Financial Management and Cost of Capital

1.1. FINANCIAL MANAGEMENT

1.1.1. Meaning and Definition of Finance

Finance is the backbone of any business. A business would not be able to run without finance and may get deceased. Finance is basically the art and science of managing monetary resources of a business concern and is extremely crucial for the survival of a business entity. Finance plays an important role, right from the generation of the business idea to its day-to-day functioning and upto the liquidation stage of a business. Finance aids in procurement of various resources such as raw materials, machinery and equipment, human resources etc., and helps to maintain the smooth flow of business operations. Thus, an efficient and healthy financial management system in an organisation is essential.

The term 'Finance' has been defined in various ways by different schools of thought. Basically, the term finance revolves around the management of money or financial resources of a business enterprise. The discipline of finance is concerned with the sources, allocation, application and usage of money by a business entity for maximising its returns and stakeholder's satisfaction.

According to F.W. Paish, "Finance may be defined as the position of money at the time it is wanted".

According to John J. Hampton, "The term finance can be defined as the management of the flows of money through an organisation, whether it will be a corporation, school, bank or government agency".

1.1.2. Meaning and Definition of Financial Management

The term 'Financial Management' consists of two words – 'Financial' and 'Management'. In order to fully grasp the meaning of this term, one needs to understand the meaning of both words separately. "Financial" denotes the process of identifying, obtaining and allocating sources of money. "Management" is the process of planning, organising, coordinating and controlling various resources for the accomplishment of organisational goal.

Therefore, Financial Management is that branch of business management process, which deals with management of financial resources of an enterprise. Financial management is the skilful and proper management of financial resources.

According to Solomon, "Financial management is concerned with the efficient use of an important economic resource, namely, Capital Funds".

According to J.F. Bradley, "Financial management is the area of business management devoted to the judicious use of capital and careful selection of sources of capital in order to enable a spending unit to move in the direction of reaching its goals".

According to Howard and Upton, "Financial management is the application of the planning and control functions of the finance functions".

According to Weston and Brigham, "Financial management is an area of financial decision making, harmonising, individual motives and enterprise goals".

1.3. Scope/Approaches of Financial Management

The scope of financial management has grown over the years. In this respect, different schools of thought/approaches have given their views:
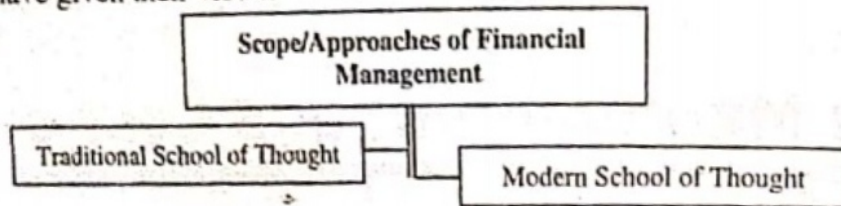
1) **Traditional School of Thought/Approach:** Under this school of thought, the scope of financial management was restricted to obtaining of funds. The finance manager was supposed to provide funds as and when required by the organisation. Finance function excluded the utilisation of funds. The decision regarding the application of funds was left to others.

Under this school of thought, the scope of financial management was limited to the following functions:
i) Assessment of fund requirements.
ii) Procurement of required funds from financial institutions.
iii) Acquiring funds through the issuance of financial products like shares, bonds, debentures and raising loans.
iv) Managing accounting and legal framework of such transactions.

Limitations of Traditional School of Thought/Approach

The traditional school of thought was developed during 1920, and evolved through forties and early fifties. However, by the end of the fifth decade, the popularity of this school of thought started to vanish. The main reasons for the decline in its influence are given below:
i) **Outsider-Looking-In Approach:** The traditional school of thought was mainly concerned with the acquisition and management of funds. It looked at the finance function through an outsider's point of view. These outsiders were generally bankers, suppliers, investors, etc. Due to this, the scope of finance function was restricted. It completely overlooked the importance of internal finance decision-making.
ii) **Overlooked Regular Issues:** This school of thought primarily dealt with the procurement of funds for big ticket events such as mergers, acquisitions and incorporations. However, it did not deal with day-to-day financial issues such as acquisition of working capital, accounts receivable management and cash management.
iii) **Overlooked Non-Corporate Enterprises:** Traditional school of thought dealt only with financial issues faced by corporate entities. The financial problems faced by unincorporated business entities such as partnership and sole proprietorship were not given much importance.
iv) **Overlooked Working Capital Financing:** The traditional school of thought dealt with long-term financing decisions. It did not deal with short-term financing problems such as working capital management.
v) **Ignored Allocation of Funds:** This approach did not deal with the distribution of funds. It only dealt with identification of sources and acquisition of funds.

2) **Modern School of Thought/Approach:** Modern school of thought takes a wider view of scope of financial management. According to this school of thought, financial management conceptualises and analyses the process of financial decision-making. The finance function deals not only with the attainment of funds, but it also deals with the utilisation of funds. Therefore, the modern school of thought is more comprehensive than the traditional school of thought.

Financial management deals with solving three main finance-related problems faced by a firm. These three problems relate to investment, financing and dividend. According to the modern definition, following are the main functions performed by modern financial management:
i) Investment decision,
ii) Financing decision,
iii) Dividend policy decision, and
iv) Liquidity decision.

1.1.4. Functions of Financial Management

Following are the main functions of financial management:

Functions of Financial Management	
Investment Decision	Financing Decision
Dividend Policy Decision	Liquidity Decision
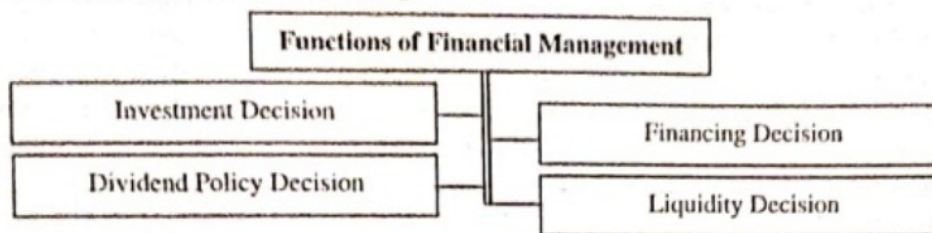
1) **Investment Decision:** The investment decision is concerned with the identification of assets which require investment. Assets are classified into two categories as below:

   i) **Long-Term Assets:** They are the assets which are expected to create value for a long period of time. Generally, this time period is longer than one year.

   ii) **Short-Term Assets:** They are also known as current assets. These assets are expected to be converted into cash in less than a year.

   Financial management concerns itself with the financing of both kinds of assets. The part of financial management dealing with current assets is known as working capital management while capital budgeting part of financial management is concerned with long-term assets. The mix of long-term and short-term assets determine the risk profile of a business. This mix also determines the cost of capital incurred by a firm. Investment decisions may be classified into two main categories:

   i) **Capital Budgeting Decisions:** Capital budgeting decisions are one of the most important decisions taken by a firm as these decisions may determine the long-term financial health of a firm. These decisions involve analysis of various alternatives available and determining the best alternatives for investment. Financial management has developed various techniques for making these decisions.

   ii) **Working Capital Decisions:** Working capital decisions are short-term in nature. A business needs to properly manage its short-term working capital requirements in order to remain profitable and liquid. An efficient firm maintains an optimal mix of profitability and liquidity. However, profitability and liquidity are inversely related.

   Shortage of working capital may increase the risk profile of the business as it will not be able to meet its current liabilities appropriately. At the very same time, if more assets are held than required, it will negatively impact the profitability of the concern. The process of optimising working capital is called working capital management. For maintaining proper capital management, account receivables and inventory should be managed properly. Financial managers are also required to take non-recurring investment decisions. Main examples of these decisions are re-organisations, liquidations and mergers.

2) **Financing Decision:** The financing strategy is the second strategy of financial management. In investment strategy, the asset-mix or the asset structure of the firm is planned, whereas financing strategy is related to the financing mix or the capital structure of the firm or leverage. The capital structure is defined as the ratio of debt and equity capital of a firm. They have their own distinct characteristics. The basic difference is in the fixed commitment. A firm needs to pay interest on the borrowed (debt) funds, whether it has earned profit or not. The firm has to pay interest on borrowed funds even if the firm has suffered loss, but this is not necessary in the case of shareholders' funds. The borrowed funds carry risk but are cheaper in comparison with shareholder's funds. This risk, referred to as the financial risk. The financial risk is defined as the risk of insolvency due to failure in payment of interest or failure in repayment of borrowed capital.

   The shareholders' funds are the fixed source of capital for the firm. They are of two kinds, which are equity share capital and preference share capital. The basic difference between the two is that equity share capital is not repayable and do not have fixed commitment, but preference share capital are repayable and have fixed commitment like dividend. The preference shares, which have redeemable dividend, are known as redeemable preference share. The financing strategy decides the ratio of sources of finance for investment.

3) **Dividend Policy Decision:** Dividend policy decision is another important decision that needs to be taken by a finance manager. These decisions are closely related to financing decisions. A finance manager can either choose to retain the business profits for future or may decide to distribute them among various stakeholders. Thus, a finance manager needs to decide whether to retain or distribute the firm's profits.

Usually, the firm distributes dividend in constant situation for fulfilling the demand of shareholders and rest is kept in the firm for growth. The distribution of dividend among the shareholders will increase the goodwill of the firm among shareholders. The non-declaration of dividend affects the market price of the firm's equity share. The dividend pay-out ratio refers to as the amount to be paid as dividend to the shareholder and it is also one of the important factors of dividend strategy. The factors which affect dividend strategy are preference of equity shareholders and investment opportunities present within the firm. The high rate of dividend as compared to market expectation will increase market price of the share. The retained earning is left for expansion. The growth of the firm will increase with the reinvestment done by the firm. The business can also expand with the help of raising funds in the market. The firm should not keep all the profit but also distribute the dividend among the shareholders.

4) **Liquidity Decision:** These decisions deal with the proper administration of current assets of a firm. In this way, liquidity decisions are closely related to working capital decisions. Working capital management is also concerned with the proper utilisation of current assets. It is important for short-term existence of a firm. These decisions also determine the course of long-term existence of a firm. If current assets are more than required, then it ensures a firm's better liquidity. This means that the firm will be able to honour its commitments on regular basis. This also denotes that a firm is not likely to default on its repayments and hence it can avoid the risk of insolvency. However, the excess funds tied up in current assets can have alternative use and thus have cost of utilisation. These unutilised funds can have negative impact on a firm's profitability. A finance manager needs to strike a balance between liquidity and profitability. These decisions are continuous in nature and need to be re-adjusted periodically. These decisions are taken after properly judging the requirements and financial health of a firm. Working capital management is a regular problem, which also tests the finance manager's skills.

1.1.5. Significance of Financial Management

Financial management function is significant in following ways:

1) **Finance is the Controlling Function:** For all the business operations, finance is the base. Every business activity, such as production, purchase, sales and marketing, manpower planning, etc. involves the flow of funds and thus is controlled and monitored by the finance function. So, planning and implementation of all the business functions are governed by the function of finance.

2) **Aid to Managerial Decision Areas:** Financial management plays a vital role in policy and managerial decision-making in a firm. Major business decisions and choices relating to production, marketing, labour, research and development are based on finance decisions.

3) **Wealth Maximisation:** Financial management has two basic objectives – profit maximisation and shareholders' wealth maximisation. Finance function aims to achieve maximum profitability through sourcing of funds or capital at a lower cost and utilisation of those funds in profitable projects or assets, to maximise returns on investment. For sourcing and application of funds, finance function has certain techniques such as ratio analysis, budgetary control, cost-volume profitability analysis, cash-flow, fund-flow management, etc. Thus, financial management techniques help in improving the profitability of the business.

4) **Financial Management is an Analytical Tool:** Financial management employs a variety of scientific, mathematical and analytical tools and methods for interpretation of data and managerial decision-making.

5) **Administrative in Nature:** Unlike before, now-a-day financial management has evolved to be more controlling and supervising in nature. Financial management is not only concerned with fund acquisitions, but its functions are also extended to capital allocation, sourcing of funds, project appraisal, etc.

6) **Finance Function is Centralised:** Finance is one such business activity, which is controlled and administered centrally. Other business functions such as sales and marketing, production, purchase, etc. are mostly scattered and distributed across various verticals and parameters. Finance function is very carefully monitored and coordinated in a centralised manner.

7) **Base for Managerial Functions:** Proper management of finance is very important for all other functions and processes of a business concern. Thus, all other management functions such as planning, coordination, and directing can be implemented and achieved, if there is proper financial planning and control.

8) **Performance Measure:** Financial management often deals with those factors, which directly affect the profitability and risk factors of a business concern. So, financial management usually acts as a measure for determining the performance levels of other functions to stabilise and control profitability and risk factors.

1.1.6. Objectives of Financial Management

The two main objectives of financial management are as follows:

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              Objectives of Financial Management
     ┌──────────────────────┬──────────────────────┐
  Profit Maximisation              Wealth Maximisation
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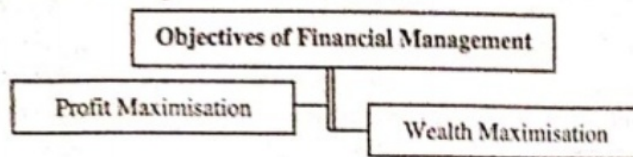
1.1.7. Profit Maximisation

Profit maximisation is the traditional and narrow approach. As per traditional theories, maximisation of profit is considered to be the sole objective of a business organisation. This theory is also called as **cashing per share maximisation**. As per the requirement of a firm, the product price and output are placed under competition to maximise profit. Profit maximisation is said to be the maximisation of returns by a firm in terms of monetary resources and increasing the earnings per share of the shareholders. Firms often select investment proposals, which suit their profit maximisation criterion. A firm selects only those investment projects which provide excess profit and reject projects which provide comparatively less profit. Maximising profit by a firm is often influenced by the input-output relationship, where firms tend to lower their cost of capital and try to achieve maximum profit and shareholders' wealth maximisation.

Thus, with the right selection of project, the firm can maximise its productivity and efficiency in the operational activities.

1.1.7.1. Features of Profit Maximisation

Profit is one of the most significant measures for assessing the efficiency of any business or economic activity. Survival and growth of a business concern also depends on its profit earning capacity. According to the traditional theories, profit maximisation is the sole objective of a business concern. Some of the salient features of profit maximisation objective are as follows:

1) Profit maximisation is related to the maximisation of earnings per share of a firm.
2) Increase in profitability is one of the foremost concerns of every business organisation and thus involves various procedures and methods to maximise profits.
3) Profit is one of the benchmarks of operational efficiency, survival and well-being of a business organisation, as it reflects its business decisions and policies.
4) The objective of profit maximisation minimises the risk and uncertainty factors in business decisions and operations.

1.1.7.2. Arguments in Favour of Profit Maximisation

Some of the arguments in favour of the objective of profit maximisation are as follows:

1) **Measure of Financial Stability:** Profitability of a firm is an important indicator of its financial stability as well as economic well-being.
2) **Optimum Utilisation of Funds:** Profit maximisation in a firm, leads to proper and efficient channelisation and utilisation of surplus funds for productive business operations and other economic activities.
3) **Promotes Socio-Economic Welfare:** Increased profit, promotes socio-economic welfare of various stakeholders associated with the firm. It aids in shareholders' wealth maximisation, increased incentives and benefits to employees, better and improved products to customers, employment generation, etc.
4) **Retained Earnings:** Retained profit acts as a major source of long-term finance for a company. Retained earnings with a low cost of capital, can be utilised for the acquisition of fixed assets, expansion and modernisation projects of a firm. Thus, outside funding is not required.
5) **Increases Competitiveness:** Maximisation of profit by a firm helps it to sustain competition from its competitors. With increased profits, a firm is more capable to sustain its growth and development amongst severe competition through product development, market development and gaining market share.
6) **Desire for Controls:** When the company earns huge profit, the entry of the shareholders is restricted, subject to internal use of funds for expansion and modernisation. And this, in turn, leads to full control of the company to the existing shareholders.

1.1.7.3. Limitations of Profit Maximisation

However, the objective of profit maximisation has been questioned and criticised on several grounds. Some of the limitations that are associated with the objective of profit maximisation are as follows:

1) **Ambiguity:** The complexity with profit maximisation criterion for financial decision-making is that the term profit is an ambiguous and confusing concept. It has no specific implication. It is open to different understanding by different individuals. **For example,** profit may be short-term or long-term; it may be total profit or rate of profit margin; profit after tax or profit before tax; return on capital employed or assets or return on equity. Thus, as an objective of profit maximisation, the issue arises as to which variant of profit a business concern should try to maximise.

2) **Timing of Benefits:** A more significant limitation to the objective of profit maximisation is that it ignores the differences in timings of the benefits received over the working life of the asset, irrespective of the fact as to when they were received. The profit maximisation criterion does not consider the time value of money.

3) **Quality of Benefits:** Perhaps, the most critical limitation of profit maximisation, as an objective, is that it ignores the quality aspect of benefits and returns associated with a financial activity. An uncertain and fluctuating return implies risk to the investors. The problem of uncertainty renders profit maximisation unsuitable as an operational criterion for financial decision-making, as it values only the amount of benefits generated and gives no value to the extent of uncertainty of the future returns.

4) **Impact on Social Welfare:** Increased profits may often lead to the organisation producing such products or services which may not be beneficial and useful to the society at large. Thus, such objective may sometimes fail to optimise social welfare.

5) **Ignores Financing and Dividend Aspects:** Another limitation of the profit maximisation objective is that the effects of financing and dividend decision areas on market price of shares are often ignored, while pursuing the objective of profit maximisation.

1.1.8. Wealth Maximisation

Wealth maximisation is also known as **Value Maximisation** or **Net Present Worth Maximisation**. Wealth maximisation has all the features of certainty, quality benefits and timing benefits. The goal of wealth maximisation is the widely accepted goal of the business, as it reconciles the varied, often conflicting, interest of the stakeholders. Also, it is free from the limitations that other objectives are faced with.

According to Ezra Solomon, wealth maximisation goal is "The gross present worth of a course of action is equal to the capitalised value of the flow of future expected benefits, discounted (or capitalised) at a rate which reflects the uncertainty or certainty. Wealth or net present worth is the difference between gross present worth and the amount of capital investment required to achieve the benefits."

Shareholders, being the true owners of a firm, are entitled to the residual profit only. After meeting the commitment to all other stakeholders, they get the remaining. Shareholders' claim cannot precede that of any other stakeholders. Thus, by maximisation of residual as the objective of the firm, it can safely be stated that all preceding commitments have been adequately satisfied. Pursuit of these all encompassing goals by a firm ensures that the interest of all the different stakeholders is taken care of in the process, as this wealth maximisation as a goal is in congruence with the objectives of the varied stakeholders. No firm can bring about sustained increase in the wealth of its owners, without taking care of the interest of its other stakeholders. **For example,** deteriorating liquidity position of a firm makes the lenders, current and prospective, worried about its creditworthiness, which eventually gets reflected in its share prices and consequently the wealth of the shareholders. Similarly, a firm that cannot retain its existing customers will witness a decline in its sales and consequently the market price of shares. The wealth maximisation approach can be more explicitly defined in the following ways:

$$W = \frac{A_1}{(1+K)^1} + \frac{A_2}{(1+K)^2} + \frac{A_3}{(1+K)^3} + \ldots + \frac{A_n}{(1+K)^n} - C = \sum_{t=1}^{n} \frac{A_t}{(1+K)^t} - C$$

where,

W = Net present worth

$A_1, A_2, \ldots \ldots A_n$ = Streams of benefits expected/Future cashflows

C = Cash outlay or cost of action/Cost of project

K = Discount rate/Capitalisation rate

1.1.8.1. Features of Wealth Maximisation

Wealth maximisation criterion has a far and wide range of acceptance, because of its following salient features:
1) The idea and notion of wealth is distinct and simple to understand.
2) It serves as an important aid to investment decisions.
3) It refers to the time adjusted present value of benefits, thereby reducing the cost of investment.
4) Maximising economic well-being of its shareholder is one of the parameters of wealth maximisation.
5) Wealth maximisation takes into concern both the quantity and quality standards of benefits.
6) It also integrates the time value of money, risk and uncertainty factors.
7) It considers that the shareholders' wealth is maximised only when the market price per share is maximised.
8) It eliminates the associated limitations of the profit maximisation objective of financial management.

1.1.8.2. Arguments in Favour of Wealth Maximisation

The following arguments can be given in favour of wealth maximisation as one of the objectives of business:
1) Wealth maximisation is advanced and can be better compared to the objective of profit maximisation, since the sole endeavour of the business firm is to enhance the value or wealth of the shareholders.
2) Wealth maximisation involves the comparison of the value to cost associated with the company.
3) Wealth maximisation takes into concern both time value and risk factors of the firm.
4) Wealth maximisation promotes and improves optimum and efficient utilisation of resources.
5) It aims to achieve and fulfil economic obligations of the society.

1.1.8.3. Limitations of Wealth Maximisation

Issues involved in implementing the goal of maximisation of shareholder's wealth:
1) **Incorrect Assumptions:** The maximisation of shareholder's wealth wrongly presumes that there is an efficient capital market. In reality, the share price in the market is subject to extensive fluctuations.
2) **Speculation:** Speculative business activities lead to variations in price of shares. Since, an investor is more concerned about the safety and security of the investment, whereas a speculator is interested in appreciation of the capital and profit.
3) **Varied Objectives:** In every organisation, there are three basic stakeholders namely shareholders, professional managers and creditors. Thus, agency problem may arise, i.e., managers may place personal goals ahead of corporate goals.
4) **Justice to All Social Groups:** It is widely reasoned that a business organisation is not concerned with shareholders only. Employees, customers, creditors and local societies at large are also associated with the company. A business firm has to function in the social context responsibly. Obligations of the company towards different social groups should be honoured.

1.1.8.4. Profit Maximisation vs. Wealth Maximisation

The Profit Maximisation and Wealth Maximisation are two conceptually different phenomena. The differences between the two has been summarised in the following table:

| Basis of Difference	Profit Maximisation	Wealth Maximisation
1) Definition or Nature	The term profit maximisation, in simple words, means that a company either produces maximum output for a given input, or uses minimum inputs to produce a given output. Thus, it is optimisation of the input-output relationship.	The wealth maximisation for shareholders means maximising the wealth of shareholders by way of dividends and value-creation of a course of action, in such a manner that the value of future inflows is maximised.
2) Purpose or Concept	The underlying concept of profit maximisation is to maximise the profitability of a company through the core business activity, the company is engaged in.	The underlying concept of wealth maximization is to increase the market value of the shares, which in turn would result in the wealth maximization for the company's shareholders.
3) Formulae	The concept of profit maximisation is based on the determination of maximisation of profits as reflected in the following formula: Profit = Total Revenue Receipts − Total Costs	The wealth maximisation of shareholders of a company depends on the share price and number of shares held by a shareholder, as reflected in the following formula: Wealth = No. of Shares Owned × Current Share Price per Share

4)	Rationale	The rationale behind this concept is the need for maximum level of accumulated profits for growth/expansion/diversification and protection against unforeseen situations like economic recession, natural disaster, unexpected losses in future, cut-throat competition, etc.	The rationale behind this concept is enhancing shareholders' wealth as a courtesy for their investment in the company's equity and their continued relationship and loyalty with the company.
5)	Time Value of Money	This concept does not consider the time value of money and its implications. It only determines the profits for the financial year and ignores the discounting factor of earnings.	This concept considers the time value of money and its implications. It projects the future earnings and their value by applying Net Present Value (NPV) approach and discounting factor of such earnings.

1.1.9. Finance Manager

The post of a 'finance manager' in a company is a key position. He/she is the person solely responsible for carrying out the finance functions of a company. He/she is part of the 'Top Management' team and his/her role needs to be extremely efficient in solving complicated fund management issues and also acting as the financial advisor to the top management.

1.1.9.1. Functions/Role of Finance Manager in Modern Age

Financial Manager's role has been undergoing a lot of changes and in the present day scenario, he/she is responsible and empowered to carry out the following functions:
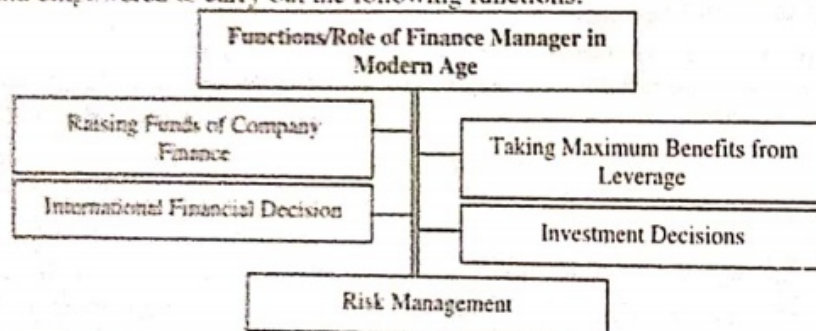
1) **Raising Funds of Company Finance:** The prime responsibility of a financial manager is to estimate his/her company's short-term and long-term requirements, explore the possibilities of raising funds from various sources and exercising the best available option (the most reasonable one with acceptable terms and conditions). He/she is responsible and also empowered to frame the company's appropriate capital structure.

2) **Taking Maximum Benefits from Leverage:** The Financial Manager has powers to utilise leverages, both 'Financial' and 'Operating', to the maximum advantage of the company.

3) **International Financial Decision:** The financial manager of a company is expected to keep him/her abreast of latest developments taking place in the international market. The opportunities available in the form of various derivatives or financial instruments like 'Credit Default Swap', 'Interest Rate Swap', 'Currency Swap', etc., need to be trapped by him/her with the aim to make profit for his/her company.

4) **Investment Decisions:** The financial manager plays an important role in 'Capital Budgeting' exercise by applying various available tools and techniques. Net Present Value (NPV) is one of such techniques, which is very popular amongst the Financial Managers. This technique includes calculation of NPV of each proposal of a given project and comparison thereof. A proposal with highest NPV is considered to be the best one. Financial Managers have an expertise in the calculation of NPV and it is their responsibility to finalise the best proposal for a project to be implemented.

5) **Risk Management:** Risk is the part and parcel of a project or venture undertaken by a company, although at times it is clearly visible and sometimes it is hidden. Avoidance of risks altogether during the conduct of a business is next to impossible. What is required is identification and efficient management (mitigation and control) of risk, which is the responsibility of financial managers. They are free to delegate responsibilities in this regard, down the line, but they are the one answerable to the top management in the areas of risk management. They are also responsible, in this connection, for the coordination with the institutions like insurance companies and rating agencies, who have specialised knowledge in the field of risk management.

1.1.9.2. Responsibilities of Finance Manager

The finance manager of an organization is responsible for the following functions:

1) **Determining Financial Needs:** The financial requirements of an organization are expected to be managed by its Finance Executive. The foremost responsibility in this regard is to assess the level of finance required by the organization, which may relate to the fixed and working capital requirements or for meeting the advertising expenses. The amount of funds required for fixed assets depends upon the industry, the organization is associated with. The fund requirement for investment in fixed asset by a trading entity would be much less when compared with that of a manufacturing entity, which needs to invest in light to heavy machineries and equipment for running its business. Similarly, the working capital requirements are directly proportional to the level of the operations an organization is engaged with higher the level of operations, higher would be the working capital requirements. Assessment of the financial needs of an organization is of paramount importance, in as much as any misjudgement in this regard may pose a question of survival for the organization. The job of a Finance Executive is, therefore, considered to be extremely demanding as well as challenging.

2) **Choosing the Sources of Funds:** Once the financial requirements of an organization have been assessed properly, the next responsibility of a Finance Executive is to raise the requisite funds. There are various options available to raise the funds, which may be broadly classified as equity route and debt route. After taking a decision in this regard, the organization may prefer either of the above routes. In some cases, a suitable mix of the routes, viz. equity and debt may be resorted.

3) **Financial Analysis and Interpretation:** Another important responsibility of a Finance Executive is to analyse the data available through the financial statements of the organization and interpretation thereof. He should know the profitability, liquidity position, short-term and long-term financial position of the organization. He needs to keep a close track of the short-term and long-term liabilities of the organization, and an appropriate plan for their timely discharge. Through the computation of different ratios from the basic data and their interpretations, can arrive at certain conclusions, and initiate suitable steps in the right direction, wherever needed. Financial analysis and interpretation has gained a lot of significance as a useful tool in the field of financial management.

4) **Capital Budgeting:** Capital Budgeting is a technique, which facilitates the decision-making process with regard to the expenditures of capital nature. Such expenditures are required to be incurred for the improvement in the efficiency of the existing fixed assets and acquisition of new fixed assets, both of which are advantageous in the long run, as the benefits of such improvement in efficiency or new assets may be reaped over a long period of time. As the capital budgeting is based upon logical and scientific approach, the decisions taken on its strength rarely go wrong. Various methods, e.g. payback period, rate of return, net present value, internal rate of return, and profitability index, are available for undertaking the capital budgeting, and a method most suitable for an organization may be used by it.

5) **Working Capital Management:** Funds required for financing of the current assets or short-term assets, like cash, inventories, receivable, etc. are termed as working capital. Working capital management entails maintaining its suitable level, neither in excess nor in shortage. It is a job of extreme responsibility, which the Finance Executive has to shoulder. Any shortage or excess of working capital may result either in slowing down / stoppage of activities or decline in profitability.

6) **Dividend Policy:** The shareholders are rewarded by a company, for having invested in its shares, or in dividend. Dividends are paid out of the profit earned by a company during a particular year. Decision with regard to the amount of dividend (in terms of percentage) to be distributed amongst the shareholders is taken. To decide in respect of such a trade-off of conflicting interests is an important as well as tough job. Framing of dividend policy, therefore, needs to be carried out very carefully.

1.1.10. Organisation of Finance Function

In a company of reasonable size, the 'Board of Directors' (BOD) is the ultimate body responsible for the finance function. The Board discharges its functions through the Chief Financial Officer (CFO), who is involved in all important financial decisions of the company. He/she is one of the top management team and as such participates in crucial policy formulation and implementation thereof with regard to designing of capital structure, diversification, acquisition, merger, etc. Besides the policy matters, he/she is also accountable for all day-to-day financial matters.

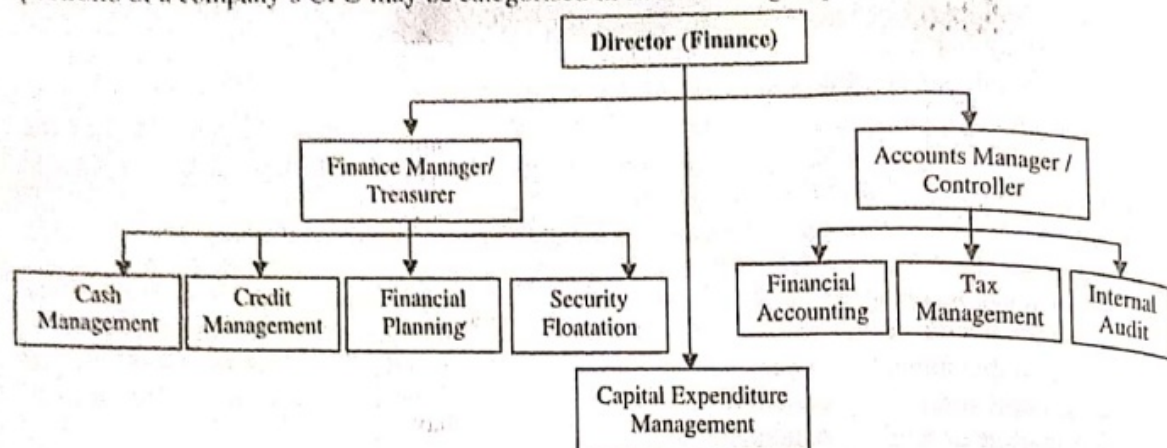The portfolio of a company's CFO may be categorised in two distinct groups:

Figure 1.1: Organisation of Finance Function

1.1.10.1. Functions of CFO as a Treasurer

Functions of treasurer can be divided into four broad categories:

1) **Cash Management Functions:** The treasurer functions for cash management involves:
   i) Opening & operating accounts and depositing cash & cheques in banks.
   ii) Timely payment of client due amount.
   iii) Proper keeping and accounting of cash deals.
   iv) Maintaining and managing day-to-day cash and bank balances.

2) **Credit Management Functions:** The treasurer functions for credit management involves:
   i) Safely recording of payment received from debtors.
   ii) Dealing with discounts and sales for timely payment.
   iii) Maintaining and managing proper collection procedures.
   iv) Estimating and assessing default risk of the clients.

3) **Financial Planning Functions:** The treasurer functions for financial planning involves:
   i) Providing true position of profit & loss of the company.
   ii) Preparing the lists of sources from where money can be borrowed.
   iii) Estimating cash inflows and outflows.
   iv) Preparing investment plans for the organisation.
   v) Providing suggestions to the management for dividend distribution.

4) **Security Floatation Functions:** The treasurer functions for security floatation involves:
   i) Advising the company which security should be taken from the outsiders, which will be helpful prompt payment of company liabilities.
   ii) Preparing the terms and conditions for trustee and record maintaining of agents.

1.1.10.2. Functions of CFO as a Controller

The functions of CFO as a controller are as follows:

1) He/she helps in controlling various activities of the business, through the evaluation of costing accounting policies, by preparing the **books of accounts, financial statements, the internal auditing** control etc.

2) Particular control activities are:
   i) To maintain and analyse the financial statements and reports.
   ii) To manage and control the inventory.
   iii) To maintain the proper financial account of the business by recording the cash receipts, cash payment payroll accounts, cost accounting, etc. related with the management functions of the business.
   iv) To help in securing the assets of the company.
   v) To provide finance to the company.
   vi) To use statistical methods for better result.
   vii) To use internal auditing.

1.2.1. Concept of Cost of Capital

The 'Cost of Capital' is the minimum rate of return, which enables a company to make such an amount of profit on its investment so as to ensure that the market value of the company's equity shares either increases or remains at the same level. This is in conformity with any company's goal of 'Wealth Maximisation' for its shareholders.

'Wealth Maximisation' for the shareholders of a company is feasible only when the projects financed by the company (shareholders money) generate revenues at a rate equal or more than the rate expected by the shareholders. In case, the company is unable to earn the expected rate of return, the possibility of decrease in the market value of the company's shares cannot be ruled out, which ultimately may result in erosion of the shareholders wealth. Some of the prominent authorities on the subject have defined 'Cost of Capital' as follows:

According to James C Van Horne, "A cut-off rate for the allocation of capital to investments of project. It is the rate of return on a project that will leave unchanged the market price of the stock".

According to Solomon Ezra, "Cost of Capital is the minimum required rate of earning or the cut-off rate of capital expenditures".

According to Hampton, John J, "The rate of return the firm requires from investment in order to increase the value of the firm in the market place".

In simple words, the minimum rate of return expected by the investors of the business on the projects is called as **cost of capital.**

Opportunity cost of capital is the lost value of an investment due to the investment made in some other projects. For an investor, it is the choice offered to him to invest in one project over another.

For example, use of fixed assets like vacant land can be used as opportunity cost for the investor if he had used it for some other purpose.

In financial markets, securities such as equity shares, debentures and government gilt-edged securities are available for investment. The rate of return earned from these investments (securities) is known as **opportunity cost** of an investment in capital projects, and if the company had invested this money elsewhere it could get better return which is not possible in this capital project. Therefore, it is advisable for the company to take consideration of all the factors during investment in the projects.

The term **"Opportunity Cost"** of the investment is also known as the **'Minimum Required Rate of Return', 'Cost of Capital',** and **'Discount Rate or Interest Rate'.**

1.2.2. Assumptions/Characteristics of Cost of Capital

Cost of capital is characterised by following fundamental features:

1) **Not Necessarily a Cash Cost:** Cost of capital, which a company is required to pay, may not be in the form of cash every time. Factually, it is indicative of the expectation of the company's shareholders with regard to returns from their investment.

2) **Minimum Rate of Return:** Cost of capital indicates the minimum rate of return, which is needed for maintaining the market value of company's equity shares.

3) **Consideration of Risk Premium:** The risk factor is taken care of during computation of 'Cost of Capital', which is likely to be high, if the numbers and degree of risk increases. In other words, the 'Cost of Capital' is directly proportional to the number/degree of risk involved. The concept would be more clear from the following formula:

$$K = R_f + R_p$$

Where, K = Cost of required return,
R_f = Risk-free rate, and
R_p = Risk premium rate.

In brief, the cost of capital to a company is equal to the equilibrium rate of return* demanded by investors in the capital markets for securities at a given degree of risk.

* Equilibrium Rate of Return is an interest rate at which the demand for money and supply of money are equal.

1.2.3. Types/Classification of Cost

The cost may be classified as follows:

1) **Future Cost versus Historical Cost:** Future costs are the basis on which financial decisions are taken. Although, they are only projections of what may or may not happen in future, they are more important as compared to the historical cost, which is nothing but frozen a figure. However, historical costs are like guiding tools for future forecasting.

2) **Specific Cost versus Composite Cost:** 'Specific Cost' is the cost of individual source of capital, whereas the 'Composite Cost', also known as 'Overall Cost' is the cost of capital of all the sources taken together. To start with, the costs of individual sources, like debentures, preference shares, equity shares, retained earnings, etc. are computed individually (specific costs) and thereafter calculation of 'Composite Cost' may be undertaken. As the 'Composite Cost' thus arrived at, takes into account source of capital received through each of the specific source, it is also termed as 'Weighted Cost'.

3) **Average Cost versus Marginal Cost:** After the calculation of the cost of individual source of capital (specific cost), weights are assigned to each of them in the ratio of their share. The average of this is termed as weighted average cost or 'Average Cost'. 'Marginal Cost' on the other hand is defined as "the change in the total cost that arises when the quantity produced has an increment by unit".

That is, it is the cost of producing one more unit of a good. When the company raises additional capital only from one source, then the 'Specific Cost' is the 'Marginal Cost'. In capital budgeting, 'Marginal Cost' is considered to be more significant. It increases in equal proportion with the increase in the amount of debt.

Difference between Average Cost of Capital (ACC) and Marginal Cost of Capital (MCC)

Basis of Difference	Average Cost of Capital (ACC)	Marginal Cost of Capital (MCC)
1) Meaning	A company's total average cost of capital is calculated by incorporating the weights of various constituents of its entire capital structure (e.g. equity, debenture, bond, term loan, etc.) prevailing at a specific point of time.	Marginal Cost of Capital is the incremental cost, which is considered at the time of infusion of fresh capital, raising the size of the existing capital structure of a company. Cost of the fresh capital, its category and weight assigned to it are the inputs to calculate MCC.
2) Coverage	Average Cost of Capital has a wider coverage which cannot be a part of marginal cost of capital.	Marginal Cost of Capital happens to be a part of the weighted average cost of capital.

4) **Implicit Cost versus Explicit Cost:** The rate of return related to the best investment option available for a company (and its shareholders) which has forgone or lost the opportunity to earn money by abandoning the project proposal is termed as 'Implicit Cost'. Once the proposal is accepted, the opportunity cost is immaterial. It may, therefore, be considered as 'Economic Cost' or 'Opportunity Cost'.

For example, the implicit cost of funds kept in a savings bank account is the difference between the rate of interest available on savings bank deposit and the rate of interest that would have been accrued if the amount have been invested elsewhere like bank FD, Government bonds, stock market.

Explicit Cost, on the other hand, is the discount rate which equates:

i) The present value of the incremental cash inflows (incremental to the taking of the financial opportunity), and

ii) The present value of the incremental cash outflows.

Difference between Explicit Cost of Capital and Implicit Cost of Capital

Basis of Difference	Explicit Cost of Capital	Implicit Cost of Capital
1) Meaning	Instant cash payments are associated with the explicit cost, e.g. rent/lease payments, wage/salary payments, payments for the purchase of raw materials, interest on loan, etc.	No cash payments are associated with implicit cost, e.g. loss of interest rate, wages foregone by the owner of a company, etc.
2) Termed	They are termed as **out of pocket costs**.	They are termed as **economic costs or opportunity costs**.
3) Nature	They are measurable and quantifiable, as they are tangible in nature.	They are difficult to measure and quantify, as they are intangible in nature.
4) Recording	Explicit costs are part of records of the books of accounts.	Implicit costs are not part of record of the books of accounts.

1.2.4. Factors Affecting Cost of Capital

Cost of capital for a company is influenced by a number of factors (both external as well as internal for the company), some of which are as follows:

1) **General Economic Conditions:** This is a factor external to a company's operational boundaries and beyond its control. General conditions prevailing in the economy of a country are largely responsible for demand for and supply of capital and inflationary expectations.

   i)   In case of an increase in the demand for capital without corresponding increase in the supply thereof, the cost of capital (interest rate) would be high. In a reverse scenario, where the demand is weak and supply is sufficient, the cost of capital is likely to be low.

   ii) High inflation rate affects the purchasing power of money and results in its reduced value. In such a condition, investors or shareholders expect a high rate of return as a part of compensation. Cost of capital, in such conditions, tends to be high.

2) **Market Conditions:** Market conditions prevailing at a particular point of time are responsible for the level of risks associated with a financial instrument. The risk inbuilt in a financial instrument is directly proportional to the interest offered by such instrument. Investors prefer to invest in a high-risk bearing instrument only when the rate of interest offered by it is relatively high and attractive enough to enter into such a risky zone. With an increase in the risk associated with an instrument, an increased rate of interest is expected by the investors. Such an increase is termed as **risk premium**. This causes the cost of funds to inflate. Further, marketability of an instrument and its price stability is equally significant; easy marketability of a financial product at relatively stable price may bring the investors expectation of rate of return at a lower level, resulting in lower cost of capital. In the opposite situation, which is poor marketability and unstable market price of an instrument the investors expectations regarding rate of interest would be higher and as a result the cost of fund is likely to be high.

3) **Company's Operations and Financing Decisions:** Certain controversial decisions taken by a company may also result in risks or fluctuations in the return. Risks arising out of such decisions may be categorised into two groups, which are as follows:

   i)   Business Risk, and
   ii) Financial Risks.

   Business risks are the outcome of the company's investment decisions and are characterised by variable returns on assets. **Financial risks** are an increase in fluctuation in return to the equity shareholders, which is the result of utilisation of debt and preference share. With an increase in business and financial risks, investors expectation with regard to rate of return also increases, ultimately increasing the cost of capital. Vice versa of the above phenomenon is also true, i.e., decreased business and financial risks are followed by the decrease in the cost of capital.

4) **Amount of Financing:** Cost of funds is directly proportional to the required amount of funds. With the increased requirement of funds for a company, there is an increase in the weighted cost of capital due to various reasons, some of which are mentioned below:

   i)   With the issue of more securities or instruments, the cost of selling securities (floatation cost) also tends to be more, which affects the cost of funds to the company.

ii) If a company approaches market for an amount of capital not in proportion with the strength of its capital or the size of the company, investors expectation of rate of return increases, which in turn increases the cost of capital.

iii) Institutional lenders express some objection to give approval of huge amount of funds in the absence of relevant documents with regard to the company's potential to ensure appropriate application of borrowed funds into the business.

iv) With the increasing size of the issue, the need to reduce the price of the security or instrument also increases, which in turn results in the increased cost of capital.

1.2.5. Importance of Cost of Capital

Cost of capital is very crucial for a company, as it facilitates certain decision making processes, as may be seen from the following:

1) **Capital Budgeting Decisions:** 'Cost of Capital' may be considered as one of the most important basis on which capital budgeting is done. It is used as a rate for discounting cash inflows to assess the profitability of a project (under the DCF method). Further, it is the minimum desired rate of return (projected), which is compared with the actual rate of return (under the IRR method).

2) **Capital Structure Decisions:** The objective of minimising cost of capital need to be kept in mind while planning an appropriate capital structure of a company. This would ensure a better market value of the company. Cost of financing is the determinant of source of financing.

3) **Evaluating Profitability:** Profitability of a project depends upon the projected cost of the capital funds and the actual cost of the capital fund raised to finance the project. The performance of a project may be considered satisfactory, if the profitability of the project is more than the projected and actual cost of capital.

4) **Other Decisions:** Decisions with regard to the level of dividend distribution, working capital requirements, etc. are directly affected by the cost of capital. Moreover, the profitability of a project depends upon the cost of capital. The success or failure of the projects undertaken by a company is one of the basis of appraisal of the top management's performance.

1.2.6. Problems in Determination of Cost of Capital

There are certain hurdles associated with the assessment of cost of capital, some of which are mentioned in the following points:

1) **Influence of the Mode and Quantum of Financing:** "Influence of mode and quantum of financing by a company upon the cost of capital" is a controversial issue, which has been a matter of debate from time to time amongst the various authorities on the subject. Traditional theorists (belonging to the old school of thought) are of the opinion that the cost of capital is influenced by the mode and quantum of the financing. According to them, overall cost of a company may be modified by altering its Debt-Equity Ratio (DER). However, the modern theorists (belonging to new school of thought) do not agree with the above view. They (e.g., **Modigliani** and **Miller**) hold a firm view that a company's cost of capital is not concerned with quantum and mode of financing and it does not get affected by change in DER. A significant presumption in the modern approach is the existence of a well developed (perfect) capital market. As the above presumption (prevalence of a perfect capital market) is not correct, i.e., a perfect capital market is only a concept; the modern approach does not carry much weight.

2) **Computation of Cost of Equity:** Calculation of 'cost of equity capital' poses a number of hurdles. Theoretical definition of the 'cost of capital' may appear to be very simple and explicit. On the basis of the minimum rate of return expected by the shareholders of a company, the equity fund financing of the company is also considered as cost of capital. This equity fund financing is capable of maintaining the existing level of market value of the company's shares. In practice, to assess the amount expected by a company's shareholders, so as to ensure maintenance of *status quo* in respect of the market value of the company's shares is not an easy task. Market value of a share of any company depends upon various market forces, viz. financial, psychological, domestic/international events, political scenario, etc. Experts have made efforts to quantify the shareholders expectations in many ways, so as to make the calculation of cost of capital easier. However, their approach and computation process varies to a great extent.

3) **Computation of Cost of Retained Earnings and Depreciation Funds:** The fund raised through cost of 'retained earnings' and 'depreciation funds' depends upon the methodology applied for the calculation of cost of equity capital. As there are contradictory approaches and views in this regard (calculation of cost of equity capital), it is a dilemma for the officers of a company to opt for an appropriate approach.

4) **Future Costs *versus* Historical Costs:** The most commonly held view is that the 'Historical Costs' are insignificant, as far as decision making process is concerned and only future projections (Future Costs) are relevant. Even if the historical costs are totally ignored, the question remains whether to consider Average Cost of Capital (ACC) or Marginal Cost of Capital (MCC), which is not easy to answer.

5) **Problem Relating to Assignment of Weights:** Weight assignment for individual category of sources of funds is a complicated and challenging process. During weight assignment, an option is required to be exercised whether to choose 'the book value of each source of funds' or 'the market value of each source of funds'. In each of the above cases, the outcomes may differ substantially, which makes it difficult to take a final view on assignment of weights. In view of the foregoing paragraphs, it may be concluded that calculation of precise cost of capital is a challenging and perplexing task. The preferred approach should calculate the range of cost of capital, within which the actual cost of capital lies. Keeping in view the significance of knowing the 'cost of capital' in taking important management decisions, it is necessary for a company to define the range as mentioned above.

1.3. MEASUREMENT OF SPECIFIC COSTS

1.3.1. Introduction

As the first step, the various sources of funds need to be considered in computing the cost of capital of a company. Sources of funds may be debentures, equity shares, preference shares, retained earnings, etc. The cost of individual source is termed as **'Specific Cost of Capital'**. Each specific cost is assigned a weight in the ratio of their share in the total capital cost, average of which is known as **'Weighted Average Cost of Capital'** or **'Composite Cost of Capital'**. Computation of cost of capital may, therefore, involve following:

1) Computation of cost of individual sources of capital, and
2) Computation of weighted average/composite cost of capital.
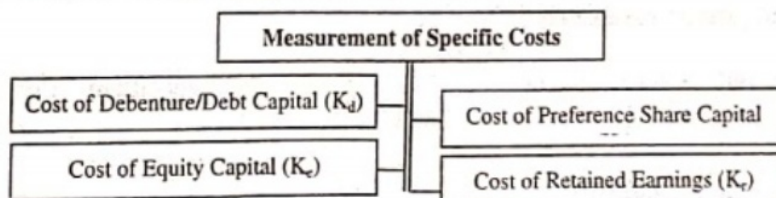
1.3.2. Cost of Debenture/Debt Capital (K_d)

Rate of interest payable by a company on the issued debt instruments is the cost of funds raised by it. However, taxation is an important issue in ascertaining the cost of debt funds, as interest paid by a company on its debt instruments is allowed as an expense under the relevant provisions of Income Tax Act. 'Cost of debt funds' may be measured as 'pre-tax cost' or 'post tax cost' of debt. Other factors required to be taken into account in calculation of 'cost of debt funds' are whether debts are redeemable or irredeemable in nature which may be issued at par, premium or discount.

1.3.2.1. Cost of Irredeemable Debt/Debentures

A company issuing irredeemable debentures have no responsibility with regard to the repayment of the debt at a predetermined date and time. It have the power to decide the time and dates to pay back the amount of debt as long as it is a going concern and does not fails to make interest payment. Therefore, while computing the cost of irredeemable debentures only the sale amount is taken into consideration.

1) **Cost of Irredeemable Debts before Tax:** The following different formulae are applied for the calculation of cost of irredeemable (perpetual) debts issued at (i) par, (ii) premium or discount:

   i) **Cost of irredeemable debt, issued at par**

   $$K_d = \frac{I}{NP} \times 100$$

Where, K_d = Cost of debts

I = Fixed annual interest payable

NP = Net Proceeds

Example 1: A company sells a fresh issue of 10% irredeemable debentures at par to raise ₹2,00,000 and realizes the full face value of ₹100. What is the cost of debt to the firm?

Solution: $K_d = \dfrac{I}{NP} \times 100$

Where,

Fixed Annual Interest Payable (I) = ₹2,00,000 × 10% = ₹20,000

Net Proceeds (NP) = ₹2,00,000

Cost of Debts $(K_d) = \dfrac{20,000}{2,00,000} \times 100 = 10\%$

ii) **Cost of irredeemable debt, issued at premium or discount**

$$K_d = \dfrac{I}{NP} \times 100$$

Net Proceed (NP) = Face value of debt – discount on issue of debentures + premium on issue of debenture – issues expenses like brokerage, underwriting commission, printing and other expenses.

Example 2: Private Ltd. issued 10,000, 10% Debentures of ₹100 each on 1st April. The cost of issue was ₹25,000. Determine the cost of debentures if they were issued i) at a premium of 10%, and ii) at a discount of 10%.

Solution:

a) **Issued at 10% Premium**

$$K_d = \dfrac{I}{NP} \times 100$$

Where,

Fixed Annual Interest Payable (I) = 10,000 debentures × ₹100 × 10%

= ₹1,00,000

Net Proceeds (NP) = Face value of debt + Premium on issue of debenture – Cost of issue

= 10,00,000 + 10% – 25,000 = ₹10,75,000

Cost of Debts $(K_d) = \dfrac{1,00,000}{10,75,000} \times 100 = 9.30\%$

b) **Issued at 10% Discount**

$$K_d = \dfrac{I}{NP} \times 100$$

Where,

Fixed Annual Interest Payable (I) = 10,000 debentures × ₹100 × 10%

= ₹1,00,000

Net Proceeds (NP) = Face value of debt – Discount on issue of debentures – Cost of issue

= ₹10,00,000 – 10% – ₹25,000

= ₹8,75,000

Cost of Debts $(K_d) = \dfrac{1,00,000}{8,75,000} \times 100 = 11.43\%$

2) **Cost of Irredeemable Debt after Tax:** The cost of irredeemable debt instruments is given by the amount of interest payable. However, as the interest payable is an admissible deduction for taxation purpose, the cost of debt capital is reduced to that extent.

Calculation is done by using following formula:

$$K_d = \frac{I}{NP} \times 100(1-t) \quad \text{or} \quad K_d = r(1-t)$$

Where,

      K_d = Cost of debts after tax
      I = Fixed annual interest payable
      r = Interest rate payable
      NP = Net proceeds of the issue
      t = Applicable tax rate

Example 3: A company raises ₹2,00,000 by the issue of 10% debentures of ₹100 each payable at par after 10 years. If the tax rate is 50%, what is the cost of debt to the firm?

Solution: $K_d = \frac{I}{NP} \times 100(1-t)$

Where,
Fixed Annual Interest Payable (I) = ₹2,00,000 × 10% = ₹20,000
Net Proceeds (NP) = ₹2,00,000
Tax Rate = 50% or .50

Cost of Debts after Tax $(K_d) = \frac{20,000}{2,00,000} \times 100(1 - .50) = 5\%$

Example 4: B. Ltd. issues ₹1,00,000, 9% debentures at a premium of 10%. The cost of floatation is 2%. The tax rate applicable is 60%. Compute cost of debt-capital.

Solution: $K_d = \frac{I}{NP} \times 100(1-t)$

Where,
Fixed Annual Interest Payable (I) = ₹1,00,000 × 9% = ₹9,000
Net Proceeds (NP) = Face Value + Premium − Floatation Charges

$$= ₹1,00,000 + 10,000 - \left(1,10,000 \times \frac{2}{100}\right)$$

$$= ₹1,10,000 - ₹2,200 = ₹1,07,800$$

Tax Rate = 60% or .60

Cost of Debts after Tax $(K_d) = \frac{9,000}{1,07,800} \times 100(1 - 0.6) = 3.34\%$

Example 5: A company issues 10% irredeemable debentures of ₹1,00,000. The company is in the 55% tax bracket. Calculate the cost of debt (before and after tax) if the debentures are issued

    i) At Par;   ii) 10% discount; and
    iii) 10% premium.

Solution:
Cost of Debt Before Tax
i) **Issued at Par:**

$$K_d = \frac{I}{NP} \times 100$$

Where,
Fixed Annual Interest Payable (I) = ₹1,00,000 × 10% = ₹10,000
Net Proceeds (NP) = ₹1,00,000

$$K_d = \frac{10,000}{1,00,000} \times 100 = 10\%$$

1.3.2.2. Cost of Redeemable Debt/Debentures

Redeemable debentures, as the name itself suggest, can be redeemed by the company at a predetermined date and time or after a prescribed period of notice is given in this regard. The average of sale value and redeemable value is considered for the calculation of the 'cost of redeemable debentures'. Different formulae are applied for calculating the cost of redeemable debts before the tax and after the tax as under:

1) Cost of Redeemable Debt before Tax

$$K_d = \frac{I+(P-NP)/_n}{(P+NP)/_2}$$

Where,

K_d = Cost of debts (before tax)
I = Interest/Fixed charge per annum
P/RV = Par Value/Face value /Redeemable value of debenture
NP = Net proceed/Price at which the debenture or the bond is sold
n = Number of years

Example 6: A firm issues 10% debentures of ₹1,00,000 after allowing 2% commission and realizes ₹98,000. The debentures are due for maturity at the end of the 10th year. Calculate the cost of debt before tax.

Solution: $K_d = \frac{I+(P-NP)/_n}{(P+NP)/_2}$

Where,

Interest/Fixed Charge (I) = Debenture Value × Interest Rate = ₹1,00,000 × 10% = ₹10,000
Par/Face Value of Debenture (P) = ₹1,00,000
Net Proceed (NP) = ₹98,000
Number of Years (n) = 10 years

$$\text{Cost of Debts (before tax) } (K_d) = \frac{10,000+(1,00,000-98,000)/10}{(1,00,000+98,000)/2}$$

$$= \frac{10,000+200}{99,000} = .103 \text{ or } 10.30\%.$$

2) Cost of Redeemable Debt after Tax: Redeemable instruments (debentures or bonds) may be issued at premium or discount. Its price varies with regard to face value. It is payable after fixed maturity period. The cost of redeemable debts is calculated by applying following formula:

$$K_d = \frac{[I+1/n(P-NP)](1-t)}{1/2(P+NP)}$$

Where,

K_d = Cost of debts(after tax),
I = Interest/Fixed charge per annum
P/RV = Par Value/Face value/Redeemable value of debenture
NP = Net proceed/Price at which the debenture or the bond is sold
t = Tax rate,
n = Number of years in which the debt is to be redeemed

Example 7: A company issues 8% debentures of the face value of ₹100 at a discount of 10% for 10 years. Assuming 50% tax rate, calculate after-tax cost of the debt.

Solution: $K_d = \frac{[I+1/n(P-NP)](1-t)}{1/2(P+NP)}$

Where,

Interest/Fixed Charge (I) = 100 × 8% = ₹8
Par/Face Value of Debenture (P) = ₹100

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Net Proceed (NP) = Face Value – Discount = ₹100 – 10% = ₹90

Number of Years (n) = 10 years

Tax Rate (t) = 50% or .50

Cost of Debts (after tax) $(K_d) = \dfrac{[8 + 1/10(100 - 90)](1 - 0.5)}{1/2(100 + 90)} = 0.0474$ or 4.74%

Example 8: A Company issues ₹10,00,000, 13% debenture at a discount of 5%. The debentures are redeemable after 5 years at a premium of 5%. The company apply 50% tax rate. Calculate before Tax and after Tax Cost of Debt.

Solution:

Cost of Debt before Tax: $K_d = \dfrac{1 + (P - NP)/_n}{(P + NP)/_2}$

Where,

Interest/Fixed Charge (I) = ₹10,00,000 × 13% = ₹1,30,000

Par/Face Value of Debenture (P) = Debenture value + Premium
= ₹10,00,000 + 5% = ₹10,50,000

Net Proceed (NP) = Face Value – Discount = ₹10,00,000 – 5% = ₹9,50,000

Number of Years (n) = 5 years

Cost of Debts (before tax) $(K_d) = \dfrac{1,30,000 + (10,50,000 - 9,50,000)/5}{(10,50,000 + 9,50,000)/2} = \dfrac{1,30,000 + 20,000}{10,00,000} = 0.15$ or 15%

Cost of Debt after Tax: $K_d = \dfrac{[I + 1/n(P - NP)](1 - t)}{1/2(P + NP)}$

Where,

Interest/Fixed Charge (I) = ₹10,00,000 × 13% = ₹1,30,000

Par/Face Value of Debenture (P) = Debenture Value + Premium
= ₹10,00,000 + 5% = ₹10,50,000

Net Proceed (NP) = Face Value – Discount = ₹10,00,000 – 5% = ₹9,50,000

Tax Rate (t) = 50% or .50

Cost of Debts (after tax) $(K_d) = \dfrac{[1,30,000 + 1/5(10,50,000 - 9,50,000)](1 - 0.5)}{1/2(10,50,000 + 9,50,000)}$

$= \dfrac{(1,30,000 + 20,000)(0.5)}{10,00,000} = \dfrac{75,000}{10,00,000} = 0.075$ or 7.5%

1.3.3. Cost of Preference Share Capital (K_p)

Preference shareholders are entitled to have a fixed rate of dividend. Although there is no statutory compulsion regarding the payment of dividends to the preference shareholders, in case a company decides to pay dividend to its shareholders, then preference shareholders would be given priority over other shareholders. Non-payment of dividend to its preference shareholders impacts negatively on the company's reputation and its capacity to mobilise funds at an appropriate rate. Further, dividend expected by preference shareholders has a direct relationship with the cost of preference capital.

There are separate methods of calculating cost of capital in respect to 'Redeemable Preference Shares' and 'Irredeemable Preference Shares'.

1.3.3.1. Cost of Irredeemable (Perpetual) Preference Share Capital

Cost of preference share capital (irredeemable) of a company is generally the dividend payable to its preference shareholders, and is calculated as per the following formula:

Cost of preference (irredeemable) share capital $K_p = \dfrac{D}{NP}$

Where,

K_p = Cost of irredeemable preference share capital

D = Annual preference dividend

NP = Net proceed of irredeemable preference share capital (Face value + Premium – Discount – cost of issue)

As the dividend on preference shares is paid subsequent to the payment of corporate taxes, there is no need for any adjustment in the above calculation.

Example 9: XYZ & Co. issues 20,000 12% preference shares of ₹100 each at par. Calculate the cost of preference share capital.

Solution: Cost of Preference Share Capital $(K_p) = \dfrac{D}{NP}$

Where,

Preference Dividend (D) = 20,000 Shares × ₹100 × 12% = ₹2,40,000

Net Proceed (NP) = 20,000 Shares × ₹100 = ₹20,00,000

Cost of Preference Share Capital $(K_p) = \dfrac{2,40,000}{20,00,000} \times 100 = 12\%$

Example 10: A company issues 10,000 10% Preference Shares of ₹100 each. Cost of issue is 2%. Calculate cost of preference capital if these shares are issued (a) at par, (b) at a premium of 10%, (c) at a discount of 5%.

Solution: Cost of Preference Share Capital $(K_p) = \dfrac{D}{NP}$

a) **Issued at Par**

Where,

Preference Dividend (D) = 10,000 Shares × ₹100 × 10% = ₹1,00,000

Net Proceed (NP) = Face value – Cost of issue

Face Value = Number of shares × Price of each share

= 10,000 Shares × ₹100 = ₹10,00,000

Cost of Issue = Number of shares × Price of each share × % of Issue

= 10,000 Shares × ₹100 × 2%

= ₹20,000

NP = 10,00,000 – 20,000 = ₹9,80,000

Cost of Preference Share Capital $(K_p) = \dfrac{1,00,000}{9,80,000} \times 100 = 10.2\%$

b) **Issued at a Premium of 10%**

Where,

Preference Dividend (D) = 10,000 Shares × ₹100 × 10% = ₹1,00,000

Net Proceed (NP) = Face value + Premium – Cost of issue

Face Value = ₹10,00,000

Cost of Issue = ₹20,000

Premium = Number of shares × Price of each share × % of Premium

= 10,000 Shares × ₹100 × 10% = ₹1,00,000

NP = 10,00,000 + ₹1,00,000 – ₹20,000 = ₹10,80,000

Cost of Preference Share Capital $(K_p) = \dfrac{1,00,000}{10,80,000} \times 100 = 9.26\%$

c) **Issued at a Discount of 5%**

Where,

Preference Dividend (D) = 10,000 Shares × ₹100 × 10% = ₹1,00,000

Net Proceed (NP) = Face value – Discount – Cost of issue

Face Value = ₹10,00,000
Cost of Issue = ₹20,000
Discount = Number of shares × Price of each share × % of Discount
= 10,000 Shares × ₹100 × 5% = ₹50,000
NP = 10,00,000 – ₹50,000 – ₹20,000 = ₹9,30,000

Cost of Preference Share Capital $(K_p) = \dfrac{1,00,000}{9,30,000} \times 100 = 10.75\%$

1.3.3.2. Cost of Redeemable Preference Share Capital

Redeemable preference shares are not perpetual (continual); they have a maturity date, on which they are redeemed. They may be issued at a discount or at a premium. Cost of redeemable preference shares is calculated by applying the following formula:

Cost of preference share (redeemable) capital $K_p = \dfrac{D + 1/n(P - NP)}{1/2(P + NP)}$

Where,

K_p = Cost of preference share (redeemable) capital
D = Annual preference dividend payable
P/RV = Par/Face value/ redeemable value of preference shares
NP = Net proceeds/Issue price of preference shares
n = Number of years

Example 11: ABC & Co. issues 2,000, 10% preference shares of ₹100 each at ₹95 each redeemable at the end of the 10ᵗʰ year from the year of issue. Calculate cost of preference share capital.

Solution: $K_p = \dfrac{D + 1/n(P - NP)}{1/2(P + NP)}$

Where,
Preference Dividend (D) = 2,000 Shares × ₹100 × 10% = ₹20,000
Par Value (P) = 2,000 Shares × ₹100 = ₹2,00,000
Net Proceed (NP) = 2,000 Shares × ₹95 = ₹1,90,000
Number of years (n) = 10 years

Cost of Preference Share Capital $(K_p) = \dfrac{20,000 + 1/10(2,00,000 - 1,90,000)}{1/2(2,00,000 + 1,90,000)} \times 100$

$= \dfrac{21,000}{1,95,000} \times 100 = 10.77\%$

Example 12: A Company issue 1,000, 7% Preference Shares of ₹100 each at a premium of 10% redeemable after 5 years at par. Compute the cost of preference capital.

Solution: $K_p = \dfrac{D + 1/n(P - NP)}{1/2(P + NP)}$

Where,
Preference Dividend (D) = 1,000 Shares × ₹100 × 7% = ₹7,000
Par Value (P) = 1,000 Shares × ₹100 = ₹1,00,000
Net Proceed (NP) = Face value + Premium = ₹1,00,000 + 10% = ₹1,10,000
Number of years (n) = 5 years

Cost of Preference Share Capital $(K_p) = \dfrac{7,000 + 1/5(1,00,000 - 1,10,000)}{1/2(1,00,000 + 1,10,000)} \times 100$

$= \dfrac{7,000 - 2,000}{1,05,000} \times 100 = 4.76\%$

1.3.4. Cost of Equity Capital (K_e)

The cost of equity share capital may be explained as "the minimum rate of return, a company is required to earn on the part of equity financed to its investment in such a manner that the market value of its stock remains unaffected". This can be calculated by applying following methods:

1) **Dividend Yield Method:** It is also known as dividend-price ratio and is calculated by dividing 'dividend per share' by 'price per share'. It can also be obtained by dividing 'total dividend payment by a company in a year' by its 'market capitalisation', provided there is no change in the number of shares. It is indicated as a percentage.

Symbolically, Cost of equity capital $K_e = \dfrac{D}{NP} \times 100$ or $\dfrac{D}{MP} \times 100$

Where,

K_e	= Cost of equity capital
D	= Expected dividend per share
NP	= Net proceeds per share
MP	= Market price per share

There is a presumption, while using this method, that for the shareholders (investors), dividends are important and the risk perception about the company remains the same.

Example 13: ABC Ltd. has distributed dividend of ₹25 on each equity share of ₹10. The current market price of equity share is ₹60. Calculate the cost of equity as per dividend yield method.

Solution: $K_e = \dfrac{D}{MP} \times 100$

Where,

Expected dividend per share (D) = ₹25

Market price per share (MP) = ₹60

Cost of Equity Capital $(K_e) = \dfrac{25}{60} \times 100 = 41.67\%$

Example 14: A company issues 1,000 equity shares of ₹100 each at a premium of 10%. The company has been paying 20% dividend to equity shareholders and also expecting to keep same performance in future years. Compute the cost of equity capital will it make any difference if the market price of equity share is ₹160?

Solution: Cost of Equity Capital $(K_e) = \dfrac{D}{NP} \times 100$

Where,

Expected dividend per share (D) = ₹20

Net proceeds per share (NP) = Face value + Premium = 100 + 10% = ₹110

Cost of Equity Capital $(K_e) = \dfrac{20}{100 + 10\%} \times 100 = \dfrac{20}{110} \times 100 = 18.18\%$

If the market price of equity share is ₹160

Cost of Equity Capital $(K_e) = \dfrac{D}{MP} \times 100$

Where,

Expected dividend per share (D) = ₹20

Market price per share (MP) = ₹160

Cost of Equity Capital $(K_e) = \dfrac{20}{160} \times 100 = 12.5\%$

2) **Dividend Yield Plus Growth in Dividend Method:** The basis of this method is the presumption of a situation, in which there is a growth of a company and also the market value of its share shows an increasing trend. Under such situation, the shareholders expectations would be more than simple dividends; they may like to have a part of the additional profit earned by the company. It may be calculated by using following formula:

Cost of Equity Capital, $K_e = \dfrac{D}{NP} \times 100 + G$

Where,   D = Expected dividend per share

NP = Net proceeds per share

G = Growth Rate of dividend

If the NP (net proceeds per share) in the above formula is replaced with MP (market price per share), the result would be the cost of existing equity share capital as under:

$K_e = \dfrac{D}{MP} \times 100 + G$

Where,

MP = Market price per share

Example 15: XYZ Ltd. market prices of the shares are at ₹120 each. The expected dividend for the next year is to be ₹30 per share and further the dividends are expected to grow at an annual rate of 5% of the previous year's dividend. What is the cost of equity shares?

Solution: $K_e = \dfrac{D}{MP} \times 100 + G$

Where,
Expected dividend per share (D) = ₹30
Market price per share (MP) = ₹120
Growth Rate of dividends (G) = 5%

Cost of Equity Capital $(K_e) = \dfrac{30}{120} \times 100 + 5\% = 30\%$

Example 16: The current market price of an equity share of a company is ₹90. The current dividend per share is ₹4.50. The expected growth rate of dividend is 7%. Calculate the cost of equity capital.

Solution: $K_e = \dfrac{D}{MP} \times 100 + G$

Where,
Expected dividend per share (D) = ₹4.50
Market price per share (MP) = ₹90
Growth rate of dividends (G) = 7%

Cost of Equity Capital $(K_e) = \dfrac{4.50}{90} \times 100 + 7\% = 5\% + 7\% = 12\%$

Example 17: Following are the dividends payment of the company for the last five years:

Year	Dividend per share
1	8.5
2	9.0
3	10.0
4	10.5
5	12.0

The price of equity share is ₹100 per share. The underwriting fee is ₹20. The expected dividend of fresh share issue is ₹12 per share. The dividend payout ratio is fixed of the company.

Solution:

Calculation of dividend growth rate = Dividend of per share of 5th year/Dividend of per share of 1st year

$$= 12.0/8.5 = 1.41$$

1.41 in 4 years = 9% [Compound (future value) of 1 rupee tables]

The dividend growth rate is 9%.

$$K_e = \frac{D}{NP} \times 100 + G$$

Where,

Expected dividend per share (D) = ₹12

Net proceeds per share (NP) = Face value – Underwriting fee

$$= ₹100 - ₹20 = ₹80$$

Growth Rate of dividends (G) = 9%

Cost of Equity Capital $(K_e) = \frac{12}{80} \times 100 + 9\% = 15\% + 9\% = 24\%$

3) **Earning Yield Method:** Under the 'Earning Yield Method', the minimum rate of return required to be earned on the market price of a share is the cost of equity capital, calculation of which is carried out by applying the following formula:

Cost of equity capital $K_e = \frac{EPS}{NP} \times 100$

or $K_e = \frac{EPS}{MP} \times 100$

Where,

K_e = Cost of equity capital

EPS = Earning per share (Profit after tax/ Outstanding shares)

NP = Net proceeds per share

MP = Market price per share

Example 18: A company shares are currently trading at a price of ₹70 with 5,00,000 outstanding shares. Their expected profit after tax for the coming year is ₹84,00,000. Calculate the cost of equity capital as per earning yield method.

Solution: $K_e = \frac{EPS}{MP} \times 100$

Where,

Market price per share (MP) = ₹70

Earning per share (EPS) $= \frac{\text{Profit after tax}}{\text{Outstanding number of shares}} = \frac{84,00,000}{5,00,000} = ₹16.8$

Cost of Equity Capital $(K_e) = \frac{16.8}{70} \times 100 = 24\%$

4) **Earning Growth Method:** Under this method, the cost of existing share capital is calculated, by replacing 'Net Proceeds' with 'Market Price' and adding 'Growth Rate in Earnings' as under:

$$K_e = \frac{EPS}{MP} \times 100 + G$$

Where,

K_e = Cost of equity capital

E = Earnings per share

MP = Current market price of shares

G = Growth rate in earnings

E. V. Walter, an expert on the subject has favoured the earning model to the dividend model. A quotation from his views is as follows: "Earnings model is preferable to dividend model due to different variables such as tax rate, economic conditions, earnings, shareholder's reactions".

Example 19: The current price of an equity share of ₹10 is quoted in the market at ₹20. The earning per share is ₹3. Growth rate in earnings is given to be 10% p.a. Calculate the cost of equity based on earnings growth model.

Solution: $K_e = \dfrac{EPS}{MP} \times 100 + G$

Where,

Earning per share (EPS) = ₹3

Market price per share (MP) = ₹20

Growth rate in earnings (G) = 10%

Cost of Equity Capital $(K_e) = \dfrac{3}{20} \times 100 + 10\% = 15\% + 10\% = 25\%$

5) **Realised Yield Method:** Under this method, the deficiencies/shortcomings prevailing in 'Dividend Yield Method (DYM)' or 'Earning Yield Method (EYM)' are addressed. The methods (DYM and EYM) are based on the forecasting of dividends and earnings respectively. Possibility of forecasting may go wrong, due to a number of factors (beyond anybody's control) cannot be ruled out. Realised Yield Method is based on the actual (not projected) earnings on all the investments. This method helps in finding out the quantum of money financed from 'equity share capital' and 'revenue amount of past profit'. This enables to calculate cost of equity capital by applying following formula:

$$K_e = (W_1 \times W_2 \times W_3 \dots W_n)^{1/n} - 1$$

The wealth/yield of equity for the year is:

$$W_t = \dfrac{D_t + P_t}{P_{t-1}}$$

Where,

K_e = Cost of equity capital

W_t = Wealth/Yield for the year t

D_t = Dividend per share at the end of the year t

P_t = Price per share at the end of the year t

P_{t-1} = Price per share at the beginning and at the end of the year

Example 20: The dividend per share for last three years are ₹10, ₹12 and ₹14 respectively. The price per share at the beginning of the years was ₹20, ₹25 and ₹30. What will be the cost of equity?

Solution: $W_t = \dfrac{D_t + P_t}{P_{t-1}}$

For First Year:

Where,

Dividend per share at the end of the year t (D_t) = ₹10

Price per share at the end of the year t (P_t) = ₹25

Price per share at the beginning and at the end of the year (P_{t-1}) = ₹20

$$W_t = \dfrac{10 + 25}{20} = ₹1.75$$

For Second Year:

Where,

Dividend per share at the end of the year t (D_t) = ₹12

Price per share at the end of the year t (P_t) = ₹30

Price per share at the beginning and at the end of the year (P_{t-1}) = ₹25

$$W_t = \dfrac{12 + 30}{25} = ₹1.68$$

Cost of Equity Capital $(K_e) = (W_1 \times W_2 \times \dots W_n)^{1/n} - 1$

$K_e = (1.75 \times 1.68)^{1/2} - 1 = 1.7146 - 1 = 0.7146$ or 71.46%

6) **Capital Asset Pricing Model (CAPM):** This model is based on the relationship between the 'required rate of return' on a risk-free security', 'the cost of equity capital' and 'non-diversifiable risk of the company' as indicated in its index of 'non-diversifiable risk beta', as under:

$$K_e = R_f + b (K_m - R_f)$$

or

$$= \text{Risk free return} + \beta (\text{Market return} - \text{Risk free return})$$

Where,

K_e = Cost of equity capital

R_f = The rate of return required on a risk free asset/security

K_m = The required rate of return on the market portfolio of assets that can be viewed as the average rate of return on all assets

b = The beta coefficient

Example 21: Calculate the return on investment from the following data/information:

Risk-free return	10.0%
Market return	12.5%
β	1.5

Solution: Return on investment = Risk free return + β (Market return – Risk-free return)

$$= 10\% + 1.5 (12.5\% - 10\%) = 13.75\%$$

Example 22: The market is giving an average return of 18%. The risk-free return is 11%.

Required

i) What return would be expected from an investment having a β-factor of 0.9?

ii) What β-factor would be necessary for an investment to yield a return of 21.6%?

Solution:

i) Return = Risk-free return + β (Market return – Risk free return)

$$= 11\% + 0.9 (18\% - 11\%) = 17.3\%$$

ii) Return = Risk-free return + β (Market return – Risk free return)

$$21.6 = 11\% + \beta (18\% - 11\%)$$

$$10.6\% = \beta (7\%) \text{ or } \beta = 10.6/7 = 1.51\%$$

1.3.5. Cost of Retained Earnings (K_r)

A company is not required to pay dividend out of the 'Retained Earnings', because it is the amount which is set aside before taking a decision with regard to dividend distribution. However, to have a view that there is no cost involved in 'Retained earnings', may perhaps not be right. Some form of return is expected by the shareholders from the 'Retained Earnings' also. The cost of 'Retained Earnings' may be the rate of return, which the existing shareholders would have got, if the 'Retained Earnings' will be invested elsewhere appropriately. In other words, cost of 'Retained Earnings' is nothing but the opportunity cost of additional dividends, the shareholders would have got, if the 'Retained Earnings' had not been set aside and consider for the payment of dividends.

For the calculation of the cost of 'Retained Earnings', following formula is used:

$$K_r = \left(\frac{D}{NP} + G\right) \times (1-t) \times (1-b)$$

or $K_r = K_e (1-t)(1-b)$

Where, K_r = Cost of retained earnings

D = Expected dividend

G = Growth rate

NP = Net proceeds of equity issue

t = Tax rate

b = Cost of purchasing securities, or brokerage cost

K_e = Rate of return available to shareholders/cost of equity capital

Example 23: A firm's K_e (return available to shareholders) is 15%, the average tax rate of shareholders is 60% and it is expected that 4% is brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

Solution: Cost of Retained Earnings $K_r = K_e (1-t)(1-b)$

Where,

Cost of equity capital (K_e) = 15%

Tax rate (t) = 60% or .60

Cost of purchasing securities, or brokerage cost (b) = 4% or 0.04

Cost of Retained Earnings K_r = 15% (1– 0.6)(1– 0.04) = 15% × 0.384 = 5.76%

1.4. OVERALL COST OF CAPITAL/WEIGHTED AVERAGE COST OF CAPITAL (WACC)

1.4.1. Introduction

Weighted Average Cost of Capital (WACC) is also known as the 'Composite Cost of Capital', 'Overall Cost of Capital', or 'Average Cost of Capital'. It is the minimum rate of interest generated from the project to meet the expectations of the investors. It is defined as the total of weighted average cost of individual sources of financing. Calculation of WACC involves following steps:
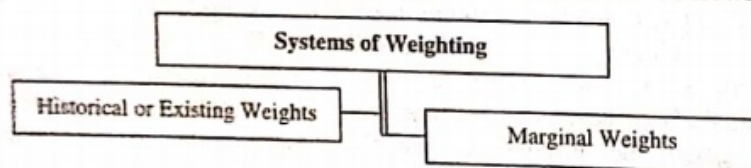
1) 'Specific Cost' of each source of finance is calculated individually.
2) Weight is assigned to each 'Specific Cost' in the ratio of their share in the total cost.
3) Then the weighted average cost of individual sources is arrived at.
4) The total of weighted average cost of all the sources is WACC.

The concept of WACC gains importance in view of the fact that its constituents have various sources of funds, but once they become part of the overall cost of capital, a single homogenous pool is created, which is used for financing specific projects. While evaluating such specific projects, there is no consideration as to which individual source of capital is funding the specific project.

The ideal capital structure depicts the minimum WACC.

1.4.2. Systems of Weighting

The assignment of weight to various sources of funds may be carried out in the following two manners:

```
              ┌─────────────────────────┐
              │  Systems of Weighting    │
              └─────────────────────────┘
       ┌──────────────────────┐   ┌──────────────────┐
       │ Historical or        │   │ Marginal Weights │
       │ Existing Weights      │   └──────────────────┘
       └──────────────────────┘
```

1.4.2.1. Historical or Existing Weights

In an existing capital structure of a company, weights are assigned to individual sources of funds in the ratio of their share in the total capital. When additional funds are raised by the company, it is presumed under this method that the ratio of individual components of overall capital funds would continue to remain same. In other words, the additional funds would be raised in the same ratio as the existing capital structure is optimum.

However, the above presumption may not be true in actual practice, as the companies face certain practical difficulties in ensuring that the additional capital is raised in the same ratio, in view of the following:

1) The existing capital structure may not be optimal and it may not be desirable to maintain *status quo* in respect of various individual components of the overall capital.

2) The company may not be in a position to raise additional capital in the same ratio due to various conditions beyond the control of the company, e.g. demand-supply conditions, political uncertainty, etc.

Under the 'Historical Weight Method', there are two ways of assigning weights:

1) **Book Value Weight:** Book value weights are assigned on the basis of the book value of a 'specific source of funds' as shown in the balance sheet of the company. Book value of that specific source of funds is divided by the book value of the total long term capital.

2) **Market Value Weight:** Market value weights are assigned on the basis of the market value of a 'specific source of funds', which is divided by the market value of the total sources of long term capital.

1.4.2.2. Marginal Weights

The most unfavourable hypothesis, under any of the weighting system is that a company would obtain capital in a specified ratio of its components. One of the choices (out of several) to assign weights to various sources of funds in order to calculate the 'Composite Cost' of capital is the system of 'Marginal Weights'. Under this system, the ratio of various constituents of total sources of funds, the company intends to raise, are understood. Assignment of weight is, therefore, on the additional or incremental funds raised; or in other words, the 'marginal weights'.

1.4.3. Computation of Overall Cost of Capital Using Book Value and Market Value Weights

The weighted average of the cost of different sources is known as the Weighted Average Cost of Capital (WACC) and is determined by using following formula:

$$WACC = K_e \times w1 + K_d \times w2 + K_p \times w3$$

Where,

WACC = Weighted average cost of capital
K_e = Cost of equity capital
K_d = After tax cost of debt
K_p = Cost of preference shares
w1 = Proportion of equity capital in capital structure
w2 = Proportion of debt in capital structure
w3 = Proportion of preference capital in capital structure

Alternatively, Weighted Average Cost of Capital is also computed with the tabular format.

Using Book Value Format

Source (1)	Book Value (₹)(2)	Book Value Weights (3)	After-Tax Cost (%) (4)	Weighted Cost (%)(5) = (4) × (3)
Equity shares	XX	XX	XX	XX
10% Preference shares	XX	XX	XX	XX
Retained Earnings	XX	XX	XX	XX
12% Debentures	XX	XX	XX	XX
12% Loans	XX	XX	XX	XX
	XX	XX	XX	XX
Weighted Average Cost of Capital				XXX%

Using Market Value Format

Source (1)	Market Value (₹) (2)	Market Value Weights (3)	After-Tax Cost (%) (4)	Weighted Cost (%)(5) = (4) × (3)
Equity shares	XX	XX	XX	XX
10% Preference shares	XX	XX	XX	XX
Retained Earnings	XX	XX	XX	XX
12% Debentures	XX	XX	XX	XX
12% Loans	XX	XX	XX	XX
	XX	XX	XX	XX
Weighted Average Cost of Capital				XXX%

1.4.4. Advantages of Weighted Average Cost of Capital

Weighted Average Cost of Capital (WACC) is of paramount importance, as it forms a base for vital decision making processes and calculation of many other useful parameters, and is evident from the following:

1) WACC is considered as a cut-off rate in assessing the profitability of a future project.

2) In determining the viability of a project, WACC is taken as a reference point; if the return from the project is forecasted to be more than WACC, then the project is considered to be viable. Similarly, if a company's earnings are more than the WACC in percentage terms; its market value would increase.

3) For the selection of a project, overall cost of capital is taken into consideration as the individual cost of capital is insufficient for 'Project Selection Process'.

4) Although, for the 'Project Selection Process', a number of options are available, WACC is the most preferred one.

5) The calculation of 'Economic Value Added' (EVA) is carried out by using WACC.

6) WACC shows the minimum rate of return in investment at which a company may create the investors value, therefore it is used as a reference point to assess the level of creation of investors' value. In case the Return on Capital Employed (ROCE) is more than WACC, investor's value would be created; otherwise (ROCE being less than WACC) investor's value would not be created.

1.4.5. Disadvantages of Weighted Average Cost of Capital

There are certain difficulties and limitations of WACC as may be explained from the following:

1) **Determination of the Weights:** The fundamental problem faced in the determination of the average cost relates to assignment of weights to various individual constituents of total capital, which is a difficult task.

2) **Choice of Capital Structure:** The option to decide the type of capital structure for the determination of the average cost is a challenging and difficult task. Various kinds of capital structure are 'Current Capital Structure', 'Marginal Capital Structure', 'Optimum Capital Structure', etc. Normally, (but not always) 'Current Capital Structure' is considered as the optimum capital structure.

3) **Other Limitations**

   i) Average Cost of Capital has certain limitations and therefore is not applicable under following situations:

   a) When the debt policy of a company is under consideration for the fundamental changes.

   b) When the dividend policy of a company is under consideration for the fundamental changes.

   c) When a company is considering change in its 'Growth Objective'.

   d) When the 'Capital Structure' of a company is under change with regard to its debt-equity proportion.

   ii) The assumption that the cost incurred in raising the funds is independent to the value funds raised, may not be practically possible.

   iii) The 'Specific Cost' relates to the existing capital structure and undergoes changes when additional funds are raised. Measurement of the cost of additional funds is rather difficult; it can only be estimated. Change in additional financing capital structure would result in the change of effective rate of capital.

Example 24: Calculate Weighted Average Cost of Capital (WACC) from the following data of RIL Industries:

Source	(₹) in Lac
Equity shares capital [20,000 shares]	40
16% Preference shares capital	10
14% Debentures	30
	80

The company pays dividend at 10%. Compute Weighted Average Cost of Capital (WACC) based of existing Capital structure.

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Solution: Computation of Weighted Average Cost of Capital (WACC) of Existing Capital Structure

Sources (1)	Amount (In Lac) (2)	Weights (W) (3)	After Tax Cost (%) (4)	Weighted Cost (%) (5) = (3 × 4)
Equity Shares Capital	40	0.500	10	5.00
Preference Shares Capital	10	0.125	16	2.00
Debentures	30	0.375	14	5.25
	80	1.000		12.25%

Thus, Weight Average Cost of Capital (WACC) = 12.25%

Example 25: The entire capital structure of a company is provided alongwith the tax adjusted cost of each component. Determine the weighted average cost of capital (WACC).

Components of Capital	₹	Tax Adjusted Cost of Capital
12% Debentures	30,00,000	8%
9% Preference Shares	20,00,000	9%
Equity Shares	50,00,000	14%

Solution:

Computation of Weighted Average Cost of Capital

Components of Capital (1)	Amount (₹) (2)	Weights (W) (3)	Tax Adjusted Cost of Capital (%) (4)	Weighted Cost (%) (5) = (3 × 4)
12% Debentures	30,00,000	0.30	8	2.40
9% Preference Shares	20,00,000	0.20	9	1.80
Equity Shares	50,00,000	0.50	14	7.00
	1,00,00,000	1.00		11.20%

Thus, Weighted average cost of capital = 11.2%.

Example 26: Mamta Ltd. has the following capital structure:

Source	₹
Equity Capital (Expected dividend 12%)	5,00,000
10% Preference Shares	2,50,000
8% Loan	7,50,000

You are required to calculate the WACC, assuming 50% as the rate of Income Tax, before and after tax.

Solution:

Computation of Weighted Average Cost of Capital

Sources of Funds (1)	Amount (₹) (2)	Weights (W) (3)	Before Tax Cost (%) (4)	After Tax Cost (%) (5)	Weighted Cost (%) Before Tax (6=3×4)	Weighted Cost (%) After Tax (7=3×5)
Equity Capital	5,00,000	0.333	12	12	4.00	4.00
10% Preference Shares	2,50,000	0.167	10	10	1.67	1.67
8% Loan	7,50,000	0.500	8	4	4.00	2.00
	15,00,000	1.000			9.67%	7.67%

Weighted average cost of capital (K_o) before tax cost is 9.67%.
Weighted average cost of capital (K_o) after tax cost is 7.67%.
Working Note:
Calculation of Loan (After Tax) = Interest (1 – Tax) = 8% (1 – 50%) = 4%

Example 27: Priyadarshini Pvt. Ltd. has following capital structure:

Sources	₹
Equity Capital (Expected Dividend 12%)	10,00,000
10% Preference Capital	5,00,000
8% Loan	15,00,000

Calculate Weighted Average Cost of Capital assuming tax rate of 50% before and after tax.

Solution: Computation of Weighted Average Cost of Capital (K₀) Before and After Tax

Sources (1)	Amount (₹) (2)	Weight (3)	Before Tax Cost (%) (4)	Weighted Cost (%) (5) = (3 × 4)	After Tax Cost (%) (6)	Weighted Cost (%) (7) = (3 × 6)
Equity Capital	10,00,000	0.33	12	3.96	12	3.96
Preference Capital	5,00,000	0.17	10	1.70	10	1.70
Loan	15,00,000	0.50	8	4.00	4	2.00
	30,00,000	1.00		9.66%		7.66%

Term Loan = Interest × (1 – Tax Rate) = 8% × (1 – 0.50) = 4%
Weighted Average Cost of Capital (K₀) Before Tax Cost is 9.66%
Weighted Average Cost of Capital (K₀) After Tax Cost is 7.66%

Example 28: M/s Akshay & Co. has the following Capital Structure as on 31st March, 2019:

Particulars	₹
10% Debentures	3,00,000
9% Preference Shares	2,00,000
Equity (5,000 shares of ₹100 each)	5,00,000
Total	10,00,000

1) The equity shares of the company are quoted at ₹103 and the company is expected to declare a dividend of ₹9 per share for 2019. Assuming the tax rate applicable to the company as 50%, calculate the weighted average cost of capital.

2) Assuming that the company can raise additional long-term loan at 12% for ₹5,00,000 to finance on expansion, calculate the revised weighted cost of capital. The company's assessment is that it will be in a position to increase the dividend from ₹9 per share to ₹10 per share, but business risk associated with new financing may bring down the market price from ₹103 to ₹96 per share.

Solution:

1) **Computation of Weighted Average Cost of Capital (K₀)**

Sources of Funds (1)	Amount (₹) (2)	Weights (W) (3)	Cost of Capital (%) (4)	Weighted Cost (%) (5) = (3 × 4)
10% Debentures	3,00,000	0.3	5	1.5
9% Preference Shares	2,00,000	0.2	9	1.8
Equity Shares	5,00,000	0.5	8.7	4.35
	10,00,000	1.00		7.65

Thus, Weighted Average Cost of Capital (K₀) = 7.65%

Working Note:

Cost of Equity Share $(K_e) = \dfrac{Dividend}{Market\,Price} \times 100 = \dfrac{9}{103} \times 100 = 8.7\%$

Cost of Preference Share Capital $(K_p) = \dfrac{D}{NP} = \dfrac{18,000}{2,00,000} \times 100 = 9\%$

Where, Preference Dividend (D) = 2,00,000 Shares × 9% = ₹18,000
Cost of Debenture (K_d) = Interest (1 – Tax Rate) = 10(1 – 50%) = 5%

2) **Computation of Revised Weighted Average Cost of Capital (K₀)**

Sources of Funds (1)	Amount (₹) (2)	Weights (W) (3)	Cost of Capital (%) (4)	Weighted Cost (%) (5) = (3 × 4)
10% Debenture	3,00,000	0.2	5	1.00
9% Preference Shares	2,00,000	0.13	9	1.17
Equity Shares	5,00,000	0.33	10.42	3.44
12% Long-term Loan	5,00,000	0.33	6	1.98
	15,00,000	1.00		7.59

Thus, Revised Weighted Average Cost of Capital $(K_o) = 7.59\%$

$$\text{Cost of Equity Share } (K_e) = \frac{\text{Dividend}}{\text{Market Price}} \times 100 = \frac{10}{96} \times 100 = 10.42\%$$

Cost of Debenture (K_d) and Preference Shares (K_p) = Same as previous case

Long-term Loan = Interest (1 – Tax Rate) = 12% (1 – 50%) = 12 × 0.5 = 6%

Example 29: The sources of capital structure are enumerated below:

Source	₹
Equity shares	8,00,000
14% Preference shares	5,00,000
10% Term Loan	10,00,000

The expected dividend on equity capital is 10%. The company tax rate is 50%. You are required to calculate the weighted average cost of capital, before and after tax.

Solution: **Computation of Weighted Average Cost of Capital (K_o) Before and After Tax**

Source (1)	Book Value (₹) (2)	Weights (3)	Before Tax Cost (%) (4)	Weighted Cost (%) (5) = (3) × (4)	After Tax Cost (%) (6)	Weighted Cost (%) (7) = (3) × (6)
Equity shares	8,00,000	0.35	10	3.5	10	3.5
Preference shares	5,00,000	0.22	14	3.08	14	3.08
Term Loan	10,00,000	0.43	10	4.3	5	2.15
	23,00,000	1.00		10.88%		8.73%

Term Loan = Interest × (1 – Tax Rate) = 10% × (1 – .50) = 5%.

Weighted Average Cost of Capital (K_o) Before Tax Cost is 10.88%.
Weighted Average Cost of Capital (K_o) After Tax Cost is 8.73%.

Example 30: X Ltd. presents the following capital structure data:

Source	₹
Ordinary shares (1000 shares)	50,000
10% Preference shares	20,000
12% Debentures	15,000
	85,000

The dividend payment of the company is @ of 5%. Further the company raises additional funds for replacement of assets of 14% debenture amounting ₹10,000.

You are ask to find out: weighted average cost of capital of existing as well as new capital structure.

Solution:
1) **Computation of Weighted Average Cost of Capital (K_o) of Existing Capital Structure**

Source (1)	Amount (₹)(2)	Weights (3)	After Tax Cost (4) (%)	Weighted Cost (5) (%) = (3) × (4)
Ordinary Shares	50,000	0.58	5	2.9
Preference Shares	20,000	0.24	10	2.4
Debentures	15,000	0.18	12	2.16
	85,000	1.00		7.46
Weighted Average Cost of Capital (K_o)				7.46%