SOUTHWESTERN UNIVERSITY NIGERIA

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LECTURE NOTE

ON

STRATEGIC FINANCIAL MANAGEMENT I (ACC 415/BUA 405)

Lecture I

INTRODUCTION TO FINANCIAL MANAGEMENT

Introduction

Financial management is that managerial activity which is concerned with the planning and controlling of the firm's financial resources. Though it was a branch of economics till 1890, as a separate activity or discipline it is of recent origin. Still it has no unique body of knowledge of its own and draws heavily on economics for its theoretical concepts even today.

Financial management is about analysing financial situation making financial decision setting financial objectives. Formulating financial plan to attain this objectives and providing effective system of financial control to ensure plan to progress towards the set of objective.

Definitions of Financial Management

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

2. According to Howard and Upon, " Financial Management is the application of the planning and controlling functions to the finance function".

3. According to Ezra Soloman and Pringle John, "Financial Management is concerned with the effective use of an economic resource namely capital fund".

4. A formal definition of finance would be determining acquisition, allocation, understanding and utilisation of financial resources usually in the aim of achieving of some particular goals of objective.

Scope Of Financial Management

Financial Management means the entire excise of managerial efforts devoted to the management of finance, both its sources and uses of financial resources of an enterprise.

Financial management has undergone significant changes over years as regards its scope and coverage. As such the role of finance manager has also undergone fundamental changes over the years. In order to have a better understanding of these changes, it will be appropriate to study both traditional approach and modern approach to the finance function.

I.Traditional Approach

The traditional approach, which was popular in the early part of this century, limited role of financial management to raising and administering of funds required by the enterprise to meet their financial needs. It broadly covered the following three aspects,

i) Arrangement of funds from financial institutions.

ii) Arrangement of funds through issue of financial instruments.

iii) Looking after the legal and accounting relationship between a corporation and its sources of funds.

Thus the traditional concept of financial management included the whole exercise of raising funds externally. The finance manager had a limited role to perform. He was expected to keep accurate financial records, prepare reports on the financial performance and manage cash in a way that the corporation is in a position to pay bills in time. The term "Corporate Finance" was used in place of the present term "Financial Management".

The traditional approach evolved during 1920 continued to dominate academic thinking during forties and through the early fifties. However, in the later fifties it started to be severely criticised and later abandoned on account of the following reasons:

1. Outsiders looking in Approach: This approach treated the subject of finance from the view point of suppliers of funds i.e., outsiders, bankers and investors etc. It followed an outsider-looking in approach and not the insider looking-out approach, since it completely ignored the viewpoint of those who had to take internal financing decisions.

2. Ignored Routine Problems: The approach gave undue emphasis to infrequent happenings in the life of an enterprise. The subject of financial management was confined to the financial problems arising during course of, incorporation, mergers, consolidations and reorganisation of corporate enterprise. As a result this approach did not give any importance to day-to-day financial problems of business undertakings.

3. Ignored Non-Corporate Enterprise: The approach focused only the financial problems of corporate enterprise. Noncorporate industrial organisations remained outside its scope. 4. Ignored Working Capital Financing: The approach laid emphasis on the problems of long term financing. The problems relating to financing short term or working capital were ignored.

II. Modern Approach

The traditional approach outlived its utility due to changed business situations since mid-1950. Technology improvements, innovative marketing operations, development of strong corporate

structure, keen business competition, all made it imperative for the management to make optimum use of available to the financial manager, based on which he could make sound decisions.

The scope of financial management increased with the introduction of capital budgeting techniques. As a result of new methods and techniques, capital investment projects led to efficient allocation of capital within the firm.

i. During the next two decades various pricing models, valuation models and investment portfolio theories also developed.

ii. Efficient allocation of capital became an important area of study under financial management.

iii. Eighties witnessed an era of high inflation, which caused the interest rates to rise dramatically. Thus, raising loan on suitable terms became an important aspect of financial management.

iv. In the new volatile environment investment and financing decisions became more risky than ever before.

v. These environmental changes enlarged the scope of finance. The concept of managing a firm as a system emerged. External factors now no longer could be evaluated in isolation.

vi. Decision to arrange funds were to be seen in consonance with their efficient and effective use. This total approach to study of finance is being termed as financial management.

vii. Thus, according to modern approach/concept, financial management is concerned with both acquisitions of funds as well as their allocation. The new approach views the term financial management in a broader sense.

i) Investment Decision:

The investment decision is a selection of assets in which funds will be invested by a firm. These are broadly divided into two parts; they are - Long-term Assets and Short-term Assets.

a) Long-term Assets: These are the asset which yield over a period of time in future such as capital budgeting. The capital budgeting is a crucial financial decision and it is a process begin with identifications of potential investment opportunities. The capital budgeting decisions relates to the choice of assets out of the alternatives or reallocation of capital when an old assets fails to justify. It is a decision which analyse the risk and uncertainty The worth of long term project implies a certain standard for benefits.

b) Short-term Assets: It is also known as current assets. The short-term assets are resources of a firm in the form of cash or converted in cash without the diminution in value. Example: The working capital management. It is day to day activity of finance which deals with current assets and current liabilities. The two basic ingredients of working capital are i) An overview of working capital management as a whole ii) Efficient management of the individual current assets such as cash, Bills receivables and inventory. ii)

Financial Decision:

The financial decision is process perform by financial manager to decide, when, where from and how to acquire funds to meet the investment needs. The main aspect is to determine the appropriate proportion of debt and equity mix known as capital structure.

III) Dividend Decision:

The financial manager must decide whether the firm should distribute all profit or return to them or distribute a portion. The proportion of profit distributed as dividend is known as dividend payout ratio and retained portion of profit is called retention ratio.

Functions Of Financial Management

There are two approaches to identify the functions that must be performed by financial management. One classification system links the functions with the twin goals of liquidity and profitability. The second classification method focuses on what is being a managed asset or funds.

I. Liquidity Functions:

In seeking sufficient liquidity to carry out the firm's activities, the financial manager performs tasks such as the following:

➢ The day-to-day operations require the firm to be able to pay its bills properly.

➢ This is largely a matter of matching cash inflows against cash outflows.

➢ The firm must be able to forecast the sources and timing of inflows from customers and use them to pay creditors and suppliers.

2) Raising Fund: The firm receives financing from a variety of sources. At different times some sources will be more desirable than others. The possible source may not at a given time, have sufficient funds available to meet firm's need.

The financial manager must identify the amount of funds available from each source and the periods when they will be needed. Then the manager must take steps to ensure that the funds will actually be available and committed to the firm.

3) Managing the Flow of Internal Funds:

A large firm has a number of bank accounts for various operating division. The money that flows among these internal accounts should be carefully monitored. Frequently, a firm has excess cash in one bank account when it has a need for cash elsewhere. By continuously checking on the cash balances in the headquarters and each operating division's accounts, the manager can achieve a high degree of liquidity with minimum external borrowing.

4) Profitability Functions: In seeking profits for the firm the financial manager provides specific inputs into the decision making process, based on the financial training and actions. With respects to profitability, the specific functions are,

i) Cost Control: Most large corporations have detailed cost accounting systems to monitor expenditure in the operational areas of the firm. Data are fed into a system on a daily basis and computer-processed reports containing important information on activities are displayed on a screen.

ii) Pricing: Some of the important decisions made by a firm involve the prices established for products and service. The philosophy and approach to pricing policy are critical elements in the company's marketing efforts, image and sales level. Determination of the appropriate price should be a joint decision of marketing manager provides information on how differing price will affect demand in the market and firm's competitive position.

The financial manager can supply information about changes in costs at varying levels of production and the profit margins needed to carry on the business successfully. In effect, finance provides tools to analyse profit requirements in pricing decisions and contributes to the formation of pricing policies.

iii) Forecasting Profits: The financial manager is responsible for gathering and analysing the relevant data and making forecasts of profits levels. To estimate profits from future sales, the firm must be aware of current costs likely increases in costs and likely changes in the ability of the firm to sell its products at the planned selling prices.

iv) Measuring Required Return: Every time a firm invests its capital, it must make a risk return decision. Is the level of return offered by the project adequate for the level of risk there in? The required rate of return that must be expected from a proposal before it can be accepted. It is

sometimes called the cost of capital. Determining the firm's required return or cost of capital is a profitability function.

v) Management functions: In performing many functions leading to liquidity and profitability, the financial manager operates in two distinct roles. One role is manager, decision maker, a participant in the corporate team trying to maximise the value of the firm over the long run. The other role is an expert of financial matters and money markets, an individual with specific knowledge and skills in the area of money management. These roles are recognised in the two categories of functions performed by the financial manager.

vi) Managing Assets: Assets are the resources by which the firm is able to conduct business. The term assets include buildings, machinery, vehicles, inventory, money and other resources owned or leased by the firm. A firm's assets must be carefully managed and a number of decisions must be made concerning their usage. The function of asset management attests to the decision making role of the financial manager. Finance personnel meet with other officers of the firm and participate in making decisions affecting the current and future utilisation of the firm's resources. The decision making role crosses liquidity and profitability lines, converting idle equipment to cash, so as to improve liquidity, reducing costs and improving profitability.

II. Managing Funds: Funds may be viewed as the liquid assets of the firm. The term funds includes cash held by the firm, money borrowed by the firm, money borrowed by the firm, money gained from purchases of common and preferred stock. In the management of funds, the financial manager acts as a specialised staff officer to the CEO of company. The manager is responsible for having sufficient funds for the firm to conduct its business and to pay its bills.

Money must be allocated to finance receivables and inventories, to make arrangements for the purchase of assets and to identify sources of long term financing. Cash must be available to pay dividends declared by the company. The management of funds has both liquidity and profitability aspects. If the companies are inadequate, the firm may default on the payment of bills, interest on its Debt or repayment of principle when a loan is due. If the firm does not carefully choose its financing sources it may pay excessive interest costs with a subsequent decline in profits.

Finance Functions

Although it may difficult to separate the finance functions from production, marketing and other functions, yet the functions themselves can be readily identified. The functions of raising funds, investing them in assets and distributing returns earned from assets to shareholders are respectively known as financing, investment and dividend decisions. While performing these functions, a firm attempts to balance cash inflows and outflows. This is called liquidity decision

and we may add it to the list of important finance decision or functions. Finance functions or decisions include,

1. Investment or long term asset-mix decision.

2. Financing or Capital- mix decision.

3. Dividend or Profit allocation decision.

4. Liquidity or Short term asset-mix decision.

A firm performs finance functions simultaneously and continuously in the normal course of the business. They do not necessarily occur in a sequence. Finance functions call for skilful planning, control and execution of a firm's activities. Let us note at the outset that shareholders are made better off by a financial decision that increase the value of their shares. Thus while performing the finance functions, the financial manager should strive to maximise the market value of shares. This point is elaborated in detail later on.

I. Investment Decision: Investment decision or capital budgeting involves the decision of allocation of capital or commitment of funds to long term assets that would yield benefits in the future. Two Important aspects of the investment decision are:

1. The evaluation of the prospective profitability of new investments; and

2. The measurement of a cut off rate against that the prospective return of new investments could be compared.

i. Future benefits of investments are difficult to measure and cannot be predicted with certainly.

ii. Because of the uncertain future, investment decisions involve risk. Investment proposals should, therefore, be evaluated in terms of both expected return and return.

iii. Besides the decision to commit funds in new investment proposals, capital budgeting also involves decision of recommitting funds when an asset becomes less productive or non-profitable.

iv. There is a broad agreement that the correct cut off rate is the required rate of return or the opportunity cost of capital.

v. However, there are problems in computing the opportunity cost of capital in practice from the available data and information. A decision maker should be aware of these problems.

i. Financing decision is the second important function to be performed by financial manager.

ii. Broadly, he or she must decide when, where and how to acquire funds to meet the firm's investment needs.

iii. The central issue before him or her is to determine the proportion of equity and debt.

iv. The mix of debt and equity is known as the firm's capital structure for his or her firm.

v. The firm's capital structure is considered to be optimum when the market value of shares is maximised.

vi. The use of debt affects the return and the risk of shareholders, it may increase the return on equity funds bit it always increases risk.

vii. When the shareholders return is maximised with minimum risk, the market value per share will be maximised and the firm's capital structure would be considered optimum.

viii. Once the financial manager is able to determine the best available sources.

ix. In practice, a firm considers many other factors such as control, flexibility, loan convenient, legal aspects etc., in deciding its capital structure.

i. Dividend decision is the third major financial decision.

ii. The financial manager must decide whether the firm should distribute all profits or retain them or distribute a portion of profit and retain the balance in the business.

iii. Like the debt policy, the dividend policy is one that maximises the market value of the firm's shares. iv. Thus, if shareholders are not indifferent to the firm's dividend policy, the financial manager must determine the optimum dividend-payout ratio.

v. The pay-out ratio is equal to the percentage of dividends to earnings available to shareholders.

vi. The financial manager should also consider the questions of dividends regularly.

vii. Periodically, additional shares called bonus shares (or stock divided) are also issued to the existing shareholders in addition to the cash dividend.

IV. Liquidity Decision:

i. Current assets management that affects a firm's liquidity is yet another r important fiancé function, in addition to the management of long-term assets.

ii. Current assets should be managed efficiently for the safeguarding the firm against the dangers of liquidity and insolvency.

iii. Investment in current assets affects the firm's profitability, liquidity and risk. A conflict exists between profitability and liquidity while managing current assets.

iv. If the firm does not invest sufficient funds in current assets, it may become liquid.

v. But it would lose profitability, as idle current assets would not earn anything.

vi. Thus, a proper trade-off must be achieved between profitability and liquidity.

vii. In order to ensure that neither insufficient nor unnecessary funds are invested in current assets.

viii. He or she should estimate firm's needs for current assets and make sure that funds would be made available when needed.

ix. It would be clear that financial decision directly concern the firm's decision to acquire or dispose off assets and require commitment or recommitment of funds on a continuous basis.

x. It is in this context that finance functions are said to influence production, marketing and other functions of the firm.

xi. This is in consequence finance functions may affect the size, growth, profitability and risk of the firm and ultimately, the value of the firm.

Lecture II

OBJECTIVES / GOALS OF THE FIRM

Introduction

i. The firm's investment and financing decisions are unavoidable and continues.

ii. In order to make them rationally the firms must have a goal.

iii. It is generally agreed in theory that the financial goal of the firm should be the maximisation of owners' economic welfare.

iv. Owners' economic welfare could be maximised by the shareholders wealth as reflected in the market value of shares.

v. In this section, we show that the Shareholders Wealth Maximization (SWM) is to theoretically logical and operationally feasible normative goal for guiding the financial decision making.

I. PROFIT MAXIMISATION:

i. Profit maximization means maximising the rupee or any other currency such as dollar, pound or both income of firms.

ii. Profit is a primary motivating force for any economic activity. Firm is essentially being an economic organisation, it has to maximise the interest of its stakeholders. To this the firm has to earn profit from its operations.

iii. In fact, profits are useful intermediate beacon (encouragement/inspiration/ guiding light/symbol of hope/signal) towards which a firm's capital should be directed.

iv. McAlpine rightly remarked that profit cannot be ignored since it is both a measure of the success of business and means of its survival and growth.

v. Profit is the positive and fruitful difference between revenues and expenses of a business enterprise over a period of time.

vi. If an enterprise fails to make a profit, capital invested is eroded /wrinkled/windswept and this situation prolongs, the enterprise ultimately ceases to exist.

vii. The overall objective of business enterprise is to earn at least satisfactory returns on the funds invested, consistent with maintaining a sound financial position.

Limitations: The goal of profit maximisation has, however, been criticised in recent times because of the following reasons:

1. Vague:

i. The term “profit” is vague and it does not clarify what exactly it means. It has different interpretations for different people. Does it mean short-term or long-term; total profit or net profit; profit before tax or profit after tax; return on capital employed.

ii. Profit maximisation is taken as objective, the question arises which of the about concepts of profit should an enterprise try to maximise. Apparently, vague expression like profit can form the standard of efficiency of financial management.

2. Ignores Time Value of Money:

i. Time value of money refers a rupee receivable today is more valuable than a rupee, which is going to be receivable in future period.

ii. The profit maximisation goal does not help in distinguishing between the returns receivable in different periods.

iii. It gives equal importance to all earnings through the receivable in different periods. Hence, it ignores time value of money.

3. Ignores Quality of Benefits:

i. Quality refers to the degree of certainty with which benefits can be expected.

ii. The more certain expected benefits, the higher are the quality of the benefits and vice versa.

iii. Two firms may have same expected earnings available to shareholders, but if the earnings of one firm show variations considerably when compared to the other firm, it will be more risky.

❖ Profit maximisation objective leads to exploiting employees and consumers. It also leads to colossal /vast inequalities and lowers human values that are an essential part of ideal social systems.

❖ It assumes perfect competition and in the existence of imperfect competition, it cannot be a legitimate/lawful/legal objective of any firm. It is suitable for self-financing, private property and single ownership firms.

❖ A company is financed by shareholders, creditors and financial institutions and managed and controlled by professional managers. A part from these people, there are some others who are interested towards company (i.e., employees, government, customers and society).

❖ Hence one has to take into consideration all these parties interests, which is not possible under the objective of profit maximisation. Wealth maximisation objective is the alternative of profit maximisation.

II. SHAREHOLDERS WEALTH MAXIMISATION (SWM) :

i. On account of above discussed limitations of profit maximisations shareholders wealth maximisation is an appropriate goal for financial decision making.

ii. It is operationally feasible since it satisfies all the three requirements of a suitable operational objective of financial courses of action namely exactness, quality of benefits and the time value of money.

iii. The objective of Shareholders wealth maximization is an appropriate and operationally feasible criterion to choose among the alternative financial actions.

iv. It provides an unambiguous measure of what financial management should seek to maximise in making investment and financing decisions on behalf of owners (shareholders).

v. Shareholders Wealth Maximisation means maximising the net present value (or wealth) of a course of action to shareholders.

vi. The Net Present Value (NPV) of course of action is the difference between the present value of its benefits and present value of its costs.

vii. A financial action that has a positive NPV creates wealth for ordinary shareholders and therefore, desirable/preferable and vice versa.

viii. A financial action resulting in negative NPV should be rejected since it would destroy shareholders wealth. Between a numbers of mutually exclusive projects the one with the highest NPV should be adopted. The NPV of firm's projects add. Therefore, the wealth will be maximised if this criterion is followed in making financial decisions.

ix. The wealth will be maximised if this criterion is followed in making financial decisions.

x. From shareholders point of view, the wealth created by corporation through financial decisions or any decision is reflected in the market value of company shares.

xi. For example, take Infosys Co., whose share price is increasing year by year, even by issue of bonus shares, and the company is trying to put its shares at popular trading level.

xii. Therefore, the wealth maximisation principle implies that the fundamental objective of a firm is to maximise market value of its shares.

xiii. In other words, the market value of the firm is represented by its market price, which in turn is a reflection of a firm's financial decisions.

xiv. Hence market price acts as a firm's performance indicator.

xv. A shareholders wealth at a period of time can be computed by the following formula:

$$SW_t = NS \times MP_t$$

where SW_t = shareholders wealth at 't 'period.

NS = Number of equity shares owned (outstanding)

MP_t = Market price of share at 't' period.

III. EARNING PER SHARE (EPS) MAXIMISATION :

i. Apart from the above discussed goals, there are several alternative goals, which will again help to maximise value of the firm or market price per share. They are:

ii. Maximisation of Return on Equity(ROE)

iii. Maximisation of Earnings Per Share (EPS)

iv. Management of Reserves for Growth and Expansion.

v. If we adopt maximising earnings per share as the financial objective of the firm, this will also not ensure the maximisation of owner's economic welfare.

vi. It also suffers from the flows already mentioned, i.e., ignores time and risk of the expected benefits. Apart from these problems, maximisation of earnings per share has certain deficiencies as a financial objective.

vii. For example, Note the following observation,

viii. For one thing, it implies that the market value of employee's shares is a function of earnings per share, which may not be true in many instances.

ix. If the market value is not a function of earnings per share, then maximisation of the latter will not necessarily result in the highest possible price for the company's shares.

x. Maximisation of earnings per share further implies that the firm should make no dividend payments so long as funds can be invested internally at any positive rate of return, however small. Such a dividend policy may not always be to the shareholders advantage.

xi. It is thus, clear that maximising profits after taxes or earnings per share as the financial objective fails to maximise the economic welfare of owners.

xii. Both methods do not take account of the timing and uncertainty of the benefits. An alternative to profit maximisation, which solves these problems, is the objective of wealth maximisation. This objective is also considered consistent with the survival goal and with the personal objectives of managers. Such as recognition, power, status and personal wealth.

PROFIT MAXIMIZATION Vs WEALTH MAXIMISATION

Profit maximisation is basically a single period or almost, short term goal, to be achieved within one year, it is usually intercepted to mean the maximisation of profits within a given period of time. A corporation may maximise its short term profits at the expense of its long term profitability. In contrast, stockholder wealth maximisation is a long term goal, since stakeholders are interested in future as well as present profits. Wealth maximisation is generally preferred because it consider,

(a)Wealth for the long term.

(b)Risk or uncertainty.

(c)The timing of return.

(d) The stakeholders return.

Timing of returns is important, the earlier the return is received, the better, since a quick return reduces the uncertainty about receiving the return and the money received can be reinvested sooner. The following Table summarises the advantages and disadvantages of these two often conflicting goals.

Lecture III

RISK-RETURN TRADE-OFF

Introduction

i. Risk is present in every business decision, whether it is corporate decision or personal decision.

ii. When we say risk, most of us think in the negative sense.

iii. For example, driving a two wheeler too fast is risky, because it may lead to accident, which in turn may take like of the people sitting on the vehicle and people moving on the road.

iv. A student planning to take slips with him/her for examination and trying to copy from them.

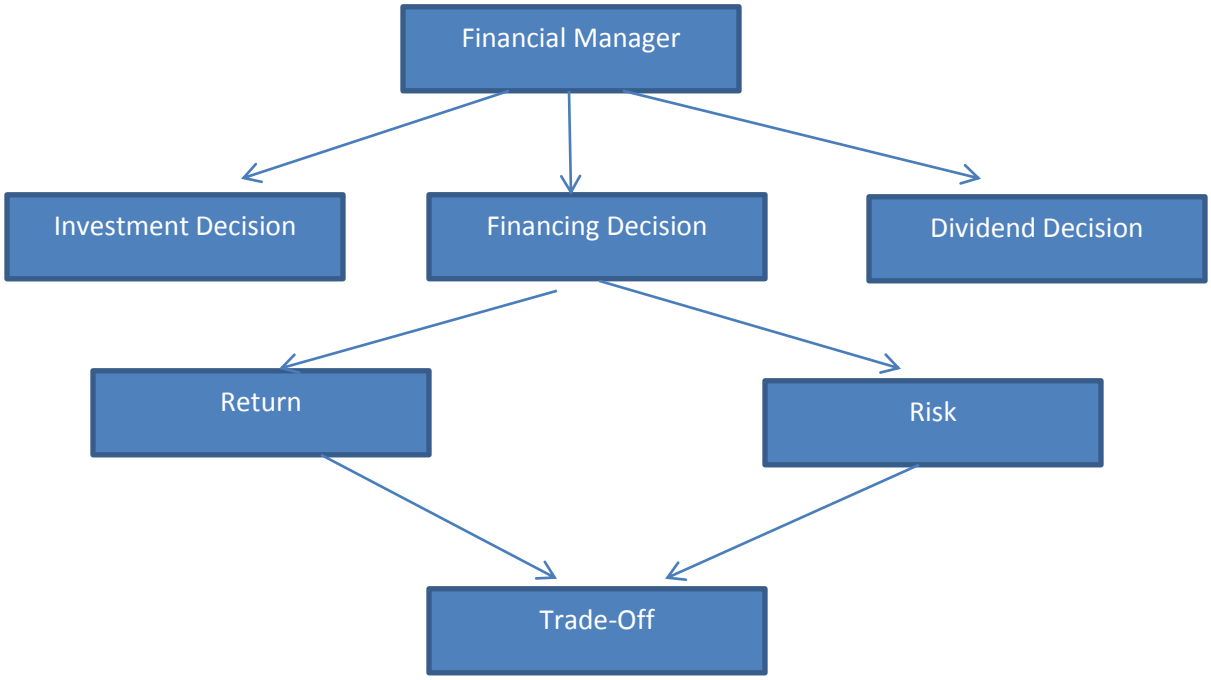
v. It is risky when he / she is caught by the room supervisor or squad.

vi. According to the business dictionary risk refers, threat or damage injury or liability or loss of other negative occurrence caused by external or internal vulnerabilities.

vii. But, from business point of view risk is the variability in an expected return. In other words, business people see the risk in broader perspective. They see risk in the business when they realize less return than expected.

viii. Actual return may be less than the expected return, because of risks like, business risk, financial risk, default risk, delivery risk, interest rate risk, exchange rate risk, liquidity risk, investment risk and political risk.

ix. For example, selection of an asset for production department or developing a new product or financial decisions like- developing capital structure, working capital management, and dividend decision. Therefore, the decision makers have to assess risk and return of investing on asset before taking any financial decision. Finance Manager Investment Decision Dividend Decision Financing Decision Return Risk Trade-off



i. One should keep in mind that the objective of measuring risk is not to eliminate or avoid it- because it is not feasible to do so.

ii. But it helps us in assessing and determining whether the proposed investment is worth or not. In other words, assessing risk helps come up with the appropriate risk adjusted discount rate to convert future cash inflows into present values.

iii. There is relation between the risk and return. Any decision that involves more risk generally we can expect more returns from taking that decision, and vice versa.

iv. In some decisions we do not assume any risk or assume zero risk, but we get some return. Return on this type of investment / decision is known as risk free return (R1). For example, investing in bank fixed deposits, because the bank account is insured by Central Bank- Reserve Bank of India.

v. Return determined on the basis of total assets. There are a good number of techniques available for measuring risk like range, standard deviation and coefficient of variation, but generally risk is measured with the help of standard deviation.

vi. Less standard deviation indicates less risk and vice versa.

vii. From the following figure we can understand that higher the risk and higher the expected return and vice versa.

viii. But we can earn 5% return (R1) without assuming any risk. In other words, we can earn risk free return.

Standard Deviation / Risk

i. Anyone who assumes higher risk may expect higher return, and lower risk lower return.

ii. When the risk increases from 0.5 to 2.0, the expected return also increased from 5 per cent to 20 per cent.

iii. But one thing we need to understand is that there is no equal proportion of increase in the expected return.

TIME VALUE OF MONEY

i. The simple concept of time value of money is that the value of the money received today is more than the value of same amount of money received after a certain period.

ii. In other words, money received in the future is not as valuable as money received today. The sooner one receives money, the better it is.

iii. Taking the case of a rational human being, given the option to receive a fixed amount of money at either of two time periods, he will prefer to receive it at the earliest.

iv. If you are given the choice of receiving ₦1,000 today or after one year, you will definitely opt to receive today than after one year.

v. This is because of you value the current receipt of money higher than future receipt of money after one year.

vi. The phenomenon is referred to as time preference for money.

REASONS FOR TIME PREFERENCE MONEY:

1. The future is always uncertain and involves risk. An individual can never be certain of getting cash inflows in future and hence he will like to receive money today instead of waiting for the future.

2. People generally prefer to use their money for satisfying their present needs in buying more food or clothes or another car than deferring them for future.

i. The present needs are considered urgent as compared to future needs.

ii. Moreover, there may also be a fear in one's mind that he may not be able to use the money in future for fear of illness or death.

3. Money has time value because of the opportunities available to invest money received at earlier dates at some interest or otherwise to enhance future earnings. For example, if you have ₦100 today, you can put it in your bank account and earn interest. After one year the interest would be Rs.8 (taking rate of interest at 8% p.a.) and you would have ₦108 at the end of the year. So, if you have a choice between ₦108 next year or ₦100 next year. Any rational person would prefer the larger amount.

TECHNIQUES OF TIME VALUE OF MONEY:

There are two techniques for adjusting the time value of money:

Compounding Technique; and

Discounting or Present Value Technique

The time preference for money encourages a person to receive the money at present instead of waiting for future. But he may like to wait if he is duly compensated for the waiting time by way of ensuring more money in future.

The future value at the end of period I can be calculated by a simple formula given below:

$$V_1 = V_0 (1+i)$$

Where

V_1 = Future value at the period I

V_0= Value of money at time 0 i.e., original sum of money.

i= Interest Rate.

COMPOUNDING FACTORS TABLES: `

We have noted above that as n becomes large, the calculation of $(1+i)^n$ becomes difficult. Such calculations can be made with the help of as per Compound Factor Tables.

Using the Compound Factor Tables, the future value of money can be calculated as below:

$$V_n = V_o(CF_i , n)$$

where

CF_i , n is compound factor at (i) present and n periods.

DOUBLING PERIOD:

Compound factor tables can be easily used to calculate the Doubling period, i.e., the length of period which an amount is going to take to double at a certain given rate of interest.

So far we have considered only one compounding of interest annually. But in many cases, interest may have to be compounded more than one year. For example, banks may allow interest on quarterly basis or a company may allow compounding of interest twice a year on 30th June and 31st December every year. The future value of money in such cases can be calculated below:

$$V_n = V_o(1+i / m)^{m \times n}$$

where

V_n = future value of money after n years.

V_o = Value of money at time O, i.e., original sum of money.

i= interest rate

m = number of times (frequency) of compounding per year.

EFFECTIVE RATE OF INTEREST IN CASE OF MULTI-PERIOD COMPOUNDING:

i. We have noticed above that amount grows faster in case of multiperiod compounding, i.e., when frequency of interest compounding is more than once a year.

ii. It is so because the actual rate of interest realised, called effective rate in case of multi-period compounding is more than the parent annual rate of interest called nominal rate.

iii. Effective rate of interest in case of multi-period compounding can also be calculated with the use of following formula:

$$EIR = (1+ I / m) - 1$$

Lecture IV

THE INVESTMENT PROCESS

MEANING OF CAPITAL BUDGETING:

Capital budgeting is the process of making investment decisions in capital expenditures. A capital expenditure may be defined as an expenditure the benefits of which are expected to be received over a period of time exceeding one year.

DEFINITIONS OF CAPITAL BUDGETING

1.According to Charles T. Horngreen, " capital budgeting is long term planning for making and financing proposed capital outlays."

2. According to Richard and Greenlaw, " capital budgeting as acquiring inputs with long run return."

3. In the words of Lynch, "capital budgeting consists in planning development of available capital for the purpose of maximising the long term profitability of the concern."

SIGNIFICANCE OF CAPITAL BUDGETING

1. Indirect Forecast of sales:

i. The Investment in fixed assets is related to future sales of the firm during the life time of the assets purchased.

ii. It shows the possibility of expanding the production facilities to cover additional sales shown in the sales budget.

iii. Any failure to make the sales forecast accurately would result in over investment or under investment in fixed assets and any erroneous forecast of asset needs may lead the firm to serious economic results.

2. Comparative study of Alternative Projects:

i. Capital budgeting makes a comparative study of the alternative projects for the replacement of assets which were wearing out or in danger of becoming obsolete so as to make the best possible investment in the replacement of assets.

ii. For this purpose, the profitability of each project is estimated.

3. Timing of Assets-Acquisition:

i. Proper capital budgeting leads to proper timing of assets-acquisition and improvement in quality of assets purchased.

ii. It is due to the nature of the demand and supply of capital goods.

iii. The demand of capital goods does not arise until sales impinge on productive capacity and such situation occurs only immediately. On the other hand, supply of capital goods with their availability is one of the functions of capital budgeting.

4. Cash Forecast:

i. Capital investment requires substantial funds which can only be arranged by making determined efforts to ensure their availability at the right time.

ii. Thus it facilities cash forecast.

iii. Wealth Maximization of shareholders:

iv. The impact of long term capital investment decisions is far reaching.

v. It protects the interests of the shareholders and the enterprise because it avoids over-investment and under-investment in fixed assets.

vi. By selecting the most profitable projects, the management facilitates the wealth maximization of equity shareholders.

5. Other Factors:

i. It assist in formulating a sound depreciation and assets replacement policy. It may be useful in considering the cost reduction.

ii. A reduction campaign may necessitate the consideration of purchasing most up to-date and modern equipment.

iii. The feasibility of replacing manual work by machinery may be seen from the capital forecast be comparing the manual cost with the capital cost.

iv. The capital cost of improving working conditions or safety can be obtained through capital expenditure forecasting.

v. It facilitates the management in making of the long-term planning of an assists in the formulation of general policy.

vi. It studies the impact of capital investment on the revenue expenditure of the firm such as depreciation, insurance on fixed assets.

LIMITATIONS OF CAPITAL BUDGETING:

1. Uncertainty in future: The Capital budgeting proposals are infested with the uncertainty in future. All data used in the evaluation of proposals is the estimates. The data is error-prone more with the human judgement, bias or discretion in the identification of cash inflows and cash out flows. Even advanced capital budgeting techniques such as sensitivity analysis cannot be useful if the data is erroneous.

2. Qualitative factors ignored: In capital budgeting, we consider only such factors which can be quantified in terms of money. Factors such as improved morale of employees as a result of implementation of proposals are not focused. The other factors in the business environment such as social, political and economic conditions and so on, are not reflected here.

3. Volatile business conditions: The factors influencing investment decisions include technological advancement, government policies, sales forecast, attitudes of management, estimated cash flows discount factor and rate of return. Any change in one or more of these factors is going to affect the capital budgeting decisions. .

4. Unrealistic Assumptions: There are certain unrealistic assumptions underlying capital budgeting process. They are i) There is no risk and uncertainty in the business environment. This is not correct. The future of the business is full of uncertainty and we apply the management techniques to minimise the risk. ii) The cash flows are received in lump sum at the end of the given period. iii) The key variables such as sales revenue, costs , price or investments and so on are taken based on past data. Particularly in times of raising prices, these seldom hold good for future. iv) The cost of capital and discount rates are one and the same.

Lecture V

COST OF CAPITAL

Introduction

The cost of capital is the measurement of the sacrifice made by an investor in order to capital formation with a view to get a fair return as his investment as a reward is the measurement of disutility of funds in the present as compared to the return expected in future. The cost of capital is the required rate of return to justify the use of capital so that the expected rate of return can be maintained on equity share and market value per share remains unchanged or should not be reduced at least.

MEANING & DEFINITIONS OF COST OF CAPITAL

"The cost of capital is the rate of return that a firm must earn on its project investment to maintain its market value of the firm to remain unchanged and attract fund." According to James C. Van Home, "The cost of capital represents a cut-off rate of the allocation of capital to investment of project. It is the rate of return on a project that will leave unchanged the market price of the stock." According to Salomon Ezra, "The cost of capital in any discounting rate, used to value cash stream." According to Salomon Ezra, "The cost of capital is the minimum required of a earnings on the cut-off rate of capital expenditures."

SIGNIFICANCE / IMPORTANCE OF COST OF CAPITAL

The cost of capital is a very important concept in financial management decision making. The concept, is however a recent development and has relevance in almost every financial decision making but prior to the development, the problem was or bypassed. There are almost 5 important reasons for management to aware the cost of capital (K_o).

1. Capital Budgeting Decision:

i. Cost of capital may be used as the measuring road for adopting an investment proposal.

ii. The firm naturally, will choose the project which gives a satisfactory return on investment which would in no case be less than the cost of capital incurred for its financing.

iii. In various methods of capital budgeting, cost of capital is the key factor in deciding the project out of various proposals pending before the management.

iv. It measures the financial performance and determines the acceptability of all investment opportunities.

2. Designing the corporate Financial Structure:

i. The cost of capital is significant in designing the firm's capital structure.

ii. The cost of the capital is influenced by the chances in capital structure.

iii. A capable financial executive always keeps an eye on capital market fluctuations and tries to achieve the sound and economical capital structure for the firm.

iv. He may try to substitute the various methods of finance in an attempt to minimise the cost of capital so as to increase the market price and earning per share.

3. Deciding about the method of Financing:

i. A capable financial executive must have knowledge of the fluctuations in the capital market and should analyze the rate of interest on loans and normal dividends and normal dividend rates in the market from time to time.

ii. Whenever company requires additional finance, he may have a better choice of the source of finance which bears the minimum cost of capital.

iii. Although cost of capital is an important factor in such decisions, but equally important the considerations of relating control and of avoiding risk.

iv. Performance of Top Management:

v. The cost of capital can be used to evaluate the financial performance of the top executives.

vi. Evaluation of the financial performance will involve a comparison of actual profitability of the projects and taken with the projected overall cost of capital and an appraisal of the actual cost incurred in raising the required funds.

5. Other Areas: The concept of cost of capital is also important in many others areas of decision making, such as dividend decisions, working capital policy etc. The cost of capital is considered as a standard of comparison for making different business decisions. Such importance of cost of capital has been presented below:

1. Making Investment Decision:

i. Cost of capital is used as discount factor in determining the net present value.

ii. Similarly, the actual rate of return of a project is compared with the cost of capital of the firm.

iii. Thus the cost of capital has a significant role in making investment decisions.

2. Designing Capital Structure:

i. The proportion of debt and equity is called capital structure.

ii. The proportion which can minimize the cost of capital and maximize the value of the firm is called optional capital structure.

iii. Cost of capital helps to design the capital structure considering the cost of each sources of financing. iv. Investor's expectations effect of tax and potentiality of growth.

3. Evaluating the Performance:

i. Cost of capital is the benchmark of evaluating the performance of different departments.

ii. The department is considered the best which can provide the highest positive met present value to the firm.

iii. The activities of different departments are expanded or dropped out on the basis of their performance.

4. Formulating Dividend Policy:

i. Out of the total profit of the firm, a certain portion is paid to shareholders as dividend. However, the firm can retain all the profits in the business.

ii. If it has the opportunity of investing in such projects which can provide higher rate of return in comparison of cost of capital.

iii. On the other hand, all the profit can be distributed as dividend if the firm has no opportunity investing the profit.

iv. Therefore, cost of capital plays a key role formulating the dividend policy.

IMPORTANCE OF COST OF CAPITAL IN CAPITAL BUDGETING DECISIONS

i. The concept of cost of capital is very essential in the financial management.

ii. It is useful in capital budgeting and in making decision related to capital structure planning.

iii. The performance of the firm is analyzed with the help of concepts of cost of capital and useful in taking other financial decisions.

1. CAPITAL BUDGETING DECISIONS:

i. According its James T.S.Posterfield, “the concept of capital has assumed growing importance largely because of the need to devise a rational mechanism for making investment decisions of the firm”.

ii. Cost of capital is taken into consideration while making capital budgeting decisions.

iii. With the help of cost of capital, firms accept or reject the projects.

iv. It is very useful in capital budgeting decision.

2. CAPITAL STRUCTURE DECISIONS:

i. In order to run a business smoothly, firm must maintain an appropriate level of debt and equity mix to finance the assets.

ii. At the time of preparing optimal capital structure, management must concentrate on maximizing the value of the firm and minimizing the cost of capital.

3. ANALYZING FINANCIAL PERFORMANCE:

i. According to S.K.Bhattacharya, the concept of cost of capital is used to evaluate the financial performance of top management.

ii. At the time of evaluating the performance of top management, the actual profitability of project is compared with overall estimated cost of capital.

iii. If profitability is more, then performance is satisfactory.

4. Other Financial Decisions: Many other financial decisions can be made with the help of cost of capital such as dividend policy, capitalization of profits, working capital etc.

MEASUREMENT OF COST OF CAPITAL

a. The cost of capital is very important for making decisions. Cost of capital involves different costs related to different sources of finance.

b. It is necessary for every firm to compute cost of capital before making decisions. The evaluation process of cost of capital involves two steps.

i) Calculation of different costs which are the sources of finance.

ii) The overall cost is calculated by combining different costs into a composite cost.

c. Hence it is essential to compute the specific cost of each source to evaluate minimum obligation of company i.e., composite cost of raising capital.

1. Cost of Debt
2. Cost of Preferential Capital
3. Cost of Equity Capital
4. Cost of Retained Earnings

1. COST OF DEBT:

The rate of interest which is paid on debt is termed as cost of debt. For calculation of the cost of debt following are required.

i. Net proceeds of debentures, amount of interest p[aid periodically and the principal quality of debt. The cost of debt before tax is calculated from following formula.

ii. Kdh = I / P

where

Kdh = Before tax cost of debt

i. I = Interest

ii. P = Principal

When firm raises debt at premium or discount, then P is not the face value of securities but it is the amount of net proceeds received from the issue. In this case the formula will be, i

v. Kdh = I / NP

where

Kdh = Before tax cost of debt i.

I = Interest

P = Principal

iii. NP = Net Proceeds

When firm raises capital from debt a sufficient amount of tax is saved because interest is treated as deductable expense in calculation of tax. Hence it reduces tax. The cost of debt after tax is calculated as follows:

➢ Kdh = Kdh (I-t) = I / NP (I-t)

where

Kdh = After tax cost of debt

I = Interest

P = Principal

NP = Net Proceeds

t = Rate of Tax.

COST OF REDEEMABLE DEBT

The debt which is issued to be redeemed after specific period of time is known as redeemable debt. The cost of redeemable debt capital before tax is calculated as follows:

Kdh = I + I/n (RV-NP) I/2 (RV-NP)

Where

I = Annual Interest.

n = No. of years in which debt is to be redeemed.

RV = Redeemable value of debt.

NP = Net Proceeds of debentures.

Cost of Redeemable Debt

The debt which is issued to be redeemed after specific period of time is known as redeemable debt. The cost of redeemable debt after tax is calculated as follows:

Kdh = I(I-t) + I/n (RV-NP) I/2 (RV+NP)

where

I = Annual Interest.

T=Tax Rate.

n = Number of years in which debt is to be redeemed.

RV = Redeemable value of debt.

NP = Net Proceeds of debentures.

2. Cost of Preference Capital (KP):

i. Preference shares are the fixed cost bearing securities.

ii. In case of preference shares, the rate of dividend is fixed in advance at the time of issue.

iii. Preference shareholders have a preferential rights unlike equity shareholders with regard to payment of dividend and return of principle amount.

iv. Preference dividend is paid from after tax profits, so adjustments are not made in tax at the time of calculating cost of preference shares.

v. Preference dividend is considered as an appropriation of profits and not as a charge on profits.

vi. There are two types of preference capital. They are - Irredeemable preference capital and redeemable preference capital.

i) Irredeemable Preference Capital:

Irredeemable Preference capital involves perpetual payment of dividend to preference shareholders at a prescribed rate.

Kp = Dp / Np (Where preference shares are issued at a premium or discount)

where

KP = Cost of preference capital

DP = Annual Preferential Dividend

P= Net Proceeds of preference share capital

ii) Redeemable preference capital:

Redeemable Preference shares are those which can be redeemed or recovered on maturity of issue or after specific period of time.

$$Kp = Dp+ Pn-P n Pn+P 2$$

where

K = Cost of the preferential capital

P= Net Proceeds on issue of Pref.shares D= Annual Preference Dividend

Pn= Amount payable at the time of redemption

N= Redemption period of preference shares.

3. Cost of Equity Share Capital (Ke)

i. The cost of equity capital is the return which is expected by its investors.

ii. In order to provide expected returns to the equity shareholders, company must earn minimum rate of return which is necessary to have a constant market price of the shares. The expectations of the shareholders must be considered before issuing new equity shares for raising additional capital.

iii. The calculation of cost of equity shares is a complicated process because interest or dividend is not paid on fixed rate and also there is no legal commitment to pay dividend to equity shareholders.

iv. Hence market value of shares depends upon the amount of dividend paid and the rate of dividend depends on the degree of the business and financial risk.

v. Following are the approaches or methods through which cost of equity shares can be computed.

I) Dividend Yield Method: In this method the cost of equity capital is considered as a discount rate at which current value of expected future dividend per share is equal to net proceeds or market price of a share. In this approach the cost of equity shares will be,

$$Ke = (D / NP) X100 \text{ or } (D / MP)X100$$

where

K = Cost of capital,

D= Expected Dividend per share

NP= Net Proceeds per share,

MP= Market price share

ii) Dividend Yield with Annual Growth Rate:

This method is used in the situation where dividend pay-out ratio remains constant and dividends are expected to grow at a constant rate of the firm, then this method is suitable to calculate cost of equity capital.In this method, dividends are the growth rate from the basis for the cost of equity capital.

$$Ke = (D1 / NP) + G = D_0 (1+g) + G\ NP$$

where

D1= Expected dividend per share at the end of year,

G= Rate of Growth in dividend ,

D_0= Previous year dividend.

When the cost existing equity share capital is calculated, then net must be replaced with market price.

$$Ke =(D1 / MP)+G$$

iii) Earnings Yield Method:

In this method, the cost of equity capital is considered as the discount rate at which the current value of expected future EPS is equal to the prevailing market price or net proceeds of the shares. In this method the cost of equity capital is

Ke = Earnings per share / Net Proceeds = EPS / NP

The earnings yield method is applicable in the following situations for the calculating cost of capital.

i) When it is expected that earnings per share remains constant.

ii)In times when the dividend pay-out ratio is 100% or Retention ratio is zero.

iii) When market price of the share is effected only by the earnings per share. When firm expects that earnings on new equity shares capital is equal to present rate of earnings.

iv) Capital Asset Pricing Model/ Approach

This method separates the cost of equity into risk free return which is available for investing in government bonds and an additional risk premium which is for investing in a specific share or investment. The risk premium involves the average return on the overall market portfolio and the beta factor i.e., the risk factor of the particular investment.

The cost of equality for an investment with the help of CAPM approach is calculated as follows:

$$Ke = Rf + bi (Rm – Rf)$$

where

Ke = Cost of Capital,

Rf= Risk free rate of return,

bi = Beta of the Investment,

Rm= Average Market Return.

v) Bond Yield with Risk Premium Approach

According to bond yield with risk premium approach, the required rate of return of the equity shareholders of a firm is equal to the return on long term bonds and risk premium.

Ke = Return on long term bonds + Risk Premium.

This approach explains that risk of equity investors is much greater than risk of bond investors. Hence required rate of return of the equity investor involves premium for higher risk. There is no theoretical basis to calculate the risk premium.

vi) Realised Yield Method:

i. The problem of evaluating the expectations of the investors relating to future dividends and earnings can be solved with the help of realized yield method.

ii. It is difficult to calculate accurate future dividends and earnings because of they are dependent on many uncertain factors.

iii. Hence the realized yield method is suitable, which considers the actual average rate of return realized in the past to calculate the cost of equity share capital.

iv. In order to calculate the average rate of return realized , the dividend received in the past and the gain realized at the time of the sale of shares must be taken into consideration.

v. The realized yield method has the following assumptions.

a) The firm will have constant risk for a specific period of time.

b) The expectations of the shareholders are dependent on past realized yield.

c) Investors assume that they get same rate of return as the realized yield even if they invest somewhere else.

d) It is assumed that there are no remarkable changes in market price of shares.

4. Cost of Retained Earnings:

As, firms do not pay any dividends on retained earnings, hence no cost is involved in retained earnings. The cost of retained earnings can be evaluated as rate of return acquired by the shareholders from an alternative by investing after tax dividends. It is similar to the opportunity cost of dividend which is scarified by the shareholders.

The cost of retained earnings can be calculated as follows:

$$Kr = \frac{D_1}{MP} + G$$

where,

Kr = Cost of Retained Earnings

D = Expected Dividend

MP = Market price per share

G = Growth Rate.

In spite of 100% payout ratio, shareholders are unable to get whole amount of retained earnings in the form of dividends. Shareholders need to pay tax on dividend income. Some alternative way is to be made with regard to tax, following formula is useful.

$$kr = \frac{D}{NP} + G(I - t)(1 - b)$$

where,

k = cost of Retained earnings d = Expected Dividend G = Growth Rate NP = Net proceeds of equity share T = Tax Rate, b = cost of purchasing new securities ,k = Rate of return available to shareholders.

Lecture VI

INVESTMENT APPRAISAL

Introduction

Ascertainment of Project deals with identifying the project for investment is the first step in capital budgeting. From various projects, the project needs to be ascertained by department officer or head for analysis and the suitable project is selected according to corporate strategies and submitted to the capital expenditure planning committee for large organization or else to concerned head for long term investment decisions. Project(s) is selected based on different factors that must be taking into consideration.

Capital Budgeting Process

According to the definition of G.C. Philippatos, "capital budgeting is concerned with the allocation of the firms source financial resources among the available opportunities. The consideration of investment opportunities involves the comparison of the expected future streams of earnings from a project with the immediate and subsequent streams of earning from a project, with the immediate and subsequent streams of expenditure".

According to the definition of Lyrich, "capital budgeting consists in planning development of available capital for the purpose of maximizing the long-term profitability of the concern". The process includes:

1. Identification of various investments proposals:

The capital budgeting may have various investment proposals. The proposal for the investment opportunities may be defined from the top management or may be even from the lower rank. The heads of various department analyse the various investment decisions, and will select proposals submitted to the planning committee of competent authority.

2. Screening or matching the proposals: The planning committee will analyse the various proposals and screenings. The selected proposals are considered with the available resources of the concern. Here resources referred as the financial part of the proposal. This reduces the gap between the resources and the investment cost.

3. Evaluation: After screening, the proposals are evaluated with the help of various methods, such as payback period proposal, net discovered present value method, accounting rate of

return and risk analysis. Each method of evaluation used in detail in the later part of this chapter. The proposals are evaluated by:

(a) Independent proposals

(b) Contingent of dependent proposals

(c) Partially exclusive proposals.

Independent proposals are not compared with other proposals and the same may be accepted or rejected. Whereas higher proposals acceptance depends upon the other one or more proposals. For example, the expansion of plant machinery leads to constructing of new building, additional manpower etc. Mutually exclusive projects are those which competed with other proposals and to implement the proposals after considering the risk and return, market demand etc.

4. Fixing property: After the evolution, the planning committee will predict which proposals will give more profit or economic consideration. If the projects or proposals are not suitable for the concern's financial condition, the projects are rejected without considering other nature of the proposals.

5. Final approval: The planning committee approves the final proposals, with the help of the following: (a) Profitability

(b) Economic constituents

(c) Financial violability

(d) Market conditions.

The planning committee prepares the cost estimation and submits to the management.

6. Implementing: The competent authority spends the money and implements the proposals. While implementing the proposals, assign responsibilities to the proposals, assign responsibilities for completing it, within the time allotted and reduce the cost for this purpose. The network techniques used such as PERT and CPM. It helps the management for monitoring and containing the implementation of the proposals.

7. Performance review of feedback: The final stage of capital budgeting is actual results compared with the standard results. The adverse or unfavourable results identified and removing the various difficulties of the project. This is helpful for the future of the proposals.

METHODS OF CAPITAL BUDGETING OF EVALUATION

The methods of evaluations are classified as follows:

(A) Traditional Methods (or Non-Discount Methods)

(i) Pay-back Period Methods

(ii) Post Pay-back Methods

(iii) Accounts Rate of Return

(B) Modern Methods (or Discount Methods)

(i) Net Present Value Method

(ii) Internal Rate of Return Method

(iii) Profitability Index Method

Pay-back Period Pay-back period is the time required to recover the initial investment in a project.

$$\text{Payback Period} = \frac{InitialOutlay}{AnnualCashInflow}$$

Merits of Pay-back method

1. It is easy to calculate and simple to understand.

2. Pay-back method provides further improvement over the accounting rate return.

3. Pay-back method reduces the possibility of loss on account of obsolescence.

Demerits

1. It ignores the time value of money.

2. It ignores all cash inflows after the pay-back period.

3. It is one of the misleading evaluations of capital budgeting.

Accept /Reject criteria

If the actual pay-back period is less than the predetermined pay-back period, the project would be accepted. If not, it would be rejected.

Example 1: if an investment of ₦10,000 in a machine is expected to produce annual cash inflow of ₦2,500 for 6 years.

$$\text{Payback Period} = \frac{10{,}000}{2500} = 4 years$$

In the case of uneven cash inflows - When a project's cash flows are not equal, but vary from year to year, i.e., they are of non-conventional nature, the calculation of payback period takes a cumulative form of annual cash inflows. In such a situation, payback period is calculated by the process of cumulating cash inflows till the time when cumulative cash inflows become equal to the original investment outlay.

Example 2: Given the information below

Year	Cash Inflow	Cumulative Cash
0	25,000	(25,000)
1	5,000	(20,000)
2	8,000	(12,000)
3	10,000	(2,000)
4	12,000	10,000
5	7,000	17,000
5	3,000	20,000

Pay-back period = 3years + 2,000/12,000 X 12months

= 3years 2months

Accounting Rate of Return or Average Rate of Return

Average rate of return means the average rate of return or profit taken for considering the project evaluation.

$$\text{Average Rate of Return} = \frac{Average\,\text{Pr}ofit\,(aftertax)}{AverageInvestment}$$

The average investments - Any of the following two formulae may be applied to calculate average investment:

(a) Initial Investment/2

(b) Initial Investment + Scrap Value/2

Merits

1. It is easy to calculate and simple to understand.

2. It is based on the accounting information rather than cash inflow.

3. It is not based on the time value of money.

4. It considers the total benefits associated with the project.

Demerits

1. It ignores the time value of money.

2. It ignores the reinvestment potential of a project.

3. Different methods are used for accounting profit. So, it leads to some difficulties in the calculation of the project.

Accept/Reject Criteria

If the actual accounting rate of return is more than the predetermined required rate of return, the project would be accepted. If not it would be rejected

Net Present Value

Net present value method is one of the modern methods for evaluating the project proposals. In this method cash inflows are considered with the time value of the money. Net present value describes as the summation of the present value of cash inflow and present value of cash outflow. Net present value is the difference between the total present value of future cash inflows and the total present value of future cash outflows.

NPV = Total Present value of Future Cash inflows - Initial Investment.

Merits

1. It recognizes the time value of money.

2. It considers the total benefits arising out of the proposal.

3. It is the best method for the selection of mutually exclusive projects.

4. It helps to achieve the maximization of shareholders' wealth.

Demerits

1. It is difficult to understand and calculate.

2. It needs the discount factors for calculation of present values.

3. It is not suitable for the projects having different effective lives.

Accept/Reject Criteria

If the present value of cash inflows is more than the present value of cash outflows, it would be accepted. If not, it would be rejected.

Example 3:

Given the information below, calculate the net present value of the two project at 10% interest rate per annum and suggest which of the two projects should be accepted a discount rate of the two.

	Project X	**Project Y**
Initial Outlay	20,000	30,000
Estimated Life	5 years	5 years
Scrap Value	1,000	2,000

The profits before depreciation and after taxation (cash flows) are as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5
Project X	5,000	10,000	10,000	3,000	2,000
Project Y	20,000	10,000	5,000	3,000	2,000

Solution

Year	**Project X**	**Project Y**	**DCF @ 10%**	**NPV for Project X**	**NPV for Project Y**
0	20,000	30,000	1.0000	(20,000)	(30,000)
1	5,000	20,000	0.909	4,545	18,180
2	10,000	10,000	0.826	8,260	8,260

3	10,000	5,000	0.751	7,510	3,755
4	3,000	3,000	0.683	2,049	2,049
5	2,000	2,000	0.621	1,242	1,242
5 (Scrap)	1,000	2,000	0.621	621	1,242
				4,227	4,728

Decision: Project Y should be selected as the net present value of project Y is higher

Internal Rate of Return

Internal rate of return is time adjusted technique and covers the disadvantages of the traditional techniques. In other words it is a rate at which discount cash flows to zero. There are three ways by which Internal Rate of Return (IRR) can be derived and these include:

(i) Graphical Method;

(ii) Annuity Method; and

(iii) Extrapolation Method

The most widely used method is the extrapolation approach and the formular for calculating it is given below:

$$IRR = R_L + \left[\frac{NPV_+}{NPV_+ - (NPV_-)}\right](R_H - R_L)$$

where

IRR = Internal Rate of Return

R_L = Lower Rate

R_H = Higher Rate

NPV_+ = Positive NPV

NPV_- = Negative NPV

Merits

1. It considers the time value of money.

2. It takes into account the total cash inflow and outflow.

3. It does not use the concept of the required rate of return.

4. It gives the approximate/nearest rate of return.

Demerits

1. It involves complicated computational m e t ho d .

2. It produces multiple rates which may be confusing for taking decisions.

3. It is assume that all intermediate cash flows are reinvested at the internal rate of r e t u r n .

Accept/ Reject Criteria

If the present value of the sum total of the compounded reinvested cash flows is greater than the present value of the outflows, the proposed project is accepted. If not it would be rejected.

Profitability Index Method

This method is also known as Benefit-Cost Ratio. One major demerit of NPV method is that it cannot be applied to compare those mutually exclusive projects which differ in costs substantially. To compare and evaluate such projects, the profitability index should be calculated. The profitability index is the relationship that exists between the present values of net cash inflows and cost outlays of the projects. It can be calculated in two manners:

(i) Gross BCR = Total Present Values of Cash Inflows /Initial Investment

(ii) Net BCR = Net Present Values of Cash Inflows/ Initial Investment