs. The objective of inventory management is too minimizing these relevant costs. This occurs when the company orders an economic order quantity.

Basic Inventory Management Model

This is the economic order quantity model which helps to manage inventory by minimizing the ordering and holding costs. Smaller inventories reduce holding or carrying costs but since smaller inventories imply more request orders they therefore involve high ordering costs.

Example.

A company requires 2000 units of items costing shs. 50 each. These forms have a lead time of 7 days. Each order costs shs. 50 to prepare and process and the holding cost is shs. 15 per unit p a for storage costs of 10% of the purchase price. Management has set up a safety stock level of 10 units and these units are on hand at the beginning of the year. This is the minimum or butter stock which acts as a cushion against any increase in usage or delay in deliver at time.

Required:

   a) How many units should be ordered each time an order is made
   b) What is the reorder level

c) Determine total relevant costs.

d) What is the inventory turnover?

Solution.

a) Q= √2×2000×50/(15+0.1×50)

=100

b) Reorder level = (Annual demand ×Lead time)/Number of days in a year + Safety stock.

=7×2000/365 +10

=48 units.

c) Total relevant cost = Co D/Q + Ch Q/2

=50×2000/100 + 20×100/2

=1000+1000

=2000

d) Inventory turnover =Annual Demand/ EOQ

=2000/100

=20

<u>Assumption of EOQ Model</u>

1. There is complete certainty of all the variables affecting the model re demand, ordering cost, holding cost and lead time.

The usage of stock is uniform.

2. the ordering cost is constant regardless of the no. of units ordered

3. Holding cost per unit per annum is constant regardless of the number of units held.

4. The purchase price is constant regardless of the no. of units purchased i.e. it ignores quantity discounts.

Exceptional to the assumption: - where quantity discounts are offered by the supplier.

The purchase price becomes a relevant cost because quantity discounts reduce the total purchase cost; reduces total ordering costs and increases total holding cost.

Example.

Using previous example assume a 5% discount is given if 200 or more than 200 units are ordered. Determine whether the discounts should be taken.

Total Cost without Discount

Purchase price = 2000 x 50   = 100 000

Holding and ordering costs   = 2000 + (10% x 50) + 15) x 10

    TOTAL COSTS   = 100,000 + 2000 + 200 = 102,200

Total costs with discount

Purchase price   =   2000 x 50 (100% – 5%) = 95,000

Holding cost   =   15 + 10% x 50(0.95) x 200/2

    =   2172.5

Ordering cost   =   50 x 2000/200

    =   500

Total Cost   =   500 + 95,000 + 2172.50

    =   97672.5

Therefore discount should be taken as the total relevant costs are lower with the discounts.

Using the previous illustration assume the following discounts have been offered.

Units	discounts	Price	Total Relevant Cost
0-199	0	50	102 200
200-299	5%	47.50	97,672
300-499	6%	47	97,485
500 and over	6.2 %	46.90	99,119

The best quantity to order is between 300 and 499 at a discount of 6% .at this level the relevant cost is the least as shown on the above computations.

Overcapitalization and Overtrading

The finance manager must be wary of two polar extremes in working capital management. These extremes are, (1) over-capitalization and, (2) over-trading.

Over Capitalization (Conservative Financing Strategy)

If a company manages its working capital, so that there are excessive stocks, debtors and cash and very few creditors, there will be an over-investment by the company in current assets. Working capital will be excessive and the company is said to be overcapitalized (i.e. the company will have too much capital invested in unnecessarily high levels of current assets). The result of this would be that the return on investment will be lower than it should, with long-term funds unnecessarily tied up when they could be more profitably invested elsewhere.

Indicators of over-capitalization

Accounting ratios can assist in judging whether over capitalization is present.

    (1)   Sales/Working capital ratio: - the volumes of sales as a multiple of working capital should indicate whether the total volume of working capital is too high (compared to the past and industry norms).

    (2)   Liquidity ratio. A current ratio and a quick ratio in excess of the industry norm or past ratios will indicate over-investment in current assets

    (3)   Turn-over periods. Excessive stock and debtors' turnover periods or too short creditor payment period might indicate that the volume of debtors and stocks is unnecessarily high, or creditors' volume too low.

Over-trading (Aggressive Financing Strategy)

Overtrading occurs when a business tries to do too much too quickly with too little long-term capital: The capital resources at hand are not sufficient for the volume of trade. Though initially an over-trading business may operate at a profit, liquidity problems could soon set in, disrupting operations and posing insolvency problems.

Symptoms of over-trading

Accounting indicators of overtrading include:

    (1) Rapid increases in turn-over ratios (over-heating)

    (2) Stock turnover and debtor's turnover might slow down with consequence that there is a rapid increase in current assets.

    (3) The payment period to trade creditors lengthens

    (4) Bank over-drafts often reach or exceed the limit of facilities offered by the bank.

    (5) The debt ratios rise

    (6) The current ratio and quick ratio fall and the net working capital (NWC) could be negative.

B. MANAGEMENT OF CASH

Cash is the ready currency to which all liquid assets can be reduced.   Marketable securities are short term, interest-earning money market instruments. The level of cash and money and marketable securities held by firms is determined by the motives of holding them.

Transaction Motive - this motive requires a firm to hold cash to conduct its normal businesses .the firm needs cash to make payments for purchases, wages and salaries and other operating expenses taxes and dividends etc.

Precautionary Motive - Balances held mainly in highly liquid marketable securities to cater for unexpected demand for cash or emergencies.

Speculative Motive – A firm may want ready funds at hand to quickly take advantage of any opportunities that may arise.

.The working balance of cash is maintained for transaction purposes. If the firm has too small a working balance, it may run out of cash. It then liquidates marketable securities or borrows both involving transaction costs. If on the other hand the firm maintains too high working balance it foregoes the opportunity to earn interest on marketable securities – an opportunity cost. The optimal working balance occurs when total costs (transaction costs plus opportunity cost) are at a minimum. Finding the optimum involves a trade-off between falling transaction costs against rising opportunity costs.

Costs

Total relevant cost

Opportunity cost (interest rate)

Transaction cost

_____
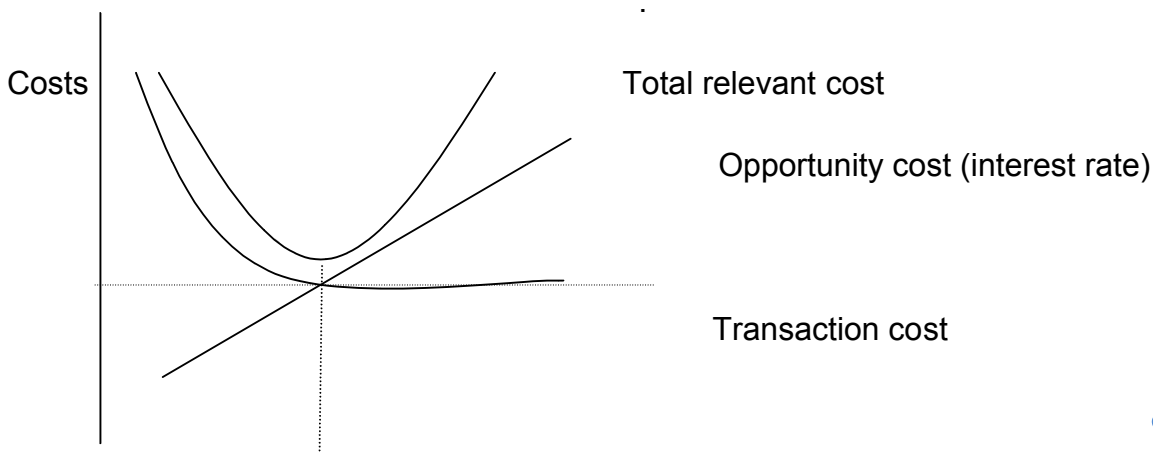
Optimal cash balance   Cash balance.

To determine the optimal cash balance, the firm uses some deterministic and stochastic models.

Deterministic models assume certainty of variables whereas stochastic models assume uncertainty in cash management. The 2 main cash management models are:

(i)   Baumol models

(ii)   Miller Orr model,

Baumol Model

The Baumol model is a deterministic model which assumes certainty of variables. It considers cash management similar to an inventory management problem. Thus the firm attempts to minimize the sum of the costs of holding cash and the cost of converting marketable securities to cash. (EOQ model in cash management.)

The underlying assumptions of this model are:

a) The firm is able to forecast its cash needs with certainty.

b) The opportunity cost of holding money is known and constant.

c) Transaction costs are known and constant. These are costs incurred by the firm inflow and outflow occurs at a steady rate.

d) The firms' cash payments occur uniformly over a period of time.

The firm incurs holding cost for keeping the cash balance. It is an opportunity costs that is , the return foregone on the marketable securities .

The firm incurs a transaction whenever it converts a marketable security to cash.

Let   Q   =   amount converted into cash by selling securities or borrowing

d   =   Total cash outflow (demand) per period (year)

c   =   Transaction costs of each sale of securities or borrowing

i   =   the interest rate that can be earned per period (year)   i.e. the cost of

Holding cash rather than investing it.(opportunity cost)

Then Q* (Optimal size of cash transfer) = $\sqrt{(2dc/i)}$

Example:

A Company anticipates Sh.150 million in cash outlays during the next year. The outlays are expected to occur equally throughout the year. The company's treasurer reports that the firm can invest in marketable securities yielding 8% and the cost of shifting funds from marketable securities portfolio to cash is Sh.7, 500 per transaction. Assume the company will meet its cash demands by selling marketable securities. Using the Baumol model:

(a)   Determine optimal size of the company's transfer of funds from marketable securities to cash.
(b)   What will be the company's average cash balance?
(c)   How many transfers from marketable securities to cash will be required during the year?
(d)   What will be the total cost associated with the company's cash requirements?
(e)   How would your answers to (a) and (b) change if transaction cost could be reduced to Sh.5, 000 per transaction? Or if Triad could invest in marketable securities to yield 10%?

SOLUTION

(a) Q* (Optimal size of cash transfer)   = $\sqrt{(2dc/i)}$

   We can determine that; d   =   150 million;   i = 0.08; c = 7500.

   Therefore,

   Q*   = $\sqrt{(2 \times 150{,}000{,}000 \times 7500)/0.08}$

         =   Sh.5, 303,301

(b) Triad's average cash balance =   Q*/2   =   5,303,301/2 = Sh.2, 651,650

(c) Cash turnover/ Number of transfers =Q/Q*

            =150,000,000/5, 303,301

            =28.28427

              =28.3 times

   Cash conversion cycle=Number of days in the year/cash turnover

            =365/28

            =13

(d)Total costs = holding cost + transaction cost

            =   2,651,650 x 0.08 + 28.3 x 7,500

            =   212,132 +   212,250

   =   Sh.424, 381.

Miller Orr. Model/ Stochastic model

This is a stochastic or a probabilistic model which assumes uncertainty in cash management. It assumes that the daily cash flows are uncertain and therefore follow a trendless random walk. This model therefore sets limits within which cash should be managed. These limits are:

(a)   An upper limit, which is the maximum amount of cash to be held (H)

(b)   Lower limit, which is the minimum amount of cash to be held (assumed to be zero) (L)

(c)   Return point, which is the target cash balance considered optimal.(Z)

Cash

H	=	Upper limit/balance
Z	=	Optimal cash balance
L	=	Lower cash balance

H

Z

L

Time.
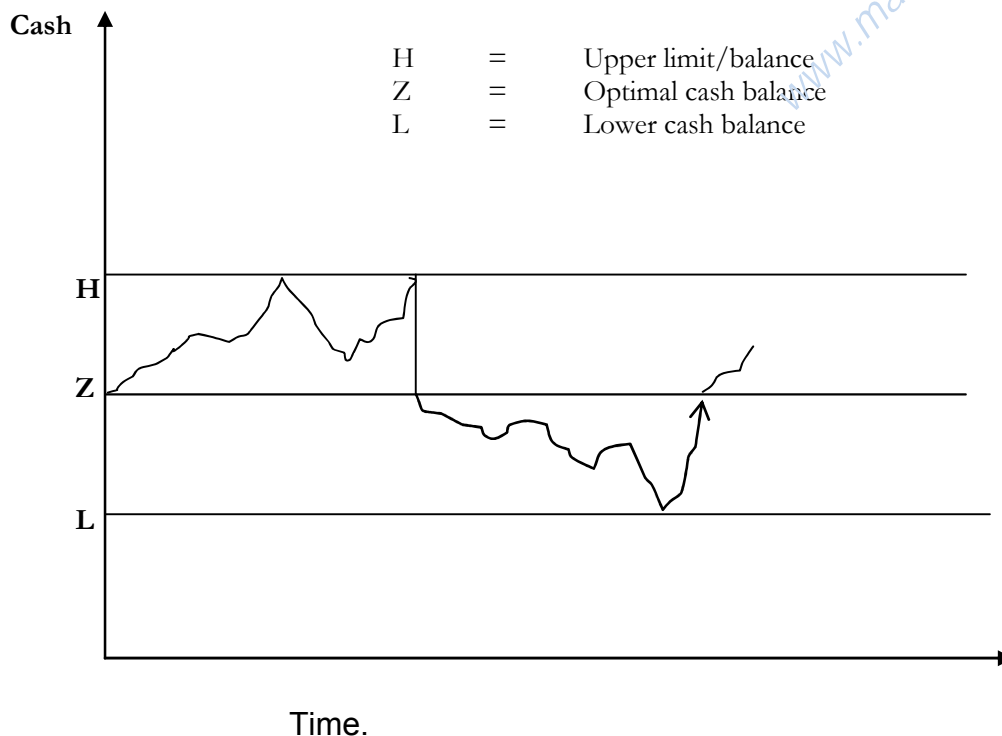
A firm will always attempt to maintain the optional balance (Z) but because of uncertainty, cash balances will fluctuate between the upper cash limit (H) and the lower cash limit (L). The difference between H and L is known as the spread.

The important implication of the model is that the greater the variability of a firm's cash flow the higher should be the minimum balance.

When cash balances move from Z to H, it means that the firm has idle cash which it needs to invest and generate some interest income therefore to revert to the target level Z the firm needs to buy marketable securities valued at H-Z.

When cash balance hit the lower limit, L, it means that the firm has deficit cash balances therefore to revert to Z; the firm should sell marketable securities amounting to Z-L.

This would enable the firm to realize cash.

Setting the Return and Upper Point
The return point is estimated by:

Return Point = $^3\sqrt{[(3 \times \text{conversion cost} \times \text{variance of daily net cash flows})/ (4 \times \text{daily Opportunity cost})]}$ + Lower cash limit (L)

The upper limit for cash balance in this model is always set at three times the return point. Therefore Upper limit = 3 x Return point.

Note: The lower cash limit (L) is set by management and since this model assumes uncertainty, it states that the optimal cash balance is influenced by 3 factors

(1) Conversion costs,

 (2) The daily opportunity cost of funds, and

(3) The variance of daily net cash flows. The variance is estimated by using daily net flows (i.e. Inflows minus outflows).

Example 1:

It costs Wetika Company Sh. 3,000 to convert marketable securities to cash and vice versa; the firm's marketable securities portfolio earns an 8% annual return. The variance of Wetika Company's daily net cash flows is estimated to be Sh. 2, 7000,000.
Determine the return point and the upper limit.
Solution

(i) Return point (Z) = $\sqrt[3]{[(3 \times 3000 \times 2,700,000/(4 \times 0.00022)]}$ = Sh.13, 990

(ii) The upper limit line (H) =3 x return point = 3 x 13,990 = Sh.41, 970

NB: Daily opportunity cost = 8%/360 = 0.00022

MANAGEMENT OF RECEIVABLES

Account Receivables are amounts of money owed to a firm by customers who have bought goods and services on credit. Management of receivables aims at determining the optimal level of investment in receivables, which maximizes the benefits and minimizes the costs of holding receivables.

Economic conditions, competition, product pricing, product quality and the firm's accounts receivables management policies are the chief influences on the level of a firms accounts receivable. Of all these factors, the last one is under the control of the finance manager. Our concern is to focus on this last factor.

As with other current assets, the manager can vary the level of accounts receivable in keeping with the trade-off between profitability and risk.

The firm's financial manager controls accounts receivable through the establishments and management of:

 (2) credit policy, which is determination of credit selection, credit standards and credit terms, and
 (3) Collection policy.

Let us consider these management variables.

➢ Credit selection

This is the decision whether to extend credit to a customer and how much credit to extend. A credit investigation is first carried out on the prospective customer in whom the five Cs of credit are employed. The five Cs of credit are key dimensions – Character, Capacity, Capital Collateral and Conditions – used by the credit analysts to focus their analysis on an applicant's credit worthiness. A brief discussion of these characteristics follows.

Character This refers to the creditor's willingness to honor obligations. The applicants record of meeting past obligations – financial, contractual, and moral - is closely scrutinized. Any past litigation against the applicant would also be relevant.

Capacity This considers the applicants ability to generate cash to repay the requested credit. Financial statement analysis, especially liquidity and debt rations are useful in assessing capacity.

Capital Considers the financial strength of the applicant as reflected by his net worth position. The applicant's debts relative to equity and the profitability ratios will be used in this assessment.

Collateral Looks at the amount of assets the applicant can pledge to secure the credit to be advanced. The asset structure as revealed in the balance sheet and record of any legal claims against the applicant will be helpful in this assessment.

Conditions The prevailing economic and business climate as well as unique circumstance affecting the applicant will be considered.

Character and Capacity receive primary attention; capital, collateral and conditions play a supplementary role.

Sources of Information on the Debtor

The evaluation of an applicant begins when he fills a form providing basic financial and credit data and references. Additional information will be obtained from other sources depending on time and expense and size of credit involved. The credit analyst may obtain information from the following sources.

Financial Statements The seller may request the audited financial statements of the applicant for a number of years. The trends shown by the statements would help gauge financial strengths.

Credit Rating And Reports Credit rating agencies provide subscribers with credit rating and estimates of overall financial strength for many companies (Dun & Bradstreet is the largest mercantile credit reporting agency in the world. In Kenya, the industry is in its infancy with Metropol Rating Agency one among the very few firms active).

Bank Checking The applicant's bank could be a good source of information for the credit analyst. The credit analyst can obtain information such as average cash balance carried, loan granted and recovery of loan experience. Despite existence of banking secrecy laws, the credit applicant will allow his bank to provide the information in order to facilitate his being granted credit.

Trade checking Credit information is frequently exchanged among companies selling to the same customer. Companies can ask other supplies about their experience with an account.

➢ Credit Analysis

Having collected information, the credit analyst must conduct a credit analysis of the applicant. The analyst must decide on the applicant's credit worthiness and the maximum amount of credit the applicant can support – the line of credit (maximum amount a credit customer can owe the selling firm at any one time). Two approaches to credit analysis are discussed below.

(a) Investigations Procedures

 The following ad hoc procedures are usually employed by small firms and by big firms on small accounts

(1) Applicant's financial statements and accounts payable ledger can be used to calculate the "average payment period"

(2) Consult past experience to see whether the firm has sold previously to the account (applicant) and whether that experience has been satisfactory.

(3) A through ratio analysis of the accounts liquidity activity, debt and profitability.

(4) A credit rating agency's recommendation could be obtained and used to estimate the maximum line of credit to extend.

(5) Time series comparison should be performed to uncover any trends.

(6) The credit analyst's own subjective judgment of a firm's credit worthiness could be decisive.

(a) Credit scoring systems

These systems employ quantitative approaches to decide whether or not to grant credit, by assigning numerical scores to various characteristics related to the applicant's credit worthiness. The credit score is a weighted average of scores obtained on key financial and credit characteristics. In consumer credit, plastic credit cards are often given out on the basis of a

credit-scoring system that rates such things as occupation, duration of employment, home ownership, years of residence and annual income. Numerical rating systems are also used by some companies extending trade credit (credit granted from one business to another).

Example:

Factor	Score	weighting	factor
Home ownership	90	0.2	18
Salary range	75	0.2	15
Bank references	80	0.1	8
Credit references	60	0.15	9
Marital status	90	0.15	13.5
Age bracket	85	0.05	4.25
Financial statements	75	0.15	11.25
			79

if the minimum score is 70, then grant credit since 79 > 70

Credit Decision and Line Of Credit

Once the analyst has marshaled the necessary evidence and analyzed it, two decisions must be made:

(1) Whether to extend the credit
(2) Whether to establish a line of credit. A line of credit is used where repeat sales are expected. It is the maximum limit on the amount the firm will permit to be owed at any one time by the

applicant. In essence it is the maximum risk exposure that the firm will allow itself to undergo for an account.

> Credit standards

Credit standards define the minimum criteria for the extension of credit to a customer. Extension of credit has its costs (risks) even as it has benefits. In determining the optimal credit standards, marginal costs of credit should be related to the marginal profits from the increased sales.

Key variables that should be considered in evaluating relaxation or tightening of credit standards are:

(a) Clerical and collection expenses – If credit standards are relaxed / tightened more/less credit is offered and a bigger/smaller credit department is needed to service accounts.

(b) Investment in Receivable – The higher the firm's average accounts receivables are, the more expensive they are to carry, and vice versa. Thus a relaxation of credit standards can be expected to result in higher carrying costs and a tightening of credit standards results in a lover carrying costs.

(c) Default and Bad date Expenses: the probability of (risk) of acquiring a bad debt increases as credit standards are relaxed and decreases as the standards become more restrictive.

(d) Sales Volume and contribution margin: it is expected that as credit standards are relaxed, sales (contribution margin) will be expected to increase; a tightening of credit standards is expected to reduce sales (contribution margin).

The table below summarizes the basic change and effects on profit expected to result from relaxation of credit standards.

Effect of a relaxation of credit standards (Danger of lenient credit policy)

Item	Direction of Change	Effect on Profits
Sales volume (contribution)	+	+

Average Collection period	+	-
Bad debt expense	+	-

Example

XY Co. is currently making annual sales of 120,000 units at Sh.10 per unit. The variable cost per unit is Sh.6 and average cost per unit, given the current sales volume is Sh.8.

The firm is contemplating a relaxation of credit standards that is expected to result in 15% increase in unit sales, an increase in average collection period from 30 days to 45 days, and an increase in bad debt loss rate from 2% to 3% of total sales. Additional working capital (apart from accounts receivable) needed will remain at 25% of sales even if the credit standards are relaxed. The firm has excess capacity and can increase sales without a corresponding increment in Fixed Assets. The firm's cost of capital is 12%. Determine whether it is advisable for the firm to relax its credit standards. Assume 360-day year.

Solution
Additional Profit Contributions from Sales

Current plan

Sales revenue (120,000 x 10)	<u>1,200,000</u>
Less costs	
Variable (120,000 x 6)	720,000
Fixed (8-6) x 120,000)	<u>240,000</u>
Total costs	<u>960,000</u>
Net profit	<u>240,000</u>

Proposed Plan

Sales revenue (120,000 x 115% x 10)	1,380,000	
Less: Costs		
Variables (138,00 x 6)		828,000
Fixed (no change)		240,000
Total costs		1,068,000
Net profit		312,000

Addition profit contribution with new plan = 312,000 – 240,000 = Sh.72, 000

Other costs of new plan

Cost of the investment in Accounts receivables (A/R)

Under the current plan:

Average A/R = $\frac{1,200,000 \times 30}{360}$ = Sh.100, 000

Average Investment in A/R = variable cost ratio(VC ratio) x Average A/R

= (6/10) x 100, 000 = 60,000

Cost of Investment in A/R = 60,000 x 15% = Sh.9,000

Under proposed Plan:

1,380,000 x(45/360)*VC ratio = 172,500 x 0.60 = 103,500

Cost of investment in A/R = 103,500 x 15% = Sh.15,525

Incremental cost of investment in A/R = 15525-9,000 = Sh. 6,525

Cost of additional working capital (WC) under proposed plan

Current plan's WC needs = 25% x 1,200,000 = 300,000

Cost working capital = 15% x 300,000 = Sh.45,000

Proposed plan's WC needs = 25% x 1,380,000 = 345,000

Cost of WC = 15% x 345,000 = Sh.51,750

Marginal increment in cost of WC = 51,750-45.000 = Sh.6,750

Bad debt losses

Current plan = 2% x 1,200,000   24,000

Proposed Plan = 3% x 1,380,000   41,000

Marginal increment in bad debts   17,400

Overall benefits of relaxation in credit standards = 72,000 – 6,525 – 6,750 – 17,400 = Sh.41.325. Therefore a relaxation in credit standards is advisable.

. CREDIT TERMS (TERMS OF SALE)

Credit terms specify the repayment terms required of all credit customers (i.e. 2/10,net 30. Credit terms make specification on three issues:

(1) the cash discount (2)%

(2) the cash discount period (10 days)

(3) the credit period (30 days)

Changes in any aspect of the firm's credit terms may have an effect on its overall profitability of the company.

Cash Discounts

The effects of a n increase in cash discounts granted on the financial variable . A decrease will have the opposite effects.

Item	Direction of change	Effect on profits
Sales volume	+	+
Average Collection period	-	+
Bad debt expenses	-	+
Profit per unit	-	-

The sales volume increases since the cash discount effectively reduces the price for those firms ready to pay within the discount period. (assuming demand is elastic). The Average collection period decreases because the discount acts as an inducement for early payment. The bad debt expense falls because as people pay earlier, the risk of a bad debt decreases. The increase in sales, and the decrease in average collection period and bad debt expense have a positive effect on net profits. Increased cash discount has however the negative effect of a decreased profit margin per unit as more people take the discount and pay the reduced price.

Example

XYZ Co. is contemplating initiating a cash discount of 2% for payment within 10 days of purchase. The firm's current average collection period is 30 days.. Credit sales of 120,000 units at a price of Sh.10 are made annually. Variable cost per unit is Sh.6, and average cost per unit is Sh.8. If the discount is initiated 70% of sales will be on discount and sales will increase by 10%. The average collection period will drop to 15 days. Bad debt expenses currently at 2% of sales will fall to 1%. Total working capital needed will not be affected by the cash discount. The firms required return on investment is 12%. Assume no additional capital investment will be necessary.

Evaluate the proposal to initiate a discount.

Solution

An additional (10% x 120,000) 12,000 units will be sold whose contributions to profit is 12.000 x 4 = Sh.48, 000

Average Investment in A/R (receivables).

Current plan (30 days) – 120,000/12 = 100,000

Proposed plan (15 days) = 1,320,000/24 = 55,000

Reduction in Average A/R =   45,000

Savings = 45,000 x 12% = Sh.5, 400

Bad debts Expenses

Current plan = 2% x 1,200,000 = 24,000

Proposed plan = 1% x 1,320,000 = 13,200

Saving in bad debt losses   sh.10,800

Cash discount costs

Cash discount 2% x 1,320,000 x 70%   = Sh.18, 480

Net benefit of cash discount =48,000 + 5,400 + 10,800 – 18,480 = Sh.45,720

Eg of an aging analysis

Days due	Action
0	No action
0-10	Send statements/call to remind them to pay
10-30	Call again
30-60	Write letter demanding payment/make provision for bad debt

| 60-90 | Ask lawyer to write |
| 90-120 | if material, take action |

Financing accounts receivable.

This involves either Assigning/Pledging of Accounts Receivable or Selling/factoring of accounts Receivable

Assigning/Pledging of Accounts Receivable

This involves borrowing form a financial institution and offering accounts receivable as security. Under this arrangement, the customer is not notified and the risk of default remains with the company. The financial institution requires full payment of the loan, whether the customer pays or not for this reason, the company must carry out a credit analysis to determine the customers credit worthiness.

Selling/factoring of Accounts Receivable

This involves selling of accounts receivable to a financial institutions referred to as a factor. This occurs without recourse to the company i.e. if the customer falls to pay. It is the duty of the factor to follow up. The customer is usually notified of this arrangement and is therefore required to pay directly to the financial institution.

The financial institution therefore assumes the risk of default and must therefore carry out a credit analysis. The financial institution would, however, charge a commission for this service.

Procedures for Factoring

An agreement between the company and the factor is usually made to specify the legal obligations of this agreement. Upon receipt of application from the customer, the co prepared a credit approval slip and sends it to the financial institution. If credit is approved, then shipment of the goods is made and an invoice sent to the customer notifying him to make payments directly to the company after deducting of commission for credit analysis, interest for risk bearing and a restrive for damaged or returned goods.

Example:

A company factors Shs. 10 000 of its accounts receivable, terms n/30. The factoring commission is 2.5% of the invoice value and interests is 9% per annum. The factor charges a reserve of 5% for damaged and or returned goods. The interest and commission are other discounted.

Required:

    i. Show the accounting entry made by the company.

    ii. Complete the effective cost of the arrangement

Solution		Working
Commission = 2.5% x 1000	=250	Interest = x
Reserve = 5% x 10 000	= 500	$x = \dfrac{9\%}{12}(10\,000 - 250 - x)$

Accounting entries

DR: Bank / Cash (9677.4 – 500) 9177.4		$x = 0.0075\,(9750 - x)$
Commission	250	$x = 73.125 - 0.0075x$
Interest	72.6	$1.0075x = 73.125$

0728 776 317

Reserve   500   z = 72.6

CR: Accounts receivable   10 000

Amount received

= 10 000 – Commission – interest

= 10 000 – 250 – 72.6

= 9677.4

ii)   Effective Cost = <u>Total Charges x months</u>
                             Amounts receivable

                          = <u>72.6 + 250 </u> X 12
                                9677.4

                          = 40%

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a) Pledging A/Cs receivable > 256 000 (80% x 320 00)

Compensating balance   15 360   x = 0.025 (30%/12)

Interest = <u>30%</u> (256 000 – 15360 – x)
                  12

1.025x   = 6016

              = -5869.27

Advance   = 256 000 – 15 360 – 586.27

= 234 770 73

Factoring

Commission = 2% 320 000   = 6400

Interest = x

Reserve = 5% x 320 000   = 16 000

Interest = x

X = $\frac{15\%}{12}$ (320 000 – 64-- - x)

x = 0.0125 (313 600 – x)

1.0125 x = 3920

x = 3871.64

<u>MANAGEMENT OF CURRENT LIABLITIES</u>
Current liabilities are sources of short term financing which assist firms finance current assets and meet other short term financing needs. The three broad categories of short term financing are:

1. Spontaneous sources
2. unsecured sources
3. secured sources

The following are brief characteristics of each of these sources.

Spontaneous Sources

Spontaneous financing arises automatically from the day-to-day operations of the firm. The most common forms of spontaneous financing come from trade credit from suppliers, and accrued expenses. This financing is interest free and requires no collateral.

Creditors Management (Account Payable)

The purchaser obtains goods and services, agreeing to pay later in accordance with the credit terms stated on supplier's invoice. Trade credit is credit extended in connection with goods purchased for resale. It is this qualification that distinguishes trade credit from other forms of credit.

Suppliers often give cash discounts on *open accounts* for payment within a specified period. The credit terms specify the credit period, the size of the cash discount, the cash discount period, and the date the credit period begins , which is usually at the end of each month (EOM). For example, terms of 2/10, net 30 EOM, mean a discount of 2% may be taken if the invoice is paid within 10 days of the invoice date; otherwise the full payment is due within 30 days from the end of the month of purchase. If the EOM is not part of the terms then counting begins from the date of the invoice. *Prompt-payment cash discounts* are to be distinguished from quantity (bulk) discounts given for purchase of large quantities, and also from *trade discounts* given at different points in the distribution chain (wholesale versus retail, etc.). Proper management of credit offered by suppliers requires that:

1. The firm takes the cash discounts by paying on the last day of the discount period. The annual percentage cost of giving up cash discounts is quite high. This cost can be estimated using the following equation.

$$\text{Cost of giving up discount } = \text{ CD}/(100\%-\text{CD})*365/\text{N} \qquad (12.4)$$

Where CD = stated cash discount as a percentage

N = number of days payment can be delayed by giving up the cash discount

Example

ABC Ltd. purchased Sh.100,000 worth of merchandise on 27 February from a supplier extending credit terms of 2/10, net 30 EOM. Calculate the cost of giving up the cash discount.

Solution

The annualized effective cost of giving the discount = CD/(100%- CD)*(365/N)

$$= 2\%/(100\%-2\%)*(365/20)$$

$$= 37.24\%$$

This is a very high cost indeed and is equivalent borrowing at 37.24%. (NB If we were to take the discount the firm would pay on 10 March. By giving up the discount it costs the firm Sh.2,000 (100,000-98,000)).

2. Stretch accounts payable The firm should pay its bills as late as possible without damaging its credit rating. The full extent of the credit period should be utilized in the case where cash discounts are not offered. Caution is to be exercised in stretching payments as this may harm the firm's reputation and at worst can cot the firm its sources of supply.

Accruals

Accruals are the other major source of spontaneous financing. Accrued expenses arise when a firm consumes services (other than trade services) without having to make immediate payment for them .Typical expenses that generate accrued financing include wages and salaries, utilities, rent, etc.

Unsecured sources of short term financing

Unsecured source of financing is one against which no specific assets are pledged as collateral. Businesses obtain unsecured short term credit from three sources i.e. trade credit, banks and commercial paper.

Trade credit Most trade credit is extended via the *open account* that results in accounts payable discussed in the preceding section. There are however two other less common sources of trade credit; The promissory note (trade) and the trade acceptances.

1. Promissory note Is usually called a note payable (trade) on the balance sheet. Such notes bear interest and have specified maturity date. They are used in situations in which a purchaser of goods on credit has failed to meet the terms of an open credit agreement and the supplier wishes a formal acknowledgement of the debt and a specific agreement on a future payment date.

2. Trade acceptances Under this arrangement the purchaser acknowledges the debt formally by accepting a draft drawn by then seller calling for payment on a specified date at a designated bank. After acceptance, the draft is returned to the seller and the goods are shipped.

Bank loans Commercial banks are by far the largest suppliers of unsecured loans to businesses. Businesses need to establish a cordial relationship with their bank that can facilitate lending transactions. For a successful relationship to blossom banks will generally look for honesty and integrity ,managerial competence and frank communication in their clients. In addition detailed and specific information regarding the nature of the financing requirement, the amounts and timing of the need, the uses to which the funds will be put, and when and how the bank will be repaid may be needed.

Banks lend unsecured short term loans in three forms: a line of credit, a revolving credit agreement, and a single payment note.

1. Single payment note This is a short term , one-time-loan, payable as a single amount at its maturity. It generally has a maturity of 30-daysto 9 months and may have either a fixed or floating rate.

2. Lines of credit A line of credit is an agreement between a business and a bank showing the maximum amount the business could borrow and owe the bank at any point in time. Lines of credit are not contractual and legally binding upon the bank, but they are nearly always honored. The major benefit, to a business, of a line of credit is its convenience and administrative simplicity. From the bank's point of view the major attraction of a line of credit is that it eliminates the need to examine the creditworthiness of a customer each time the customer wants to borrow. The terms of a credit line may require a floating interest rate, operating change restrictions, compensating balances, and annual cleanup provisions (a period usually of 1or 2 months during which the loan is completely paid off). A line of credit is often used to finance seasonal working capital needs or other temporary requirements.

3. *Revolving credit agreement* Involve a contractual and binding commitment by the bank to provide funds during a specified period of time. Because the bank legally guarantees the availability of funds, the borrower pays a *commitment fee* of ¼ or ½ percent per year on the average unused portion of the commitment. Revolving credit agreement, like a line of credit,

permit the firm to borrow up to a certain maximum amount; but unlike a line of credit, are not subject to 'clean-up ' provisions.

Commercial Paper

A commercial paper is a form of financing that consists of short term promissory notes issued by firms with high credit standing. Commercial paper is typically sold at a discount from its par value. Consequently, the interest charged is determined by the size of the discount and the time to maturity. Commercial paper distributed through the stock exchange is known as a money market instrument.

The use of commercial paper to raise funds is advantageous because the cost is lower relative to bank loans and the borrower avoids the cost of maintaining compensating balances required on bank loans. Additionally , borrowers who need to raise huge amounts of money can satisfy their needs more conveniently by issuing commercial paper.

Example

A company has issued a Sh.100,000,000 par value worth of commercial paper with a 90-day maturity, for Sh.98,000,000. Find the effective annual rate of interest on the paper.

Solution

The effective annual rate   = $(1+D/N_P)^n -1$ (12.1)

Where D = discount

    N_P = net proceeds from issue

    n = 365/time to maturity

The effective 90-day rate is = D/N_p = 2,000,000/98,000,000 = 0,0204

Therefore ,effective annual rate = $(1+0.0204)^n - 1$ = 0.0841 = 8.41%

(n =365/90 = 4)

Secured Sources Of Short Term Financing

A loan is one obtained by a borrower pledging specific asset(s) as security. In the case of shot term loans, lenders insist on collateral that is reasonably liquid. Inventory, accounts receivable, and marketable securities are the assets commonly used as security. Usually the interest on secured

loans is higher than interest on unsecured loans because of the perceived risk and the costs of negotiation and administration. The primary sources of secured loans are the commercial banks and non-bank financial institutions.

In considering the use of a company's asset as security we should keep in mind the adverse effect of such action on unsecured creditors who may take them into account in any future transactions.

Reinforcement questions:

1 (a) What is meant by the term "matching approach" in financing fixed and current assets?

(4 marks)

(b) Briefly explain how the Miller-Orr cash management model operates. (4 marks)

(c) (i) What is a Commercial Paper? (3 marks)

(ii) State and explain the advantages of using commercial paper by businesses to raise funds (4 marks)

(d) In working capital management,

    a. Distinguish between a credit policy and a working capital policy.

    b. Give factors to be considered in establishing an effective credit policy.

    c. How does a company's working capital policy impact on its liquidity – profitability position? Explain with reference to the strategies available to the firm for financing its working capital.

(e) A co has set the minimum cash balance at Sh.10, 000. The interest rate on marketable able securities is 9% p.a. standard deviation of daily cash flows is sh.2500 and transaction costs. For every sale or purchase of marketable securities is sh. 20.

Assume a 360 days year.

Required

    (i)   Compute the target cash balance.

    (ii)   Compute the upper-limit, average cash

    (iii)   State the company's cash decision rule.

(2.)   The management of Furaha Packers Ltd. is planning to carry out two activities at the same time to:

    (i)   determine the best credit policy for its customers
    (ii)   find out the optimal level of ordering orange juice from its suppliers.

The following data have been collected to assist in making the decisions:

    1.   Annual requirements of orange juice are 2,100,000 litres

    2.   The carrying cost of the juice is Sh.8 per litre per year

    3.   The cost of placing an order is Sh.1,400.

    4.   The required rate of return for this type of investment is 18% after tax.

    5.   Debtors currently are running at Sh.60 million and have an average collection period of 40 days.

    6.   Sales are expected to increase by 20% if the credit terms are relaxed and to result in an average collection period of 60 days.

    7.   60% of sales are on credit.

    8.   The gross margin on sales is 30% and is to be maintained in future.

Required:

    (i)   Use the inventory (Baumol) model to determine the economic order quantity and the ordering and holding costs at these levels per annum. (8 marks)
    (ii)   Determine if the company should switch to the new credit policy.   (4 marks)

3. a)   A firm may adopt a conservative policy or an aggressive policy in financing its working capital needs.

Clearly distinguish between:

i)   A conservative policy and   (3 marks)
ii) An aggressive policy.   (3 marks)

b)   The following information relates to the current trading operations of Maji Mazuri Enterprises (MME) Ltd:

-   Level of annual sales (uniform per month)   -   Sh.600 million

-   Contribution to sales ratio   -   15%

-   Debtors recovery period:

        Percentage Average collection

        of debtors   period (days)

        25   32
        60   50
        15   80

-   Credit sales as a percentage of total sales   -   60%

-   Required return on investments   -   15%

-   Level of bad debts (2% of credit sales)   -   Sh.7,200,000

The management of the company is in the process of reviewing the company's credit management system with the objectives of reducing the operating cycle and improving the firm's liquidity. Two alternative strategies, now being considered by management are detailed as follows:

Alternative A: change of credit terms:

The proposal requires the introduction of a 2% cash discount which is expected to have the following effects:

- 50 per cent of the credit customers (and all cash customers) will take advantage of the 2 per cent cash discount.
- There will be no change in the level of annual sales, the percentage of credit sales and the contribution of sales ratio.
- There will be savings in collection expenses of Sh.2,750,000 per month.
- Bad debts will remain at 2 per cent of total credit sales.
- The average collection period will be reduced to 32 days.

Alternative B: contracting the services of a factor:

The factor would charge a fee of 2% of total credit sales and advance MME Ltd. 90% of total credit sales invoiced by the end of each month at an interest rate of 1.5% per month.

The effects of this alternative are expected to be as follows:

- No change is expected in the level of annual sales, proportion of credit sales and contributions margin ratio.
- Savings on debt administration expenses of Sh.1,400,000 per month will result
- All bad debt losses will be eliminated
- The average collection period will drop to 20 days.

Required:

i) Evaluate the annual financial benefits and costs of each alternative (Assume 360 –day year)   (8 marks)

ii) Advise MME Ltd. management on the alternative to implement.   (2 marks)

iii) Explain briefly other factors that should be considered in reaching the decision in (ii) above.   (4 marks)

4. The following information is provided in respect to the affairs of Pote Limited which prepares its account on the calendar year basis.

	1995	1994
	Shs.	Shs.
Sales	600,000	500,000
Purchases	400,000	350,000
Cost of goods sold	360,000	330,000
Stock at 31 December	100,000	60,000
Debtors at 31 December	98,000	102,000
Creditors at 31 December	40,000	25,000
Total assets at 31 December	300,000	185,000

Stock and debtors at 1 January 1994 amounted to Sh.70,000 and Sh.98,000 respectively.

Required:

a)   Calculate the rate of stock turnover expressed:

   i)   as a ratio;   (3 marks)

   ii)   in days, for each of the years 1994 and 1995.   (3 marks)

b)   Calculate the rate of collection of debtors, in days, for each of the years 1994 and 1995.
                                              (3 marks)

c)   Calculate the rate of payment to creditors, in days, for each year 1994 and 1995.

                                              (3 marks)

d)   Show the cash operating cycle for each year.   (6 marks)

e)   Comment on the results.   (6 marks)

REVISION QUESTIONS

1. PKG Ltd. maintains a minimum cash balance of Sh.500,000. The deviation of the company's daily cash changes is Sh.200,000. The annual interest rate is 14%. The transaction cost of buying or selling securities is Sh.150 per transaction.

Required:

Using the Miller-Orr cash management model, determine the following:

    (i)   Upper cash limit   (4 marks)
    (ii)   Average cash balance   (2 marks)
    (iii)   The return point.   (2 marks)

 (b) Explain briefly the meaning of the terms (i) overtrading

                                (ii) Overcapitalization

CHAPTER: 8

SOURCES OF FUNDS

Objectives

(i) To classification different sources of funds

(ii) Evaluation of the advantages and disadvantages of the different funds

Introduction

Sources from which a firm may obtain its funds to finance its operations can be classified in four different way as this include

1. Classification according to the duration over which the funds will be retained. These sources include (a) long term sources of funds-

They are refundable after a long period of time i.e. after 12 years

Short term sources of funds

These funds are refundable after a short period of time i.e. a period of 3 years

(c) Permanent sources of funds

These funds are not refundable as long as the business remains a going concern for example ordinary share capital

2. Classification according to origin

These sources include;-

(a) External sources of funds

They are raised from outside the organization

(b) Internal sources of funds

These are funds that are raised from within the firm

3. Classification according to the relationship between the firm and parties providing the funds

These sources include:-

(a) Common equity capital

These are funds provided by the real owners of the business i.e. ordinary share capital; it is the total of the ordinary capital and the reserves

(b) Quasi capital these are funds that are provided by the preference shareholders

(c) Debt finance

They are funds provided by the creditors i.e. debentures

4. Classification to the rate of return

These sources include:-

(a) Capital with affixed rate of return

This is capital that is paid a certain prespecified rate of return each year i.e. preference capital and long term debts

(b) Capital with a variable rate of return

(c) This is capital that is paid a different rate o0f return each year depending on the firm's performance.

A business may obtain funds from various sources which may be either:

➢ Long term sources which are repaid after a long period of time.

➢ Short term sources which are repaid after a short period even less than a year.

Long term sources of funds

They include: -

1. Equity finance
2. Debentures
3. Preference share capital
4. Long term loans
5. Leases and sale and lease back
6. Sale of fixed assets

EQUITY FINANCE

This is finance from the owners of the company (shareholders).it is generally made up of ordinary share capital and reserves (both revenue and capital reserves)

A) Ordinary share capital

The true owners of business forms are the ordinary shareholders. Sometimes referred to as residual owners, they receive what is left after satisfaction of all other claims.
The ordinary share capital is raised by the shareholders through the purchase of common shares through the capital markets.

This form of long term capital is only accessible to limited companies who have met the requirements of the capital market authority for listing before floating the shares.

Features of ordinary share capital.

Ownership

The ordinary shares of a firm may be owned privately (family) or publicly with shares being traded in the stock exchange.

Par value

The par value of an ordinary share is relatively useless value, established in the firm's corporate charter (memorandum). It is generally very low- Sh.5or less.

Pre-emptive rights

Allow shareholders to maintain their proportionate ownership in the corporation when new shares are issued. The feature maintains voting control and protects against dilution.

Rights offering

The firm grants rights to its shareholders to purchase additional shares at a price below market price, in direct proportion to their existing holding.

Authorized, outstanding and issued shares

Authorized shares are the number of shares of common stock that the firm's charter (articles) allows without further shareholders' approval.

Outstanding shares is the number of shares held by the public

Issued shares are the number of share that has been put in circulation; they represent the sum of outstanding and treasury stock.

Treasury stock is the number of shares of outstanding stock that have been repurchased by the firm (not allowed by the Companies Act of Kenya Laws).

Dividends

The payment of corporate dividends is at the discretion of the Board of Directors. Dividends are paid usually semi- annually (interim and final dividends). Dividends can be paid in cash, stock (bonus issues) and merchandise.

Voting rights

Generally each ordinary share entitled the holder to one vote at the Annual General Meeting for the election of directors and on special issues. Shareholders can either vote in person or in proxy i.e. appoint a representative to vote on his behalf .Shareholders can vote through two main systems,
1. Majority voting system.
2. Cumulative system.

Majority voting system

Under this system , shareholders receive a vote for every share held. Decisions to be made must therefore be supported by over 50% of the votes in a company .Under this system any shareholder or group pf shareholders owning more than 50% of the company's shares will make all the decisions. The minority shareholders have no say.

Cumulative voting system.

Under this system, shareholders receive one vote for every share held times the number of similar decisions to be made. This system is appropriate for making decisions that are similar and is mainly used in the election of directors.

Example.

Assume that there are 10,000 shares outstanding and you own 1001v shares .Their are 9 directors to be elected and therefore you would have (1001×9)= 9009 votes .How many directors can you elect.

A.1001 shares = 1001×9 =9009

B. 10,000 – 1001 = 8999 × 9 = 80,991

Share holder A has 9009 votes and with 9 directors to be elected , there is no way for the owners of the remaining shares to exclude A from electing a person to one of the top 9 positions. The majority shareholder would control 8999 shares thus thus entitling them to 80991 votes .The 80991 vote cannot be spread thinly enough over the nine candidates to stop shareholder   A from electing one director.

The number of shares required to elect a give number of directors is given as follows.

$$R = \frac{d\,(n)}{Nd + 1} + 1$$

Where,

R-   Number of shares required to elect a desired number of directors.

d-   Number of directors shareholders desire to elect.

n-   Total number of common shares outstanding.

Nd- Total number of directors to be elected.

Example

A company will elect 6 directors and their ae 100,000 shares entitled to vote,

Required.

a. If a group desires to elect two directors, how many shares must they have.
b. Shareholder A owns 10,000 shares, shareholder B owns 40,000 shares how many directors can each elect.
Solution.

a) $R = \dfrac{2\ (100,000)}{6+1} + 1$

   $= 28571.6 + 1 = 28573$

b) A. $10,000 = \dfrac{d\ (100,000)}{6+1} + 1$

   $10,000 = 14285.7d + 1$

   $d = 9999/14285.7$

   $d = 0.7$

Therefore zero directors.

   B. $40,000 = \dfrac{d\ (100,000)}{6+1} + 1$

   $d = 2$

Therefore 2 directors.

Advantages of equity financing accruing to shareholders

1. Shares can be used as security for loans.
2. Providers of these funds can participate in the supernormal earnings of the firm
3. The shares are easily transferable
4. Return in form of a share price appreciation (capital gain) and dividends.
5. The following rights of ordinary shareholders can be viewed as advantages:

Rights of ordinary shareholders.

   i.   Right to vote-shareholders have the right to vote on a number of issues in a company such as election of directors, changes in the Memorandum of Association and Articles of Association. Shareholders can vote either in person or by proxy that is, by appointing someone to represent them and vote on their behalf.
   ii. Pre-emptive rights- Allow shareholders to maintain their proportionate ownership in the corporation when new shares are issued. The feature maintains voting control and protects against dilution.
   iii. Right to appoint another auditor
   iv. Right to approve dividend payments
   v.   Right to approve merger acquisition
   vi. Right to residual assets claim

Disadvantages accruing to shareholders

1. The ordinary share dividend is not an allowable deduction for tax purposes
2. The dividend is paid after claims for other providers of capital are satisfied
3. Ordinary shares carry the highest risk because of the uncertainty of return(company has the discretion to declare dividend or not)and incase of liquidation the holders have a residual claim on assets

Advantages of using ordinary share capital to a company

1. It is a permanent source of capital hence facilitates long term projects
2. Use of equity lowers the gearing level hence a company has a broader borrowing capacity
3. The shareholders may provide valuable ideas to the company's operation
4. A company is not legally obliged to pay dividend especially if it is facing financial difficulty these funds would serve better if retained.
5. It enables a company to get the opinion of the public through the movement in share prices.
6. This source can be raised in very large amounts
7. It does not require any collateral as security.
8. The funds are provided without conditions hence are flexible.

Disadvantages of using ordinary share capital to a company

1. The floatation costs are higher than those of debt
2. It is only accessible to companies that have fulfilled the capital markets authority requirements
3. It can lead to dilution of ownership of control of the firm by the shareholders
4. Since the dividend payment is not tax allowable then the company does not enjoy a tax saving
5. The cost of this source of fund(dividend) is perpetual as ordinary shares are not redeemable securities
6. The firm has to follow set guidelines on disclosure and publishing of financial statements.

Methods of issuing common shares

- Through a public issue
- Private placement
- Through a rights issue
- Employee stock option plans (ESOP)
- Bonus issue

Public issue

Ordinary shares are offered to the general public. The issuing company engages an investment banker who will undertake the issue. The investment will set the securities issue price and will sell the shares to the investors. The issuing firm can enter into an arrangement with the investment banker

where the investment banker will underwrite shares, that is, buy any shares not taken up by the public.

Private placement

Under this method securities are sold to a few, usually chosen investors mainly institutional investors. The advantages of this method is that the firm gets to decide who will take up there shares, it can be used as part of strategic partnership, it will also lead to less floatation cost as no advertisement is necessary. It also takes less time to raise funds through a private placement than a public issue which involves a number of requirements to be fulfilled. A major disadvantage is that the share is not as liquid-transferability is made difficult.

Rights issue

This is an option offered to already existing shareholders to buy common shares of the company at a price (subscription price) which is less than the market price. The subscription price is set a lower price than the market price so as to make it attractive for the existing shareholders to buy the common shares; also it acts as a safeguard against any reduction in share price in the market.

When a rights issue is declared every outstanding share receives one right however, a shareholder needs to have a number of rights in order to buy one new share.

A shareholder has 3 options available during a rights issue. He can exercise, ignore or sell the rights.

Computations under rights issue

P_o = cum rights price (price of the share with the rights)

P_x = ex rights price (price of the share without the rights)

P_s = subscription price

S_o = number of outstanding shares before the rights issue

S = number of new shares

N = number of rights required to buy one new share

R = theoretical value of the rights

The formula to be applied is as a follows:

$N = \dfrac{S_o}{S}$

P x = $\frac{\text{Po x So} + \text{Ps x S}}{\text{So} + \text{S}}$

R = $\frac{\text{Px} - \text{Ps}}{N}$ (ex rights)   = $\frac{\text{Po} - \text{Ps}}{N + 1}$ (cum rights)

Example

A company has 900000 shares outstanding whose current market price is 130. The company needs 22.5 million to finance a proposed expansion. The BOD has declared that rights be issued at sh.75 per share to raise he required finance.

Required,

Calculate;

The number of rights required to buy one new share.

The price of the share after the rights issue (ex rights price).

The theoretical value of the right.

Consider the effect of the rights issue on a share holder under the three options available. Assume he has 3 shares sh.75 cash in hand.

  Solution

N= So ÷S

    S= 22500000÷300000

      =300000

    N=900000÷300000

      =3

Px= $\frac{130 \times 900000 + 75 \times 300000}{900000 \div 300000}$

      =116.25

R = $\frac{116.25 - 75}{3}$

=13.75(Ex Rights)

130 -75

4

=13.75(Cum Rights)

3 shares

3×130= 390

Cash = 75

Total wealth before = 465

Alternatives:

Exercise his rights

3 share = 3 rights = 1 share.

3 old shares + 1 new share= 4×116.25

Total wealth after rights issue= 465 therefore wealth remains constant.

Sell his Rights

3share = 3 rights @ 13.75 (13.75 ×3) = 41.25

Cash in Hand	75
3 shares @ 116.25	348.75
Total wealth	465.0

Total wealth after rights issue= 465 therefore wealth remains constant.

Ignore his rights.

3 shares @ 116.25	348.75
Cash in Hand	75.0
Total wealth	423.75

The shareholders wealth decreases by 41.25 which is the value of the rights ignored.

Dates of a rights issue

There are 4 important dates in a rights issue:

1. Announcement date.

2. Register of members date (Record date)

3. Issue date.

4. Expiry date.

Announcement date: This is the date when the company announces that it is going to issue the rights to those shareholders whose names appear in the register at a certain date.

Register of members date: Also know as record date .This is the date when the company is supposed to close the register .This is the last day that members are registered so that members whose names appear in the register as at that date will receive the rights. (Practically this date is earlier so that records of new shareholders can be recorded)

Issue date: This is the date when the company mails the certificate of rights to shareholders.

Expiry date: This is the date after which the rights cannot be exercised as the rights have lapsed.

Employee stock option plans

These are schemes that allow employees of a company to purchase shares of the company under specific conditions usually at a lower price than the market price.

Bonus issue

This is an issue of additional shares to existing shareholders in lieu of a cash dividend. Companies may choose a bonus issue if it wants to give dividends but not in the form of cash so as to retain the cash say for investment, it is not taxable as cash dividends would be taxed. A bonus issue is expected to have no effect on the shareholders wealth and may have the following benefits,

Tax benefit –If a company declares such an issue. It Is not taxable as in the case of Cash dividends .The share holder can therefore sale the new shares in the market to make capital gain which is not taxable.

It can result into conservation of cash especially if a company is facing financial constrains.

If the market is inefficient, a bonus issue maybe regarded as signaling important information and may result in an increase in the share price because a bonus issue is interpreted to mean high profits.

Increase in future dividends .This occurs especially if a company follows a policy of paying a constant mount of dividends per share and continues with this policy even after the bonus issue.

2. TERM LOAN

Medium term & long term loans are obtained from commercial banks and other financial institutions. This funds are mainly used to finance major expansions or profit financing.

Features of term loans

1. Direct negotiation – A firm negotiates a term loan directly with a bank of financial institution. I.e. a private placement.

2. Security – term loans are usually secured specifically by the assets acquired using the funds. (Primary security). This is said to create a fixed charge on the company's assets. A fixed charge can also be referred to as specific charge.

3. Restrictive covenant – financial institutions usually restrict the firms so as to safeguard their funds. They do this by way of restrictive covenants which include asset based covenant, cashflow, liability etc.

4. Convertibility – they are usually not convertible to common shares unless under special cases. E.g. a financial institution may agree to restructure the firms capital structure.

5. Repayment schedule – this indicates the time schedule for payment of interest and principle. It may occur.

i) Where interest & principle are paid on equal periodic instalments.

ii) Where principles is paid on equal periodic instalments & interest on the outstanding balance of the loan.

Example

A company negotiates a Sh.30 million loan at 14% pa from a financial institution. Acquired; prepare the loan prepayment schedule assuming that:

(i) Interest & principle paid in 8 equal year end installment's

(ii) Principle is paid in 8 equal instalments

i) 30,000,000   =   A x PVIFA

                         14% 8 years

   30,000,000   =   4.6389A

        A   =   6,46,050.0378

Schedule of Repayment

Year	Bal. b/d	Instalment	Interest 14%	Principle	Bal b/d
1	30,000,000	6,467,050	4,200,000	2,267,050	27,732,950
2.	27,732,950	6,467,050	3,882,613	2584437	25148513
3.	25148513	6,467,050	3520792	2946258	22202254.8
4.	22202255	6,467,050	3108316	3358734.3	18843521
5.	18843521	6,467,050	2638093	3828957	15014564

6.	150145639	6,467,050	2102039	4365011	10649553
7.	10649553	6,467,050	1490937.4	4976112.6	5673440.4
8.	56734404	6,467,050	794282	5672768.4	672.1

iii)   8 equal principle – 30n/8 = 3,750,000

YR Bal b/d inst. Int. primar

Year	Bal. b/d	Instalment	Interest 14%	Principle	Bal b/d
1	30,000,000	7950000	4200000	3750000	26250000
2.	26250000	7425000	3675000	3750000	22500000
3.	22500000	6900000	3150000	3750000	18750000
4.	18750000	6375000	2625000	3750000	15000000
5.	150000000	5850000	2100000	3750000	11250000
6.	11250000	5325000	1575000	3750000	7500000
7.	7500000	4800000	1050000	3750000	3750000
8.	3750000	4275000	525000	3750000	0

3. PREFERENCE SHARES (QUASI-EQUITY)

Preference shares are considered as hybrid securities since they are similar to both common shares and debentures. They are similar to common shares in the following ways.

i)   They are perpetual securities and therefore have no maturity date.

ii)   Dividends are not tax deductible.

iii)   The non-payment or dividends does not force the company into liquidation.

They are similar to debentures on the following ways:

i)   The dividend rate is fixed i.e. it is a % of the pa. Value.

ii)   Preference shareholders do not have voting rights unless dividends are in arrears for several years.

iii)   Preference shareholders do not share in the extraordinary income of the company.

Preference shareholders have a claim on income and assets prior to that of common share holders.

Preference shares may have several distinguishing features such as;

Cumulation

Most preferences shares are cumulative with respect to any dividend passed over. Dividend in arrears together with current dividends must be paid first before distribution is made to ordinary shareholders.

Callable (redeemable)

The issuer can retire outstanding stock within a certain period of time at a specific price.

Conversion

This feature allows holders to change each share into a stated number of ordinary shares.

4. VENTURE CAPITAL

Venture capital is a form of investment in new and risky small enterprises which is required to get them started. Venture capitalists are therefore investment specialist who raises pools of capital to fund new ventures which are likely to become public companies in return for an ownership interest. They therefore buy part of the stools of the company at a low price in anticipation that when the

company goes public, they would sale the shares at a high price and make considerable capital gains, venture capitalists also provide managerial skills to the firm examples of venture capitalists are:

Pension funds, insurance companies and also individuals.

Since the goal of venture capital is to make a profit, they will only invest in that have a potential for growth.

Constraints in the development of a venture capital market in Kenya.

i)   The few promoters of venture capital are risk averse and therefore are discouraged by the level of risk, the length of investment and the liquidity of investment.

ii)   The nature of firms in Kenya is such that they are privately owned and therefore do not dillusion of ownership through use of venture capital.

iii)   The poor infrastructure in the country also discourages venture capitalists.

iv)   They are not enough incentives for the development of venture capital and the government is discriminative against venture capital. The tax laws favour debt over equity.

v)   Lack of efficient capital markets also discourages venture capital development because there is no channeled for disinvestment i.e. selling off the venture interest once it has succeeded.

vi)   There is a general shortage of venture capitalists.

Importance of venture capital market in small and medium scale business development

i)   Venture capitalists provide the much needed finance to tour small businesses which lack access to capital markets due to their size.

ii)   Small medium scale businesses may lack managerial skills. Venture capitalists sere as active partners through involvement in this businesses and therefore provide marketing and planning skills as the also want to see their investments succeed.

iii)   Venture capitalists encourage tree spirit of entrepreneurship therefore small businesses are encouraged to see their ideas through as they know they will get start up capital.

iv) Venture capitalists provide improved technology so that small and medium scale business are in line with changes in technology and are therefore able to compete with other firms of the same level.

LEASE FINANCING

This is an agreement where the right repossession and enjoyment of an asset is transferred for a definite period of time. The person transferring the right i.e. the owner of the asset is referred to as leasor. The recipient of the asset is the lessee.

Classification of Leases

A lease can be classified according to term or according to terms of payment.

- According to term

There are two types of leases: -

1. The short term operating or finance lease
2. Long term capital or finance lease

Long term lease

A long term lease can be defined as a contract whereby the lessee has substantially all the risks and rewards associated with the asset except legal title.

Requirements of a Long Term lease

1. The present value of lease rentals must be greater than 90% the year value of the asset.
2. 75% of the assets life is the lease term.
3. It is non-cell unsalable
4. Maintenance costs, insurance and taxes are paid by the lessee.

According to terms of payment

1. Net lease

   This is on in which the leasee pays all or a substantial part of the maintenance cost. It is therefore where the lessee pays for all the expenses except taxes, insurances and exterior repairs.

2. Flat Lease

   This is one which opts for periodic payment for use of the asset over the term of the lease. Such a lease is usually made for such periods of time since inflation can easily erode the buying power of the fixed rentals.

3. Step Up lease

   This provides for the fixed payments to be adjusted periodically. This adjustments can be made either b new rentals taking effect after the passages of a certain period of time or by periodically adjusting the fixed payments for inflation. The term of a stepup lease is usually longer than a flat lease.

4. Percentage lease

   This is where the lessee is required to pay a fixed basic percentage rate and a designated percentage of sales volume. The percentage factor acts as an inflation gauge as well as a means of Keeping lease rentals in line with the market conditions.

5. Escalator lease

   This calls for an increase in taxes insurance and operating costs to be paid for the lessee.

6. Sandwich lease

This refers to a multiple lease in which the lessee in turn sub-lease to a sub-lessee who in turn sub-leases to another sub-lessee. Example: A the original owner of an asset leases to B. B executes a sub-lease to C who then sub-leases to D.

This is a sandwich lease between B & C, B being the sandwich lessor and C the sandwich lessee.

Example.

Dereva and Makanga are considering purchasing the new 30 passenger coach to engage in transport business .They have two alternatives of financing the purchase as shown below.

Alternative 1.

Purchase the vehicle whose current cash price is sh. 2,400,000 through a finance lease from Matatu Auto Company. The terms of the lease will require 4 equal payments per year for each of the three years .No deposit is required.

Alternative 2.

Obtain the vehicle through Equal's Bank loan scheme being advertised in the papers .Dereva and Makanga will be required to make a down payment of sh .900,000 and then meet four equal yearly payments of sh. 153,436 each for the three years.

The market rate of interest is currently 16% per annum.

Dereva and Makanga have been informed that as part of your social responsibility, you provide free consultancy service to small scale businessmen.

Required.

a. The finance lease payment to be made by Dereva and Makanga if they opt for finances from Matatu Auto Company Limited.

b. The present value of the payment scheme of Equal Bank.

c. The interest expense charged by Matatu Auto Company on the third installment.

d. Give reasons why finance leases are referred to as "off- balance sheet" finance.

e. Which of the two alternatives –Finance lease or Bank loan scheme is better in financial terms? Why?

f. Give a reason why the better alternative may not necessarily be chosen by persons in Dereva and Makanga's circumstance.

a) Finance lease payment to be made by D & M 1st Option 2,400,000 = A x PVIFA

$\frac{16\%}{4}$ 12years

4

A = Sh. 255,724.5

b) PV of the payment scheme of Equal Bank

PV = Initial down payment + PVIFA

$\frac{16\%}{4}$ 12 periods

4

= 900,000 + 153,436 (9.3851)

= 2,340,012.204

Year	Bal. b/d	Installment	Interest 14%	Principle	Bal b/d
1st	2,400,000	255,724.5	96,000	159,724.5	2,240,275.5

2nd	2,240,275.5	255,724.5	89,611.02	16,6113.48	20,74162.02
3rd	2074162.02	255,724.5	82,966.48	172,758	1,901,404

Interest expense 3rd Installment = 82,966.48

e) The loan is cheaper than the lease.

f) They may not have Sh. 900,000 because they are small scale businessmen.

Advantages of lease

i) To avoid the risk of ownership. When a firm purchases an asset, it has to bear the risk of obsolescence especially if the asset is vulnerable to technological changes e.g. computers.

ii) Avoidance of investment outlay. Leasing enables a firm to make full use of an asset without making an immediate investment in the form of initial cash outflow.

iii) Increased flexibility. A St. lease is a cancelable lease especially when the asset is needed for a short period of time e.g. during construction, equipment can be leased on a seasonal basis after which the lease can be cancelled.

iv) Lease charges are tax allowable expenses. This therefore reduces the tax liability.

HIRE PURCHASE

This is arrangement whereby a company acquires an asset on making a down payment or deposit and paying the balance over a period of time in installments. This source of finance is more expensive than a bank loan and companies that use this source need guarantors since it does not require security or collateral. The company hiring the asset will be required to honour the terms of the agreement which means that any term in violated, the selling firm may repossess the asset. This is therefore finance in kind and the hirer will not get title to the asset until he clears the final installment and any charges thereof.

Example:

Assume that a customer wants to acquire an asset costing Shs. 160,000. The customer is required to make a 50% down payment and the balance in installments. The installments will be paid annually for 8 years at a flat rate of 14% pa. The calculation of interest and installments would be as follows: -

Cash Shs. 160,000 x 50% = 80,000

Installments   =80,000

14% x 80,000 = 11200 x 8 = 89,600

80,000 + 89,600 = 169,600÷8 =21,200 (Interest & principles)

One of the must common methods sued to compute the interest amount is the sum of years digit methods:

Year	Bal. b/d	Installment	Interest 14%	Principle	Bal b/d
1	80,000	21,200	19,911	1289	78,711
2.	78,711	21,200	17,422	3778	74,933
3.	74,933	21,200	14,933	6267	68,666
4.	68,666	21,200	12,444	8756	59,910
5.	59,910	21,200	9956	11244	48,666
6.	48,666	21,200	7467	13,733	34,933
7.	34,933	21,200	4978	16,222	18711
8.	18,711	21,200	2489	18,711	0

$80,000 = 1,200 \text{ PVIFA}_{r\% \text{ 8 years}}$

$\dfrac{80,000}{21,200}$ = PVIFA $_{r\%\ 8\ years}$

     = 3.7734

From Table A – 1 Present value at the Appendix.

    24%   20%

    3.4212   3.8372

    $\dfrac{r-20}{0.0636}$ = $\dfrac{24-r}{0.3522}$

0.3522r – 7.044 = 1.5264 – 0.0636r

      0.4158r = 8.5704

Effective rate of interest r = 20.6%

Although Hire purchase is an expensive source of financing, it has its benefits which include:

1. The customer is able to avoid the purchase price immediately.
2. The customer does not require security or collateral
3. The customer will save on taxes on the interest payments.

Compound rate   =

    42007.5   = 7841.4 PVIFA

                       r%, 6 periods

$$\frac{42007.5}{7841.4} = 5.3571$$

3%	4%
5.4172	5.2421

$$\frac{r-3}{0.06} = \frac{4-r}{0.115}$$

$$0.115r - 0.345 = 0.24 - 0.06r$$

$$0.175r = \frac{0.585}{0.175}$$

Month	Bal. b/d	Installment	Interest	Principle	Bal. c/d
1.	42007.5	7841.4	1403	6438.35	35569.15
2.	35569.15	7841.4	1188	6653.39	28915.75
3.	28915.76	7841.4	965.79	6875.61	22040.15
4.	22040.15	7841.4	736.14	7105.26	14934.89
5.	14934	7841.4	498.83	7342.57	7591.43
6.	7591.43	7841.4	253.55	7587.8	3.5

b) How long will it take a given amount earning 6% pa to double if no withdrawal is much.

X PVIFA   =   2x

    6% n years

    PVIFA

       6% n years = 2x

2   3

1.8334   2.673   1.8458 = 0.8396r

                             = 2 years

$$\frac{r-2}{0.1666} = \frac{3-r}{0.673}$$

0.673r – 1.346 = 0.4998 – 0.1666r

Mortgages

A Mortgage can be defined as a pledge of security over property or an interest therein created by a formal written agreement for the repayment of monetary debt.

8. MINIMUM MORTGAGE REQUIREMENTS

1. All mortgages should be in writing.
2. All parties must have contractual capacity.
3. Interest in the property being mortgaged should be specific e.g. rental income lease hold etc.
4. A description of true loan or obligation secured by the mortgage should appear in the mortgage agreement.
5. A legal description of the mortgage must be included in the documents.

6. The mortgage must be signed by the mortgagor

7. The mortgage must be acknowledged and delivered to the mortgagee.

Reinforcing questions.

1. (a) List and explain five factors that should be taken into account by a businessman in making the choice between financing by short-term and long-term sources.   (10 marks)

(b) Mombasa Leisure Industries is already highly geared by industry standards, but wishes to raise external capital to finance the development of a new beach resort.

Outline the arguments for and against a rights issue by Mombasa Leisure Industries.

(c) Examine the relative merits of leasing versus hire purchase as a means of acquiring capital assets.   (6 marks)

(d) Identify four factors that have limited the development of the venture capital market in your country.   (4 marks   2.

2. (a) Hesabu Limited has 1 million ordinary shares outstanding at the current market price of Sh.50 per share. The company requires Sh.8 million to finance a proposed expansion project. The board of directors has decided to make a one for five rights issue at a subscription price of Sh.40 per share.

The expansion project is expected to increase the firm's annual cash inflow by Sh.945,000. Information on this project will be released to the market together with the announcement of the rights issue.

The company paid a dividend of Sh.4.5 in the previous financial year. This dividend, together with the company's earnings is expected to grow by 5% annually after investing in the expansion project.

Required:

(i) Compute the price of the shares after the commencement of the rights issue but before they start selling ex-rights.   (4 marks)

(ii) Compute the theoretical ex-rights price of the shares.   (2 marks)

(iii) Calculate the theoretical value of the rights when the shares are selling rights on.   (2 marks)

(iv)   What would be the cum-rights price per share if the new funds are used to redeem a Sh.8 million 10% debenture at par? (Assume a corporation tax rate of 30%).

(6 marks)

3. Equator Ltd. has been in operation for the last eight years. The company is all equity financed with 6 million ordinary shares with a par value of Sh.5 each. The current market price per share is Sh.8.40, which is in line with the price/earnings (P/E) ratio in the industry of 6.00.   The company has been consistent in paying a dividend of Sh.1.25 per share during the last five years of its operations, and indications are that the current level of operating income can be maintained in the foreseeable future. Tax has been at a rate of 30%.

The management of Equator Ltd. is contemplating the implementation of a new project which requires Sh.10 million. Since no internal sources of funds are available, management is to decide on two alternative sources of finance, namely:

Alternative A

To raise the Sh.10 million through a rights issue. Management is of the opinion that a price of Sh.6.25 per share would be fair.

Alternative B

To obtain the Sh.10 million through a loan. Interest is to be paid at a rate of 12% per annum on the total amount borrowed.

The project is expected to increase annual operating income by Sh.5.6 million in the foreseeable future.

Irrespective of the alternative selected in financing the new project, corporation tax is expected to remain at 30%.

Required:

(i)   Determine the current level of earnings per share (EPS) and the operating income of the company.   (3 marks)

(ii)   If Alternative A is selected, determine the number of shares in the rights issue and the theoretical ex-rights price.   (3 marks)

(iii) Calculate the expected earnings per share (EPS) for each alternative, and advise Equator Ltd. on which alternative to accept. (6 marks)

(iv) "It is always better for a company to use debt finance since lower cost of debt results in higher earnings per share".

Briefly comment on this statement. (4 marks)

CHAPTER 9:

DIVIDEND POLICY

Dividend policy determines the division of earnings between payment to shareholders and reinvestment in the firm. It therefore involves the following four aspects:

1. How much to pay

   It encompasses the 4 major alternative dividend policies.

   a) Constant pay out ratio

   This is where the firm will pay a fixed dividend rate e.g. 40%of earnings. Dividends will therefore fluctuate as the earnings change. Dividends are therefore directly dependant on the firms earning ability. If no profits are made, no dividends are paid. The policy creates uncertainty in ordinary shareholders especially those who depend on dividend income thus they may demand a higher required rate of return.

   b) Constant amount per share/fixed dividend per share

   The dividend per share is fixed in amount irrespective of the earnings level. This creates uncertainty and is thus preferred by shareholders who have a reliance on dividend income. It protects the firm from periods of low earnings by fixing dividends per share at a low level. Thus policy treats all shareholders like preference shareholders by giving a fixed return. Dividend per share could be increased to a higher level if earnings appear relatively permanent and sustainable.

c) Constant amount plus extra

Here, a constant dividend per share is paid every year. However, extra dividends are paid in years of supernormal earnings. This policy gives firms the flexibility to increase dividends when earnings are high and shareholders are given a chance to participate in the supernormal profits of the firm. The extra dividends are given in such a way that it is not seen as a commitment to continue the extra in the future. It is applied by firms whose earnings are highly volatile e.g. the agricultural sector.

d) Residual amount

Under this policy, dividend is paid out of earnings left over after investment decisions have been financed. Dividends will therefore only be paid if there are no profitable investment opportunities available. This policy is consistent with shareholders wealth maximization.

2. When to pay

Dividends can either be interim or final.
Interim dividends are paid in the middle of the financial year and are paid in cash.
Final dividends are paid at the year end and can be and can be in cash and stock form (bonus issue).

3. Why pay

a) Residue dividend theory

Under this theory, a firm will pay dividends from residue earnings ie. Earnings remaining after all suitable projects with a positive NPV have been financed. It assumes that retained earnings is the best source of long term capital since it is readily available and cheap. This is because no floatation costs are involved in the use of retained earnings to finance new investments therefore the first claim on profit after tax and preference dividend. There will be a reserve for financing investments. Dividend policy is therefore irrelevant

and treated as a passive variable. It will hence not affect the value of the firm. However the investment decision will .]

Advantages of residual theory

1. Savings on floatation costs .

2. There is no need to raise debt or equity capital since there is a high retention of earnings which require no floatation costs.

3. Avoidance of dilution of ownership. A new equity issue will dilute ownership and control. This will be avoided if retention is high.

4. Tax position of shareholders. High income shareholders prefer low dividends to reduce their tax burden from dividend income. They prefer high retention of earnings which are reinvested. This increase the share value and they make capital gains which are not taxable.

    b) MM dividends irrelevance theory.

    This was proposed by Modigliani and Muller .This theory asserts that a firms divided policy has no effect on its market value and cost of capital .They argued that the firm value is primarily determined by .

    i.   Ability to generate earnings from investments .

    ii.   Level of business andfinancial risk .

    According to MM dividend policy is a passive residue determined by the firms needs for investment funds.It does not matter how earnings are divided between divided and retention therefor divided policy does not exist . When investment decisions are made dvident decision is a mere detail without any effect on the value opf the firm

C)

The main dividend theories are:
    i.   Residual dividend theory

ii. MM dividend irrelevance theory

iii. Bird in hand theory

iv. Information signaling effect theory

v. Tax differential theory

vi. Clientele effect theory

vii. Agency theory

4. How to pay dividends/ mode of paying dividends

a) <u>Cash or Bonus issue</u>

Ideally, a firm should pay cash dividends, for such a company it must ensure that it that it has enough liquid funds to make payment . Under conditions of liquidity and financial constraints , a firm can pay stock dividends (bonus issue) Bonus issue involves an issue of additional shares in addition to or instead of cadsh to the exixsting shareholders prorate to their share holding in the company. Astock dividend / bonus issue involves capitalization of retaoined earnings therefore does not increasew the wealth of the shareholders. This is because retained earnings is converted into share capital.

<u>Adnvantages of a bonus issue</u>

i. To indicaes that the foirm plans to retain a portion of earnings permanenbtly in the business.

ii. To continue dividend distribution s without disbursing cash needed for operation.

iii. T o increase the trading of shares in the market.

iv. Tax advantage. Shareholders can sale the new shares to generatae cash in the form of capital gains which are tax exempt unlike cash dividends whiccjh attract a 5% withholding tax which is final.

v. Indication of higher profits in the future of the company. A bonus issue is an inefficient market survey b importsant information that the firm expects high profits in future to offset additional outstanding share so that the earnings per share is not diluted.

b) <u>Stock Splits and reverse split.</u>

A stock split is a change in the number of shares outstanding accompanied by an offsetting change in the par or stated value per share.

The primary purpose of a stock split is to increase the market activity of the stock.

Example

A company has 1000 ordinary shares of sh.20 each and a share split has been announced of 1:4. The effects on ordinary share capital is a s follows;

New par value = 20/4

            =sh.5

Ordinary shares outstanding = 1000×4

                    =4000

The ordinary share capital remains the same(4000×5=sh. 20,000)

A reverse split is the opposite of a stock split as it involves consolidation of shares into bigger units thereby increasing the par value of the shares .It is meant to attract high income clientel.

Example

In the case of 20,000 shares at sh.20 par value, they can be considered into 10,000 shares at par value of sh.40 par value.

Example

Company Z has the following capital structure,

            sh.000

Ordinary shares (Sh.20 par)	8000
Share premium	3600
Retained earnings	2400

<u>14000</u>

The company shares have been selling in the market for sh.60. The management has declared a share split of 4 share for every one share held. Assume that the shares are expected to sell at sh17 after the stock split.

Required,

i.   Prepare the capital structure of the company after the company's stock split.

ii.   Compute the capital gain for a shareholder who held 40,000 shares before the split.

Solution

i)

		shares
Number of shares before split	sh.8000,000÷20	400,000
Number of shares after split	400,000×4	1,600,000
New par value	20/4	sh.5

Capital structure	sh.000
Ordinary shares (Sh.5 par)	8,000
Share premium	3,600
Retained earnings	2,400
	14,000

ii)

		sh.000
Shares before split	40,000×60	2400
Share after split	40,000×4×17	2750
Capital gain	2750 -2400	320

c) <u>Stocks repurchase.</u>

The company can also buy back some of its outstanding shares instead of paying cash dividends. This is known as a stocks repurchase and the share bought back are known as treasury stock.If some outstanding shares are repurchased , fewer share s would remain outstanding .Assuming a repurchase does not adversely affect the firm's earnings , EPS would increase .This would result in an increase in the market price per share so that a capital gain is substituted for dividends.

<u>Advantages of stock repurchase.</u>

1. Utilization of idle funds.

Companies which have accumulated cash ba,lance s in excess of future investments might find a share re-invest\ment scheme a fair mewthod of returning cash to sshareholders .Continuing to csrry excess cash may prompt managementto invest unwiselyas a meanssof using excess cash e.g. a firm may invest in a tendency for more mature firms to continue in investment plans even when the expected return is lower than the cost of capital.

2. Enhanced dividends and EPS.

Following a stock repurchase, the numer of shares issued would decrease therefore in ni\ormal circumstances , both DPS and EPS would increase in future . However the increase in EPS is a book-keeping increase since total earnings remain constant.

3. Enhanced share price.

Companies that undertake a stock repurchase experience an increase in the market price of the share.

4. Capital structure.

A company's managers may use a shae buy-back or repurchase as a meansof correctingwhat they perceive to be an unbalanced capital structure .If shares are repurchased from cash reserves, equity would be reduced and gearing increased , assuming debt exists in the capital structureal termnatively , a company may raise debt to finance a repurchase . Replacing equity with debt can reduce the overall cost of capital.

5. Reducing take over threat.

A share repurchase reduces the number of shares in operation and also the number of weak shareholders i.e. shareholders with no strong loyalty to the company since a repurchase would induce them to sell .Ths helps to reduce the threat of as host\ile take over as it makes it difficultfor a predator company to gain control .This is also refered to as a poison pill i.e. a company's value is reduced because of huge cash outflow or borrowing huge long-term dept to increase gearing.

Disadvantages of a stock repurchase.

1. High price.

A company may find it difficult to repurchase\se at thei current value or the price pid maybe too high to the detriment of the remaining shareholders.

2. Market signaling.

Despite directors efforts at trying to convince markets otherwise, a share repurchase may be taken as a signal that the company lacks suitable investment opportunities .This may bre interpreted as a sign of management failure.

3. Loss of investment income.

The interest that could have been earned from investment of excess cash is lost.

Factors that would affect dividend policy.

1. Legal rules:
    a. Net profit rule- This states that the dividends may be paid from company profits, either past or present.

b. Capital impairment rule- This prohibits payment of dividends from capital i.e. from the sale of assets. This would be liquidating the firm.

c. Insolvency rule- This prohibits payment of dividends when a company is insolvent .An insolvent company is one where assets are less than liabilities .In such a case all earnings and assets belong to debt holders and no dividends are paid.

2. Profitability and liquidity.

A company's capacity to pay dividends will be determined primarily by it's ability to generate adequate   and stable profits and cashflows. If the company has liquidity problems ,it may be unable to pay cash   dividends and resort to paying stock dividends.

3. Investment opportunity.

Lack of appropriate investment opportunities i.e. those with positive returns may encourage a firm to increase its dividend distribution. If a firm has many investments opportunities it will pay low dividends and have high retention.

4. Tax position of share holder

Dividend payment is influenced by the tax regime of a country e.g. in Kenya cash dividends are taxed at source, while capital gains are tax exempt. The effect of tax differential is to discourage shareholders from wanting high dividends.

5. Capital structure.

A company's management may wish to achieve or restore an optimal capital structure. E.g. If they consider gearing to be too high they may pay low dividends and allow reserves to accumulate until a more optimal capital structure is achieved or restored.

6. Industrial practice

Companies will be resistant to deviate from accepted dividend or payment norms in the industry.

7.Growth stage.

Dividend policy is likely to be influenced by the firms growth stage, e.g. a young   rapidly growing firm is likely to have high demand for developing funds therefore may pay low dividends or differ dividend payment till the company reaches maturity. It will therefore retain high amounts.

8. Owners hip structure.

A dividend policy may be driven by the ownership structure in affirm e.g. in small firms where the owners and managers are the same, dividend pay out is usually low. However, in large quoted public companies, dividends are significant since the owners are not the managers. The value and

preferences of a small group of owner managers would exert more direct influence on the dividend policy.

9. Access to capital markets.

Large well established firms have access to capital markets hence can get funds easily. They therefore pay high dividends unlike small firms which pay low dividends due to the limited borrowing capacity.

10. Shareholders expectation.

Shareholder s that have become accustomed to receiving stable and increasing dividends will expect a similar pattern to continue in to the future .Any sudden reduction or reversal of such a policy is likely to dissatisfy shareholders and the results in falling share prices.

11. Contractual obligations on debt covenants.

This limits the flexibility and amount of dividends to pay e.g. the cashflow based covenants.

Important ratios on dividends.

Dividend pay-out ratio.

This ratio reflects a company's dividend policy. It indicates the proportion of earnings per

share paid out to ordinary shareholders as divided. It is computed as follows:

Dividend pay-out ratio = Dividends per ordinary share / Earnings per share

Where ordinary dividends per share =   Ordinary dividends/   Number of ordinary shares

Dividend Yield Ratio

This shows the dividend return being provided by the share. It is given by

Dividend yield = Dividends per share / Market price per share

Reinforcing questions

1. (b) Kathonzweni Holdings Limited has investment interests in three companies. Kanzokea Video Limited (KVL), Kithuki Hauliers Limited (KHL) and Mbuvo Fisheries Limited (TFL).   The following financial data relate to these companies.

1.   As at 31 December 2001, the financial statements of two of the companies revealed the following information:

Company	Price of share	Earnings per share	Dividend per share
	Sh.	Sh.	Sh.
Kanzokea Video Ltd. (KVL)	160	8	8
Kithuki Hauliers Ltd. (KHL)	270	18	9

2.   Earnings and dividend information for Mbuvo Fisheries Ltd. (TFL) for the

past five years is given below:

Year ended 31 December	1997	1998	1999	2000	2001
	Sh.	Sh.	Sh.	Sh.	Sh.
Earnings per share	5.0	6.0	7.0	10.0	12.0
Dividend per share	3.0	3.0	3.5	5.0	5.5

The estimated return on equity before tax required by investors in Turkana Fisheries Ltd.'s shares is 20%.

Required:

(i)   For Kanzokea Video Ltd. (KVL) and Kithuki Hauliers Ltd. (KHL), determine

and compare:

- Dividend yields
- Price/Earnings ratios
  Dividend covers.

(ii)Using the dividends growth model, determine the market value of 1,000 shares held in Mbuvo Fisheries Ltd. (TFL) as at 31 December 2001.

Discussion questions

(4) Discuss the nature of the factors which influence the dividend policy of a firm

(5) What is a stock split? Explain why it is used and how does it differ from bonus shares?

(6) Explain the different payout methods and how the shareholders react to the methods

(7) Explain the effects of a bonus issue and a share split on the earnings per share and the market price of the share

(8) What is a stable dividend policy? Why should it be followed? What are the consequences of changing a stable dividend policy?

CHAPTER 10:

FINANCIAL MARKETS
Objectives

At the end of this chapter you should be conversant with:

1. Meaning of financial markets.
2. Difference between money market and capital market.
3. Discuss the Nairobi Stock Exchange.
4. Terminologies used in the stock exchange market.

5. Capital market authority (CMA)
6. Money market instruments
7. The Dow theory.
8. Special financial institutions

FINANCIAL MARKETS

MEANING OF A FINANCIAL MARKET

A market can be defined as an organizational device, which brings together buyers and sellers. A financial market is a market for funds. It brings together the parties willing to trade in a commodity, which constitutes fluids. The respective parties in financial markets are known as demanders of funds (borrowers) and suppliers of fluids (lenders) who come together to trade so as to meet financial needs. The level of economic development of any country will be affected by the ability of the financial markets to move surplus funds from certain economic units, which constitutes individuals and corporate bodies to other economic units in need of additional funds.

Financial market can be divided into three categories: -

1. Capital and money markets.

2 Primary and Secondary markets

3. Organized and over — the counter markets.

I. PRIMARY AND SECONDARY MARKET

Primary financial markets are those markets where there is transfer of new financial instruments. Financial instruments constitute assets, which are used in the financial markets. They consists of cash, shares and debt capital both long term and short-term e.g. commercial paper.

The primary financial markets trade is for securities which have not been issued e.g. if a company wants to make an issue of ordinary share capital issue of commercial paper, issues of preference shares, debentures etc, offers and purchase will be through the primary etc.

Secondary markets — the secondary financial markets are for already issued securities. After a thorough issue of new securities in the primary market later trading of the securities will take place in secondary market e.g. if a company is to make public issue of ordinary share capital the issue will take place in primary market. If the initial purchasers wish to dispose off the shares, trading will take

place in the secondary market. The only distinction between primary and secondary markets is the form of security being traded but there is no physical separation of the markets.

2. CAPITAL AND MONEY MARKETS

This classification is based on the maturity of financial instruments. The capital market is a financial market for long-term securities. The securities traded in these markets include shares and bonds. The money market is market for short-term securities. The securities traded in these markets include promissory notes, commercial paper, treasury bills and certificates of deposits While capital market is regulated by capital authority, the money market is regulated by central banks.

3. ORGANIZED AND OVER- COUNTER MARKETS

An organized market is a market which is a specified place of security trading, defined rules, regulations and procedures for security trading. Only listed securities trade in organized market, where exchange is through licensed brokers who are members of exchange

Conducted by accountants, auctioneers, estate agents and lawyers who were engaged in other areas of specializations.

In 1951 an estate agent (Francis Drummond) established the first stock broking firm. He then approached the finance minister of Kenya with an idea of setting up a stock exchange in East Africa. in 1953 he too approached London Stock Exchange Officer and London accepted to recognize the setting up of Nairobi Stock Exchange as an oversee stock exchange. The major reorganization emerged in 1954 when stockbrokers emerged and registered the NSE as a voluntary association under society's Act. It was registered as a limited liability company.

Advantages of stock exchange quotations

1. It's easy for quoted companies to obtain underwriters when issuing shares. This is as a result of wide market quoted for company shares. This is because of easier transferability of shares through use of brokers.

2. Quotations attract investors in a share issue since they can easily dispose their shares.

3. It enhances public confidence. A quoted company is considered stable by investors and other stakeholders; this can be useful in borrowing or other transactions relating to the company.

4 A quoted company will be able to get access to relevant information through the

NSE and also able to get comparative data e.g. reflecting performance of other

quoted companies.

5. In an inefficient market, a quoted company will be able to obtain up to date information or feedback regarding share prices in stock exchange. Changes in

stock market prices will act as a signal as regard perceptions of the company.

ROLE OF NAIROBI STOCK EXCHANGE

I. NSE provides a market of securities. It provides a media through which securities can be bought and sold.

2. Stock exchange enhances share price discovery through interaction of demand and supply forces in the trading floor.

3 Stock exchange share index acts as indicator of economic performance.

4. Stock exchange allows provision of information both to the investors and industry. This is both for quoted companies or other issues within the stock

market. This information is for investor decisions.

5. It enhances the transfer of share ownership among investors through financial facilitation's role played by the brokers

TERMINOLOGIES USED TN THE STOCK EXCHANGE

1. Cum dividend and Ex-dividend:

These prices are quoted when the company which has declared dividends has not paid

price per share is cum-div, this price include the additional value in form of

If the sellers offer the same cum-dividend then it means that the buyer will get both share to be sold and dividend declared on it. A cum-dividend share is more expensive as compared to an ex- dividend share. Ex-dividend means without dividend. In this case the buyer only gets the share sold. The dividend declared on the share belongs to the seller.

2. Cum-rights and Ex-rights price

These prices are quoted where a company has declared a right issue. If the sellers have offered to sell his share cum-right, it means that the buyer will be entitled not only to receive shares being purchased but also rights declared not yet issued. Share prices are high at that issue. If the seller

sold his shares ex-right it means that the buyer will only receive original shares and the sellers will not be entitled to receive each right issue on share.

3. Cum-cap and ex-cap.

The word cap stands for capital. This price applies when a company has announced a bonus issue but it is not yet issued. If the buyer buys shares cum-cap he will be entitled not only to receive shares being purchased but also right declared not yet issued. Share prices are high at that issue. If the seller sold his shares ex-RIGHTS it means that the buyer will only receive original shares and the sellers will be entitled to receive each right issue on share.

4 Cum - all price or ex- all price

Cum all means with dividends, with bonus or with rights. The purchaser of the security will be entitled to dividends: declared bonus shares, and has a right to subscribe for additional shares. The share price will thus reflect this additional value otherwise; share will sell at ex-all price.

5 Insider trading:

An insider is an individual who has access to such confidential information that is not yet available to the public and which may be considered useful when making investments decision regarding the company. Insider trading constitutes use of confidential information about listed company which is not yet made public so as to take advantage himself or for other person connected directly or indirectly with the company e.g. a managing director who has access to company's information may get information that the company is about to make huge losses and as a result dispose his shares or advice another person accordingly before this information is made public. An insider is prohibited by aw to use his privilege positions to make gains or manipulate the prices of the company's securities for personal gains.

6. Active securities

These are securities, which are most frequently traded at the stock exchange in Kenya. Exchange constitutes the 20 most active companies in the NSE capitalization

7. Bid and offer price

A bid is the highest price a security purchaser will be willing to purchase the security whereas offer price is price at which the seller is wiling to sell the security.

8. Odd Lots

This arises when the number of share fall below the stipulated limit in NSE the minimum Number is 100 shares. Below this, they are regarded as odd lots.

9. Market Capitalization

This is market value of a company based on Number of shares issued of a company and their market price at specified period of time. Market capitalization may also represent the aggregate volume of transaction within NSE.

Market capitalization = No of shares traded X market price per share.   The higher the market capitalization the higher the activity of share trading, and vice versa

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10 Futures and Options.

These are instruments, which provide a means of hedging. Hedging is the process undertaking an activity so as to minimize risk. Financial futures and options provide a means of reducing the risks inherent within the financial market. A future is a contractual agreement entered between two parties where one party promises to provide a security and the other party promises to buy the security at some time in future. A future leads to an obligation(s).

ILLUSTRATIONS ON USE OF A FUTURE

(a) Future:

A has acquired a share in X limited at price of Shs. 50. He intends to sell the share after 12 months but he fears that the market forces will make the prices fall below Kshs. 50 per share. He enters a future contract with B where B promises to buy the share after 12 months at shs. 51 share. At the material dates the price per share is shs. 54. A must deliver shares to B at Shs 51 as agreed. However if the price is below shs. 51 per share B must buy the share at shs. 51. By use of future contract A is guaranteed shs. 51 per share. The minimizes risks associated with future price fluctuations.

(b) Options

An option is a right to either buy or sell the security in future at a specified price. The buyer of the options has a right to exercise the options or otherwise ignore the option. there are two main types of options:

i. Call option

This is a right to buy a security at a specified date within a specified period of time and at specified place

A call option will be relevant if expectations are that the market prices will decline. He
will exercise the call option only if the market price exceeds the exercise price.

ii Put options:

This constitutes a right to sell a security at a specified price and at specified date or within a specified period in future. A put option is relevant if the purchaser expects the market no to begged. He will exercise the option only if markets price is less than the exercise price.

NB Exercise price is agreed at which the share will be purchased or sold.

NSE SHARES INDEX

An index is a measure of relative changes in s specified phenomena's. It indicates changes in variable over given period of time or between 2 periods. Index number classification will depend on variables they are intended to measure. An index is used to measure changes, which have occurred. Share indexes are used to measure changes, which have occurred for shares in specific stock exchange e.g. stock indices measures. The changes of price or value changes where the value changes are brought about by changes in the capitalization of the share in the exchange. NSE index is based on share trading of 20 companies, which are considered very active. The 20 companies' account nearly 30% of NSE capitalization.

- A fall in NSE share index represents a fall in market price per share. Arise in NSE index represent arise in the market price per share.
- An index may act as an indicator of activities in NSE the higher the demand of the share, the higher is it market price and as a result the higher will be *index.*

Drawbacks of stock indices

1 .20 company's not true representation.

2 .Thinness of the market — small changes in the above stocks tend to be considerably magnified in the index

3 .1966 base year too far in the past.

4 .Relatively small price changes-Some stock prices do not change for weeks.

5 .Lack of clear portfolio selection criteria.

6 .Use of arithmetic instead of preferred geometric mean in computing the index.

7 .New companies have been quoted and others deregistered.

CAPITAL MARKET AUTHORITY (CMA)

CMA was established in 1989 through the market authority Act Sec ii which includes the principles and objectives of the authority.

The act provide for:

Development of all aspects of the capital Market and in particular it emphasizes on the removal of impediments and creation of incentives for long-term investment productive enterprises.

The creation, maintenance and regulation of the CMA through the implementation of system in which the market participants are self regulatory and the creation of a market in which securities can be issued and traded in an orderly, fair and efficient manner.

Protection of investor's interests

THE ROLE OF CAPITAL MARKET AUTHORITY

1 .The CMA has the responsibility of licensing and regulating stockbrokers, investment advisers, security dealers and the authority depositories.

2. The capital market authority is involved in the process of listing of new companies. Any company, intending to be quoted in the NSE must apply through

CMA.

3. CMA is involved in the making of policies that would enhance the development of the capital market e.g. policy regarding the buying and selling of securities, policies on admission of individual and institutions to the capital market and generally policies on the introduction of securities and their regulations

4. The CMA acts as a watchdog for shareholders of listed company's. This is through regulating the operations of the listed company's so as to protect investors against penalty, insider trading or suspensions.

5. The authority assists in the development of new securities in the market. This is through research and evaluations of various recommendations of stakeholders in the NSE. It is the responsibility of the CMA to evaluate whether there is need of new security and develop on appropriate policy

6. The CMA acts as a government advisor through the ministry of finance regarding policies affecting the capital markets.

OTHER STOCK EXCHANGE TERMS

I. BROKER:

Is an agent who buys and sells securities in the Market on behalf of his client on a commission basis. He also gives advise to his client and at times manages the portfolio for his client. In connection with the new issue, a broker will advise on price to be charged, will submit the necessary documents to the quotation department the stock exchange and the capital market authority. He may be involved in arranging for funds or for the purchase of shares and may underwrite the issue (assure the company that shares are sold if not broker will buy them).

2. JOBBER:

He is a dealer. He is not an agent but a principal who buys and sells securities in his own name. His profit is referred to as Jobber's turn. Since they are experts in the markets, they are not allowed to deal with general public but only with brokers or other jobbers to avoid exploitation of individual investors. A Jobber will quote two prices for a share. The bid price, which is the price at which he is willing to buy securities and offer price — price at which he is willing to sell the shares. The difference between offer price and the bid price is called spread price = Ask price - Bid price. A Jobber will take stocks in his books (also called along sale) when brokers have predominantly selling orders, and will also sell short (Short sale) when brokers are engaged in buying.

3 .BULLS:

Speculators in the market who believe that the main market movement is upwards and therefore buy securities now hoping to sell them at a higher price in the future

4. BEARS:

These are speculators in the market who believe that the main market movement is downwards therefore securities now hoping to buy them back later at a lower price.

5. STAGS:

These are speculators in the market who buy new shares because they believe that the price Set by issuing company is usually lower than the theoretical value and that when shares are later dealt with in the stock-exchange the share price will increase and they will be able to sell them at profit.

TRADING MECHAMSM IN NSE (NAIROBI *STOCK* EXCHANGE)

- NSE is dominated by brokers who are the investors link with the stock exchange.

- Potential investors approach brokers who guide them on the securities to invest in helps them to determine the price they should pay for such

securities, and the most appropriate time to acquire them.

- Stock brokers bids for the share at the stock market on behalf of the investors.

The brokers then refer investors to the selling broker if the order is executed

- The stock broker thereafter send s a contract note to the buyer showing him the number of shares purchased, the price per share, commission

chargeable and the total amount payable.

- A sale contract note is sent by selling broker to the seller of the shares.

The stockb1okers forwards to the buyer a transfer deed k for signature. The buyer signs the transfer deed and returns it to the stock broker who sends it to the company registrar. The Registrar issues a new share certificate on the name of the buyer through the stock

broker.

METHODS OF OBTAINING LISTING IN THE STOCK EXCHANGE

Methods of obtaining listing in the stock exchange are:

1. Offer satisfaction; Can be fixed or by tender and occurs where the issuing authority offers the shares directly to the public using an intermediary.

2. Placing:

A sponsor buys the whole issue and then determines terms for sale to its own clients. Any unplaced shares are sold to a second broker known as an intermediary.

3. Introduction: Method available to companies that already have a good spread of share-holders or companies already quoted on an overseas exchange.

4 Tender offer.

Where shares are subscribed for using a bidding system.

INTERPRETATION OF STOCK EXCHANGE REPORTS:

WHY THE PRICE OF A SHARE CHANGES

Due to changes in supply and demand of shares:

The price of a share change would be as a result of the change of demand and supply of the respective share. An increase in demand would lead to an increase in the price of the share and vice - versa. An increase in supply leads to a reduction in the market price and vice-versa .The demand and supply changes may be as a result of the following:

(a) Past performance of the company - This depends on the reported profit and loss levels of the company. If a company reports enormous Losses, demand for the share will go down and supply will increase and therefore price will fall.

(b) Expected performance of the company- This is normally used on shareholders (both existing and potential) perception i.e. their expectation regarding the performance of the company in future e.g. future profitability level.

(c) Economic level of performance - Economic factors that make individual ability to buy shares e.g. income or exchange rates.

(d) Political climate in the country: This is normally relevant to the foreign investors. Lack of conducive political climate may make purchases of a share risky investment thus reducing the demand.

(e) Rate of Return on alternative form of investments: - e.g. return on Treasury bill and fixed deposits among others. A high alternative rate of

return will reduce demand of a share due to high opportunity costs.

i) CD against Kakuzi means that the shares were selling Cum-Dividend i.e. with dividend.

ii.) Das (-) implies that there was no trading on Express Kenya Ltd's shares

iii) A Co may be suspended from the stock exchange because of the following reasons:-

(a) Lack of adherence to set conditions: e.g. share capital maintenance i.e. if the company is not able to maintain the minimum authorized and issued

capital.

(b) Non-remittance of subscription to the NSE or CMA.

(c) Gross irregularities in the performance of company e.g. because of insider dealings.

(d) Non-provisions of quarter reports to the NSE or CMA i.e. lack of submission of financial statements as required

NOTE: Suspension in the process through which company share are not quoted. If a company is suspended from the NSE shares will not trade in the NSE for the period that the suspension is in force i.e. in the period shares cannot be bought or sold through a broker.

iv) CB means share were sold Cum-Bonus.

v) Meaning of ordinary sh 10 means the par value of the shares.

MONEY MARKET INSTRUMENTS

These are instruments used to raise short-term funds from the market. They include

(a) TREASURY BILLS

These are government securities issued to:

(i) Cover government deficit

(j) Finance maturity debts

(k) Control inflation

These are usually sold on auction system at a discount which depends on the value and it maximum period.

$$\text{Yield in Treasury bills} = \frac{\text{face value} - \text{market value}}{\text{Face value}} \times \frac{360}{\text{No of days maturity}}$$

Main features.

1 .Maturity period is usually 1 year or less. If the period is more than one

year, then it is a treasury bond. In Kenya we have Treasury bill of 28 days (I month), 91 days (3months) and 182 days (6 months).

2 .Treasury Bills, in Kenya are denominated in terms of 50,000, 100,000,

1,000,000 — 20,000,000 shillings etc.

3 .The yield on treasury bills is determined by the market forces through

competitive bidding.

4. Increase from the T.B's is usually taxed at normal tax rate on interest on the part of the receiver.

5. They are usually risk-free securities because they are guaranteed by the government.

(b) CERTIFICATE OF DEPOSITS

These are certificates issued by a bank or non banking financial institution indicating that

a specified sum of money has been deposited there in:

The certificate bears the maturity date and a specified interest rate and can be issued in

any denomination.

They can be issued in bearer or non-bearer from:

(a) Bearer>. Any one who bears the certificate has a right to the money even if it has no name.

(b) Non bearer> has a name on it of the person to whom the money belongs i.e. depositor and may

not be transferable.

Tile interest rate on these is usually paid after maturity and the finds deposited

can be withdrawn before maturity but at a penalty.

Types of certificate of deposits:

(a) Normal CD — Issued by commercial banks

(b) Euro dollar CD — Dominated in US dollars/or foreign currency & issued by banks.

(c) Yankee CD — Denominated in US dollars and issued by a foreign bank having a branch in the

US.

(d) Thrift CD — issued by a non - banking financial institution.

(C) COMMERCIAL PAPERS

Consist of promissory notes issued by financially stable companies and sold to investors in the

market. They usually have a maturity period of less than one year and mainly sold on discount basis,

which has the effect of increasing the effective rate of interest.

Effect yield: = <u>face value— market value </u>x   <u>360</u>

              Face value   No of days maturity

Illustration:

A company sells 120 days commercial paper with par value of shs. 10,000 but at shs.

9.700 compute the effective yield on the paper

$$\frac{10000-9700}{9700} \times 360/120 = 9.3\%$$

- They can be discounted before maturity.

- They are negotiable due to the credit worthiness of the issuing co.

(D) BANKERS ACCEPTANCES

These are bills of exchange drawn in and accepted by the bank Usually, a bank's customer under an agreement with the bank draws a bill on the bank and the bank accept it. The bill becomes a banker's acceptance.

The bank charges acceptance commission and the drawer will have a two name bill,

i.e. his own and that of bank. This makes the bill a highly negotiable instrument.

Main features:

(i) Highly required because they can be discounted at any time especially by the accepting bank.

(ii) Usually sold on discounted basis

(iii) usually unsecured.

(iv) Mainly used to finance international transaction/trade due to the fact that there my not be enough trust between the parties.

(v) Usually have a maturity period of less than one year, mostly 6 months or 3 months.

(E) INTER-BANK OVERNIGHT LOANS:

- This arises from the central bank's requirement that Commercial Banks hold a specified level of liquidity everyday. Commercial banks to meet at the clearing house (which is managed by the Kenya Banker's Association) and the bank with insufficient funds to borrow from those with excess and the one with deficit to approach these with excess and negotiable terms of the loan.

Lending Banks instructs clearing house through a cheque or telephone to transfer some of its deposits to the borrowing bank. Since these loans are authorized the borrowing bank serves on order the following day transferring ownership back to the lending bank. Incase of illiquidties, the bank can borrow from central bank.

- These are usually un-secured loans.

(F)RE-PURCHASE AGREEMENTS

- Government security dealers may use repurchase agreements to increase their level of liquidity. Re-purchase agreement is a sale of short-term government security by the dealer to the investor where the dealer agrees to re-purchase the securities at a specified future time.

- The investor receives a specified yield while holding the security.

- The maturity period may be fixed or left open in which case either the borrower or lender can terminate the agreement at any time. Most re-purchase agreements are overnight although once for as long as 6 months can be made.

(H)CAPITAL MARKET INSTRUMENTS

For issuing long-term funds.

They include:

i) Common share/ordinary share

(j) Preference share

(k) Debentures

(I) Treasury Municipal bonds

(m) Warrants & Convertible

(n) Terms loans

(o) Mortgages

STOCK MARKET EFFICIENCY

This refers the degree to which the securities reflect the market information in their prices. It's the capability of the securities to show and reflect all the relevant information. There are 3 forms of market efficiency namely-

(i) The weak form efficiency

This type of market efficiency says that current share prices fully reflect all the information contained in first price movements. The sequence of the price changes contains no information about the future price changes. The prices of securities change in a random manner.

(ii) Semi strong form efficiency

The semi strong form of efficient market hypothesis states that current share prices show both the past price movements and also the publicly available information. No trading strategies based on the release of any public information ie earnings will enable an investor to generate abnormal returns. Except by chance if the market is efficient in the semi strong sense a public announcement will some reaction from the market and will highly affect the market prices.

(iii) Strong form efficiency

This type of market states that security prices reflect all the information available both public and private at each point in time. The consequence of this is that no investor Even when the investor has some inside information can device trading strategies based on such information so as to consistently earn abnormal returns. This form of efficiency states that people such as stock specialists security brokers and dealers who often have insider information cannot on average earn greater profits than investors who don't have have such information.

THE DOW THEORY

Charles dow the founder or the wall street journal developed among others the dow theory in the early part of the century. According to Dow Theory the stock market is characterized by three trends namely

1. Primary trend
2. The intermediate trend
3. Tertiary trends

Primary trend

This is the most important it refers to the long term movement in share prices i.e. movement in share prices over a period of more than one year.

The intermediate trend

This trend runs for weeks or months before being reversed by another intermediate trend in the opposite direction. If an intermediate trend is in the opposite direction to the primary trend, it is called a secondary reversal or reaction. A primary trend is normally interrupted by a series of information reversals.

Tertiary trends.

They last for a few days and are less important.

<u>SPECIAL FINANCIAL INSTITUTIONS.</u>

The major financial institutions in Kenya economy are commercial banks, savings and loans, credit unions, savings banks, life insurance companies, pension funds, and mutual funds. These institutions attract funds from individuals, businesses, and governments, combine them, and make loans available to individuals and businesses. A brief description of the major financial institutions follows.

Institution	Description
Commercial bank	Accepts both demand (checking) and time (saving) deposits. Also offers negotiable order of withdrawal (NOW), and money market deposit accounts. Commercial banks also make loans directly to borrowers or through the financial markets.
Saving and loan	These are similar to a commercial bank except chat it may not hold demand (checking) deposits. They obtain funds from savings, negotiable order of withdrawal (NOW) accounts, and money market deposit accounts. They lend primarily to individuals and businesses in the form of real estate mortgage loans.
Credit union	Commonly known as Savings co-operative societies (Saccos), credit unions deal primarily in transfer of funds between members. Membership in credit unions is generally based on some common bond, such as working for a given employer. Credit unions accept members' savings deposits, NOW account deposits, and money market account deposits and lend funds to members, typically to finance automobile or appliance purchase, or home improvements.
Savings banks	These are similar to a savings and loan in that it holds savings, NOW, and money market deposit accounts. Savings banks lend or invest funds through financial markets, although some mortgage loans are made to individuals.
Life insurance Company	It is the largest type of financial intermediary handling individual savings. It receives premium payments and invests them to accumulate funds to cover future benefit payments. It lends funds to individual, businesses, and governments, typically through the financial markets.

Pension fund	Pension funds are set up so that employees can receive income after retirement. Often employers match the contribution of their employees. The majority of funds is lent or invested via the financial market.
Mutual fund	Pools funds from the sale of shares and uses them to acquire bonds and stocks of business and governmental units. Mutual funds create a professionally managed portfolio of securities to achieve a specified investment objective, such as liquidity with a high return. Hundreds of funds, with a variety of investment objectives exist. Money market mutual funds provide competitive returns with very high liquidity.

Unit trusts

Financial Markets

Financial markets provide a forum in which suppliers of funds and demanders of funds can transact business directly. Whereas the loans and investments of intermediaries are made without the direct knowledge of the suppliers of funds (savers), suppliers in the financial markets know where their funds are being lent or invested. It is important to understand the following distinctions in the market.

Money versus *Capital markets.* The two key financial markers are the money market and the capital market. Transactions in the money market take place in short-term debt instruments, or marketable securities, such as Treasury bills, commercial paper, and negotiable certificates of deposit. The market brings together government units, households, businesses and financial institutions who have temporary idle funds, and those in need of temporary or seasonal financing.

Long-term securities—bonds and stocks—are traded in the capital market. The main actor in the capital markets is the *securities exchanges,* which provide the market place in which demanders can raise long-term funds and investors can maintain liquidity by being able to sell securities easily. The Nairobi Stock Exchange (NSE) was established in 1954 and is one of the most active stock markets in sub-Saharan Africa. It currently (2005) has 48 companies listed and 20 brokerage company members.

Private placements versus Public of*ferings.* To raise money, firms can use either private placements or public offerings. Private placement involves the sale of a new security issue, typically bonds or preferred stock, directly to an investor or group of investors, such as an insurance company or

pension fund. However, most firms raise money through a public offering of securities, which is the nonexclusive sale of either bonds or stocks to the general public,

Primary market versus Secondary market. All securities, whether in the money or capital market, are initially issued in the primary market (Initial public offerings (IPOs) and seasoned equity offerings (SEOs)). This is the only market in which the corporate or government issuer is directly involved in the transaction and receives direct benefit from the issue. That is, the company actually receives the proceeds from the sale of securities. Once the securities begin to trade in the stock exchange, between savers and investors, they become part of a secondary market. The primary market is the one which "new" securities are sold; the secondary market can be viewed as "used," or "pre-owned," securities market.

OTHER SPECIALISED FINANCIAL INSTITUTIONS

1 .Industrial and commercial Development Corporation (LC.D.C)

I. C.D.C was established in 1954 by the government. Its main objective was to promote industrial & commercial development in Kenya.

Its specifically provides financial or technical assistance to small enterprises. Financial assistance may be in the form of working capital financing or purchase of fixed assets. This may take the form of equity or debt financing. Equity is provided by large-scale enterprises with more than 50 employees. Loans are given to both small and medium

sized enterprise. Long-term loans repayment period is 6 years for industrial and up to 10 years for commercial loans

2) Agricultural finance corporation (AFC)

it was established by the government in 1963. The main objective is to provide support for the agricultural sector. This is through provision of short term and long-term loans. The loans must be for a defined project by a farmer. Loans may be short term or long term and there exist flexibility to allow its repayment.

3) Kenya Industrial Estate (KIE)

It was established in 1967

At inception it was a wholly owned subsidiary of ICDC. However in 1978 it was separated from ICDC and become an independent body as a parastatal under the ministry of industry.

The main objective of K1E is to assist in the development of new projects and the expansion and modernization of new business enterprise. This is through the provision of finds and technical assistance. They provide both debt and equity finance.

4) Kenya Tourist Development Corporations: (KTDC)

The KTDC was established in 1960's. Its main responsibility was carrying out Investigations, formulation and study of projects development of the tourism industry

KTDC Provides financial assistance in forms of loan, for tourism related enterprises. It has substantial share —holdings in local hotels, which includes Hilton, Serena, and Pan Africa etc.

5) Industrial Development Bank (IDB)

Was established in 1963 as a limited company. The main objective of setting this

Institution was to promote industrial development in Kenya through the establishment promotion and expansion of small or large-scale enterprises. This is through financial assistance .n the form of loans, provision of guarantee and securities and underwriting

6) Hire — purchase financial companies

These are institutions, which provides assets on credit with an arrangement to pay the principal and interest in installment basis. However, the legal ownership of the assets remains with the hire-purchase company. The title is transferred when the last installment is made. Hire Purchase Company's in Kenya include- Kenya finance corporation (KFC), Pan-Afric credit finance Ltd, Investment and mortgage Ltd. etc.

7) Insurance Companies

The main role of insurance companies is to assist individuals and corporate bodies safeguard against future risks. May also engage in other activities. The main capital for insurance companies is the premium paid by the policy holders.

Forms of Insurance Company's in Kenya includes: - Life Insurance, Third party insurance etc. Examples of Insurance company's in Kenya include: jubilee insurance company, pan African insurance company, Blue shield insurance Co. Ltd. etc.

8) Building societies/Housing finance Co:

These ale financial institution, which provide finance to the public so as to purchase or construct houses. The individual or corporate bodies make deposit upon which they later receive loan for acquiring or constructing house. Some buildings societies in Kenya include: Housing finance corporation (HFC), East African building society and Pioneer building society.

9) Pension and provident scheme institution

These institutions obtain funds from both employees and employers of contribution. They manage and invest these funds so as to meet the current and future obligations of the pension scheme to its members.

10) Merchant Banks

It originated and also derives its name from the activities of wealth merchants who provided credit for the trading ventures. The ventures were for small-scale merchants. Before the establishment of banking systems in the 19th century, the merchants changed their role of merchants and started offering financial service. Today merchant banks performs the role of underwriting and assisting companies to raise capital in the financial markets They underwrite the security issues, buy and sell securities and provide advice in Investment in securities.

Reinforcing questions

1. (a) (i)   What is financial intermediation?   (3 marks)

      (ii)   Identify any five services that financial intermediaries provide.   (5 marks)

  (b)   What economic advantages are created by the existence of:

      (i)   Primary markets.   (3 marks)
      (ii)   Secondary markets   (3 marks)
      (iii)   Portfolio management firms.   (4 marks)

  (c)   Explain how the Capital Authority can ensure:

      (i)   Faster growth and development of the Nairobi Stock Exchange or Stock Exchange in your country.   (6 marks)

      (ii)   Development of other stock exchanges in Kenya or in your country.   (4 marks)

  (d)   (i)   What is a stock exchange index?   (2 marks)

      (ii)   Outline four drawbacks of the Nairobi Stock Exchange index. (4 marks)

(e)   Highlight four advantages and disadvantages to a company of being listed on a stock exchange.   (8 marks)

(f)   In relation to the stock exchange"

      (i)   Explain the role of the following members:

           •   Floor brokers   (2 marks)
           •   Market makers   (2 marks)
           •   Underwriters   (2 marks)

      (ii)   Explain the meaning of the following terms:

           •   Bull and bear markets   (2 marks)
           •   Bid-ask spread   (2 marks)
           •   Short selling   (2 marks)

ANSWERS TO REINFORCING QUESTIONS

<u>Chapter 1.</u>

<u>Nature of business Finance</u>

1.
(a)
An agent is an individual or party acting on behalf. In the context of public limited agency relationship may take two main forms.

(i)   Agency relationship between Shareholders and Management.

The shareholders are the owners of the company through equity capital contribution. However, they may not be involved in management. The shareholders may not have the necessary skills or time required. As a result, they appoint other parties to run the company on their behalf (managers). The shareholders are the principles and the management constitutes the agents.

(ii)   Agency relationship between the shareholders and creditors.

The creditors are the contributors of debt capital They are not allowed to be involved in management of the company directly. After provision of funds the shareholders are expected to manage the funds along with the management on behalf of the creditors. The creditors constitute the principles and the shareholders the agents.

The management may be involved in funds and irregularities. This will reduce the net earnings accruing to the shareholders.

(iii)   Other agency relationship is between shareholders and government auditors, employees and consumers.

(b
)
- Use of performance based reward/compensation
- Threats of firing
- Contractual based employment
- Introduction of share ownership plans for employees
- Incurring agency costs or monitoring costs to avoid or minimize agency problem – eg audit fees.
- Threat of takeover

(2i)   Borrowing additional debt capital which take priority charge in case of liquidation

(ii)   Disposal of assets used as collateral for loans

(iii)   Payment of high dividends which reduce the cash for investment.

(iv)   Asset substitution

If a firm sells bonds for the stated purposes of engaging in low variance projects, the value of the shareholders equity rises and the value of bondholders claim is reduced by substituting projects which increase the time variance rate.

(v)   Under investment

A firm with outstanding bonds can have incentive to reject projects which have a positive NPV if the benefit form accepting the project accrues to the bondholders.

Inadequate disclosure

Sale of assets used to secure creditors

Restructure bond covenants include the following:

(i)   Restriction on investments, flats profits movement in such risky ventures. The aim to discourage assets substitution.

(ii)   Restriction to disposition of assets require that the firm should not dispose of substantial part of its properties and assets.

(iii)   Securing debts give bondholders title to pledge bonds until assets are paid.

(iv)   Restrictions on mergers. Mergers may affect the value of claims.

(v)   Covenants restricting payments of dividends a limit in distribution is placed.

(vi)   Covenants restricting subsequent financing restrict issue of additional debt

(vii)   Covenants modifying pattern of payment to bondholder

- Sinking fund
- Convertibility provisions
- Collability provisions

(viii) Bonding requirement

- Purchase of insurance
- Certificates of compliance
- Specification of accounting technique.

3.

(a) Agency costs

These are cost borne by shareholders of an organization as a result of not being directly involved in decision making, when the decisions are made by the directors. Agency costs are incurred when management decisions are based on the interests of directors rather than shareholders.

Examples of agency costs.

(i) Expenditure for external audit incurred by the organization

(ii) Installation of systems of internal control and internal audit

(iii) Opportunity costs of foregone projects which are perceived by management to be too risky.

(iv) 'Perks" and incentives paid by the organization to make directors act the best interests of shareholders.

4. (a) Agency relationships
Shareholders and management

In this case the shareholders act as the principal while the management acts as their agents. The shareholders provide equity capital while the managers provide managerial skill.

Shareholders and creditors

In this case the shareholders act as the agent and the creditors act as the principal.

The relationship arises from the fact that though the creditors provide debt capital to the various operations of the firm, they do not make decisions.

Shareholders and the government

Any shareholder will rely on the establishment existing in a specific country in undertaking any form of business and reliance will be made on the government services. In this case the government expects the owners to reciprocate by avoiding engagement in activities which would be in conflict with societal expectations. The government will act as the principal and the shareholders will act as the agent who is expected to consider the government interests.

(b) (i) The goal of profits maximization involves maximizing the accounting profits by either increasing sales (selling price) or reducing costs

- Profits = Sales revenue – Costs

- In a competitive environment, firms are operating at 100% capacity hence volume/ production cannot be increased thus sales revenue can be increased through increase in selling price
- Shareholding wealth maximization includes maximizing the share price by undertaking all projects yielding the highest net present value (N.P.V)
- The focus is to maximize the P.V of Cashflow where

$$N.P.V = \sum_{t=1}^{n} C_t /(1 + K)^n - I_o$$

Where Ct = cashflows during period t

K = Discounting rate

I_o = Initial capital

Limitations of profit maximization goal

- It's vague or unclear: does it refer to gross profits, operating profits, net profits, long term or short term profits e.t.c
- It ignores the time value of money
- It ignores risk and uncertainty of benefits/ profits received in future
- It ignores the plight of other stakeholders such as consumers and employees and only consider the owners
- It is a short term goal e.g. cost reduction or increase in selling price is short term measure

(ii)

5.

(a) ▪ Welfare of employees. A company might try to provide good wages and salaries, comfortable and safe working conditions, good training and career development etc.

▪ Welfare of management. Managers will often take decisions to improve their own circumstances. Their decisions have the effect of incurring expenditure and reducing profits.

▪ Welfare of society as a whole. Many companies participate in social and environmental activities which

are meant to improve the social welfare of the society as a whole. Such activities incur costs.

- Fulfillment of responsibilities towards customers and suppliers.

  - Customers will need to be provided with products and services of the standard of quality that they demand. They will also expect the company to be honest and fair in its dealing with them.
  - The company needs to maintain relationships with suppliers.

- Business ethics e.g no tax evasion, no bribery, fair employment practices and policies.

(b)
- Management might learn about the shareholders preference for either high dividends or high retained earnings for profits and capital gain.

- Recent share price movements can be explained by changes in share holdings.

- Enables them to know their attitudes towards risks and gearing.

(c) (a) The range of stakeholders may include: shareholders, directors/managers, lenders, employees, suppliers and customers. These groups are likely to share in the wealth and risk generated by a company in different ways and thus conflicts of interest are likely to exist. Conflicts also exist not just between groups but within stakeholder groups. This might be because sub groups exist e.g. preference shareholders and equity shareholders. Alternatively it might be that individuals have different preferences (e.g to risk and

return, short term and long term returns) within a group. Good corporate governance is partly about the resolution of such conflicts. Stakeholder financial and other objectives may be identified as follows:

Shareholders

Shareholders are normally assumed to be interested in wealth maximization. This, however, involves consideration of potential return and risk. Where a company is listed this can be viewed in terms of the share price returns and other market-based ratios using share price (e.g price earnings ratio, dividend yield, earnings yield).

Where a company is not listed, financial objectives need to be set in terms of accounting and other related financial measures. These may include: return of capital employed, earnings per share, gearing, growth, profit margin, asset utilization, market share. Many other measures also exist which may collectively capture the objectives of return and risk.

Shareholders may have other objectives for the company and these can be identified in terms of the interests of other stakeholder groups. Thus, shareholders, as a group, might be interested in profit maximization; they may also be interested in the welfare of their employees, or the environmental impact of the company's operations.

Directors and managers

While directors and managers are in essence attempting to promote and balance the interests of shareholders and other

stakeholders it has been argued that they also promote their own interests as a separate stakeholder group.

This arises from the divorce between ownership and control where the behaviour of managers cannot be fully observed giving them the capacity to take decisions which are consistent with their own reward structures and risk preferences. Directors may thus be interested in their own remuneration package. In a non-financial sense, they may be interested in building empires, exercising greater control, or positioning themselves for their next promotion. Non-financial objectives are sometimes difficulty to separate from their financial impact.

Lenders

Lenders are concerned to receive payment of interest and ultimate repayment of capital. They do not share in the upside of very successful organizational strategies as the shareholders do. They are thus likely to be more risk averse than shareholders, with an emphasis on financial objectives that promote liquidity and solvency with low risk (e.g gearing, interest cover, security, cash flow).

Employees

The primary interest of employees is their salary/wage and security of employment. To an extent there is a direct conflict between employees and shareholders as wages are a cost to the company and a revenue to employees.

Performance related pay based upon financial or other quantitative objectives may, however, go some way toward drawing the divergent interest together.

Suppliers and customers

Suppliers and customers are external stakeholders with their own set of objectives (profit for the supplier and, possibly, customer satisfaction with the good or service from the customer) that, within a portfolio of businesses, are only partly dependent upon the company in question. Nevertheless it is important to consider and measure the relationship in term of financial objectives relating to quality, lead times, volume of business and a range of other variables in considering any organizational strategy.

Chapter 2

Financial statement analysis.

1.(a)   Limitations of ratios

- They are based on historical data
- They are easy to manipulate due to different accounting policies adapted by the firms
- They are only quantitative measures but ignore qualitative issues such as quality of service, technological innovations etc
- They constantly change hence are computed at one point in time e.g. liquidity ratios change now and then
- They don't incorporate the effect of inflation
- They don't have standard computational purposes, firms are of different sizes

(b)	Ratio	Formulae	Computation
(i)	Acid test ratio	Current Asset-stock	= 205.9 - 150 =

		Current Liabilities	138.3

(ii) Operating profit ratio

$$\frac{EBIT/Operating\ profit}{Sales} \times 100 = \frac{53 + 4 \times 100}{900} =$$

(iii) Return on total capital Employed

$$\frac{Net\ Profit\ after\ Tax}{Sales} \times 100 = \frac{88.9 \times 100}{900} =$$

(iv) Price Earning ratio

$$\frac{M.P.S}{EPS} = \frac{20}{(88.9 - 4.8)/10m\ shares}$$

$$= 20/8.41 = 2.38\ times$$

(v) Interest coverage ratio

$$EBIT/Interest\ changes = (53 + 4)/4$$

$$= 14.25\ times$$

(vi) Total Asset Turnover

$$Sales/\ Total\ Assets = 900/213.9 + 205.9$$

$$= 2.14\ times$$

(c) Working capital cycle =

Stockholding period	Debtors +collection period	Creditors -payment period

Stockholding period = $\frac{Average\ debts}{}$

| | Cost of sales | x 365 | $=(210\times150)^{½}$ | x 365 | =91.25 |
| | | | 720 | | |

Debtors collection period = $\dfrac{\text{Average creditors}}{\text{Credit sales}}$ x 365 $=\dfrac{35.9}{600}$ x 365 = 21.84

Creditors payment period = $\dfrac{\text{Average creditors}}{\text{Credit purchases}}$ x 365 $=\dfrac{60}{660}$ x 365 = (33.18)

Working capital / Cash operating cycle

$\underline{79.91}$

$\underline{80}$
$\underline{\text{days}}$

2.

Ratio	Formular	1998	1999	2000
Acid test/ Quick ratio	CA – Stock CL	$\dfrac{30 + 200}{230 + 200 + 100}$ = 0.43	$\dfrac{20 + 260}{300 + 210 + 100}$ = 0.46	$\dfrac{5 + 290}{380 + 225 + 140}$ = 0.396
Av. Debtors collection period	Av. Debtors x 365 CV sales p.a.	$\dfrac{200 \times 365}{4000}$ = 18.25	$\dfrac{260 \times 365}{4300}$ = 22.07	$\dfrac{290 \times 365}{3800}$ = 27.86

Inventory Turnover	Cost of Sales___ Av. Closing stock	$\dfrac{3200}{400}$ = 8	$\dfrac{3600}{480}$ = 7.5	$\dfrac{3300}{600}$ 5.5
Debt/Equity	Fixed charge capital Equity	$\dfrac{350}{100 + 500}$ = 0.5	$\dfrac{300}{100 + 550}$ = 0.46	$\dfrac{300}{100 + 550}$ = 0.46
Ratio NP margin	NP x 100 Sales	$\dfrac{300 \times 100}{4000}$ = 7.5%	$\dfrac{200 \times 100}{4300}$ = 4.7%	$\dfrac{100 \times 100}{3800}$ = 2.63%
ROI = ROTA	NP___ Total Assets	$\dfrac{300 \times 100}{1430}$ = 20.98%	$\dfrac{200 \times 100}{1560}$ = 12.82%	$\dfrac{100 \times 100}{1695}$ = 5.90%

Note:

(i)   All sales are on credit since they are made on terms of 2/10 net 30 i.e pay within 10 days and get a 2% discount or take 30 days to pay without getting any discount.

(ii)   Debtors = Account Receivable while ordinary share capital = common stock.

(iii)   Current Asset - Stock = Cash + Accounts receivable

(b)   When commenting on ratios, always indicate the following:

(i)   Identify the ratios for a given category e.g when commenting on deficiency, identify efficiency or turnover ratios.

(ii)   State the observation made e.g ratios are declining or increasing in case of trend or time series analysis.

(iii)   State the reasons for the observation.

(iv)   State the implications of the observation.

Comment on liquidity position:

-     This is shown by acid test/quick ratio

-     The ratio improved slightly in 1999 but declined in year 2000.

-     The ratio is lower than the acceptable level of 1.0

    This is due to poor working capital management policy as indicated by increasing current liabilities while cash is consistently declining.

-     The firms' ability to meet its set financial obligations is poor due to a very low quick ratio.

Comment on profitability position:

-     This is shown by net profit margin and return on total assets.

-     Both ratios are declining over time

- This is particularly due to decline in net profits thus decline in the net profit margin and increase in total accounts as net profit decline thus reduction in ROTA.

- The firm's ability to control its cost of sales and other operating expenses is declining over time e.g Sales – Net profit will indicate the total costs.

  These costs as a percentage of sales are as follows:

1998	$\dfrac{\text{Sales} - \text{Net profit}}{\text{Sales}} \times 100$	=	$\dfrac{4,000 - 300}{4,000} \times 100$
			= 92.5%
1999	$\dfrac{4,300 - 100}{3,800} \times 100$	=	95.3%
2000	$\dfrac{3,800 - 100}{3,800} \times 100$	=	97.5%

Comment on gearing position:

- This is shown by debt/equity ratio

- This was 50% in 1998 and declined to 46.2% in 1999 and 2000

- It has been fairly constant

- This is due to the constant long term debt and ordinary share capital

- The decline in 1999 and 2000 was due to increase in retained earnings

Generally the firm has financed most of its assets with either short term or long term debt i.e current liabilities + long term debt

Example: the total liabilities (long term debt + Current liabilities) as a percentage of total assets are as follows:

3. a) i)   Inventory turnover ratio   = $\dfrac{\text{Cost of sales}}{\text{Average stock (closing stock)}}$

                        = $\dfrac{1,368,000}{649,500}$ =   2.1 times

ii)   Times interest earned ratio = $\dfrac{\text{Operating profit EBIT)}}{\text{Interest charges}}$

                        = $\dfrac{105,750}{34,500}$ = 3.1 times

iii)   Total assets turnover   = $\dfrac{\text{Sales}}{\text{Total Assets}}$

                        = $\dfrac{1,972,500}{1,233,750}$ = 1.6 times

iv)   Net profit margin   = $\dfrac{\text{Net profit (profit after tax)}}{\text{Sales}} \times 100$

                        = $\dfrac{42,750}{1,972,500} \times 100$ =   2.2%

i.e 2.2% is the net profit margin

97.8% is the cost of sales.

b)   Industrial analysis

-    Industrial analysis involve comparison of firm performance with the industrial average performance or norms.

-    This analysis can only be carried out for a given year. I.e

Times series/trend analysis

-    This involve analysis of the performance of a given firm over time i.e ratio of different year of a given Co. are compared in order to establish whether the performance is improving or declining and in case a weakness is detected e.g decline in liquidity ratio, this will force the management to take a corrective action.

-    When commenting on industrial and trend analysis the following 4 critical points should be highlighted:

a)   In case of individual ratio classify them in their immediate category e.g when commenting on TIER indicate this in a gearing ratio.

When commenting on a given category of ratio identify the ratios in that category e.g if required to comment on liquidity position identify the liquidity ratio from the ratios computed.

b) State the observation made e.g total asset turnover is declining or increasing over time (in case of trend analysis) or the ratio is lower or higher than the industrial norms (in case of industrial analysis).

c) State the reason for observation i.e. explain why the ratio is declining or increasing.

d) State the implication for observation e.g decline in liquidity ratio means that the ability of the firm to meet in short term financial obligation is declining over time.

Ratio	ABC Ltd.	Industrial Norm
Inventory Turnover	2.1	6.2
Times interest earned ratio	3.1	5.3
Total Asset turnover	1.6	2.2
Net profit margin	2.2%	3%

i) Inventory turnover

- This is a turnover or efficiency ratio

- The rate is lower than industrial norm

- A low stock turnover could be attributed to:

    i) Charging higher price than competition

    ii) Maintenance of slow moving/obsolete goods

    iii) Where the firm is selling strictly on cash while competitors are selling on credit.

- The firm is not efficiently utilising its inventory to generate sales revenue.

ii)   Times interest earned ratio (TIER)

-        This is a gearing ratio

-        It is lower than industrial average or norm

-        This could be due to low operating profit due to high

         operating expenses or high interest charges due to high level of
         gearing/debt capital.

-        This implies that the firm is using a relatively high level of fixed
         charge capital to finance the acquisition of assets.

iii)   Total asset turnover

-        This is efficiency ratio/activity

-        Lower than industrial average

-        This could be due to holding large non-operational or fully
         depreciated asset which are not utilised by the firms.

-        This implies inefficiency in utilisation of total assets to generate
         sales revenue.

iv)   Net profit margin

-        Is a profitability ratio

-        Lower than industrial norm

-        This could be due to low level of net profit of the firm

         relative to sales revenue.

-        This implies that the firm has a low ability to control its cost of sales,
         operating & financing expenses e.g in case of ABC Ltd selling &
         admin expenses are equal to 82.5% of gross profit

$\dfrac{498,750}{604,500}$ x 100

- Also the cost of sales expense is 69.4% of sales i.e

$\dfrac{1,368,000}{1,972,000}$ x 100

| 1998 | $\dfrac{230 + 200 + 100 + 300}{1,430}$ x 100 | = | 58.04% |

| 1999 | $\dfrac{300 + 210 + 100 + 300}{1,560}$ x 100 | = | 58.33% |

- 2000
  - $\dfrac{380 + 225 + 140 + 300}{1,695}$ x 100
  - =
  - 61.65%

Chapter 4

COST OF CAPITAL

1. (a) Cost of capital

- This is the rate used to discount the future cash flows of a business, to determine the value of the firm. The cost of capital can be viewed as the minimum return required by investors and should be used when evaluating investment proposals.
- In order to maximize the wealth of shareholders, the basic decision rule is that if cash flows relating to an investment proposal are negative, the proposal should be rejected. However, if the discounted cash flows are positive, the proposal should be accepted. The discounting is carried out using the firm's cost of capital.

Why cost capital should be calculated with care:

- Failure to calculate the cost of capital correctly can in <u>incorrect investment</u> decisions being made.
- Where the cost of capital is understated, investment proposals which should be rejected may be accepted.
- Similarly, where the cost of capital is overstated, investment proposals may be rejected which should be accepted. In both cases, the shareholders would suffer a loss.

(b) Required conditions for using the WACC

♦ The WACC assumes the project is a marginal, scalar addition to the company's existing activities, with no overspill or synergistic impact likely to disturb the current valuation relationships.

♦ It assumes that project financing involves no deviation from the current capital structure (otherwise the MCC should be used.). The financing mix is similar to existing capital structure.

Using the WACC implies that any new project has the same systematic or operating risk as the company's existing operations. This is possibly a reasonable assumptions for minor projects in existing areas and perhaps replacements but hardly so for major new product developments.

2.

(a) Cost of debt K_1

$$K_d \quad = \quad \frac{1 + \dfrac{1000 - N_d}{n}}{\dfrac{N_d + 1000}{2}}$$

I = 0.1 x 1000 = 100

N_d = 1000 – 30 discount – 20 floatation costs = 90

n = 10 years

$$100 + \frac{1000 - 950}{10} \quad = \quad 10.8\%$$

$$\frac{950 + 1000}{2}$$

K_1 = $K_d(1 – I)0.108(1 – 0.3)$

0.108(0.7) = 7.56%

Cost of preferred stock K_p

K_p = $\dfrac{D_p}{N_p}$

D_p = 0.11 x 100 = 11

N_p = 100 – Sh.4 floatation cost = 96

K_p = $\dfrac{11}{96} x 100$ = 11.5%

Cost of retained earnings

$$K_r \quad = \quad K_s \quad = \quad \frac{D_1}{P_o} + g$$

$$\frac{6}{80}x100 + 6\% \quad = \quad 7.5\% + 6\% \quad = \quad 13.5\%$$

Cost of new common stock K_n

$$K_n \quad = \quad \frac{D_1}{N_o} + g$$

$$D_1 \quad = \quad Sh.6, \quad g \quad = \quad 6\%, \quad N_n \quad = \quad 73$$

$$K_n \quad = \quad \frac{6}{73}x100 + 6\% \quad = \quad 8.219\% + 6\% = \quad 14.219\%$$

(b)   Break occurs at:

$$\frac{225,000}{0.5} \quad = \quad Sh.450,000$$

(c)   (i)   WACC before exhausting retained earnings.

$$= \quad 0.4 \times 7.56\% + 0.1 \times 0.5 \times 13.5\% \quad = \quad 10.9\%$$

(ii)   With external equity

3.024 + 1.15 + 7.11   =   11.28%

(d) At initial stages of debt capital the WACC will be declining up to a point where the WACC will be minimal. This is because.

(i) Debt capital provides tax shield to the firm and after tax cost of debt is low.

(ii) The cost of debt is naturally low because it is contractually fixed and certain.

Beyond the optimal gearing level, WACC will start increasing as cost of debt increases due to high financial risk.

3.

(a) Real rate = risk free rate – inflation rate.

Risk free rate is the interest rate on Treasury bills

Real rate   =   12% - 8%   =   4%

(b) The minimum required rate of return for each investor is the cost of each capital component to the firm.

Cost of preference shares, Kp

Since market price of a preference share is equal to par value

then Kp = coupon rate = 15%.

Cost of debentures = (Kd)

The debentures have a maturity period of 20 years (1985 – 2005). Therefore Kd is equal to yield to maturity (YTM)

M   =   Maturity/redemption value = Sh.1,000

Vd   =   Market value = Sh.950

n   =   Interest period = 20 years

Int   =   Interest after tax = 16%(1 – 0.4) x 1000 = Sh.96

Therefore Kd = $\dfrac{Int + (M - Vd)\frac{1}{n}}{(M + Vd)\frac{1}{2}}$ = $\dfrac{96 + (1000 - 950)\frac{1}{20}}{(1000 + 950)\frac{1}{2}}$

= $\dfrac{101}{975} \times 100$ =   10%

Cost of equity K_e

Since growth rate is given, use dividend yield growth model to determine K_e

K_e = $\dfrac{d_O(1+g)}{P_O} + g$

Where: g   =   growth rate = 10%

P₀   =   Current market price = Sh.75

d_o = dividend per share for last year = 2.50 + 3.00 = 5.50

K_e = $\dfrac{5.50(1.10)}{75} + 0.10$ = 0.18 x 100 = 18%

(c) Overall or composite cost of Capital is the weighted average cost of capital (WACC). It is based on market values.

Market value of equity = Sh.75 x $\dfrac{\text{Sh.25m}}{\text{Sh.10par}}$ (E) Sh.187.5m

Market value of debentures = Sh.950 x $\dfrac{\text{Sh.31.250m}}{\text{Sh.1000par}}$ (D) Sh.29.7m

Market value of preference shares = Par value (f) = <u>Sh.12.5m</u>

Total market value, V = E + D + P <u>Sh.229.7m</u>

K_e = 18%

K_d = 10%

K_p = 15%

WACC = $K_e\left(\dfrac{E}{V}\right) + K_d\left(\dfrac{D}{V}\right) + K_p\left(\dfrac{P}{V}\right)$

= $18\left(\dfrac{187.5}{229.7}\right) + 10\left(\dfrac{29.7}{229.7}\right) + 15\left(\dfrac{12.5}{229.5}\right) = 16.80\%$

(d)   Weaknesses of WACC

-     It is based on assumption that the firm has an optimal capital structure (mix of debt and equity) which is not achievable in real world.

-     Market values of capital will constantly change over time hence change in WACC.

-     It can be used as a discounting rate on assumption that the projects risk is equal to the firm's business risk otherwise it will require some adjustment.

It is based on historical data e.g growth rate in dividends is based on past date. The growth rate cannot be constant p.a. in perpetuity.

Chapter 5

CAPITAL BUDGETING DECISIONS

1. (a).   Importance of capital budgeting decision

-     They have long term implications to the firm e.g. they influence long term variability of cashflows
-     They are irreversible and very costly to reverse
-     They involve significant amount of initial capital.

(b)   Difficulties faced in capital budgeting

-     Uncertainty of variables e.g annual cash flows, discounting rates, changes in technology, inflation rate, changes in tax rates etc.

-     Lack of adequate capital to undertake all viable profits (capital rationing)

- Lack of adequate information on the available investment opportunities e.g in case of mutually exclusive profits NPV and IRR will have conflict in banking of profits under some circumstances.

- Identification of all the quantifiable and non quantifiable costs and benefits association with a project.

(c)   Features of an ideal investment appraisal method

- Should consider time value of money
- Should utilize cash flows in project appraisal
- Should give absolute decision criterion whether to accept or reject a project
- Should rank independent projects in order of their economic viability
- Should distinguish between acceptable and unacceptable projects if they are mutually exclusive.

(d)   Why cash flows are considered to be more relevant for the following reasons:

- They are not affected by the accounting policies adopted in preparing financial statements

- Cash flows rather than profits determine the viability of any project

- Accounting profits include some non-cash items such as depreciation which are irrelevant in the investment decision.

- Cash flows are not affected by accounting standards. They are also easier to measure/ascertain.
- It is in line with shareholders wealth maximization objects

(2.) (a.) Cost of equity (ke) $\quad = \quad \dfrac{do\,(1+g)}{Po} + g$

$$= \quad \dfrac{6.50}{50 + 0.07}$$

$$= \quad \underline{20\%}$$

(b)   Project X

Year	Cash flows	$PVIF_{20\%, n}$	P.V
1	2,000,000	0.833	1,666,000
2	2,200,000	0.694	1,526,800
3	2,080,000	0.579	1,204,320
4	2,240,000	0.482	1,079,680
5	2,760,000	0.402	1,109,520
6	3,200,000	0.335	1,072,000
7	3,600,000	0.279	<u>1,004,400</u>
	TOTAL P.V		8,662,720
	Less initial capital		<u>(8,000,000)</u>
	N,P.V. (+ve)		<u>662,720</u>

Project Y

Year	Cash flows	$PVIF_{20\%, n}$	P.V
1	4,000,000	0.833	3,332,000
2	3,200,000	0.694	2,082,000
3	4,800,000	0.579	2,779,200
4	800,000	0.482	<u>385,600</u>
			8,578,800
			<u>(8,000,000)</u>
			<u>578,000</u>

(c)   Project X

     N.P.V @   24% =   -296,120

N.P.V @   20% =   662,720

I.R.R =   20% + $\dfrac{662,720}{662,720+296,120}\left(24\%-20\%\right)$

                                       22.8%

         =   20% + 2.8 =

Project Y   -94,400

            25% =   578,000

N.P.V @   20% =

N.PV @ $\left(\dfrac{578,000}{578,000+94,400}\right)\left(25\%-20\%\right)$

            20% +

I.R.R =

         20 + 4.3 = 24.3%

(d)   -   N.P.V method ranks project X as number one

       -       I.RR method ranks project Y as number one
       -       There is conflict in ranking of mutually exclusive projects

(e)   Conflict between N.P.V and I.R.R

       -       Incase of difference in economic lives of projects
       -       Incase of difference in size of the projects
       -       Incase of difference in timing of cash flow
       -       Incase of non-conventional cash flows

3. Depreciation p.a. = 20% x 2,200,000 = 440,000

Prepare a cash flow schedule:

Year	1	2	3	4	5
	Sh.'000'	Sh.'000'	Sh.'000'	Sh.'000'	Sh.'000'
Sales	1,320	1,440	1,560	1,600	1,500
Less operating costs	700	700	700	700	700
EBPT	620	740	860	900	800
Less depreciation	440	440	440	440	440
EBT	180	300	420	460	360
Less tax @ 35%	63	105	147	161	126
EAT = accounting profits	117	195	273	299	234
Add back depreciation	440	440	440	440	440
Cash flows	557	635	713	739	674

Screening Criteria

1. The net commitment of funds should not exceed 4 years i.e the payback period should at least be 4 years. Therefore, compute the payback period.

Year	Cash flows	Accumulated Cash flows
1	557	557
2	635	1,192
3	713	1,905
4	739	2,644
5	674	3,318

The initial capital of Sh.2,200,000 is recovered after year 3. After year 3 (during year 4) a total of Sh.295,000 (2,200 – 1,905) is required out of the total year 4 cash flows of Sh.739,000.

Therefore payback period = $3yrs + \frac{295}{739} = 3.4yrs$

2.   The time adjusted or discounted rate of return is the I.R.R of the project. Discount the cash flows at 15% cost of capital given:

Recall discounting factor (PVIF) = $(1+r)^{-n} = \frac{1}{(1+r)^n}$

Year	Cash flows '000'	PVIF$_{15\%}$	P.V	PVIF$_{14\%}$,n	P.V.
1	557	0.870	484.59	0.877	488.49
2	635	0.756	480.06	0.770	488.95
3	713	0.658	469.15	0.675	481.28
4	739	0.572	422.71	0.592	437.49
5	674	0.497	334.98	0.519	349.81
Total P.V.			2,191.49		2,246.30
Less initial capital			2,200.00		2,200.00
N.P.V.			(8.51)		46.30

Since the NPV is negative at 15% cost of capital rediscount the cash flows again at a lower rate, say 14%, to get a positive NPV.

NPV @ 14% =   46.3

NPV @ I.R.R.   =   0

NPV @ 15% = -8.51

I.R.R. = $14\% + \dfrac{46.3 - 0}{46.3 - \left(-8.51\right)}\left(15\% - 14\%\right)$

= $14\% + \dfrac{46.3}{54.81}(1\%)$ = <u>14.85%</u>

3.   The unadjusted rate of return on assets employed is the accounting rate of return.

ARR = <u>Average accounting profits (EAT)</u> x 100

                Average investment

Average accounting profits = $\dfrac{117 + 195 + 273 + 299 + 234}{5yrs}$

                = 223.6 p.a.

Average investment = (Initial capital + Salvage value)½

                = (2,200 + 0)½

                = 1,100

A.R.R = $\dfrac{223.6}{1,100}$ x100 = <u>20.3%</u>

4. (a) I.R.R. for projects B, C and D

Project B

This has 15 years economic life and an annuity of Sh.50,000.

Therefore 50 x PVAF$_{r\%}$,15 = 250

PVAF$_{r\%}$,15   = $\dfrac{250}{50} = 5$

From PVAF table at 15 period, a PVAF of 5.000 falls between 18% and 20%

Rate	PVAF
18%	5.092
I.R.R	5.000
20%	4.676

I.R.R = $18 + \left(\dfrac{5.092 - 5.000}{5.092 - 4.676}\right)(20 - 18)$ =   18 + 0.44 = 18.44%

Project C

175 x PVAF$_{r\%}$,5 = 500

$PVAF_{r\%},5 = \dfrac{500}{175} = 2.875$

At 5 periods, a PVAF of 2.875 falls between 20% and 24%.

Rate	PVAF
20%	2.991
I.R.R	2.875
22%	2.864

I.R.R = $20 + \left(\dfrac{2.991 - 2.875}{2.991 - 2.864}\right)(22 - 20)$ =   20 + 1.83 = 21.83%

Project D

Computation of I.R.R of a project whose cash flows do not depict any annuity pattern.

We use the weighted average method e.g Project D does not depict any annuity pattern.

Steps:

1.   Compute the weighted average cash flows

Year	Cash flows	Weights	Weighted cash flows
1	0	9	0

2	0	8	0
3	0	7	0
4	0	6	0
5	0	5	0
6	500	4	2000
7	500	3	1500
8	500	2	1000
9	500	1	500
		45	5000

Weighted cash inflows:

=   Σ Weighted cash flows

        Sum of the weights

= $\dfrac{5,000,000}{45} = 111,111$

2.   Compute the payback using the weighted average cash flows

Payback   = $\dfrac{500,000}{111,111} = 4.5$

3.   Determine the approximate rate from the PVIFA tables NPV/16%.

4.   Computation of NPV at 16%

500,000 x [4.607 – 3.274] =- 500,000	666,500
	(500,000)
	166,500

NPV/22%

500,000 x [3.786 – 2.864]	=	461,000
		(500,000)
		(39,000)

NPV/22%

500,000 x [3.786 – 2.864]	=	520,000
		(500,000)
		20,000

Compute IRR

$$2\% + \frac{20000}{59000} \times 2\%$$

=   20.678

=   20.5%

Project	IRR	Ranking
A	14%	4
B	18.5	3
C	22.0	1
D	20.5	2
E	12.6	5
F	12.0	6

(b) Payback reciprocals

Project	B	C
Payback period	$\dfrac{250}{50} = 5$	$\dfrac{500}{175} = 2.857$
Payback reciprocal	$\dfrac{1}{5} = 20\%$	$\dfrac{1}{2.857} = 35\%$

Note: The longer the project life (n>is) the better the payback reciprocals as an estimation of the IRR of a project whose cash flows depict the perfect annuity pattern.

(c) To compute NPV if rate of return is 16% for all project:

Project A n = 15   NPV

0 x 0.862   0

25000 x 0.743   18575

50000 x (5.575-2.605)   19890

-250000   (250,000)

                       (32,925)

Project B n = 15   NPV

50000 x 5.575 – 250,000   28750

Project C n = 15   NPV

175000 x 3.274 – 500000   72950

Project D n = 9yrs   NPV

500000 x (4.607 – 3.274) –   166,500
500000

Project E n = 10 yrs   NPV

12500 x 0.862   10,775

37500 x 0.743   27,862.5

75000 x 0.641   48,075.0

125000 x [4.833 – 2.246]   323,375

                       (500,000.00)

NPV   (89,912.5)

Project F n = 4 yrs	NPV
57500 x 0.862	49565
50000 x 0.743	37150
25000 x 0.641	16025
25000 x 0.552	13800
	(125000)
	(8460)

Project	NPV	Ranking	IRR	Ranking
A	(32950)	5	14%	4
B	28750	3	18.5%	3
C	72950	2	22%	1
D	166500	1	20.5%	2
E	(89912.5)	6	12.6%	5
F	(8460)	4	12.0%	6

CHAPTER 6

BASIC VALUATION MODELS.

1 (a) Valuation of ordinary shares is more complicated than valuation of bonds and

Preference shares because of

- Uncertainty of dividend unlike interest charges and preference dividends which are certain
- The data for valuation of ordinary shares is historical which may not reflect future expectations.
- A constant stream of dividends per share is assume

- The growth rate is assumed constant and is computed from past dividends.
The cost of equity/required rate of return on equity is assumed to be constant though it changes over time

1 (b) i)   If they do nothing:

d_0 = Shs.3.00

g = 6%

K_e = 15%

$P_0 = \dfrac{d_0(1+g)}{K_e - g} = \dfrac{3(1.06)}{0.15 - 0.06}$ =   Sh.35.33

ii)   Invest in a venture

d_0 = Shs.3.00

g = 7%

K_e = 14%

$P_0 = \dfrac{d_0(1+g)}{K_e - g} = \dfrac{3(1.07)}{0.14 - 0.07}$ =   Sh.45.86

iii)   Eliminate unprofitable product line

d_0 = Shs.3.00

g = 8%

K_e = 17%

$P_0 = \dfrac{d_0(1+g)}{K_e - g} = \dfrac{3(1.08)}{0.17 - 0.08}$ =   Sh.36.00

iv)   Acquire a subsidiary

d_0 = Shs.3.00

g = 9%

K_e = 18%

$P_0 = \dfrac{d_0(1+g)}{K_e - g} = \dfrac{3(1.09)}{0.18 - 0.09}$ = Sh.36.33

The best alternative is to invest in a venture since this option has the highest impact price of Sh.45.86.

2.(a) i Debenture with floating interest rate:

- A debenture whose interest rate is variable and pegged to charges in interest rate on Treasury bill e.g. a debenture/bond may have a 3% premium above interest rate on Treasury bill such that:-

  - If interest rate on treasury bill is 7%, interest rate on the bond is 7% + 3% = 10%
  - If interest rate on Treasury bill rises to 8.5%, the interest rate on the bond rises to 8.5% + 3% = 11.5%.

- Such a bond is advantageous when market interest rates are volatile.

- If market interest rate falls the borrower pays lower interest charges and when it rises, the lender receives more interest income.

- Since the coupon rate is matched to market interest rate, the intrinsic value of the bond is usually stable and easy to determine.

(ii) Zero coupon bonds

- The bonds do not pay periodic interest hence the words "zero coupon" bond.

They are issued at a discount and mature at par.

- Therefore, interest is accumulated and accounted for in the redemption value of the bond.

- The lender is not locked into low fixed interest rate while the borrower does not have fixed financial obligations of paying fixed interest charges.

- The liquidity of the borrower is not affected until the redemption date.

(b) Drawbacks of dividend growth model

- It is only applicable if the cost of equity, Ke is greater than growth rate, in dividends i.e.

Po $= \dfrac{d_o(1+g)}{Ke - g}$

If g>ke, then the model would collapse.

- It is based on historical information where "do" is the past dividend per share, and 'g' is based on historical stream of dividends.

- It assumes a constant stream of dividends in future, growth rate and cost of equity all of which are not achievable in real world.

(ii) Compute the expected DPS at end of each period and discount at 10% rate. Expected DPS = $d_o (1 + g)^n$

End of year	Expected DPS	PVIF$_{10\%}$,n	P.V
1	$2.50(1.2)^1 = 3.00$	0.909	2.73
2	$2.50(1.2)^2 = 3.60$	0.826	2.97
3	$2.50(1.2)^3 = 4.32$	0.751	3.24
4	$2.50(1.2)^4 = 5.18$	0.683	3.54
5	$2.50(1.2)^5 = 6.22$	0.621	3.86
6-∞	$\dfrac{do(1+g)}{Ke - g}$		

$$= \frac{16.22(1.07)}{0.10 - 0.07} = \quad 221.85 \qquad 0.621 \qquad \underline{137.77}$$

= Intrinsic value = Total present value = <u>154.11</u>

Chapter 7

<u>WORKING CAPITAL MANAGEMENT.</u>

1. (a) Matching approach

The matching approach to funding is where the maturity structure of the company's financing matches the cash-flows generated by the assets employed. In simple terms, this means that long-term finance is used to fund fixed assets and permanent current assets, while fluctuating current assets are funded by short-term borrowings.

(b) Miller-Orr cash management model

In normal circumstances, cash-flows of a business go up and down in fairly random manner. Therefore, instead of assuming that daily balances cannot be predicted because they meander in a random fashion. This gives rise to a cash position like the one below:
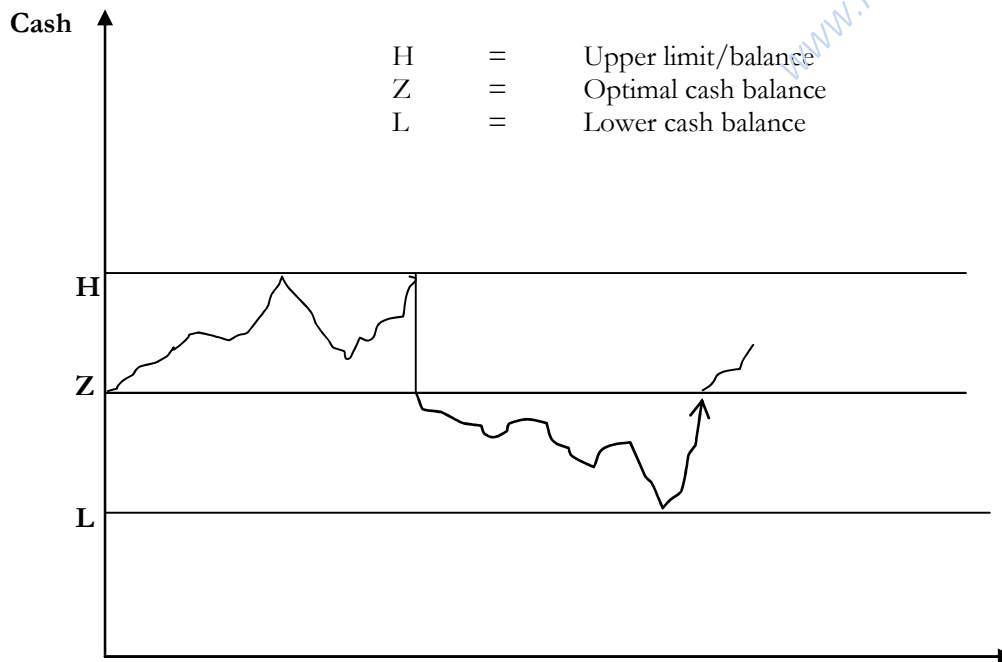
Rather than decide how often to transfer cash into the account, the treasurer sets upper and lower limits which, when reached, trigger cash adjustments sending the balance back to return point by selling short-term investments.

In general, the limits will be wider apart when daily cash flows are highly variable, transaction costs are high and interest on short-term investments are low. The following formulae are used:

Range between

Upper and lower limits = $3\left(\dfrac{3 \times \text{Transaction cost} \times \text{cash-flow variance}}{4 \qquad \text{Interest rate}}\right)^{1/3}$

The return point = Lower limit + $\dfrac{\text{Range}}{3}$

As long as the cash balance is between the upper limit and the lower limit, no transaction is made.

At point (x) the firm buys marketable securities. At point Y, the firm sells securities and deposits the cash in the account. (4 marks)

(c) (i) A commercial paper is unsecured short term financial instrument issued at a discount by financially stable and sound firm to raise short term funds.

(ii) Advantages of Commercial Papers

- Cheap source of funds (low interest rate)
- Improves credit rating of borrower
- Conserves long term sources of funds and attracts other sources of finance.

(d) Credit policy – a policy of managing debtors or accounts receivable of
. the firm in order to minimize bad debts, debt collection and administration cost and cost of financing debtors (capital tied up in debtors)

- Working capital policy – policy of administration of working capital in particular debtors, cash and stock in order to
(i) Identify the optimal mix of each component of working capital

(ii) Improve the firms liquidity position

Factors to consider in establishing effective credit policy

.
- Administration expenses
- Level of financing debtors
- Amount of discount to give
- Debt collection expenses
- Credit period

(b)   (i)   According to Miller Orr Model of cash management:

Optional cash balance $3Z = \sqrt[3]{\dfrac{36\sigma}{4i}} + L$

Where: b   = transfer (conversion cost)   =   120

i   = Interest rate/day on short term securities $= \dfrac{9.465\%\text{p.a}}{365}$ = 0.00026

σ^2 = Variance of daily cash flows = (standard deviation)^2

= 22.750^2 = 517,562,500

L   = Lower/minimum cash balance = 87,500

$Z \quad = \sqrt[3]{\dfrac{3\text{x}120\text{x}517{,}562{,}500}{4\text{x}0.00026} + 87{,}500}$
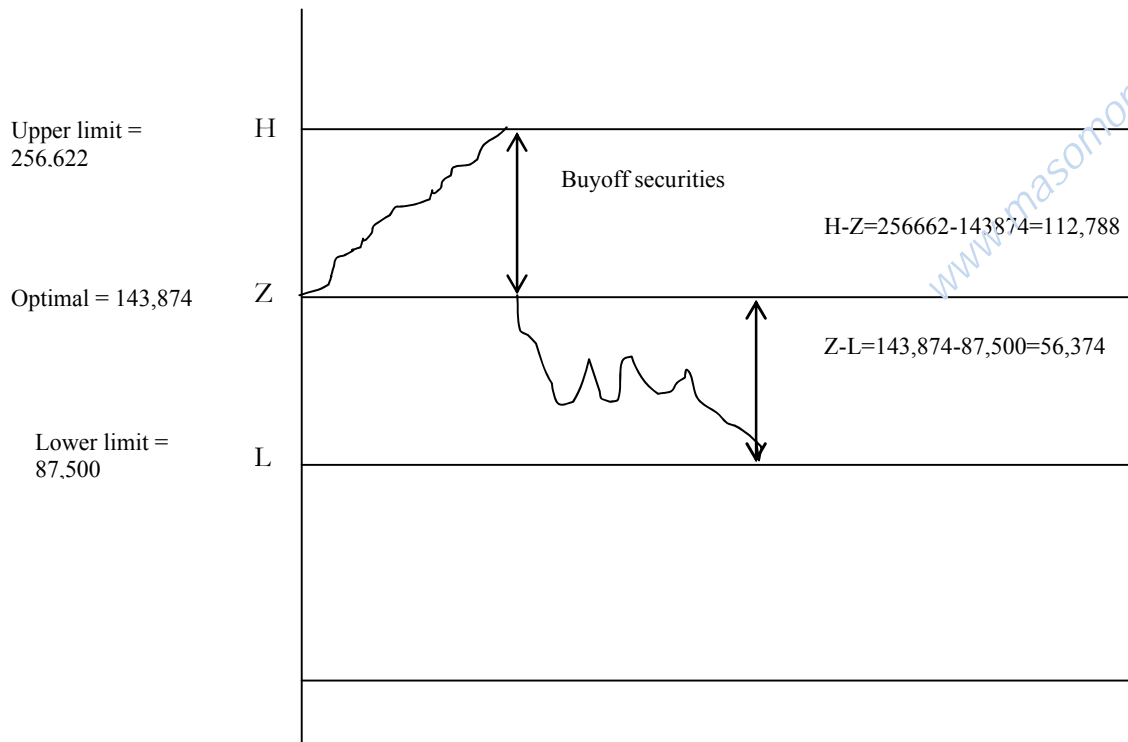
=   56,373.8 + 87,500

=   143,874

(ii)   Lower cash limit   =   87,500

Upper cash limit   =   3Z – 2L

=   3(143,874) – 2(87,500)

=   256,622

The decision criteria for Baumol Model could be illustrated graphically as follows:

The decision criteria for this model is:

(i) If the cash balance moves from Z – H, the firm has excess cash = H – Z which should be invested by buying short term securities.

(ii) The firm should sell short term marketable securities to realize cash if the cash balance declines to lower limit L. The amount realized = Z - L

(iii) The firm should maintain a cash balance range (spread = H – L) i.e. 255,662 – 87,500

The average cash balance as per the model = $\dfrac{4Z - L}{3}$

$$= \frac{4(143,874) - 87,500}{3} = \frac{487,996}{3}$$

$$= 162,665$$

2. (a) The Baumol Model of cash management is the EOQ model for stock management. According to EOQ model, the optimal stock to hold (EOQ) $= \sqrt{\dfrac{2DC_0}{Ch}}$

Where: D   = annual demand/requirements   =   21,000 litres

Co   = ordering cost/order   =   Sh.1,400

Ch   = holding/carrying cash p.a.   =   Sh.8

$$EOQ = \sqrt{\frac{2 \times 21,000 \times 1,400}{8}}$$

$$= 27,110.9 \text{ litres}$$

Holdings cost   =   ½ x Q x Ch

=   ½ x 27,110.9 x 8

=   108,443.6

Ordering cost   = $\dfrac{D}{Q}Co$

$$= \frac{2,100,000}{27,110.9} x1,400$$

= 108,443.4

If the assumptions of EOQ hold, then holding cost = ordering cost. These assumptions are:

(i)   Annual stock requirement/demand is certain/known

(ii)   Ordering cost/order is certain

(iii)   Holding cost/unit p.a is certain

(iv)   There are no quantity discounts on purchase of goods/stock.

(v)   Lead time is zero i.e goods are supplied immediately they are ordered such that no time elapses between placing an order and receipt of goods.

(vi)   There is no cost associated with being out of stock.

3.

a   A conservative policy and an aggressive policy

(i)   A conservative policy

In a conservative working capital management policy, an organization uses more of long-term source sources are used to finance all permanent working capital (current assets) and part of temporary curr therefore more liquid but sacrifices profitability as interest charges have to be paid on long term finan required.

(ii)   An aggressive policy

An aggressive policy uses more of short-term finance. All seasonal working capital requirements and assets are financed from short-term sources. This policy lead to higher levels of profitability at the ex

b (i)   Proposal A

Current average collection period = 0.25(32) + 0.6(50) + 0.15(80)

= 50 days

$$\frac{\text{credit Sales x AcP}}{360}$$

$$\frac{360m \times 50}{360}$$

Sh.50 million

After adoption of proposal A

Average debtors $\frac{0.6 \times 600 \text{ million} \times 32}{360}$

32 m

Therefore

Reduction in investment in debtors(50 – 32) = 18m

Financial effects Sh

Reduction in operating cost (2,750 x 12)   33

Decrease in bad debts

    Current level

    With alternative A (2% x 60% x 600,000 x 0.5 (7,200)   3,6

Reduced W capital costs (15% x 18,000)   3,600   2,7

                                                3,9

Costs

Discounts expense

    Credit customers (2% x 60% x 600,000 x 50%) 7,200

    Cash customers (2% x 40% x 600,000)   4,800

                                                12

Net benefits   24

                                                27

Alternative B:

Average debtors current   50 million

Average adoption of alternative B 360m x 20   20

                                     360

Therefore

Decrease in investment in debtors 30m x 0.85

Monthly sales   = 600m/12   =   50 million

Credit sales   = 60% x 50m   =   30 million

Monthly interest charges = 15% x 30m x 0.9   =   Sh.405,000

Financial effects:	Sh.000
Bad debt losses saved	7,200
Savings on debt admn. (140 x 12)	16,800
Savings on debtors investment (15% x 30m x 0.9 =	4,500
	28,000

Less costs

Fees charged (2% x 360,000) = 7,200

Interest charges (405 x 12)   = 4860

Net benefit	12,060
	16,410

(ii)   Preferred alternative (alternative A) is to introduce cash discount since it has a higher net benefit.

(iii Other non-financial factors to consider include

- Effect of each policy on growth of the company
- Reliability of the factor
- How realistic the estimates are
- Reaction of employees and customers
- Expected trends/level of sales in the industry

a)   i)   Stock Turnover   = $\dfrac{\text{Cost of sales}}{\text{Average stock}}$

	1994	**1995**
Stock turnover =	$\dfrac{330}{(70+60)\frac{1}{2}} = 5.0\text{times}$	$\dfrac{360}{(60+100)\frac{1}{2}} = 4.5\text{times}$

ii)   Stock holding period   = $\dfrac{360\ \text{days}}{\text{Stock turnover}}$

	1994	**1995**
Stock holding period =	$\dfrac{360}{5} = 72\text{days}$	$\dfrac{360}{4.5} = 80\text{days}$

b)   Debtors collection period   = $\dfrac{\text{Average debtors} \times 360\ \text{days}}{\text{Credit sales}}$

	1994	**1995**
Average collection period =	$\dfrac{(98+102)\frac{1}{2}}{500} \times 360 = 90\text{days}$	$\dfrac{(102+98)\frac{1}{2}}{600} \times 360 = 60\text{days}$

c)   Creditors payment period   = $\dfrac{\text{Average creditors} \times 360\ \text{days}}{\text{Credit purchases}}$

	1994	**1995**
Creditors payment period =	$\dfrac{25}{350} \times 360 = 25\text{days}$	$\dfrac{40}{400} \times 360 = 36\text{days}$

d)   Cash operating cycle (also called working capital cycle) is the time that elapsed between payment of raw mat. of cash on goods sold on credit.

Operating cycle
= Stock holding period + Debtors collection period – Creditors payment period.

1994	=	72 + 90 – 25	=	137 days
1995	=	90 + 60 – 36	=	104 days

e)   The cash operating/working capital cycle declined by 33 days due to:

♦   Significant decline in debtors collection period by 30 days. This means the firm adopted decline in stock turnover in 1995.

♦   Increase in creditors payment period which means the firm has to pay supplier after 36 d 1994.

♦   The decrease in cash operating cycle is meant to improve the liquidity of the firm.

Chapter 8

Sources of funds

1.a) In deciding whether to go for short term rather than long term finance the following would be taken into

(i) The purpose for which the money is required (matching)

In general its is preferable that the life of the project under review should not exceed the period fo
money is borrowed. It may be inconvenient for example if an investment if fixed asset having a wo
years was financed by a five year loan.

(ii) Relative cost of different forms of finance

This is a question that has to be considered in each case. As a general point, if interest rates gen
but are expected to fall longer term finance is preferable.

(iii) Flexibility – Short term loans are more flexible since a firm can react to changes in interest rates u
loans.

(iv) Repayment pattern – a short term loan may be payable any time cash is available unlike long term

(v) Availability of collateral – a security is required for long term debt unlike short term debt.

(vi) The liquidity of the business

If the liquid ratio is low, it may not be possible to obtain further finance without causing concern to

(vii) Availability – the question of what is available will influence whether the borrow short or long term

(b)   Benefits of a right issue to Mombasa Leisure Industries;

The company is highly geared as rights issue would reduce the level of gearing and reduce financial risk.

If the issue is successful it will not significantly change the voting structure.

If underwriters are raised then the amount of finance that will be known and guaranteed

If the market is high, Mombasa Leisure Industries should be able to achieve a rights issue low cost since less shares will be issued. (Lower floatation costs)

Less administrative procedures e.g no need for prospectus.

Drawbacks of rights issue

The issue will need to be priced at a discount to the current share price in order to make it investors. Thus will result in a dilute in earnings and a fall in price.

If the issue is not successful, a significant number of shares may be taken by underwriters the voting structure

Administration and underwriting costs are high

Shareholders may be unable or unwilling to increase their investment in Mombasa Leisure

(c)   Advantages of leasing

No risk of obsolescence in the lessee

Leasing does not require a down payment to be made at the start of the contract unlike hir
heavy initial capital outlay required)

Lease finance can be arranged relatively, cheaply, quickly and easily

Operating leases are off-balance sheet financing

Advantages of hire purchase

Unlike leasing, hire purchase allows the user of the asset to obtain ownership at the end ot
period

The interest element of the payments is allowable against tax

Tax shield on salvage value at the end of economic life of asset

(d)   Factors that have limited the development of the venture capital market:

Venture capital is a form of investment in new small risky enterprises
get them started by specialists called venture capitalists. Venture
re investment specialists who raise pools of capital to fund new ventures
kely to become public corporations in return for an ownership interest.
italists buy part of the stock of the company at a low price in anticipation
he company goes public, they would sell the share at a higher price and
ake a considerable profit.

- Lack of rich investors. This leads to inadequate equity capital.

- Inefficient stock market. This impairs the ability of the company to dispose of shares at a later date.

- Lack of managerial skills by the owners of the firm.

- Highly conservative approach by the venture capitalists.

2.(a)

(b) - Cost of equity ke $\quad\quad\quad\quad\quad\quad\quad\quad\quad = \dfrac{do(1 + g)}{Po} + g$

- P.V of cashflows $\quad\quad\quad\quad\quad\quad\quad \dfrac{945000}{0.1445 - 0.05}$

N/B P.V of a growing annuity is xx

N.P.V of the project = 10M – Sh 8M invested = 2M

N.P.V per share = $\dfrac{\text{Sh 2 million}}{\text{1 million share}}$ = Sh 2 per share

New price on announcement = Sh 50 + Sh 2

(cum-right M.P.S)

(ii) 5 existing shares @ Sh 52 = 260

$\quad$ 1 new share @ Sh 40 $\quad\quad$ = 40

6 shares   300

Ex-right M.P.S = Sh $\dfrac{300}{6}$ = Sh 50

(iii) Value of a right=cum-right M.P.S–ex-right M.P.S

(iv) Savings in interest changes = 8m x 10%

    Less forgive tax shield = 30% x 8000000

    Net cash inflows p.a in perpetuity

    This is a constant saving p.a in xx (annuity in xx)

P.V @ 14.45% = $\dfrac{560000}{0.1445}$ = 3,875,433

Less initial capital   (8,000,000)

N.P.V   (4,124,567)

N.P.V per share = $\dfrac{\text{Sh - 4,124,567}}{\text{1million shares}}$ = - 4.12

Cum-right M.P.S = 50 – 4.12 = 45.88

(b) (i)   Earnings   = $\dfrac{\text{Marketing price/share}}{\text{P/E ratio}}$
          per share

                   = $\dfrac{8.4}{6}$

= <u>Sh.1.4</u>

Operating income is the earnings before interest and tax

= 6 million x 1.4

$\Rightarrow$ 0.7 x

= 8,400,000

x

= <u>Sh.8400</u>

0.7

= Sh.12,000,000 or 12 million

(ii) No of shares   = <u>10,000,000</u>

6.25

= <u>Sh.1,600,000</u> <u>shares</u>

Theoretical ex-rights price   = <u>6 million x 8.4 +</u> <u>1.6m x 6.25</u>

7.6m

= <u>50.4 + 10</u>

7.6

= Sh.7.95

(iii) | | Alternative A | Alternative B |

	Alternative A	Alternative B
	Sh.000	Sh.000
Current level of EBIT	12,000	12,600
New project	5,600	5,600
Operating income	17,600	17,600
Less interest	-	(12% x 10m) 1,200
Net profit before tax	17,600	16,400
Less: Tax (30%)	5,280	4,920
Profit after tax	12,320	11,480
Earnings/shares	12,320	11,480
	7,600	6,000
	1.621	Sh.1.913

Chapter 9

DIVIDEND POLICY.

1.(a)

(i)   Dividend = $\frac{8}{}$ x 100 = 5% $\frac{9}{}$ x 100 = 5%

	160	270

P/E ratio = $\dfrac{160}{8}$ = 20 times $\dfrac{270}{18}$ = 15 times

Dividend cover = $\dfrac{EPS}{DPS}$ = $\dfrac{8}{8}$ = 1 time $\dfrac{18}{9}$ = 2 times

- KVL has higher dividend because of the high DPS and lower MPS.

- For P/E ratio an investor will take 20 years to recover his investme
from KVL as compared to 15 years in KHL. KHL is therefore preferabl
because it offers a shorter payback period.

- For dividend cover KHL is better since dividends are more secure sinc
they can be paid twice from earnings attributable to ordina
shareholders.

  KVL has a percentage dividend payout ratio (EPS = DPS = Sh.8) an
thus a lower dividend cover.

(ii) Since we are using dividend growth model specifically, then value of a
share P_0 =

$$P_0 = \frac{d_0(1+g)}{k_e - g}$$

d_0 = DPS for the year just ended = 5 years

k_e = Cost of equity/estimated return on earnings = 20%

g = constant growth rate in dividends.

This g can be established from the past stream of DPS given usir compounding method when $d_0(1+g)^n = d_n$

$$g = \sqrt[n]{\frac{d_n}{d_s}} - 1$$

d_n = DPS at end of last year of growth = 5.5

d_s = DPS at beginning of first year of growth = 3.0

n = No. of years of growth = 4

$$g = \sqrt[4]{\frac{5.5}{3.0}} - 1 = 0.164$$

$$P_0 = \frac{d_0(1+g)}{k_e - g} = \frac{5.5(1.164)}{0.2 - 0.164} = 177.83$$

With 1,000 shares MV = 177.83 x 1,000

= Sh.177,830

Chapter 10

FINANCIAL INTERMEDIARIES.

1.(a) (i) Financial intermediation

Financial markets promote savings and investment by providing mechanisms by wh
requirements of lenders (suppliers of funds) and borrowers (users of funds) can b
institutions (such as pension funds, insurance companies, banks, building societies
specialist investment institutions). These collect funds from savers to lend to thei
other customers through the money and capital markets or directly through loans, le
forms of financing.

   (ii) Services that financial intermediaries provide:

The needs of lenders and borrowers rarely match. These differences in require
lenders and borrowers mean that there is an important role for financial intermediarie
markets are to operate efficiently.

1. Re-packaging services

Gathering small amounts of savings from a large number of individuals and re-
packaging them into larger bundles for lending to business.

2 Risk reduction

Placing small sums from numerous individuals in large, well-diversified
investment portfolios, such as unit trust.

3 Liquidity transformation

Bringing together short-term saves and long-term borrowers (e.g. building
societies and banks). Borrowing short and lending long is only acceptable
where relatively few savers will want to withdraw funds any given time.

4   Cost reduction

Minimizing transaction costs by providing convenient and relatively inexpensive services for linking small savers to larger borrowers.

5   Financial advice

Giving advisory and other services to both lender and borrower.

6   Funds transmission (provide payment/settlement mechanisms)

(a)   (i)   PRIMARY MARKET

- Raising Capital Business
- mobilizing savings
- Government can raise capital (sell bonus)
- Open market operators (control excess liquidity)
- Vehicle for Foreign Direct Investment

(ii)   SECONDARY MARKET

- Investment improvement for companies and small investors.
- Barometer for Healthy of economy and companies (as whole)
- Privatization of parastatals and giving local citizens a chance for ownership of multi-national companies.
- Realize investments (by disposal in small quantities due to separation of ownership and control.
- Improves corporate governance
- Diversification of investments hence reduction of risk
- Liquidity of securities improved.

(iii)   PORTFOLIO MANAGEMENT FIRMS
(i)   Diversification
(ii)   Professional advice
(iii)   Watchdog for share under/over valuation
(iv)   Enhances market efficiency through information.

(b) (i) Protects investors from financial losses
(ii) Establishes Rules & Regulations for private placement of securities
(iii) Removal for impendment and creation of incentives for lonf term investment. of investors.
(iv) Facilitate National wide system of Brokerage services
(v) Creation maintenance and regulation market for securities.
(vi) Creation for environment which will encourage local companies go public.
(vii) Removal of Barriers to security transfers
(viii) Encourage Development of International investors - eg insurance and premium co's
(ix) Introduces wider range of Investments in the market
(x) Decentralize operations of market to Rural Areas.
(xi) Provide adequate information to players in market for efficient pricing of securities.

(d) (i) An index in general terms is a measure of relative change from one point in price to another. Stock indices measure changes in price or value.

(ii) Drawbacks of NSE:

- 20 companies not true representatives
- Thinness of the market – small changes in the active stocks tend to be considerably magnified in the index.
- 1966 base year too far in the past
- Relatively small price changes – some stock prices do not change for weeks on end.
- Lack of clear portfolio selection criteria
- Use of arithmetic instead of preferred geometric mean in computing index.
- New companies have been quoted and others deregistered.

(a) Advantages of being listed

- New funds may be easily obtained from the stock exchange
- Easy pricing of shares
- A better credit standing obtained
- Easy share per transfer (ownership)
- Buying other companies is easier
- Wide ownership of the firm
- Reduction in perceived risk by shareholders

- Greater prominence and status given to quoted companies may create goodwill for the company.

Disadvantages

- Cost of floating
- Stringent stock exchange regulation
- Agency problem due to divorce of management and ownership
- Dilution of control from wider holding of shares
- Increased chances of forced take over.
- Extra administrative burdens on management
- Disclosure requirements

(b) Floor brokers – act on behalf of individuals

(i) Client who are willing to buy or sell some of their shares or debentures through floor/stock brokers:

- Stock brokers acting on behalf of client will deal with one of the market makers to buy or sell the shares.

- Market makers may act as shareholders too, dealing directly with individual investors.

- Stock brokers earn a commission for their service payable by the client.

(ii) Market makers are dealers in the shares of the selected companies whose responsibility is to "make a market" in the shares of those companies. It is noteworthy that a market maker:

- Must be a member of the stock exchange
- Must announce which company's shares they are prepared to market
- Must undertake to make a two way prices in the securities for which they are registered as market makers under any trading conditions.
- Must decide the share price
- Brings "new" companies to the market.
- Earns a profit being the difference of selling and buying price.

(iii) • Underwriter is an investment banker who performs the insurance function of bearing the risk of adverse price fluctuating during the

period in which a new issue of security is being distributed.
- The underwriter underwrites the risk of under-subscription of a company's shares during a primary issue.
- He ensures that the company gets the targeted funds sometimes having to take up the shortfall in demand.

(b) (i) Bull and bear markets

A bull market is a market characterized by rising prices, encouraging people to buy now in the hope of making a profit when they sell later after prices have climbed up.

A bear market is characterized by falling prices encouraging bears to sell now in order to avoid future losses when prices would have fallen.

(ii) Bid ask spread

Is the difference between the offer price and the buying price of a share.

(iii) Short selling

- Is the act of selling a share which one does not already possess.
- The dealer could "borrow" the shares, sell them when prices are high and in anticipation of decline in prices, the shares will be bought back at lower prices and refunded to the "lender"