LESSON 1

FINANCIAL MANAGEMENT: MEANING, SIGNIFICANCE, SCOPE AND OBJECTIVES

Structure of the Lesson:

Objectives of the Lesson:

- To introduce the students the subject of financial management .
- To highlight the importance of finance function.
- To integrate finance function with rest of the functions of the organisation.
- To bringout the importance of financial management.

1.1.1 INTRODUCTION

Finance is the kingpin of any economic activity and only when properly managed money begets more money. Business finance is that activity which is concerned with acquisition and conservation of capital funds in meeting financial needs. Finance function is the task of providing funds needed by the enterprise on terms that are most favourable in the light of objectives of the business. Getting required funds in the most suitable way on the best possible terms is the core function of finance. If the finance function is properly blended with production, marketing, personnel, accounting and other business functions, scarce resourses can be profitably channelised to maximise wealth. The art of managing finance to yield best possible results is financial management.

1.1.2 MEANING AND DEFINITIONS OF FINANCIAL MANAGEMENT

Financial management is an appendage to the finance function. According to Howard and Upton ‘Financial Management involves the application of general management principles to a particular financial operation.’ To quote Joseph and Massie, ‘Financial management is the operational activity of a business that is responsible for obtaining and effectively utilising the funds necessary for efficient operations.’ It is that part of management which is concerned mainly with raising of finances in the most economic and suitable manner, using the funds as profitably as possible, planning future operations, controlling current performances and future developments through financial accounting, cost accounting, budgeting, statistics and other means.

According to Encyclopaedia of Social Sciences, Corporate Finance deals with the financial problems of corporate enterprises. This includes financial aspects of promotion, administration problems relating to growth and expansion, accounting problems relating to distinction between capital and revenue and finally financial adjustments in case of difficulties to rehabilitate the sick units. Management of all such situations is financial management. Financial considerations reign supreme particularly for the line executives who are decision making authorities. Future resource allocations depend on such financial implications. The old concept of finance as treasurership has broadened to include the new equally meaningful concept of controllership.

While the treasurer keeps track of the money, the controller’s duties extend to planning, analysis and the improvement of every phase of company’s operations which are measured with financial yardstick. Here, Raymond Chambers observes, ‘Financial Management may be considered to be the management of finance function’. Thus planning followed by proper monitoring of execution of the financial plan is the crux of financial management.

According to Raymond Chambers, “The term financial management may be applied to any kind of undertaking or organisation regardless of its aims of constitution”. Thus financial management does not confine to working capital management but extends to complex situations such as mergers and acquisitions also. It plays two distinct roles. Primarily, it safeguards the interests of the Corporate body, which is a separate legal

entity. Next, it has to protect the interests of all the interested parties by efficient management of funds; both short term and long term. In the words of Guttman and Dougall “It is in the handling of these more complex problems that the skill and effectiveness of the financial management are more rigorously tested”.

Thus it is more complex and comprehensive and welds together with accounting, economics, mathematics, systems analysis and behavioural sciences and uses other disciplines as its tool. In this connection Raymond Schultz and Robert Schultz opine that the subject is broad and complex as it is descriptive, analytical, theoretical and applicative. However Vanhome and Wachowicz define, “Financial management is concerned with the acquisition, financing and management of assets with some overall goal in mind”. Here a financial manager has to anticipate needs both short term and long term. Apart from the short term working capital needs a proper planning to acquire long term assets with a clear concept about the source of finance with the primary intent of maximising shareholder’s wealth, is essential. Thus the decisions of financial management can be divided in to three decision making areas viz. investment, financing and dividend.

The entire gamut of financial management is concerned with raising of funds at optimum cost and their effective utilisation with a view to maximize the wealth of share holders. Thus financial management includes-

Three ‘A’s – Anticipating financial needs, Acquiring financial resources and Allocating funds in business.

1.1.3 CHANGING PHASES OF FINANCIAL MANAGEMENT

The subject financial management which emerged in 20th century has undergone a series of changes over a period of time.

(A) The traditional Phase:

This phase was for first four decades where the focus was on four selected aspects –

- It treated the subject of finance from the point of lenders rather than of the owners.
- It laid emphasis on corporate finance more than on non-corporate enterprises.

- The sequence of treatment was a routine of events from formation to liquidation.
- Concentrated more on long term financing. Thus working capital management was neglected.

  Thus, this approach was lopsided.

(B) Transitional Phase:

This began in 1940's and lasted for a decade. It started giving importance to working capital management.

(C) Modern phase:

Post 1950's made financial management more analytical and quantitative. Areas like capital structure which is different from cost of capital, linear programming to give scientific approach towards various investment projects etc., have formed an integral part of financial management. The investment choices depend on a scientific formula based on risk and return. For example- Capital Asset Pricing Model suggests the neutralisation of risks by holding diversified portfolios. Arbitrage Pricing Model suggest that risk and return should be so entwined that no single investor could create unlimited wealth through arbitrage. The agency theory emphasises the role of financial contracts in creating and controlling Agency problem. Further the new approach elaborates the role of new financial instrument thus giving a wider and comprehensive and ever inclusive dimension to the subject of financial management.

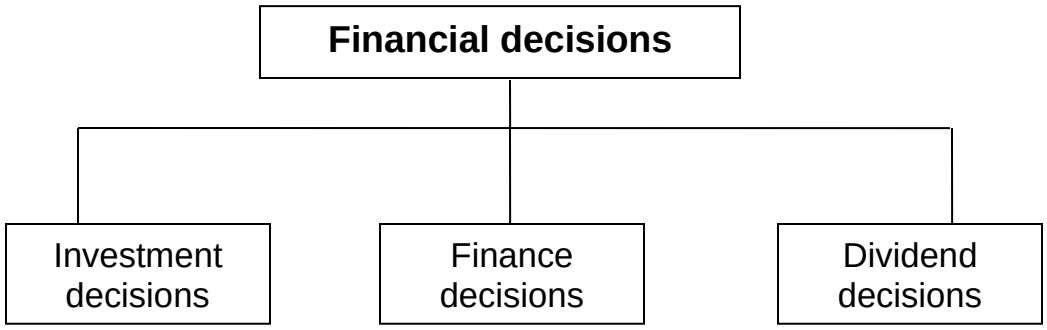
1.1.4 SIGNIFICANCE OR IMPORTANCE OF FINANCIAL MANAGEMENT

Financial Management, a key to success of any business organisation, irrespective of its size, envisages proper streamlining of finances. With the organisational goal as the objective financial management tunes its short term and long term decisions. The importance of financial management lies on decisions in three major areas, viz:

(1) Investment decisions

(2) Financing decisions and

(3) Dividend decisions.



1. Investment Decisions:

A key area of decision making where the total asset requirement has to be estimated includes both long term and short term..Long term asset planning means estimate of Plant and Machinery and Buildings etc., where the investment is huge. This is popularly referred to as 'Capital Budgeting'. This can be defined as the firm's decision to invest its current funds most efficiently in fixed assets with an expected flow of benefits over a series of years.

Short term asset like raw material, debtors, and cash can be estimated where cash conversion takes place within a year. This is popularly called as Working Capital Management. This is vital as liquidity of today determines tomorrow's long term success. This is a match between risk and return. If more capital is locked in working capital, risk is less but return is effected and vice versa. A proper planning on determination of the working capital required and financing the same speak on efficient working capital management.

2. Financing Decision:

After planning investment, the next issue is how to finance the same i.e. a proper planning of the liabilities side of Balance Sheet. This decision speaks about weighing the proportion between debt and equity i.e. the finance mix or leverage. This finance mix should be optimum in order to balance risk and return and pay the investors maximum. This speaks about Capital Structure theories and Optimal Capital Structure.

3. Dividend Decision:

Dividend is the share of shareholders in the profits of the firm. The dividend policy of the organisation is one crucial area as the two basic issues – dividend and retained

earnings are to be balanced. Dividend is today's return on investment and retained earnings strengthen the capital base. Both will have impact on the market value of the share and thereby of the firm. An optimal dividend policy has to be deduced which, while protecting tomorrow will give an assured and reasonable return today.

However all the three decisions are intertwined. As, when a project is to be finalised, asset requirement i.e. investment is to be decided which will also necessitate proper planning about funds required, i.e. finance decision. Depending on the retained earnings, assets can be self financed thus depending on dividend decision. Financial management is properly viewed as an integral part of the overall management rather than as a task specially concerned with fund raising operation.

In addition to raising funds, financial management is directly concerned with production, marketing and other functions within an enterprise, whenever decisions are made about the aquisition or distribution of assets.Keeping this in view, the importance of financial management can be enunciated thus.

- Successful Promotion: The success of a business depends on proper financial planning; a proper estimate of the requirement of funds – both short term i.e. working capital and long term i.e. investment in fixed assets. Any mismatch is hazardous for the functioning of the organisation.
- Smooth Running: Since finance is required at each stage such as promotion, incorporation, development, expansion and working capital management, proper financial administration becomes necessary for the smooth running of business enterprise.
- Decision making: Ratio Analysis, Variance analysis, Budgets etc., are the scientific tools used by a financial manager to take short term and long term decision to minimise the risk and maximise the return.
- Solutions to financial problem: Financial manager through his scientific approach helps solve financial problems.

- Measure of Performance: The performance of the organisation can be measured by financial management which helps investors/ Creditors/ workers/ society/ government and all the stake holders to judge the functioning of the organisation.

Thus financial management is both at the centre and circumference of all business activities.

1.1.5 SCOPE OF FINANCIAL MANAGEMENT

The success of a business – small or big depends on efficient financial management as finance is both cause and effect of diligent planning and management. The objectives and scope of financial management should tune with objectives of the organisation in general and specific schemes in particular. Financial management aims at wealth maximisation of the shareholders and stake holders by optimum utilisation of scarce resources in a planned direction.

Financial management provides a conceptual and analytical framework for financial decision making. This covers not only acquisition of funds but also judicious allocation towards various functions thus forming an integral part of the overall management. As has been enunciated in the previous lesson, financial management, as a discipline is undergoing tremendous change.

Broadly, this can be divided into two Approaches:

(1) Traditional Approach

(2) Modern Approach

(1) Traditional Approach

This confines the role of financial management to raise and administer funds needed by the organisation. This covers:

- Arrangement of funds from financial institutions
- Arrangement of finances from shares and debentures.
- Monitoring the legal aspects of the source of funds

Here the term ‘Corporation finance’ was used in place of ‘Financial Management’ and was in vogue from 1920-50. This has serious limitations.

- External Approach: This approach has given priority to outsiders i.e. suppliers, banks shareholders and the role of internal agencies who are the decision making authorities was totally neglected.
- Ignored day-to-day problems: In this approach emphasis was given to acquisitions, merges, etc. No attention was given to the daily problems i.e. Working Capital management.
- Ignored Non Corporate Enterprise: OnlyJoint stock companies are given importance and other types of organisations which also require financial monitoring are neglected.
- No Emphasis on Allocation of Funds: Only procurement is focused under this approach but allocation of funds is neglected.

The four basic issues as propounded by Solman i.e. the purpose for which capital funds are used, return on risk, cost of capital and portfolio management are not covered under traditional approach.

(2) Modern Approach:-

According to this, the term financial management provides conceptual and analytical framework for financial decision making, covering both procurement and allocation, thus forming an integral part of the overall management.

Under this approach, the total funds needed, assets required and match between funds and assets is scientifically covered. Thus the major decision of (1) Investment (2) Finance (3) Dividend forms an integral part of financial management.

From this point of view the functions can be classified as (i) Liquidity (ii) Profitability (iii) Management.

- Liquidity: - This is ascertained on the basis of three important considerations.
- Forecasting Cash flows, i.e. match between inflow and outflow.
- Raising of funds.
- Managing the flow i.e. working capital management.

- Profitability: While ascertaining the profitability, cost control, pricing, forecasting future profits and measuring cost of capital are taken into consideration.
- Management: Asset Management is primarily important for success of the business both long-term and short-term.

Apart from the above, the following also come in the purview of financial management.

FUNCTION AREAS OF FINANCIAL MANAGEMENT

- Estimating the financial requirement
- Determining Sources of funds
- Financial Analysis
- Optimal capital structure
- Profit Planning and Control
- Fixed Assets management
- Project Planning and Evaluation
- Capital Budgeting
- Working Capital Management
- Dividend Decision
- Acquisitions and Mergers
- Corporate Taxation

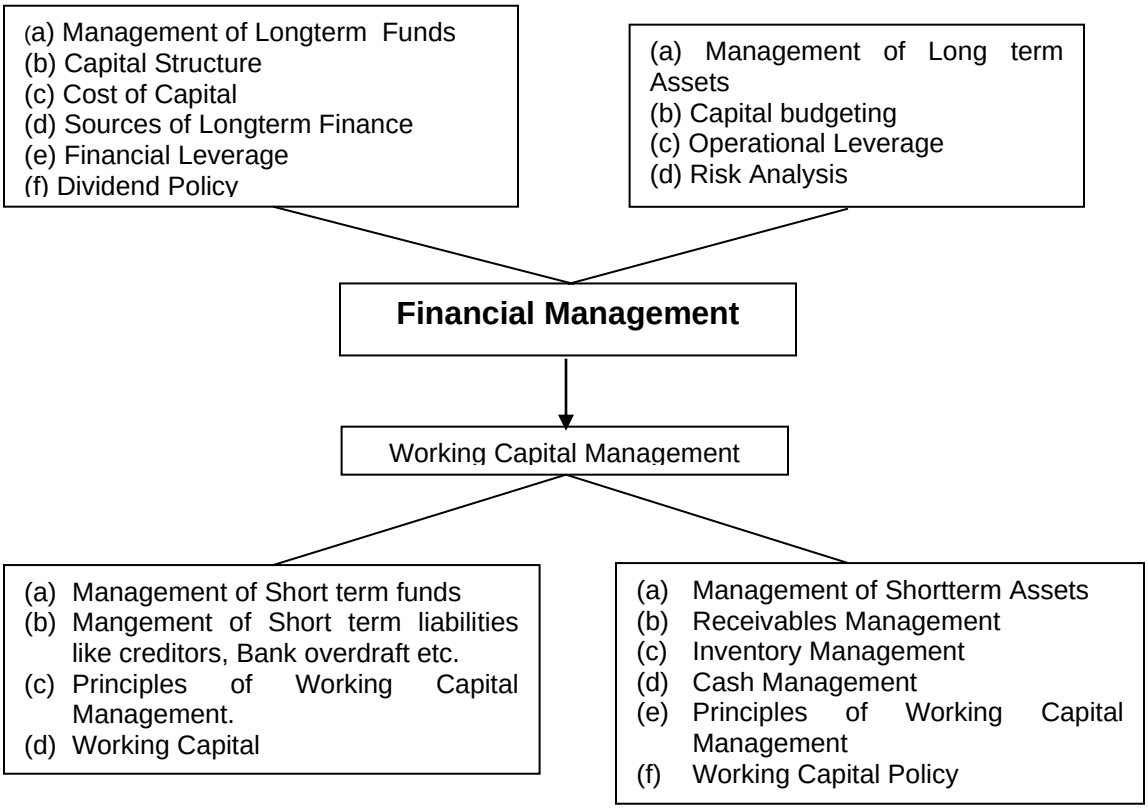
The core activities thus are:

(1) Management of firm's financial structure

(2) Management of asset structure

The entire function of financial management which aims at thorough planning, allocation, utilisation of resources – both short term and long term, with the objective of wealth maximisation of the enterprise and of all the stakeholders in general and the stockholders in particular can be viewed from the following chart.

FRAME WORK OF FINANCIAL MANAGEMENT



1.1.6 FUNCTIONAL AREAS OF FINANCIAL MANAGEMENT

Following are the important functional areas of financial management:

1) Estimating financial requirement: A careful foresight into future needs both short-term i.e. working capital and long term i.e. fixed capital is one of the primary functions of financial management.

2) Determining the sources of funds: The financial manager, after estimating the requirement should identify the sources of funds i.e., a choice between shares, debentures, borrowings from lending institution or a combination thereof. While deciding the pattern, he should keep in view the size of his organisation, the age of the organisation as new firms may not attract moneylenders, the liquidity necessary to make regular payment of interest and return on investment to the shareholders.

3) Financial Analysis: - This requires the skill on the part of financial manager to use different tools of financial analysis like Comparitive Statements, Common size Statements, ratio analysis, trend percentages and interpret them carefully. The financial status of the organisation should be assessed on the basis of such analysis. Liquidity, profitability and solvency of the organisation can be judged.

4) Optimal capital Structure:- To ensure maximum return on investment, optimum capital structure has to be determined. The ratio between equity and other fixed interest bearing securities i.e. debentures and preference shares has to be defined. In this process, he has to determine the financial and operation leverages of the firm. Financial leverage exists because of debt element in funding and operational leverage exists due to operational expenses. Financial manager should have adequate knowledge about different empirical studies on the optimum capital structure and decide the suitability to his organisation.

5) Cost Volume Profit Analysis:- CVP Analysis necessitates the financial manager to study the fixed variable and semi variable costs. Fixed costs are constant for any volume of production / sales whereas Variable Cost changes. Semi Variable comprise both the elements, for example depreciation. The income of the firm should cover variable costs for sure and fixed costs to be covered to the extent possible. The point of breakeven has to be ascertained where all the costs are covered up and over and above any leverage is the profit margin.

6) Profit Planning and Control:- Profit maximisation is a major element for business decisions. Profit Planning ensures attachment of stability and growth. Profit, a surplus after meeting out all the costs, has to be attained by increasing the revenue, a major chunk of it is sales and by reducing the costs. Thus planning and control go simultaneously. Profit planning is related to policy making on issues like taxation, dividends, retention of profits, etc. Breakeven analysis and CVP analysis are two important tools of profit planning.

7) Fixed Asset Management:- Fixed assets like land, buildings, plant, machinery, furniture and also intangible assets like patents, goodwill, and copyrights involve

capital expenditure decisions and long term commitment of funds which these assets require. These are normally funded with the issue of shares, debentures, long term borrowings etc., keeping in view their productivity. A financial manager should use his discretion while deciding on purchase of asset vis a vis leasing them or taking on rental basis. A caution also has to be taken while estimating the replacement cost as suitable depreciation has to be provided.

8) Project Planning and Evaluation:- A substantial portion of the initial capital is sunk in long term assets of the firm. Decisions are to be taken based on technical, economical, commercial, financial and organisational viabilities. Decisions in respect of economy of size, choice of technology and choice of site are all technical considerations. Demand and competition are considerations for economic viability. Availability of required manpower is considered for organisational viability. Financial analysis, the key to success speak about forecast of funds, keeping the cost of investment as low as possible and maximising the return on investment. Above all, other uncertainties should also be kept in mind while planning the project.

9) Capital Budgeting: These are long term implications referring to judicious allocation of long term funds. Thus capital budgeting forecasts on proposed long term investments and compares the profitability of different investments and their cost of Capital. Urgency, liquidity, profitability, risk sensitivity form the criteria for ranking various investment proposals. Financial techniques such as pay back, internal rate of return, discounted cash flow, and net present value are taken as the basis for capital budgeting proposals.

10) Working Capital management : However profitable an organisation may be, working capital determines the liquidity of the organisation. It is the lubricant which keeps business operations going smoothly. Cash, accounts receivable and inventory are three basic assets needing monitoring. Cash is the central reservoir; other two are the basis for current operations. Determining the distribution policies such as discounts, speedier collection from accounts

receivable, maintaining adequate stocks to enable smooth production operation is one of the important tasks of financial manager.

11) Dividend Policies : This speaks of matching the interest of owners and management as the former prefer getting more and more dividend whereas the latter insist on future survival with retention of profits. While a sound business organisation possesses a strong internal base which increases the value of the share, this point should be clearly explained to shareholders who should understand that their present sacrifice pay them a permanent, long lasting benefit in future by increasing the value of the share. A dividend policy should be properly arrived at to secure shareholders – both present and future.

12) Acquisitions and Mergers: Mergers refers to integration of two entities into one big organization. Acquisition consists of purchase of smaller firms by a bigger organisation with minimum cash outlay. This requires a proper valuation of firm's securities to arrive at the exchange rate.

13) Corporate Taxation: Corporation as a separate entity is subject to income tax structure which is distinct from personal taxation. A proper planning is necessary for finance manager in this area.

Thus the role of financial manager is not just a cash manager but a more decision maker on several issues pertaining to the organisation. A well informed, dynamic financial manager is definitely an asset to the organisation.

1.1.7 OBJECTIVES OF FINANCIAL MANAGEMENT

The objectives of financial management can be categorised under following two broad headings.

(1) Basic Objectives: Traditionally the two basic objectives of maintenance of liquid assets and profit maximisation have undergone a sea change with the passage of time. The present era envisages shareholders' wealth maximisation as the core objective of financial management.

- Maintenance of Liquid Assets: Financial manger has to balance liquidity and profitability. There should be adequate funds to meet out current obligations. At the same time, it should not be too much to lose profitable opportunities. A correct balance has to be struck to assure undisrupted and safe liquidity position at the same time not to block too much of the cash.
- Profit Maximisation: The three dimensions of financial management i.e. investment, finance and dividend decisions centre around profit maximisation which means maximising the returns to shareholders.

The term 'Profit' can be used in two senses – one from the owner's point of view and the other from operational point of view.

From the owner's point of view this refers to the net profit available as dividend to shareholders and from the operational point refers to profitability, i.e. efficiency of the enterprise. This means projects and decisions should be so oriented as to yield the best return, thus no profitable propositions should be rejected.

Profit maximisation has the following merits:

- It is the best criterion for decision making.
- It leads to efficient allocation of resources.
- It results in optimum utilisation of resources
- With maximum return to shareholders, timely payment to creditors, higher wages, better quality and lower prices, more employment opportunities due to increased activity contributes to societal welfare.

But profit as a yardstick has the following drawbacks:

- profit – short term or long term is not clear.
- Profit is a vague term as it may mean accounting profit, economic profit, profit after tax or profit before tax.
- The term 'Maximum' also is not clear.
- It ignores time value as time value of future inflows of cash earnings is a vital issue.

- It ignores risk factor. A correct balance has to be struck between profit and risk.

- Wealth maximisation: It is now widely accepted that the objective of the enterprise should be operationally feasible. Professor Ezar Solomon rejected profit maximisation due to its drawbacks and suggested the adoption of wealth maximisation. This is also called Value – Maximisation. The wealth or 'net present worth' of a course of action is the difference between gross present worth and the amount of capital investment required to achieve the benefits. Gross present worth represents the present value of expected cash benefit.

Thus wealth maximisation is maximising the present value of a course of action (NPV = GPC of benefits – Investment). Any financial action which results in positive net present value adds to existing wealth and vice versa. Wealth maximisation, with its comprehensive approach takes care of Lenders or creditors, workers or employees, public, society, management and employer.

(2) Other objectives:

The other objectives of financial management are:

- Ensuring a fair return to shareholders.
- Building up resources for growth and expansion.
- Ensuring maximum operational efficiency by efficient and effective utilisation of finance
- Ensuring financial discipline in the management.

To achieve the above objectives the financial manager use various tools e.g. Cost of capital, Trading on Equity, Capital Budgeting Appraisal, Ratio Analysis, ABC Analysis, Fund Flow Analysis, and the Cash flow Analysis.

1.1.8 SUMMARY

Finance is the key for any business activity and finance function aims at providing adequate finance for various activities of planning – production – supply – distribution – personnel in the optimum manner in consonance with the objectives of the business. The art of managing finance to yield the best possible result at minimum cost to achieve goals of the organisation is finance function. Its main objective is wealth maximisation. Thus it is not only procurement of funds but also channelising the scarce resources to yield the best / optimum results. Its functions include money management at various phases – production, designing, supply distribution, personnel, record keeping and reporting, control functions, auditing functions, etc.

Business finance is the activity concerned with the planning, raising, controlling and administering of the funds used in the business. The scope of financial management can be studied under two approaches: i.e. Traditional approach and Modern Approach. The former limits the role to fund raising and administering it to some extent but neglected working capital management and cost of capital.

Modern Approach however covers procurement of funds as well as its allocation. Hence three decisions of financial management - Finance decision, Investment decision and Dividend decision form the three vital areas of financial management.

The two basic objectives of financial management are profit maximisation and wealth maximisation. The former neglects time value of money, quality of benefits. Shareholders' wealth maximisation means maximising the net present value of a course of action to shareholders.

There are several people who have defined financial management several ways. But the essence of all the defenitions is to raise funds at optimum cost and channelise into optimum possible use to maximise wealth primarily to shareholders and subsequently to all the stake holders. Thus, it includes three 'A's – Anticipating financial needs, Acquiring financial resources and Allocating funds in business. With the passage of time, financial management too underwent change from traditional appoarch to transitional phase and to modern phase.

Financial decision making involves decisions in three key areas – Investment decisions (which speak about Asset management - both fixed and working capital), finance decision to give various means to fund the assets to be aquired and dividend decision, (which speaks about thorough financial planning for present and future commitment to shareholders). All the three decisions are inter linked. Financial management aquires importance from the point of view of successful promotion, smooth functioning, decision making for measuring performance and suggest ways and means to come out of financial crisis. Thus a manager who can successfully manage finances can automatically be a successful businessman.

1.1.9 SELF CHECK QUESTIONS

A) Objective Questions:

1. Short term financial management is called _____

   (Capital budgeting / working capital management)
2. Three major decision making areas of financial management are (1) _____ _____ (2) _____ (3) _____.
3. Profit maximisation ignores _____ .
4. Traditional Concept of finance was limited to acquisition of funds. Yes / No
5. A rupee receivable today is less valuable than a rupee receivable in future.

   Yes / No
6. Finance function is independent of the rest of the business activities. True / False
7. Maximisation of _____ is the main goal of financial management.

B) Home Assignment:

1. Describe Finance function? What are the different areas that are determined?
2. What is the importance of financial management ?
3. In what way the concept of Wealth maximisation is superior to profit maximization.
4. State the objective of financial management.
5. Briefly explain the functional areas of financial management.

C) Class Assignment:

1. What is financial management? Explain various definitions which give the essence of financial management.

2. ’Financial Management is the appendage of finance function’; Explain.
3. ‘The modern approach to financial management is comprehensive’- Explain.
4. The three decision making areas are interrelated – Explain

1.1.10 SUGGESTED READINGS

- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK
- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach:Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 2

FINANCIAL FUNCTIONS, ORGANIZATION, AND PLANNING

Structure of the Lesson:

Objectives of the Lesson:

- To explain meaning and types of financial functions.
- To highlight the importance of finance function.
- To explain the structure of financial organization.
- To highlight the importance of financial planning.
- To bringout the meaning and steps involved in financial planning.
- To familiarise with the features of a good financial plan.

1.2.1 INTRODUCTION

Finance is the art and science of managing money. This comprises (1) Financial Services (2) Managerial Services. Financial managers perform varied tasks such as budgeting, financial forecasting, cash management and credit administration, Investment analysis, fund management and so on. Recently the flexibility of the economy due to liberalisation has increased the role of financial manager. He needs to assimilate information, analyse it and make suitable strategies to attain the overall objective of the organisation i.e. wealth maximisation. This needs a thorough planning on his part and an effective implementation which can not possibly be done by an individual. This is a co-operative and coordinated effort with perfect communication

system upward and downward. Thus a proper financial plan implemented by a well devised organisational structure yields positive results for a progressive enterprise.

1.2.2 MEANING OF FINANCIAL FUNCTION

A proper blend of production, marketing, personnel, accounting and other business functions can help control the wastage of funds. Charles Gestenborg visualizes the importance of scientific arrangement of records with the help of which inflow and outflow of funds can be effectively managed, stocks and bonds effectively marketed and the efficiency of the organization greatly improved.

The operational functions of finance include:

- Financial Planning
- Cash Management
- Credit Management
- Security Floatation
- Signing Share and Debenture Certificates, Contracts, Mortgage Deeds and other Corporate documents
- Custody of Funds and Documents

The ultimate finance function lies in maximization of the value of the firm. Thus it is not confined to procurement of funds but of utilizing the scarce resources in an optimum manner. The task of procuring and utilizing funds should be in consonance with proper timing, at proper cost, the sale of stock, the types and duration of obligations, the condition of money market, etc. One predominant feature which differentiates finance from other managerial functions is the '*time'.* Finance function comprises the following functions:

- Money Management: This includes efficient management of monetary resources i.e. resource mobilization, working capital management and investment decisions.
- Record Keeping and Reporting: This includes financial accounting, cost accounting and management accounting.
- Control Functions: This includes budgeting, cost control and internal audit.

- Auditory Functions: This includes pricing, acquisitions, expansion, diversification, dividend policy, etc.

1.2.3 TYPES OF FINANCE FUNCTION

Finance function is not just a service function. Most of the important decisions of the business enterprise are determined on the basis of availability of funds. This exists in every stage of business. From this point of view, classification of finance function can be done as follows:

a) Design Function:

It is evident that the success of a project depends on cost management through proper designing. Apart from commercial success, research and other exploratory work must be undertaken for the project. Technical ideas, market segments, product and selling process, etc., should be properly planned. Proper financial management of existing product is necessary to launch a new product to give assured return to the investor. Thus a close liaison between design function and finance function is essential.

b) Supply Function:

A smooth supply of material ensures smooth flow of production but this should be economical. While determining the essential supply of material a proper and optimum quantity of material is to be ordered keeping in view production requirement, hoarding costs, locking of interest for which Economic Ordering Quantity has to be arrived at. Thus supply and finance are closely interlinked.

c) Production Function:

Production determines most of the other activities of the business like distribution i.e. marketing, selling and other supporting service activities. Production planning within the financial resources should be so done that the latest Production Planning Control Techniques must be provided for the optimum installation of required machinery. Various financial decisions making areas like purchase of plant, going for new product, alternate product, make or buy, transporting expenditure, etc. should be so planned as to yield best results with minimum wastage. Thus production and finance need close monitoring to assure growth with stability.

d) Distribution Function:

Decisions on the channels of distribution, sales promotion, credit policies, modes of advertisement, etc., cannot be independent but interdependent on finances available. It is distribution function which speaks about revenue as well as cost from the finance point of view. Proper co-ordination in this area is essential for an organisation.

e) Personnel Function:

Of late Personnel function is gaining momentum as a satisfied employee is the greatest asset to any organisation. But while deciding on various issues like labour payment rates, overtime, incentive schemes, compensation for layoff, retrenchment or accident, bonus declaration, long run perspective is required here as it has to match the psychology of the employees with affordability of the organisation. This requires diligence, foresight and human approach.

The size and importance of the finance function depends upon the size of business firm. There are different layers among the finance personnel such as Chief Financial Officer /Executive/ Manager/ Treasure etc. But the role of each segment has to be clearly defined. Board of directors, however take final decision as to approve the financial policy, select senior finance officers, declare dividends, and translate aspirations of the stock holders into goals and objectives. Financial Planning is required at all the key areas like investment decisions, finance decision and dividend decisions.

Finance is both science as well as art, as it is based on systematized body of knowledge which rules branches like public finance, institutional finance, international finance and financial management. These scientific principles can be streamlined for the efficient financing of the organisation with commonsense, foresight and risk taking ability which is an art. Thus, it is a golden mean between science and art.

1.2.4 STRUCTURE OF FINANCIAL ORGANIZATION

The importance of financial decisions to a firm makes it imperative to setup a sound and efficient organisation for the finance function. Finance being an important element at every stage there should be a proper co-ordination between all the individuals concerned in the hierarchy of financial organisation. Any loophole at any point disturbs

the entire system. Inefficient financial management at any stage paralyses the activity of the firm. So, it is the necessity of a systematic financial organisation, whatever is the size of the organisation, to have separate departments to take care of the activity.

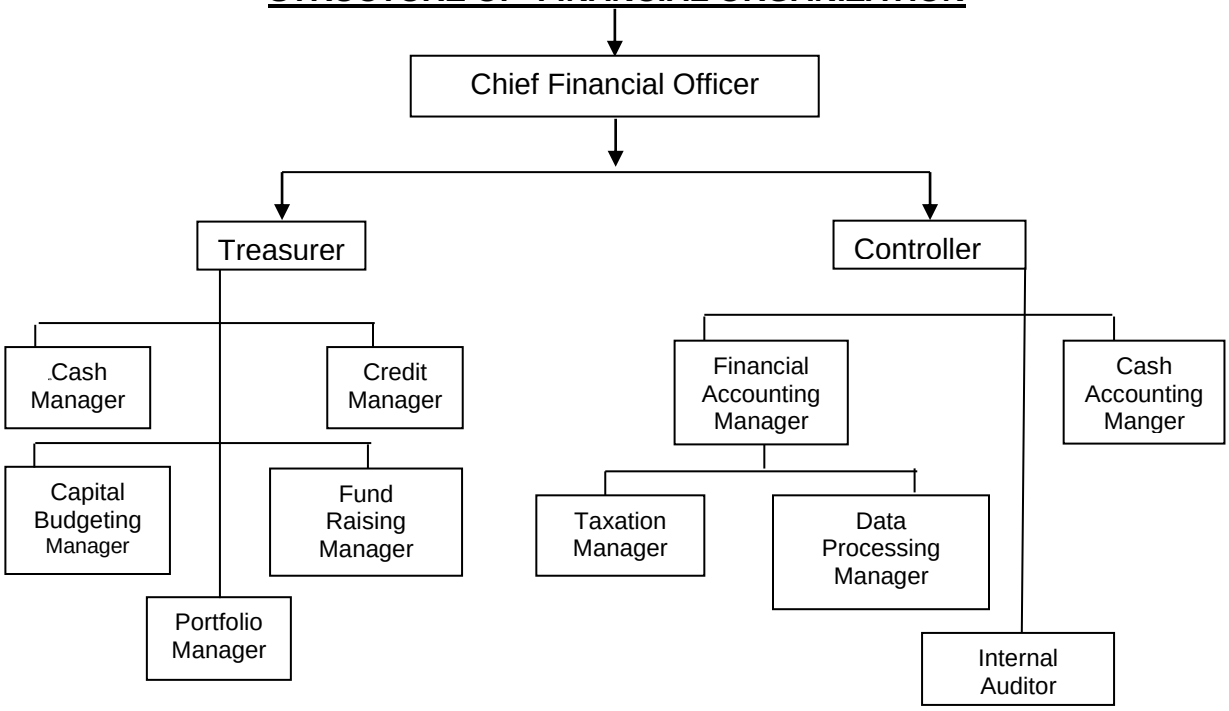
We know that financial activities can be broadly categorised under two heads:

Routine financial matters like custody of cash and bank accounts, collection of loans, payment of cash, etc.

Special financial functions like financial planning, budgeting, profit analysis, investment decisions, etc.

General matters are taken care of by the Treasurer and special matters are managed by the “Controller of Finance”. The following chart gives an idea about the finance department.

STRUCTURE OF FINANCIAL ORGANIZATION



The ultimate responsibility of carrying out the finance function lies with the top management. An exclusive department to look after the same may be created under the direct control of Board of Directors. The Board will constitute a finance committee headed by the Chief Finance Officer (CFO). He decides all the major financial policy

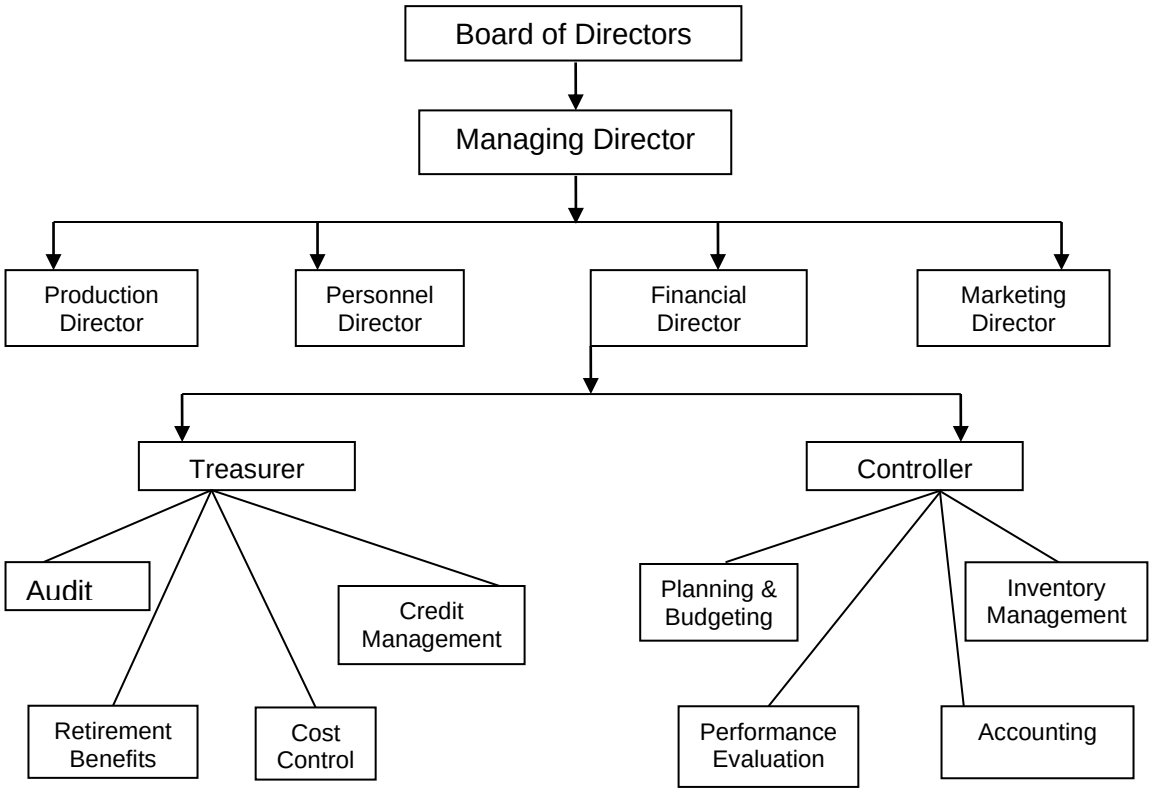
matters, while the routine activities would be delegated to lower levels. The finance function is delegated to top management for the following reasons:

Primarily, financial decisions which are crucial to the existence of the organization and financial policy of the organization should be operative only with the knowledge of top management.

Secondly, financial actions having a say on the solvency of the organization should be only after the information of top management which is in a better position to co-ordinate the activities of different segments.

Finally, centralization of finance function can reap number of economies as duplication can be avoided, better planning is possible (for example: interrelation between production and distribution and vice versa)

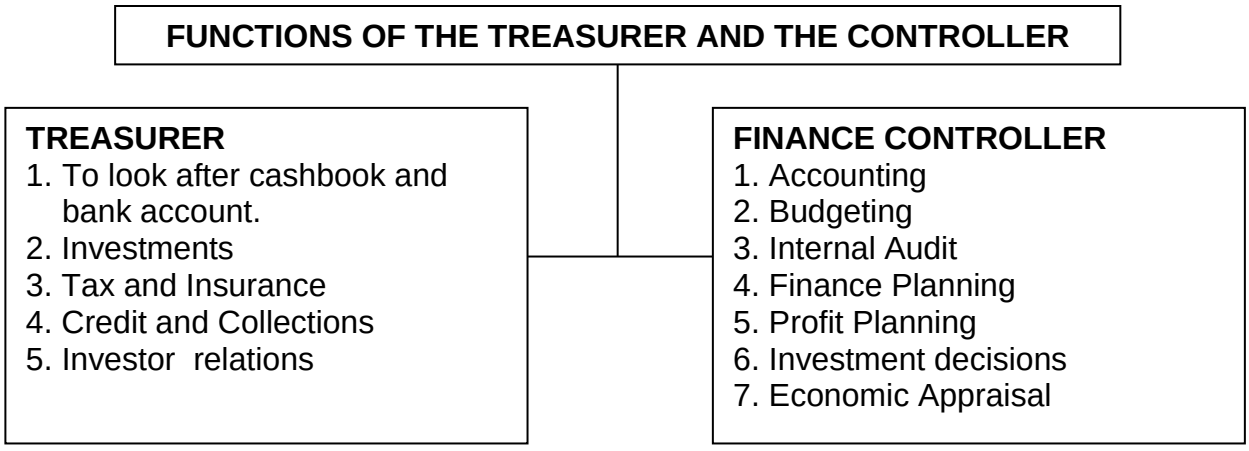
FINANCIAL STRUCTURE IN A HUGE BUSINESS FIRM



A co-coordinated approach in asset utilisation and fund management requires sound financial organisation. Size of the organisational structure of a typical firm depends on several factors such as size of the firm, nature of business, financing operations,

capabilities of the firm's financial officers and most importantly on the financial philosophy of the firm. The designation of the chief financial officer (CFO) would vary with firms such as, Vice President, Director of Finance, Financial Controller, etc. Under him two more officers- treasurer and controller may be appointed to assist him. CFO has both line and staff responsibilities as she/he is a liaison between top management and is associated with financial decision making and guides the staff for effective implementation.

In the area of regular matters i.e. managing the working capital to safeguard the liquidity of the organisation, it is the 'Treasurer' who has to organise smooth functioning. He is also called the Controller. In USA, the functions of the financial management or the functions of the financial officer are divided into two viz., treasurership and controllership function. In India, these terms are not being used. Instead, terms such as 'financial controller' or 'controller' (who performs the function of an accountant) are used. Currently, ancillary activities like asset management, government reporting, insurance coverage are added to the regular activities of the treasurer. In India financial managers or company secretaries perform the duties of the controller and treasurer.



It should be realised that the financial controller does not control finances; he uses, develops and interprets financial information for management control and planning. Management of finance is the separate function usually managed by accountants in India.

Thus the role of a treasurer and financial controller revolves round looking after the daily functioning of the organisation. Synchronising the long run activities and planning devised by CEO into the daily schedule to have a co-coordinated approach for the implementation of plans. He should devote total energy in fulfilling his duties

1.2.5 MEANING OF FINANCIAL PLANNING:

One of the most important functions of financial manager is that of planning to suit requirements of the company. He should primarily study the needs of the organisation, its present position, capabilities and chalk out the action plan based on priorities. Financial planning is essentially concerned with the economical procurement and profitable use of funds determined by realistic investment decisions. This requires a sensible appraisal of the economic, industrial and share market patterns which are likely to emerge as plans are developed and operationally assessed. G.D.Bond says, 'Whilst making profit is the mark of corporate success, money is the energiser which makes it possible. The aim of corporate planning should be to match the needs of the company with those of investors with a sensible gearing of short term and long term fixed interest securities'. Planning is vital as it results in elimination of wastage of men, material and money. Planning helps here by providing policies and procedures which make possible a closer co-ordination between various functions of the enterprise.

A well planned course of action with past experience and future forecast helps achieve the objectives of the organisation- both short run and long run as it is the finance which determines the success or failure of the finance function. Gordon and Donaldson observe that, as the central integrating document for corporate strategy and action, financial plan should do more than include the best available information about the economic and competitive environment in which the business operates and establish targets for sales and profits to be achieved by certain dates.

Planning also includes a continuous performance evaluation, integration and co-ordination and a thorough system of control. It should take in to consideration the present capital needs for fixed assets, working capital, probable earnings and requirements of investors and it should anticipate possibilities of later expansion,

combinations, future interest rates etc..This involves the determination of: the amount of capital raised, form and amount of securities to be issued, and the policies having a bearing on the administration of capital.

Financial planning has been defined as advance programming of all the plans of financial management and the integration and co-ordination of them with rest of the functions of the organisation.

Cohen and Robins opine that financial planning should:

- Determine the financial resources required to meet the company's operating programme.
- Forecast the extent to which these requirements will be met by internal generation of funds and need for external financing.
- Develop the best plans to obtain external funding.
- Establish and maintain a system of financial controls governing the allocation of funds.
- Formulate programmes to provide the most effective profit-volume-cost relationships.
- Analyse the financial results of operations.
- Report the facts to the top management and make recommendations of future operations of the firm.

Financial planning is the responsibility of top level management as it a part of the master plan to be integrated with rest of the activities.

1.2.6 STEPS INVOLVED IN FINANCIAL PLANNING

According to Earnest W Walker and William H Baughn, there are four steps in financial planning:

(1) Establishing Objectives: The financial objective of any business is to employ the factors of production i.e. an optimum way to achieve the overall objective of the enterprise. Both short run and long run objectives should be so established as to use capital in correct proportion.

(2) Policy formulation: Financial policies act as guides for procuring, disbursing of funds and monitoring the utilisation which may be:

- Policies governing the amount of capital required for firms.
- Policies which determine the control of parties.
- Policies to determine the use of debt.
- Policies which decide the ratio of debt and equity.
- Policies which determine the credit and collection.

(3) Forecasting: The diligence of finance manager is reflected in forecasting the future course of action and the combination of factors of production.

(4) Formulation of Procedures: A proper financial planning is successful only with a proper implementation with formulation of strategies and policies.

1.2.7 CHARACTERISTICS OF GOOD FINANCIAL PLANNING

- Simplicity: Henry Hogland is of the view that a financial plan should be drafted in simple methods in terms of the purpose which the enterprise is organised.
- Intensive use: A financial plan should devise optimum and intensive use of funds.
- Financial Contingency: Contingency planning to meet out emergency situation should be a part of the financial plan. A contingency plan should envisage emergencies with past experience, setup time related, volume related and scale related action by maintaining necessary financial resources.
- Objectivity: A financial plan should be free from partiality, nepotism and favouritism in the interest of the organisation.
- Comparison: Figures and reports should be expressed in terms of standards of performance.
- Uniformity: The principle of consistency should be followed in formulating financial policies.
- Flexibility: The plan should be flexible enough to incorporate need based changes. An enterprise should have a versatile and flexible plan to ensure a progressive organisation.

- Exceptions: It should be desirable to indicate areas of diversion from the normal established standards.
- Conservative: It should be conservative in certain areas for example the debt should be taken based on repaying capacity.
- Solvency: Adequate liquidity, both short term and long term should be properly planned.
- Profitability: A financial plan should maintain the required proportion between fixed charge obligations and the liabilities in such a way that the profitability of the organisation is not adversely affected.
- Varying risks: a financial plan should provide for ventures with varying risks.
- Foresight: a futuristic approach for capital requirements is essential for a financial plan.
- Practical: A feasible plan is always desirable than an idealistic plan.
- Availability: A plan should be so formulated as to make use of resources and facilities which are available.
- Timing: A sound financial policy involves timely acquisition of funds.
- Maneuverability: A firm's ability to choose its source of finance at its own discretion is one of the features of financial plan.
- Suitability: This speaks the principle of acquiring fixed assets from long term sources and vice versa.
- Communication: Communication of plans to all the parties concerned is essential from the point of view of effective implementation.
- Implementation: A plan formulated should be properly implemented with proper information to everybody concerned.
- The capital structure of the firm should be so planned that control does not pass in to the hands of outsiders. Protective restrictions on debt, preferred stock should be reduced as far as possible.
- Cost: Cost of capital is an important element in the formulation of financial plan. A firm's average cost of capital should be minimised.

- (x) Risks: Risk created due to high debt-equity ratio should be taken proper care. Different types of securities with different types of risks should be so matched in their portfolios as to yield best result with minimum risk.

Any financial plan should thus consider all the above elements keeping in view financial pattern, market conditions, asset values, earning capacity and control. A good financial plan is the best health insurance a corporation may acquire.

1.2.8 CHANGING SCENARIO OF FINANCIAL MANAGEMENT IN INDIA

The role of financial management is gaining importance day by day. With the change in political strategies, financial policies also change. As the economy is opening up with liberalisation policy, opportunities are limitless. Financial management is also passing through an era of changes.

The following features can be observed which can have a say on investor's decisions and financial management.

- Interest rates are free from regulations.
- Rupee is fully convertible in current account.
- Optimum debt equity mix is possible.
- Mergers and acquisitions.
- Difficulty in maintaining share prices due to liberalisation.
- Foreign portfolio management.
- Foreign direct investment.
- Growing and volatile capital market.
- Much demanded management control in the light of foreign participation.

The above information becomes crucial to acquire and use of it from the point of view of Profit Maximisation and Wealth Maximiation. Of the two, wealth maximisation is a wider term speaking about the value of share depending on the anticipated rate of earnings per share and the Capitalisation rate.

In a challenging dynamic global environment, planning, procurement, allocation and earning the profit and maintaining the same is itself a challenging task.

1.2.9 SUMMARY

The Finance being a key area for the success of any organisation, it is imperative to primarily plan the financial activities both short run and long run and then implement them through a sound organisational structure: Financial planning is a wide term, requires a futuristic, analytical and progressive approach to chalk out the plan of action- both long term and short term synchronising various functions of the organisation.

A thorough co-ordination is needed among various functions as well as functionaries for the success of a financial plan. Resources have to be estimated, pooled and procured in the most economical manner, allocated judiciously, monitored periodically with proper control techniques. All this with a view to achieve the organisational goal - wealth maximisation. The steps in financial planning involve goal setting, policy formulation, forecasting and setting the procedure for implementation. The financial plan should be simple, comprehensive, objective, flexible, uniform, conservative to some extent and wholesome.

To chalk out, implement monitor, co-ordinate and control the financial plan an effective organisational structure is vitally essential. The structure of financial wing in any organisation can be broadly divided as a) Routine financial matters, b) Policy matters like investment decisions, profit analysis budgeting, etc.

Chief Financial officer appointed by the Board of Directors will be at the apex to take financial decisions. Under him are the Treasurer and Controller who are assisted by designated managers with different portfolios, in large organisations. The CFO under the direct supervision of the Board of Directors or Vice President, finance formulates all financial matters- long term and short term. In USA, the short term decisions are implemented and monitored by Treasurer or Controller who have different jobs to perform. But in India only one person holds the entire responsibility assisted by a number of area based managers in the financial front. With a perfect system of upward and downward communication, the financial manager leads the organisation to achieve the objectives specified by it.

With the changing political, economic policies, the role of financial manager is gaining importance in the Indian panorama. He should keep himself abreast with all the financial

information globally related to his business so that he can work towards the target of wealth maximisation for his investors.

1.2.10 SELF CHECK QUESTIONS:

A) Objective Questions:

1. In large business undertaking the _____ takes top level financial decisions for the long run.
2. A treasurer/controller takes avital role in _____ decisions.
3. A financial plan should be as complicated as complicated as possible. Yes / No
4. An organisational short term plans should synchronise with long term plans.

Yes / No

B) Home Assignment:

1. What do you mean by a financial plan? List out the major features of an ideal financial plan.
2. Describe the hierarchy in financial operations of a large business firm.

C) Class Assignment:

1. What is the importance of financial planning?
2. What is the role of a treasurer/controller in the operational structure of an organisation.

1.2.11 SUGGESTED READINGS

- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK
- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach:Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 3

ROLE AND RESPONSIBILITIES OF A FINANCIAL MANAGER

Structure of the Lesson:

Objectives of the Lesson:

- To explain meaning of finance manager.
- To explain the role of a finance manager.
- To explain the responsibilities of a finance manager.

1.3.1 WHO IS A FINANCIAL MANAGER?

Financial Manager is a person who is responsible in a significant way to carry out the finance functions. It should be noted at the outset that, in a modern enterprise, the financial manager occupies a key position. He is one of the dynamic members of the top management team, and his role, day by day is becoming more pervasive, intensive and significant in solving the complex management problems. Now his functions are neither confined to that of a scorekeeper maintaining records, preparing reports and raising funds when needed, nor is he a staff officer- in a passive role of an advisor. He became an important management person only with the advent of the modern or contemporary approach to financial management. The main functions of the financial manager are enlisted below.

1.3.2 ROLE OF FINANCIAL MANAGER

The finance manager has to manage funds in such a way so as to make their optimum utilization and to ensure that their procurement is in a manner so that the risk, cost and control considerations are properly balanced under a given situation. He may not however, be concerned with the decisions, which do not affect the basic financial management and structure.

It is relevant here to distinguish between the nature of job of the finance manager and that of the accountant. An accountant's job is primarily to record the business transactions, prepare financial statements which show the working results of the organization for a given period and its financial condition at a given point of time. He has to record the various happenings in monetary terms to ensure that assets, liabilities, incomes and expenses are properly grouped, classified and disclosed in the financial statements. The accountant is not concerned with management of funds which is a specialized task though historically many accountants have been managing funds also. In the modem day business, since the size of the business has grown enormously the finance function is a separate one and is a complex task. The finance manager or the controller has a task entirely different from that of the accountant. He hast to manage funds. This involves a number of important decisions. Thus, the role or functions of a financial manager can be categorized in following two categories.

- Primary functions
- Subsidiary function

(A) PRIMARY FUNCTIONS

1. Estimating the requirements of funds: In a business the requirements of funds have to be carefully estimated. Certain funds are required for long term purposes i.e., investment in fixed assets etc. A careful estimate of such funds and of the exact timing when such funds are required must be made. Also an assessment has to be made regarding requirements of working capital which involves estimating the amount of funds blocked in various current assets and the amount of funds likely to be generated for short periods through current liabilities. Forecasting the requirements of funds involves the use of techniques of budgetary control and long range planning. Estimates of requirements of funds can be made only if all the physical activities of the organization have been forecasted. They can then be translated into monetary terms.

2. Decision regarding capital structure: Once the requirement of funds has been estimated, a decision regarding various sources from where these funds would be raised has to be taken. A proper mix of the various sources has to be worked out. As we have seen earlier, each source of funds involves different issues for consideration. In

this context, the finance manager has to carefully look into the existing capital structure and see how the various proposals of raising funds will affect it. He has to maintain a proper balance between long-term funds and short-term funds. He has to ensure that he raises sufficient long term funds in order to finance fixed assets and other long-term investments and to provide for the permanent needs of working capital.

3. Financing Decisions: Within the total volume of long term funds, he has to maintain a proper balance between the loan funds and own funds. Long-term funds raised from outsiders have to be in a certain proportion with the funds procured from the owners. There are various options available for procuring outside long term funds also. The finance manager has to decide the ratios between outside long term funds and own funds. He has also to see that the overall capitalization of the company is such that the company is able to procure funds at minimum cost and is able to tolerate shocks of lean periods. Financing decisions involve two important aspects. These are:

a) **Raising of funds:** The traditional approach dominated the scope of financial management and limited the role of financial manager, simply to raising of funds. It was during the major events, such as promotion, reorganization, expansion or diversion in the firm that the financial manager was called upon to raise funds. The notable feature of the traditional view of financial management was the assumption that the financial manager had no concern with the decision of allocating the firm's funds. These decisions were assumed to be given to him, and he was required to raise the needed funds from a combination of various sources.

b) **Allocation of funds:** The traditional approach outlived its utility in the changed business situation since the mid-1950. A number of economic and environmental factors , such as the increasing pace of industrialization, technological innovations and inventions, intense competition, increasing intervention of government on account of management inefficiency and failure, population growth and widened markets, during and after mid – 1950s, necessitated efficient and effective allocation of firm's resources. The emphasis shifted from episodic financing to the managerial financial problems, from raising of funds to efficient and effective use of funds.

In this broader view the central issue of financial policy is the wise use of funds, and the central process involved is a rational matching of advantages of potential uses against the cost of alternative potential sources so as to achieve the broad financial goals which an enterprise sets for itself. In his new role the financial manager must analyze the following questions:

- How large an enterprise be and how fast should it grow?
- In what form should it hold it assets?
- How should funds required be raised?

4. Investment decisions: Funds procured from different sources have to be invested in various kinds of assets. Long term funds are used in a project for various fixed assets and also for current assets. The investment of funds in a project has to be made after careful assessment of the various projects through capital budgeting. A part of long term funds is also to be kept for financing toe working capital requirements. Asset management policies are to be laid down regarding various items of current assets. The inventory policy would be determined by the production manager and the finance manager keeping in view the requirement of production and the future price estimates of raw materials and the availability of funds.

5. Profit planning: The term profit planning refers to the operating decisions in the areas of pricing, costs, volume of output and the firm's selection of product lines. Profit planning is therefore, a pre-requisite for optimizing investment and financing decisions. The cost structure of the firm, i.e., the mix of fixed and variable costs has a significant influence on a firm's profitability. Fixed costs remain constant while variable costs change in direct proportion to volume changes. Because of the fixed costs, profits fluctuate at a higher degree than the fluctuations in sales. Profit planning helps to anticipate the relationships between volume, costs and profits and develop action plans to face unexpected surprises.

5. Dividend decision: The finance manager is also concerned with the decision to pay or declare a dividend. He has to assist the top management in deciding as to what amount of dividend should be paid to the shareholders and what amount should be retained in the business itself. This involves a large number of considerations.

Economically speaking, the amount to be retained or to be paid to the shareholders should depend on whether the company or the shareholders can make a more profitable use of the funds. However, in practice, a large number of considerations like the trend of earnings, the trend of share market prices, the requirement of funds for future growth, the cash flow situation, the tax position of share-holders, etc., are to be kept in mind.

The concern of the financial manager, besides his traditional function of raising funds, will be on determining the size and technology of the firm, in setting the pace and direction of growth and in shaping the profitability and risk complexion of the firm by selecting the best asset mix and by obtaining the optimum financing mix.

(B) SUBSIDIARY FUNCTIONS

The principal function of a finance manager relate to decisions regarding procurement, investment and dividends. However, the finance manager also undertakes the following subsidiary function.

1. Supply of funds to all parts of the organization or cash management: The finance manager has also to ensure that all sections i.e., branches, factories, departments and units of the organization are supplied with adequate funds. Sections which have an excess of funds have to contribute to the central pool for use in other sections which need funds. An adequate supply of cash at all points of time is absolutely essential for the smooth flow of business operations. Even if one of the 200 retail branches does not have sufficient funds, the whole business may be in danger. Hence the need for laying down cash management and cash disbursement policies with a view to supplying adequate funds at all times and at all points in an organization is an important function of finance manager. Cash management should also ensure that there is no excessive cash.

2. Evaluating financial performance: Management control systems are often based upon financial analysis. One prominent example is the ROI (returns on investment) system of divisional control. A finance manager has to constantly review the financial performance of the various units of the organization. The ROI chart is extremely useful in this regard. Analysis of the financial performance helps the

management for assessing how the funds have been utilized in various divisions and what can be done to improve it.

3. **Financial negotiations:** A major portion of the time of the finance manager is utilized in carrying out negotiations with the financial institutions, banks, and public depositors. He has to furnish a lot of information to these institutions and persons and has to ensure that raising of funds is within the statutes like Companies Act, etc. A negotiation for outside financing often requires specialized skills.

4. **Understanding Capital Markets:** The financial manager has to deal with capital markets where the firm's securities are traded. He should fully understand the operations of capital markets and the way in which securities are valued. He should also know how risk is measured in capital markets and how to cope with it as investment and financing decisions often involve considerable risk. For instance, if a firm uses excessive debt to finance its growth, investors may perceive it risky. The value of the firm's share may, therefore, decline. Similarly, investors may not like the decisions of a highly profitable, growing firm to distribute dividend. Investments also involve risk and return.

1.3.3 RESPONSIBILITIES OF FINANCE MANAGER

In the modem enterprise the finance manager occupies a key position. He is one of the dynamic member of corporate managerial team. His role, day-by-day, is becoming more and more pervasive and significant in solving the complex managerial problems. The traditional role of the finance manager was confined just to raising of funds from a number of sources, but the recent development in the socio-economic and political scenario throughout the world have placed him in a central position in the business organization.

A finance manager is now responsible for shaping the fortunes of the enterprise, and is involved in the most vital decision of the allocation of capital like mergers, acquisition etc. A finance manager like other members of corporate team cannot be averse to the fast developments, around him. He has to take note of these changes in order to be relevant and dynamic according to the fast changing circumstances. For example, introduction of Euro-as single currency of Europe is the example on international level

which may be quoted in this respect, and will ultimately be having a bearing on the corporate financial plans and policies.

The domestic developments like emergence of financial services sector and SEBI as a watch dog for investor protection and regulating body of capital market is contributing towards the prominence of finance manager's job. The innovative tools of funds raising like zero coupon bonds, flexible bonds are some of the examples of developments during the recent years having a direct impact on the corporate financial policies.

In earlier years, Finance Managers in India used to practice in an environment where seller's market prevailed. Nearly monopoly was the state of affairs in the Indian business. Sources of finance usually come from Banks / Financial institutions. The satisfaction of shareholders was not the concern of the promoters since most companies were closely held. Because of openings; of the economy the competition is hotting up. Seller's markets are becoming buyer's market at a rapid rate. The development of internet in the field of IT has brought new challenges before Indian Managers. Now the Indian concerns have not only to compete nationally but also internationally.

Therefore a new era has ushered during the recent years in financial management, especially with the developments of new financial system, emergence of financial services industry, recent innovations and developments of financial tools, techniques, instruments and products and emphasis on public sector undertakings to be self-supporting and their dependence on capital market for fund requirements, have all changed the role of a finance manager. His role, especially, assumes significance in the present day context of liberalization, deregulation and globalization.

1.3.4 SUMMARY

The twin aspects viz. procurement and effective utilization of funds are the crucial tasks which the finance manager faces. The financial manager is required to look into the financial implications of any decision in the firm. Thus all decisions involving management of funds comes under the preview of the finance manager. A large number of decisions involve substantial or material changes in the value of funds procured or employed.

In performing finance functions the financial manager should aim at increasing the value of the shareholder's stake in the firm. The financial manager raises capital from the capital markets. He should therefore know how capital markets function to allocate capital to the competing firms and how security prices are determined in the capital markets.

1.3.5 SELF CHECK QUESTIONS

A) Objective Questions:

1. A finance manager plays a vital role in _____ decisions.
2. Investment decisions do not come under the preview of the functions of a finance manager. Yes / No
3. A finance manager is now responsible for shaping the fortunes of the enterprise. Yes / No

B) Home Assignment:

1. What do you mean by a finance manager? List out his primary functions.
2. Describe the responsibilities of a finance manager in modern corporate world.

C) Class Assignment:

1. What are the important functions of finance manager? Explain in detail.
2. Elucidate the role and responsibilities of a finance manager in a large organization.

1.3.6 SUGGESTED READINGS

1. Kulkarni PV & Kulkarni SP: Corporate Finance
2. Chandra Prasanna: Financial Management
3. Pandey IM: Financial Management
4. Kulshreshtra RS: Financial Management of Corporation
5. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
6. Khan MY & Jain PK: Financial Management

LESSON 4
CAPITALIZATION

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of Capitalization.
- To explain components and theories of capitalization.
- To explain the concept, causes, effect and remedies of over capitalization, and the under capitalization.
- To give a comparative view of over capitalization and under capitalization.

1 2.1.1 INTRODUCTION

The term capitalization is used in case of joint stock companies and can not be used to sole trader or partnership firms. In a narrow sense ‘capitalization’ refers to the process of accumulating funds required by the company and in a broader sense, it refers to the whole process of financial planning.

2 2.1.2 MEANING AND DEFINITIONS

The capitalization of an undertaking refers to the way in which its long term obligations are distributed between different classes of owners and creditors. This depends on the expected average net income. From the point of income of investors, the yield on the securities which have been issued should be comparable to the yields of other

securities which are subject to the same kind of rise. The rate at which prospective earnings are capitalized will vary, for it is a subjective measure of risk and would be therefore be different for firms in different fields of business activity. If the income is expected to be regular, the rate would be lower and vice versa. For a new venture, it will be higher. Apart from this it would be low if the business conditions are at brisk.

Guttmann and Dougall define Capitalization as to the par value of the outstanding stocks and bonds. A .S. Dewing includes capital stock and debit within the term Capitalization. Lincoln States that Capitalization is a word ordinarily used to refer the sum of outstanding stocks and funded obligations, which may represent wholly fictitious values. According to Husband and Dockray, the ordinary meaning of capitalization is the computation and appraisal or estimation of present values.

The components of capitalization include:

- Par Value of Share i.e. paid up value of both equity and preference,
- Reserves and surplus, and
- Long term borrowings i.e. debentures and other term loans.

Thus, Capitalization confines to long term sources of finance where as capital refer to both long term and short term funds.

2.1.3 THEORIES OF CAPITALIZATION

There are two approaches/ basis/ theories for the determination of the amount of capitalization of the company. They are: (I) Cost approach or Cost theory of Capitalization, and (II) Earnings approach or Earnings theory of Capitalization.

(I) Cost Approach: Here the capitalization of the company is based on the cost of acquisition of fixed assets, the establishment of the company and the amount of regular working capital requirement. So under this method, the amount of Capitalization or value of the company is arrived by adding: Cost of acquisition of fixed assets; Cost of establishing the company, comprising the preliminary expenses, underwriting commission, expenses on the issue of shares etc.; and the Working Capital.

Though this approach is simple to arrive at, but it has the following drawbacks:

- Value of the company i.e. capitalization is based more on the earning capacity i.e. productivity than on the value of assets held by it.
- Though the assets are existing and shown at the value of acquisition, if the earning capacity comes down, it is not reflected.
- Where the earnings are irregular this approach has no relevance.

(I) Earning Approach: According to this approach**,** the value of the company is arrived at depending on the value of the earnings. If the average annual earnings i.e. profit is rs.50,000 and the fair rate of return is 10%on the capital employed then Capitalization is equal to:

$$\text{Capitalization} = \frac{\text{Average amount of profit of the company}}{\text{Fair rate of return}} \text{X } 100$$

$$\text{Capitalization} = \frac{50{,}000}{10} \text{X } 100 = 5{,}00{,}000$$

This method, though more practical may not suit new and upcoming companies. This is because estimation of future average annual profits of the company is not only difficult but also risky.

2.1.4 OVER CAPITALIZATION

A company is said to be over-capitalized when its actual earnings or profits are not sufficient to pay dividend at proper rate to shareholders. When the actual capitalization of the company which is arrived at by adding share capital- equity and preference. Reserves and surplus, debentures and other long term borrowings is more than the actual capitalization I.e. capitalization as determined from cost approach or earnings approach or earnings approach the company is to be over-capitalized.

For instance, if the fair rate of return is 10% on capital employed, the company earns a profit of Rs.75000 and it has raised a total of Rs.900000, then the earnings of the company is $\frac{75{,}000}{9{,}00{,}000} \times 100 = 8.33\ \%)$, which is less than 10% Here the company is said to be over-capitalized.

Thus, over-capitalization is a situation where:

- Capitalization exceeds the real economic value of its net assets
- A fair return is not realised in capitalization.
- Business has more net assets than it needs.

This condition is also called “Watered stock” and may take place when:

- Prospective income is over estimated
- Un-predictive circumstances reduce the income
- Over estimation of funds required.
- Excess funds are not utilized.
- Low yield makes it difficult for a firm to raise fresh capital
- Market value falls below issue price.

2.1.5 CAUSES FOR OVER CAPITALIZATION

a) Difference between Book Value and Real Value of assets: If the company purchases the assets at a value higher than the book value, the difference is attributed to over capitalization.

b) Promotional expenses: Excessive promotional expenses charged by the promoters, contributes to it.

c) Inflation: Due to inflationary conditions, the assets are acquired at high prices and precipitate over capitalization.

d) Shortage of Capital: When faced with shortage of funds, a company may borrow at unremunerative rates which result in excessive fixed charges.

e) Depreciation policy: Inadequate provision for depreciation, obsolescence may lead to over-capitalization.

f) Taxation policy: High Corporate tax structure discourages companies to implement programmes of replenishment, renewals and renovations; as a result of which their profitability may suffer.

g) Dividend policy: If the company is too lenient in declaring cash dividends to gain popularity which weakens liquidity position, it results in over-capitalization.

h) Market sentiments: Companies may float securities in the market more than required resulting in over-capitalization.

i) Underestimation of Capital rate: If the actual rate at which capital is available is higher than the rate at which company's earnings are capitalized, capitalization is underestimated, resulting in over-capitalization.

2.1.6 EFFECTS OF OVER CAPITALIZATION

3 Over capitalization has its own effect on corporations, owners, consumers and society at large.

(A) ON CORPORATIONS / COMPANIES:

(i) Over capitalization reduces earnings of the company

(ii) This result in reduction in the rate of dividend as equity share prices reduces, bringing down the confidence of the investors.

(iii) Raising of new capital is not possible due to above fact.

(iv) To save the situation the company may resort to window dressing by declaring dividends out of fictitious profits which in other words from out of capital which is fatal to the company.

(v) The company has to resort to reconstruction or reorganization for which the stake holders may resent.

(vi) The company may resort again to increase prices to overcome the crisis which makes it a poor participant in the competition.

(B) ON SHARE HOLDERS:

(i) Fall in dividends

(ii) Fall in market value of shares

(iii) With lesser value of securities, will have such securities to raise loans.

(iv) Difficulty in disposing of the shares.

(v) Due to reorganization of the company, share holders are worst hit people as either they have to surrender certain shares or value of shares.

(C) ON CONSUMERS:

(i) An over-capitalised company should increase prices of the products to maintain earning capacity which will have a direct impact on customers.

(ii) The quality of the product may be affected due to such crises.

(iii) An over-capitalised company may go on liquidation which will result in stoppage of production which will affect the customers.

(D) On the society:

(i) Due to economic crises, wages may not be paid to workers which will hamper industrial relations.

(ii) Wage cuts also result in strained relations.

(iii) Due to large issue of debentures, it is difficult to service them resulting in adverse effect on debenture holders.

(iv) Repayment to creditors is a difficult task.

(v) Over- capitalization may result in closure of the company, i.e. wastage of scarce resources.

(vi) Fall in market value of shares will disturb the economy.

(vii) Closure of the company has adverse effect on the employees.

2.1.7 REMEDIES FOR OVER CAPITALIZATION

The real remedy for over-capitalization is the scheme for reorganization or reconstruction. A suitable scheme has to be devised to write off accumulated losses, fictitious assets, over valuation of assets and to provide for repairs and renewals. This can be done in the following manner:

(i) Share holders may be asked to surrender certain number of shares or accept reduction in the value of shares.

(ii) Debenture holders and creditors also may be requested to forego a reasonable amount of claim say from the interest component.

(iii) High dividend Preference Shares may be replaced with low dividend Preference shares.

(iv) High interest bearing Debentures may be replaced with low interest bearing debentures.

(v) Sub division of shares which will increase the marketability of shares.

(vi) If funds are available redemption of debentures or repayment of loans can be thought of.

Apart from the above every effort must be made to reduce the costs of operation and to increase the earning capacity.

2.1.8 UNDER CAPITALIZATION

Under-capitalization is the reverse of over-capitalization where the actual capitalization of the company is much less than its proper capitalization as reflected through its earnings. For instance, if the fair rate of return in the industry is 10%, average annual earnings are Rs.60, 000/- and its capitalization is Rs.5, 00,000/-, it is under- capitalized as it has less than fair capital. Where fair capital is (60,000 X 100 / 10) = Rs. 6, 00,000

Thus, if the rate of return is higher than the average rate of return, it is under-capitalization. Symptoms of under-capitalization are:

a) Actual capitalization is less than fair capitalization as warranted by the company.

b) Rate of return is higher than the average return in the industry.

c) Dividend rate is higher than the industrial average dividend rate.

d) Market value of the shares is much higher than similar units in the industry.

2.1.9 CAUSES FOR UNDER CAPITALIZATION

a) Underestimation of earnings f the company

b) If a company is acquired in recession, its assets would be acquired at a low price which will result in under-capitalization.

c) Higher standards of efficiency

d) Creation of reserves for depreciation and repairs and conservative dividend policy making it possible for expansion and modernization.

2.1.10 EFFECTS OF UNDER CAPITALIZATION

Under-capitalization has the following consequences:

a) With high rate of earnings, other companies may be encouraged to enter which will reduce profits of the company.

b) Management may be encouraged to manipulate share prices.

c) More Government interventions and control.

d) Workers demand for higher wages and other benefits.

e) Consumers may develop a psychological feeling that they are exploited.

2.1.11 REMEDIES FOR UNDER CAPITALIZATION

The situation of under-capitalization can be set right through the following steps:

a) Issue of bonus shares by capitalizing the reserves and this reduces the earnings per share.

b) Raising the par value of shares of the company by exchanging the existing shares with the shares of higher denomination.

c) Splitting of shares which will increase the number of shares and fall in the rate of earnings per share without affecting the average rate of earning of the company.

2.1.12 OVER CAPITALIZATION VS. UNDER CAPITALIZATION

Both over-capitalization and under-capitalization are post mortem studies and deviations from ideal pattern of capitalization and are detrimental to society. Over-capitalization involves a stress on the financial resources and a jolt to share holders, investors, consumers, employees, etc., whereas under-capitalization accentuates unhealthy competition from business rivals and sows seeds of dissention, cause discontentment among employees and thus may lead to exploitation of consumers.

Of the two, over-capitalization is more dangerous and common and its remedial process having an impact on every segment is more painful. But, both the situations must be avoided.

2.1.13 SUMMARY

Capitalization, in the narrow sense of the term refers to accumulation of required funds and in the broader sense to the process of financial planning. There are number of definitions about capitalization. The essence of all refers to the way in which the long term funds are distributed among ownership funds and creditorship funds. This depends on the expected average net income. The three components of capitalization are par value of shares, reserves and surpluses and long term loans.

There are two approaches or theories of capitalization; cost theory and earnings theory. While cost theory determines capitalization on the basis of cost of acquisition of fixed assets, in the earnings theory, the value of the company is arrived at depending on the value of earnings. Thus earnings approach is suitable to existing undertakings and cost approach suits new undertakings.

There are two situations of capitalization, over-capitalization and under-capitalization. Over-capitalization refers to a situation where its actual earnings are not sufficient to pay off dividends at the normal rate paid by the industry. Here, capitalization exceeds the real economic value of assets. This hazardous situation brings down the value of shares and can be corrected by reorganization of the company which demands sacrifice on the part of every body, more particularly the share holders. Under-capitalization is the situation where its actual capitalization is much less than its proper capitalization or its earnings are more than any other company working in a similar industry.

This also is not desirable as it leads to unhealthy competition, more governmental interventions, etc. Thus an ideal situation is to have a proper capitalization with optimum utilization of asset capacity.

2.1.14 SELF CHECK QUESTIONS

A) Objective Questions

1. Capitalization in the broad sense refers to _____.
2. In the case of a company undergoing over-capitalization, earnings are _____ than the average rate of earnings in the industry.
3. Assts are over valued in case of a company facing over-capitalization. Yes/No.
4. Under-capitalization requires capitalization of reserves. Yes/No.
5. Under-capitalization is more dangerous than over-capitalization. Yes/No.

B) Class Assignment

1. What do you mean by capitalization? What are the two approaches for ascertaining the value of capitalization?
2. What is over-capitalization and what are the features of it?
3. What is under-capitalization? How do you overcome this?

C) Home Assignment

1. How do you rectify the situation of over-capitalization?
2. Reorganize the balance sheet of a company which is over-capitalized with imaginary figures adopting a suitable scheme/
3. Compare over-capitalization against under-capitalization.

2.1.15 SUGGESTED READINGS

- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK

- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach:Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 5

CAPITAL STRUCTURE - I

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize with the meaning of capital structure.
- To explain the concept of optimal capital structure.
- To acquaint with the determinants of capital structure.
- To bring out the factors influencing capital structure.

2.2.1 INTRODUCTION

Organization, big or small requires funds to run the business. These funds may be from long-term sources or short term sources or a combination thereof. A prudent financial policy is to acquire fixed assets with long term funds either own or loaned and current assets with short term funds. Since the working capital needs to be positive to safeguard the liquidity of the organization, to some extent current assets can be funded with long term loans. Thus long term funds are necessary both to fund fixed assets and current assets too.

The long term financial strength as well as profitability is influenced by its financial structure. This refers to the left side of the Balance Sheet i.e., liabilities comprising of share capital, long term loans as well as short term loans. Capital structure is that part of financial structure which includes long term debt and total share capital.

2.2.2 MEANING OF CAPITAL STRUCTURE

The term capital structure refers to mix of long term sources of funds which comprises of long term debt and total stock holders investment. This includes share capital, Reserves and Surplus, debentures and any long term debt from outside sources i.e., the composition of debt and equity.

Thus, Capital structure = Long term debt + Preferred stock + Net worth; or
Capital structure = Total Assets – Current Liabilities

The following illustration throws a light on the concept of capital structure and its nature. Let us suppose there are two companies A and B which are equally efficient as is reflected through its profitability but having a different capital structure which ultimately determines the wealth of the company.

Illustration: The total capital of two companies A and B is Rs. 3, 00,000. But they have adopted different strategies for designing capital structure. The financial records of two companies show following details:

	A	B
Profit before interest and tax (Rs.)	50,000	50,000
6% Debentures (Rs.)	1, 00,000	2, 00,000

Share capital (Shares of 100 each) (Rs.)	2, 00,000	1, 00,000

With a view to take strategic advantage, two companies have raised capital resources (i.e. debt-equity mix) in the proportion of 1:2 and 2:1 respectively. The reason for this can be understood with the help of following table.

Particulars	A	B
Profit before interest and tax (Rs.)	50,000	50,000
Less: Interest on debentures (Rs.)	6,000	12,000
Profit before tax (Rs.)	44,000	38,000
Less: Tax @ 50%	22,000	19,000
Profit after tax (Rs.)	22,000	19,000
Earning per share (Rs.)	22,000/2000=11	19,000/1000=19
Rate of Return on Equity	11%	19%

This makes it evident, other things being equal company B, whose capital structure is more of debt than equity can give better rate of dividend to share holders than Company A. However, apart from the above strategy there are many more factors which determine the capital structure of a company.

2.2.3 DETERMINANTS OF CAPITAL STRUCTURE

Capital structure may be determined either at the time of promotion of the company or during an intermediate stage of the organization. But determining the optimal capital structure at the time of floatation of the company is more important and plays a vital role on the running of the organization. Following are the important determinants of capital structure.

1) Tax benefits of debt: Debt is a cheaper source of finance than equity as interest on debt is a permissible item from income tax purpose. As a tax sheltered source debt contribution better for wealth maximization.

2) Flexibility: This refers to the firms ability to adapt to the needs of changing conditions which may be either positive or negative i.e., if the funds are in surplus the possibility of repayment and if the funding is needed, possibility of raising it. This flexibility depends on the flexibility in fixed charges, the covenants and debt capacity of the firm.

3) Control: Equity share holders have the right to vote and if more shares are floated that will reduce the controlling power of the share holders. If the capital has to be issued it should be with non voting right instrument. Debt finance is preferred if the company debt serving capacity is satisfactory.
4) Industry leverage ratio: This can be used as role model for constructing the capital structure as it depicts the trend of constituencies in capital structure.
5) Seasonal variation: Financial leverage depends on seasonal variation also low degree of financial leverage i.e., less of debt is preferable when a firms business is seasonal in nature. For example business engaged in air coolers, fans etc. depend less on debt as its income is concentrated and it may not be able to pay the interest during stack season.
6) Degree of competition: Less competition allows a firm to take more debt. Since they can sell more products at higher rate and their debt servicing is not at risk whereas the firms with more of competition depend more on equity.
7) Industry life cycle: The life cycle of any industry comprises introduction stage, growth stage, maturity stage and decline stage. During the initial stages there should be less debt and more of equity and as it grows and gets more profits it can borrow more.
8) Agency costs: This arises when there is conflict of interest among owners and debenture holders due to transfer of wealth. This is handled through monitoring and restrictive covenants which involve costs called agency costs. The financing strategy should minimize the agency costs by employing external agents who specialize in low cost monitoring.
9) Company's characteristics: The size of the company, nature of its business, credit standing and credit rating too influence the capital structure. Small companies don't get any credit and the companies with good credit rating can easily get finance.
10) Timing of public issue: Public issue should be made when the economy is conducive. Prices as well as yields depend on policy of the government.
11) Requirement of investors: Nature of the investors is also one of the influencing factors as they may be institutional investors or individual investors. Even among

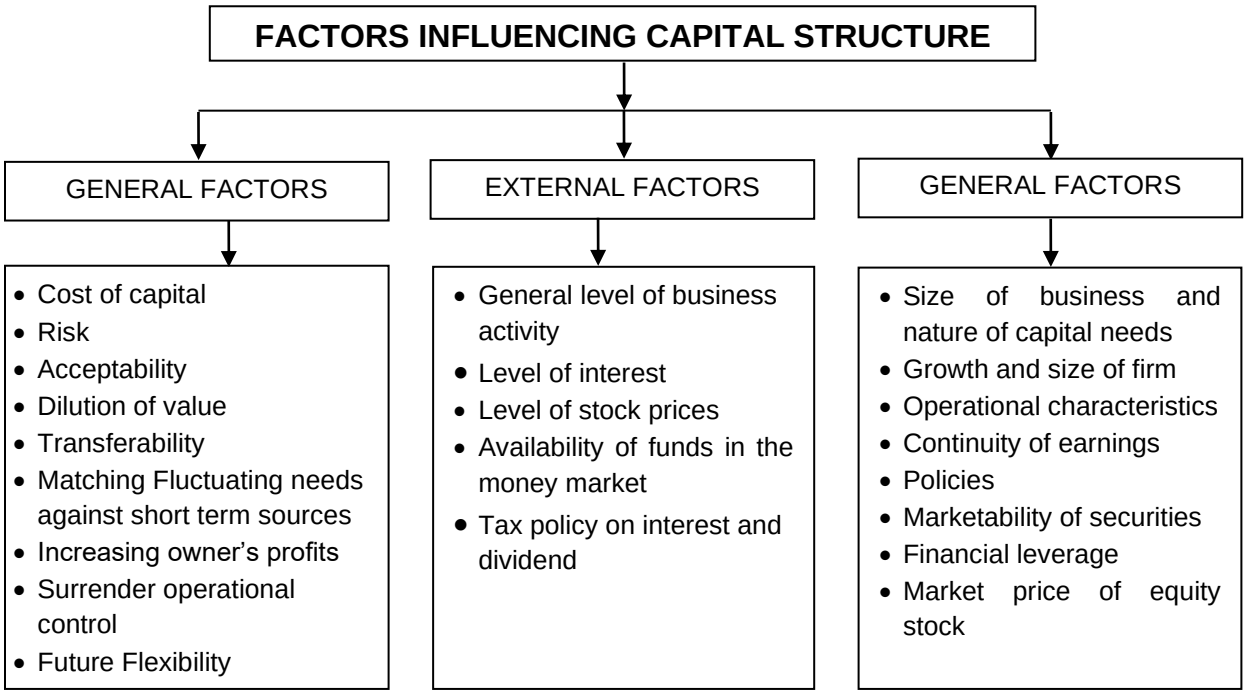
them they be risk takers and risk averters the former prefer equity where as the latter, debentures.

12) Period of finance: If fiancé is required for a limited period a firm can issue redeemable preference shares or debentures. But equity should be sought for long tern requirement.

13) Purpose of finance: When a firm is planning to invest in productive avenues for example machinery debt should be sought but if it is for non productive purpose, it can raise equity source of finance.

14) Legal requirements: The guidelines issued by the government also can not be disregarded while deciding the capital structure. For example the SEBI grants consent to capital issue where debt ratio does not exceed 2:1 ratio of preference capital to equity capital doe not exceed 1:3 and promoters hold at least 25% of equity capital.

2.2.4 SOME MORE FACTORS INFLUENCING CAPITAL STRUCTURE



(A) INTERNAL FACTORS

1) Cost of capital: The current and future cost of each potential source of capital should be estimated and compared

2) Risk: Debt securities increase the risk and equity reduces it. Risk can be measured by measuring the gearing and times interest earned.
3) Acceptability: Borrowing is possible only when the people willing to lend.
4) Dilution of value: A company should not issue shares which reduces the authority of existing share holders
5) Transferability: By listing their shares in the stock exchange many companies increase the possibility of transfer of shares
6) Matching fluctuating needs against short term sources: When the needs are not stable a company may resort to short term borrowings.
7) Increasing owner's profit: This is possible by resorting to more of debt financing, debt being allowed for taxable purposes. Earning after tax is more if interest element is more thus leaving a wider margin to share holders.
8) Surrender operational control: Equity share may result in a possible increase of operational control.
9) Future flexibility: A firm generally maintains a balance to ensure future flexibility in the capital structure.

(B) EXTERNAL FACTORS

1) General level of business activity: As already explained when the overall business activity is rising a firm would expand its operations.
2) Level of interest: If interest rates are exorbitant, firms will not go for debt financing
3) Level of stock prices: This depends on the competition in the market.
4) Availability of funds in the money market: This will affect firms ability to offer debt and equity securities
5) Tax policy on interest and dividend: Government policy on interest and dividend also influences the investors to opt for shares or debentures.

(C) GENERAL FACTORS

1) Size of business and nature of capital needs
2) Growth age and size of firm.
3) Operational characteristics.
4) Continuity of earnings

5) Policies: A firm which is conservative carried a small debt and vice verse.
6) Marketability of securities: Changes in the market, psychology influences the choice of the source of finance.
7) Financial leverage: Unfavorable financial leverage indicates a low level of productivity and makes borrowings costlier than the return or investment i.e., rate of return is less than the rate of interest. It is difficult for a firm to issue additional stock when profits are low. The only alternative for the firm here is to raise profits and improve its financial leverage.
8) Market price of equity stock: This depends on the psychology of equity share holders which is not predictable as they may prefer more debt in order not to loose their control. On the contrary same may view more dependence on debt as risk increasing measure.

Thus, the essence of the above is that a firm's capital structure depends on number of factors financial, economical, psychological, environment, physical and political.

2.2.5 FEATURES OF OPTIMUM / GOOD CAPITAL STRUCTURE

In taking a financial decision the financial manager has to arrive at optimal capital structure which refers to that proportion of debt and equity where the market value per share is maximum and the cost of capital is minimum. Ezra says "Optimum leverage is that mix of debt and equity which will maximize the market value of the company and minimize the companies overall cost of capital". This depends on the type of business. As observed by Vantlone, "In the Optimum capital structure the marginal real cost of each available method of financing is the same."

It is more appropriate capital structure than optimal capital structure as it varies from firm to firm in deciding the proportion of debt and equity. While deciding the capital structure basic importance is to be given to equity share holders and subsequently others. Following are the qualities of as appropriate/ good capital structure.

a) Profitability / Return: Within the frame work, a firm should set maximum profit at maximum return to owners with out raising the costs.
b) Solvency / Risk: The use of excessive debt is risky and threatens solvency. A proper proportion of it has to be arrived at which will not hamper the solvency of the firm.

c) Flexibility: This demands the possibility of changing the capital structure to 'need based' without adding to the cost of production

d) Conservation / capacity: Proportion of debt and equity should arrive at depending on the repaying capacity and debt servicing capacity.

e) Control: Use of more equity capital means dilution of control. The construction of capital structure should ant involve the risk of loss of control over the firm.

A capital structure of a firm should consider the above elements in general and specific problems in particular. Thus, the optimal capital structure is that capital structure where the proportion of debt and equity is so designed as to yield maximum value of the firm as well as the share.

2.2.6 SUMMARY

Funds, long term and short term are needed to run an organization. Long term financing refers to the funding from share holders and debenture holders and any other term loan. Capital structure refers to the left side of Balance Sheet comprising of share holders funds i.e., share capital, reserves and accumulated profits and Debentures holders funds i.e., the composition of debt and equity. The optimal capital structure refers to that proportion of debt and equity which will maximize the market value of the company and minimize the company's overall cost of capital. This cannot be identical for all the firms and varies with the nature of the firm. There are number of factors determining the capital structure. These may be internal, external or general.

Internal factors include cost of capital, risk, dilution of value, acceptability, transferability, matching fluctuating needs against short term source, increasing owner's profits, operational control and flexibility.

External factors include the general level of business activity, interest rates, stock prices, tax policy and availability if funds. Other factors like size of business, stages of business, government influence, financial leverage, market price of shares etc. have influence in deciding the proportion of debt and equity.

2.2.7 CHECK YOURSELF

D) Objective Questions:

1. Capital structure refers to the proportion of _____.
2. Fixed assets are to be financed with _____ funds.
3. A new firm can attract more of debt than equity. Yes / No
4. All the firms cannot have a uniform optimal capital structure. Yes / No
5. If the interest rates are high the firm should go for debt financing. Yes / No

E) Class Assignment

1. What is capital structure? Explain in detail.
2. What are the main determinants of capital stricture?

F) Home Assignment

1. What is optimum capital structure? What are the qualities of good capital structure?
2. Explain various internal, external and general factors affecting the capital structure?

2.2.8 SUGGESTED READINGS

- Financial Management: IM Pandey
- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK
- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach: Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 6

CAPITAL STRUCTURE: II

(PRACTICAL DECISIONS BASED ON CAPITAL STRUCTURE)

Structure of the Lesson:

Objectives of the Lesson:

- To explain various approaches towards capital structure.
- To discuss the application of these approaches in capital structure decisions.

2.3.1 INTRODUCTION

The capital structure is planned initially when company is incorporated. The initial capital structure should be designed very carefully. The management of the company should set a target capital structure and the subsequent financing decisions should be made with a view to achieve the target capital structure. Every time when funds have to be procured, the financial manager weighs pros and cons of various sources of various sources of finance and selects most advantageous sources keeping in view the target capital structure. Thus the capital structure decision is a continuous one and has to be taken whenever a firm needs additional finances.

2.3.2 APPROACHES OF CAPITAL STRUCTURING

There are three common approaches of capital structuring. These are:

- Operating and financial leverage approach for analyzing the impact of debt on EPS.
- Cost of capital and valuation approach for determining the impact on the shareholder's value.
- Cash flow approach for analyzing the firm's ability to service debt.

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

(I) Operating and Financial Leverage approach: EBIT – EPS analysis:

The use of fixed cost sources of finance, such as debt, preference share capital to finance the assets of the company is known as financial leverage or trading on equity. If the assets financed with the use of debt yield a return greater than the cost of debt, the earning per share also increases without an increase in the owner's investment. The earning per share also increases when the preference share capital is used to acquire assets. But the leverage effect is more pronounced in the case of debt because

- The cost of debt is usually lower than the cost of preference share capital and
- The interest paid on debt is tax deductible.

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

EXAMPLE 1: A firm has an all equity capital structure consisting of 1, 00,000 ordinary shares of Rs.10 per share. The firm wants to raise Rs.2, 50,000 to finance its investments and is considering three alternative methods of financing:

- To issue 25,000 common shares at Rs.10 each,
- To borrow Rs.2,50,000 at a 8% rate of interest,
- To issue 2,500 preference shares of Rs.100 each at a 8% rate of dividend.

If the firm's Earnings before interest and taxes (EBIT), after additional investment are Rs. 3, 12,500 and the tax rate is 50%, find the effect of above financing alternatives on the EPS of the company.

Also find out the effect on EPS (Earnings per share) of the firm if Earnings before interest and taxes (EBIT) is Rs. 75,000 only.

SOLUTION:

PART A: If the firm has an EBIT of Rs.75, 000 EPS under different methods will be as follows:

EPS UNDER ALTERNATIVE FINANCING FAVOURABLE DEBT

Particulars	Equity Financing (Rs.)	Debt Financing (Rs.)	Preference Financing (Rs.)
EBIT	3,12,500	3,12,500	3,12,500
Less: Interest	0	20,000	0
Profit before tax	3,12,500	2,92,500	3,12,500
Less: Taxes	1,56,250	1,46,250	1,56,250
Profit after tax	1,56,250	1,46,250	1,56,250
Less: Preference Dividend	0	0	20,000
Equity Earnings	1,56,250	1,46,250	1,36,250
Number of Outstanding Shares	1,25,000	1,00,000	1,00,000
Earnings per Share	1.25	1.46	1.36

In this alternative (debt financing) the firm is able to maximize the EPS. Though the rate of preference dividend is equal to the rate of interest, EPS is high in case of debt financing because interest charges are tax deductible while preference dividend are not. With increasing levels of EBIT, EPS will increase at a faster rate with a high degree of leverage.

However, if a company is not able to earn a rate of return on its assets higher than the interest rate on debt or the preference dividend rate on preference financing, it will have adverse impact on EPS.

PART B: If the firm has an EBIT of Rs.75, 000 EPS under different methods will be as follows:

EPS UNDER ALTERNATIVE FINANCING: UNFAVORABLE EBIT

Particulars	Equity Financing (Rs.)	Debt Financing (Rs.)	Preference Financing (Rs.)
EBIT	75,000	75,000	75,000
Less: Interest	0	20,000	0
Profit before tax	75,000	55,000	75,000
Less: Taxes	37,500	27,500	37,500
Profit after tax	37,500	27,500	37,500
Less: Preference Dividend	0	0	20,000
Equity Earnings	37,500	27,500	17,500
Number of Outstanding Shares	1,25,000	1,00,000	1,00,000
Earnings per Share	0.30	0.275	0.175

It is obvious that, under unfavorable conditions i.e., when the rate of interest on total assets is less than the cost of debt, the EPS will fall with the degree of leverage.

The EBIT-EPS analysis is one important tool in the hands of the financial manager to get an insight into the firm's capital structure management. He considers the possible fluctuations in EBIT and examine their impact on EPS under different financial plans. If the probability of earning a rate of return on the firm's assets less than the cost of debt is insignificant, a large amount of debt can be used by the firm in its capital structure to increase the earnings per share. This may have a favorable effect on the market value per share. On the other hand, if the probability of earning a rate of return on the firm's assets less than the cost of debt is very high, the firm should refrain from employing debt capital. It may, thus, be concluded that the greater the level of EBIT and lower the probability of downward fluctuation, the more beneficial it is to employ debt in capital structure. However, it should be realized that the EBIT-EPS is first step in deciding about a firm's capital structure. However it should be realized that the EBIT-EPS is a first step in deciding about a fir's capital structure.

(II) **Cost of Capital and Valuation approach:**

The cost of a source of finance is the minimum return expected by its suppliers. The expected return depends on the degree of risk assumed by investors. A high degree of risk is assumed by shareholders than debt holders. In the case of debt holders the rate of

interest is fixed and the company is legally bound to pay interest whether it makes profit or not. For shareholders the dividend is not fixed and the boards of directors have no legal obligation to pay dividends even if the company makes profit. The loan of debt holders is returned within a prescribed period, while shareholders will have to share the residue only when the company is wound up. This leads one to conclude that debt is a cheaper source of fund then equity. This is generally the case even when taxes are not considered. The tax deductibility of interest charges further reduces the cost of debt. The preference share capital is also cheaper than equity capital, but is not as cheap as debt is. Thus, using the component, or specific, cost of capital as a criterion for financing decisions, a firm would always like to employ debt since it is the cheapest source of funds.

(III) Cash Flow approach:

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

The fixed charges of a company include payment of interest, preference dividends and principal, and they depend on both the amount of senior securities and the terms of payment. The amount of fixed charges will be high if the company employs a large amount of debt or preference capital with short term maturity. Whenever a company thinks of raising additional debt, it should analyze its expected future cash flows to meet the fixed charges. It is mandatory to pay interest and return the principal amount of debt. If a company is not able to generate enough cash to meet its fixed obligation, it may have to face financial insolvency. The companies expecting larger and stable cash inflows in the future can employ a large amount of debt in their capital structure.

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

2.3.3 CASH FLOW ANALYSIS VERSUS EBIT- EPS ANALYSIS

Now, after studying the three approaches, the question may arise in one's mind that which approach is better. Is cash flow analysis superior to EBIT-EPS analysis?

To explain this it is important to discuss advantages of cash flow analysis over EBIT-EPS analysis. These are:

- The cash flow analysis focuses on the liquidity and solvency of the firm over a long period of time, even encompassing adverse circumstances. Thus, it evaluates the firm's ability to meet fixed obligations.
- It goes beyond the analysis of profit and loss statement and also considers changes in the balance sheet items.
- It identifies discretionary cash flows. The firm can thus prepare an action plan face to face adverse situations.
- It provides a list of potential financial flows which can be utilized under emergency.
- It is long term, dynamic analysis and does not remain confined to a single period analysis.
- The most significant advantage of the cash flow analysis is that it provides a practical way of incorporating the insights of the finance theory.

2.3.4 SOME OTHER CONSIDERATIONS

The determination of capital structure, in practice involves additional considerations in addition to the concerns about EPS, value and cash flow. Attitudes of managers with regard to financing the decisions are quite often influenced by their desire not to lose control, to maintain operating flexibility and to have convenient and cheaper means of raising funds. The most important considerations are:

- Concern for dilution of control
- Desire to maintain operating flexibility
- Ease of raising capital inexpensively
- Capacity for economics of scale

2.3.5 SUMMARY

The advantage of debt is that it saves taxes since interest is a deductible expense. On the other hand, its advantage is that it can cause financial distress. Therefore, the capital structure decision of the firm in practice should be governed by the trade-off between tax advantage and costs of financial distress. Financial distress becomes costly when the firm finds it difficult to pay interest and principal. From this point of view both debt ratio and EBIT-EPS analysis have their limitations. They do not reflect the debt servicing ability of the firm. A full cash flow analysis over a long period, which covers the adverse situations also, helps to determine the firm's debt capacity. Debt capacity means the amount of debt which a firm should use given its cash flows. Cash flow analysis indicates how much debt a firm can service without any difficulty.

A firm does not exhaust its debt capacity at once. It keeps reserve debt capacity to meet financial emergencies. The actual amount of debt also depends on flexibility, control and size of the firm in terms of its assets. Other factors, which are important when capital is actually raised, include timing (marketability) and floatation costs.

2.3.6 CHECK YOURSELF

G) Class Assignment

1. What is capital structure? Explain briefly the EBIT – EPS approach of capital structuring.
2. Explain clearly cost of capital and valuation approach of capital structuring.

H) Home Assignment

1. What is EBIT-EPS analysis? How is EBIT-EPS analysis different from valuation approach?
2. Differentiate between cash flow approach and EBIT-EPS analysis?

2.2.7 SUGGESTED READINGS

- Financial Management: IM Pandey
- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK
- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach: Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 7

MEANING AND SOURCES OF CAPITAL

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of capital.
- To discuss various sources of capital.
- To explain methods of floatation of securities.

3.1.1 CONCEPT OF CAPITAL

All man made goods which are used in production are capital. Money is only one form' of capital. In fact all tools, machinery of all kinds, buildings, railways, buses, raw materials used in production are forms of capital. A plough kept unused is only wealth for the farmer but when it is used to till the land it becomes his capita In Economics Capital refers to that part of man made wealth which is used for the further production of wealth. According to Prof. Marshall "capital consists of those kinds of wealth, other than free gifts of nature, which yield income" "Capital is also defined as "produced means of production". However, in finance Capital can be defined as financial assets or the financial value of assets, such as cash or the factories, machinery and equipment owned by a business.

3.1.2 SOURCES OF CAPITAL

Firms can issue three types of capital - equity, preference and debenture capital. These three types of capital distinguish amongst themselves in the risk, return and ownership pattern. The firms can also take term loans and they can go for use of retained earnings.

(A) EQUITY CAPITAL: Equity Shareholders are the owners of the business. They enjoy the residual profits of the company after having paid the preference shareholders and other creditors of the company. Their liability is restricted to the amount of share capital they contributed to the company. Equity capital provides the issuing firm the advantage of not having

any fixed obligation for dividend payment but offers permanent capital with limited liability for repayment. However, the cost of equity capital is higher than other capital. Firstly, since the equity dividends are not tax-deductible expenses and secondly, the high costs of issue. In addition to this since the equity shareholders enjoy voting rights; excess of equity capital in the firms' capital structure will lead to dilution of effective control.

(B) PREFERENCE CAPITAL: Preference shares have some attributes similar to equity shares and some to debentures. Like in the case of equity shareholders, there is no obligatory payment to the preference shareholders; and the preference dividend is not tax deductible (unlike in the case of the debenture holders, wherein interest payment is obligatory). However, similar to the debenture holders, the preference shareholders earn a fixed rate of return for their dividend payment. In addition to this, the preference shareholders have preference over equity shareholders to the post-tax earnings in the form of dividends; and assets in the eve.ijt of liquidation.

Other features of the preference capital include the call feature, wherein the issuing company has the option to redeem the shares, (wholly or partly) prior to the maturity date and at a certain price. Preference shares can be of following types.

a) Cumulative or Non-cumulative preference shares: In case of cumulative preference shares, the dividend is cumulative. It means that in case dividend remains unpaid in any financial year due to insufficient profits. The company will have to pay up all the arrears of preference dividends before declaring any equity dividends. While on the other hand, the non-cumulative shares do not enjoy such right to dividend payment on cumulative basis.

b) Redeemable or Perpetual preference shares: Redeemable preference shares will be redeemed after a given maturity period while the perpetual preference share capital will remain with the company forever.

c) Convertible or non-convertible preference shares: Convertible preference shares are converted into equity shares after certain period. But, in other case this facility is not available.

(C) DEBENTURES: A debenture is a marketable legal contract whereby the company promises to pay its owner, a specified rate of interest for a defined period of time and to repay the principal at the specific date of maturity. Debentures are usually secured by a charge on the immovable properties of the company. Company pays interest on debentures. If the company issues debentures with a maturity period of more than 18 months, then it has to create a Debenture Redemption Reserve (DRR), which should be at least half of the issue amount

before the redemption commences. The company can also attach call and put options. With the call option the company can redeem the debentures at a certain price before the maturity date and similarly the put option allows the debenture holder to surrender the debentures at a certain price before the maturity period. Debentures can be classified into following categories.

a) Non Convertible Debentures (NCDs): These debentures cannot be converted into equity shares and will be redeemed at the end of the maturity period.

b) Fully Convertible Debentures (FCDs): These debentures are converted into equity shares after a specified period of time. In the case of a fully established company with an established reputation and good, stable market price, FCD's are very attractive to the investors as their bonds are getting automatically converted to shares.

c) Partly Convertible Debentures (PCDs): These are debentures, a portion of which will be converted into equity share capital after a specified period, whereas the non-convertible (NCD) portion of the PCD will be redeemed as per the terms of the issue after the maturity period. The non-convertible portion of the PCD will carry interest right up to redemption whereas the interest on the convertible portion will be only up to the date immediately preceding the date of conversion.

(D) TERM LOANS: Term Loans constitute one of the major sources of debt finance for a long-term project. These term loans are offered by the Financial Institutions viz., IDBI, ICICI etc. and by the State Financial Institutions (e.g. UPFC). The interest rate on the term loans will be fixed after the financial institution appraises the project and assesses the credit risk.

Term Loans, which can be either in rupee or foreign currency, are generally secured through a first mortgage or by way of depositing title deeds of immovable properties or hypothecation of movable properties. In addition to the security, financial institutions also place restrictive covenants while granting the term loan.

The major advantage of this source of finance is its post-tax cost, which is lower than the equity/preference capital and there will be no dilution of control. However, the interest and principal payments are obligatory and threaten the solvency of the firm. The restrictive covenants may, to a certain extent, hinder the company's future plans.

(E) PLOUGHING BACK OF RETAINED EARNINGS: Ploughing back of retained earnings implies foregoing of dividend receipts by the investors. The company can use this source as a long term finance avenue.

3.1.3 METHODS OF ISSUE OF SECURITIES

A firm can raise capital from the primary market (both domestic & foreign) by issuing securities in the following five ways:

(I) PUBLIC ISSUE: Companies issue securities to the public in the primary market and get them listed on the stock exchanges. These securities are then traded in the secondary market. The major activities involved in making a public issue of securities are as follows:

- Appointment of the Lead Manager: Before making a public issue of securities the firm should appoint a SEBI registered Category-I Merchant Banker to manage the issue. Preparation of the Prospectus: The Lead Manager is responsible for the preparation of the prospectus.
- Appointment of Intermediaries: The other intermediaries who are involved in the public issue of securities are underwriters, registrars, bankers to the issue, brokers and advertising agencies. Apart from these it also involves promotion of the issue, printing and dispatch of prospectus and application forms, obtaining statutory clearances, filing the initial listing application, final allotment and refund activities.

(II) RIGHTS ISSUES: Under Section 81 of the Companies Act, 1956, when a firm issues additional equity capital, it has to first offer such securities to the existing shareholders on a pro rata basis. The rights offer should be kept open for a period of 60 days and should be announced within one month of the closure of the books. The shareholders can also renounce their rights in favor of any other person at market determined rate. The cost of floating of rights issue will be comparatively less than the public issue, since these securities are issued to the existing shareholders, thereby eliminating the marketing costs and other relevant public issue expenses. The rights issue will also be priced lower than the public issue since it will be offered to the existing shareholders.

(III) PRIVATE PLACEMENT

The private placement method of financing involves direct selling of securities to' a limited number of institutional or high net worth investors. This avoids the delay involved in going public and also reduces the expenses involved in a public issue. The company appoints a merchant banker to network with the institutional investors and negotiates the price of the issue. The major advantages of privately placing the securities are: Easy access to any company; Fewer procedural formalities; Lower issue cost; and Access to funds is faster.

(IV) BOUGHT-OUT DEALS

Buy-out is a process whereby an investor or a group of investors' buy-out a significant portion of the equity of an unlisted company with a view to sell the equity to public within an agreed time frames. The bought-out deal route is relatively inexpensive; and the funds accrue without much delay. In addition to this, it affords greater flexibility in terms of the issue and matters relating to off-loading with proper negotiations with the sponsor or the merchant banker involved.

(V) EURO ISSUES

The Government has allowed Indian companies to float their stocks in foreign capital markets. The Indian corporates, which face high rates of interest in the domestic markets, are now free to tap the global capital markets for meeting resource requirements at less costs and administrative problems. The instruments which the company can issue are Global Depository Receipts (GDRs), Euro Convertible Bonds (ECBs), and Foreign Currency Convertible Bonds (FCCBs). These instruments are issued abroad and listed and traded on a foreign stock exchange. Once they are converted into equity, the underlying shares are listed and traded on the domestic exchange.

3.1.4 NEW INSTRUMENTS OF CAPITAL

Apart from traditional sources of capital there are some new instruments of capital. These may include:

(A) SECURED PREMIUM NOTES (SPNs): This is a kind of NCD with an attached warrant that has recently started appearing in the Indian Capital Market. This was first introduced by TISCO which issued SPNs to its existing shareholders on a rights basis. SPNs do not yield interest in the initial period, and are repaid after this period on installment basis. But, the warrant attached to the SPN gives the holder the right to apply for and get allotment of one equity share through cash payment.

(B) INTERNAL ACCRUALS: Financing through internal accruals can be done through the depreciation charges and the retained earnings. While depreciation amount will be used for replacing an old machinery etc., retained earnings on the other hand can be utilized for funding other long-term objectives of the firms. The major advantages the company gets from using this as a source of long-term financial are its easy availability, elimination of issue expenses and the problem of dilution of control.

(C) DEFERRED CREDIT: The deferred credit facility is offered by the supplier of machinery, whereby the buyer can pay the purchase price in installments spread over a period of time. The interest and the repayment period are negotiated between the supplier and the buyer and there are no uniform norms. Bill Rediscounting Scheme, Supplier's Line of Credit, Seed Capital Assistance and Risk Capital Foundation Schemes offered by financial institutions are examples of deferred credit schemes.

(D) LEASING AND HIRE PURCHASE: The other sources of finance for companies are the leasing and hire purchase of assets. These two types of financing options, which are supplementary to the actual long-term sources, are offered by financial institutions, Non Banking Finance Companies, Banks and manufacturers of equipment/assets. Leasing is a contractual agreement between the lessor and the lessee, wherein companies (lessee) can enter into a lease deal with the manufacturer of the equipment (lessor) or through some other intermediary. This deal will give the company the right to use the asset till the maturity of the lease deal and can later return the asset or buy it from the manufacturer. During the lease period the company pays lease rentals. Leasing is also similar to hire purchase, except that in hire purchase the ownership will be transferred to the buyer after all the hire purchase installments are paid-up.

(E) GOVERNMENT SUBSIDIES: The central and state governments provide subsidies to Industrial units in backward areas. The central government has classified backward areas into three categories of districts - A, B and C. The central subsidy applicable to industrial projects in category A districts is 25% of the fixed capital investment (subject to a maximum of Rs.25 lakh); category B districts: 15% of the fixed capital investment (subject to a maximum of Rs.15 lakh); and in category B districts: 10% of the fixed capital investment (subject to a maximum of Rs.10 lakh).

3.1.5 SUMMARY

Long-term finance is absolutely essential for any operating concern. Any company needs to have a lot of money for investing in long-term assets such as land and buildings, plant and machinery, technical know-how and working capital margin and hence it needs long-term sources of funds to finance these investments as usage of short-term funds will only result in asset-liability mismatch and make the firm illiquid.

There are three main sources of long-term funds - equity shares, preference shares and debentures. Equity shareholders are the owners of the company and enjoy residual profits after having paid all the commitments including preference share dividend. Companies have no fixed

obligation to pay dividends and hence equity offers perpetual capital with limited liability for repayment. However, since the equity shareholders assume a lot more risk than others, cost of equity is higher than the cost of other sources of finance. In addition, since equity shareholders enjoy voting rights, too much of equity capital can dilute the control of the management.

Preference shares are similar to equity in that there is no obligatory payment and the dividends are not tax deductible. However, preference shareholders earn a fixed rate of return for their investments and have a preference over equity shareholders to post-tax earnings in the form of dividends and assets in case of liquidation. Preference shares can be classified into three types: cumulative and non-cumulative, redeemable and perpetual and convertible and non-convertible.

Debentures are marketable contracts where-in the company promises to pay the holder a specified rate of interest for a certain period and repay the principal on maturity. These instruments are generally secured by a charge on immovable properties of the companies. Interest paid on debentures is tax deductible and debenture holders have the first right to assets in case of liquidation. Debentures can be classified into non-convertible, partly convertible and fully convertible debentures.

A company can raise money using any of these instruments by going to the capital market. There are many ways of doing it. A company can go for a public issue, a rights issue, private placement, buyout deals or euro-issues for raising finances.

With a definite increase in the variety of sources for long-term funds raising, an efficient finance manager will be the one who devises the optimum financing mix. The funding process should be a trade-off between the cost of funding, the risk involved and the returns expected, so that a reasonable spread is maintained for the firm.

3.1.6 CHECK YOURSELF

I) Objective Questions:

6. Capital refers to _____.
7. Bought-out deal means _____.
8. Debentures are cheaper than equity. Yes / No
9. SPN have an attached warrant which authorizes the holder to apply for and get allotment of equity share. Yes / No
10. If the tax rates are high the firm should go for debt financing. Yes / No

11. Indian companies can float their stocks in foreign capital markets through GDR/SDR. Yes / No

J) Class Assignment

3. What are various types of debentures? Explain.
4. Differentiate between explicit and implicit cost.
5. Explain clearly the concept of marginal cost of capital.
6. How leasing and hire purchase of assets is a source of capital?

K) Home Assignment

3. What are various sources of capital? Explain in detail.
4. What the important methods of floatation of securities?

3.1.7 SUGGESTED READINGS

- Financial Management: IM Pandey
- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK
- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach: Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 8

COST OF BORROWED AND OWN CAPITAL

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of cost of capital.
- To discuss various important terms of cost of capital.
- To explain methods for calculating cost of specific sources of capital.
- To explain the suitability of different approaches available for calculating cost of specific sources of capital.

3.2.1 INTRODUCTION:

Cost of capital represents the rate of return that a firm must pay to the suppliers of capital for use of their funds. In other words, cost of capital is the weighted average cost of various sources of finance used by the firm in capital formation. The sources are equity shares, preference shares, long-term debt and short-term debt.

Thus, from the above, we can say that cost of capital is that minimum rate of return which a firm must and is expected to earn on its investments so as to maintain the market value of its shares. It is also known as Weighted Average Cost of Capital (WACC), composite cost of capital. It is expressed in terms of percentage.

3.2.1 CONCEPT OF COST OF CAPITAL

Cost of capital is the minimum required rate of return needed to justify the use of capital. In the investment decisions, an individual or a manager encounters innumerable competing investment opportunities to choose from. For example, a person has option to invest his saving of Rs.1, 000 either in 11%, 3 year postal certificates or in 12%, 3 year fixed deposit in a bank. In both the cases payment is assured by the government. So, both the investment opportunities reflect equivalent risk. If the person decides to deposit in bank, he will have to forego the opportunity of investing in postal certificates which is 11%.

It is important here to explain the concept of opportunity cost. Opportunity cost is the rate of return foregone on the next best alternative investment opportunity of comparable risk. Thus, the required rate of return on an investment project is an opportunity cost. It is a concept having different meanings which could be understood from the following view points:

1. Investor's view point: It may be defined as "the measurement of the sacrifice made by him/her in order to capital formation." E.g., an investor invested in a company's equity shares, amount to Rs. 1, 00,000, instead of investing in a bank deposit which pays 7% interest. Here investor has sacrificed 7% interest for not investing in the bank.

2. Firm's view point: It is the minimum required rate of return needed to justify the use of capital. E.g., a firm raised Rs. 50 lakhs through the issues of 10% debentures, for justifying this issue it has to earn a 10% minimum rate of return on investment.

3. Capital Expenditure's view point: The cost of capital is the minimum required rate of return or the hurdle rate or target rate or cut off rate or any discounting rate used to value cash flows. E.g., a firm is planning to invest in a project, that requires Rs. 20 lakhs as initial investment and it provides cash flows for 5 years period. Here for conversion of the future 5 years cash inflows into present values we need cost of capital.

3.2.3 COST OF CAPITAL: SOME BASIC ASPECTS

There are three basic aspects of cost of capital:

1. Rates of Return: Cost of Capital is not a Cost as such it is the rate of return that a firm requires to earn from its investment projects.
2. Minimum Rate of Return: Cost of Capital of any firm is that minimum rate of return that will at least maintain the market value of the shares.
3. Cost of Capital: Cost of Capital (K o) comprises of three components.

   - The risk less cost of the particular type of financing (r_j)
   - The business risk premium, (b) and,
   - The financial risk premium (f)

   Symbolically cost of capital may be represented as: $K_o = r_j + b + f$

3.2.4 COST OF CAPITAL: SOME IMPORTANT TERMS

Before computation of specific cost of each source of capital, it is wise to know the various relevant costs associated with the problem of measurement of cost of capital. The relevant costs or important terms used are:

1) **Marginal Cost of Capital:** It is the additional cost incurred to obtain additional funds required by a firm. It refers to the change in total cost of capital resulting from the use of additional funds.
2) **Average Cost/Overall Cost:** It is the average cost of various specific costs of the different components (equity, preference shares, debentures, retained earnings) of capital structure as a given time and this is used as the acceptance criteria for (capital budgeting) investment proposals.
3) **Historic Cost (Book Cost):** The book cost has its origin in the accounting system in which, book values, as maintained in the books of accounts that are readily available. Cost of capital may be computed based on the book value of the components of the capital structure. Historical costs act as guide for future cost estimation.
4) **Future Cost:** It is the cost associated with particular source of finance a capital budget or investment proposal.
5) **Specific Cost:** It is the cost associated with particular source of finance. It is also known as component cost of capital. For example, cost of equity (K_e) or cost of preference share (K_p) or cost of debt ($K_{d)}$ etc.
6) **Spot Cost:** The costs that are prevailing in the market at a certain time. For example, few years back cost of bank loans (house loans) was around 18%, now it is 12%. The 12% is the spot cost.
7) **Opportunity Cost:** It is the benefit that the shareholder forgoes by not putting his/her funds elsewhere because they have been retained by the management.
8) **Explicit Cost:** Explicit cost of any source of capital is the discount rate that equates the present value of the cash inflows with present value of cash outflows.
9) **Implicit Cost:** It is the opportunity cost, which is given up in order to pursue a particular action. It can also be defined as “the rate of return associated with the

best investment opportunity for the firm and its shareholders that would be foregone, if the projects presently under consideration by the firm were accepted.

3.2.5 CALCULATION OF COST OF SPECIFIC SOURCES OF CAPITAL

Financial manager has to compute the specific cost of each source of fund needed in the capitalization of a company. Company may resort to different financial sources (equity share, preference share, debentures, and retained earnings. It may prefer internal source (retained earnings) or external source (preference shares, equity, and debt). Generally, the component cost of a specific source of capital is equal to the investor's required rate of return. Investors required rate of returns are interest and discount on debt; dividend, capital appreciation, and earnings per share on equity share holders, dividend and share of profit on preference shareholders funds. But investors' required rate of returns should be adjusted for taxes while calculating the cost of a specific source of fund. In the investment analysis, net cash flows are computed on after – tax basis, therefore, the component costs, used to determine the discount rate, should also be expressed on an after-tax basis.

Now, the question is, how does the firm know about the required rates of return of investors? The required rates of return are market determined. They are established in the capital markets by the actions of competing investors. The influence of market is direct in the case of new issue of ordinary and preference shares and debt. The market price of securities is a function of the return expected by investors. The demand and supply forces work in such a way that equilibrium rates are established for various securities. Thus, the opportunity cost of a source of capital is given by the following formula:

$$Io = \frac{CF_1}{(1+K)^1} + \frac{CF_2}{(1+K)^2} + \frac{CF_3}{(1+K)^3} + \cdots \frac{CF_n}{(1+K)^n}$$

Where

I_o = Capital supplied by investors in period O (It represents a net cash inflow to the firm) CF_1 = Returns expected by investors (They represent cash outflows to the firm)

K = Required Rate of Return or the Cost of Capital

In terms of the above equation, the cost of capital is the internal rate of return which equates the present value of inflows and outflows of a financial opportunity. The outflows in the equation represent the returns which investors could earn on the alternative investment opportunities of equivalent risk.

Computation of specific sources of funds in discussed below:

3.2.6 COST OF DEBT

Firms may raise debt in a variety of ways. It may borrow funds from financial institutions or public either in the form of public deposits or debentures (bonds) for a specified period of time at a certain rate of interest. The interest paid on debt is a charge on the profit and loss account of the company. In other words, interest payment made by the firm on debt issue qualifies tax deduction in determining net taxable income. It implies that higher the interest charges, the lower will be the amount of tax payable by the firm. This also means the government indirectly pays a part of the lender's required rate of return. As a result of the interest tax shield, the after-tax cost of debt to the firm will be substantially less than the investors' required rate of return. The before-tax cost of debt should, therefore, be adjusted for tax effect as follows:

$$K_d \text{ (After-tax)} = K_d \text{ (Before tax) } (1 - t)$$

The cost of debt or term loan can be calculated as:

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

Where: K_d = cost of debt

I = Amount of Interest

NP = Net Proceed (i.e. Amount of debt – Expenses on arranging debt)

t = Corporate tax rate

3.2.7 COST OF DEBENTURE

A debenture or bond may be issued at par or at discount or premium. The contractual or coupon rate of interest forms the basis for calculating the cost of any form of debt. Computation of cost of debenture or debt is relatively easy, because the interest rate that is payable on dent is fixed by the agreement between the firm and the creditors. Computation of cost of debentures or debt capital depends on their nature. The debt interest paid on that debt, but from company point of view it will be less than the interest payable when the debt is issued at par since the interest is tax deductible. From calculation of cost of debentures point of view, the debenture can be divided in two categories, i.e. irredeemable and redeemable. The cost of irredeemable or perpetual debentures can be calculated by applying following formula:

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

Similarly, the cost of redeemable can be calculated by applying following formula:

$$K_d = \frac{I + \frac{MV - NP}{N}}{\frac{MV + NP}{2}} \times (1 - t)$$

Where: K_d = cost of debenture

I = Amount of Interest

MV = Maturity value

NP = Net Proceed (i.e. Face value of debenture $\pm$ Premium/Discount – Expenses on arranging debt)

N = Number of years (Maturity period)

$\frac{MV+NP}{2}$ = Average amount of Debt

t = Corporate tax rate

Example 1: Bahrain Steel Limited issued 10% redeemable debentures of Rs. 100 each at par for Rs. 5, 00,000. The issue expenses amounted to Rs. 10,000. The debentures are to be redeemed after 10 years. Assuming corporate tax rate at 50%, find out before tax and after tax cost of debentures.

Solution: By Formula:

$$K_d = \frac{I + \frac{MV - NP}{N}}{\frac{MV + NP}{2}} \times (1 - t)$$

Here, Total Net Proceed = 5, 00,000 – 10,000 = 4, 90,000

Hence NP per debenture = 4, 90,000 ÷ 5,000 = 98

$$K_d = \frac{10 + \frac{100 - 98}{10}}{\frac{100 + 98}{2}} \times (1 - .5) = 0.0606 \text{ or } 6.06\%$$

Example 2: Modern Syntax Ltd. is considering to issue Rs. 40 lakhs of Rs. 200 12% debentures at par. The debentures are repayable after 10 years. However, the company will have to pay Rs. 6 per debentures as issue expenses. Assuming corporate tax rate at 50%, find out after tax

cost of debentures. What would be the cost if the debentures are issued at (I) at par, (II) a discount of 5% or (III) a premium of 10%?

Solution:

(I) Cost of debt if debentures are issued at Par:

$$K_d = \frac{24 + \frac{200 - 194}{10}}{\frac{200 + 194}{2}} \times (1 - .5) = 0.0624 \text{ or } 6.24\%$$

Here, Net Proceed = 200 – 6 = 194

(II) Cost of debt if debentures are issued at 5% discount:

$$K_d = \frac{24 + \frac{200 - 184}{10}}{\frac{200 + 184}{2}} \times (1 - .5) = 0.0666 \text{ or } 6.66\%$$

Here, NP = FV – (Discount + Issue Expenses)

Hence, NP = 200 – (10 + 6) = 184

(III) Cost of debt if debentures are issued at a premium of 10% :

$$K_d = \frac{24 + \frac{200 - 214}{10}}{\frac{200 + 214}{2}} \times (1 - .5) = 0.05458 \text{ or } 5.46\%$$

Here, NP = FV + Premium - Issue Expenses)

Hence, NP = 200 + 20 + 6) = 214

It should be clear from the preceding discussion that the before-tax cost of debentures to the firm is affected by the issue price. The lower the issue price, the higher will be the before tax cost of debt. Bond or debenture, however, may be sold at a premium by the highly successful companies; this will pull down the before-tax cost of debt.

It should be noted that the tax benefit of interest deductibility would be available only when the firm is profitable and is paying taxes. An unprofitable firm is not required to pay any taxes. It would not gain any tax benefit associated with the payment of interest, and its true cost of debt is the before-tax cost.

It is important to remember that in the calculation of the average cost of capital, the after-tax cost of debt must be used, not the before-tax cost of debt.

3.2.8 COST OF PREFERENCE CAPITAL

The measurement of the cost of preference capital poses some conceptual difficulty. In the case of debt, there is a binding legal obligation on the firm to pay interest, and the interest constitutes the basis to calculate the cost of debt. However, in the case of preference capital, payment of dividends is not legally binding on the firm and even if the dividends are paid, it is not a charge on earnings to preference shareholders. One may be, therefore, tempted to conclude that the dividends on preference capital do not constitute cost. This is not true.

The cost of preference capital is a function of the dividend expected by investors. Preference capital is never issued with an intention not to pay dividends. Although it is not legally binding upon the firm to pay dividends on preference capital, yet it is generally paid when the firm makes sufficient profits. The failure to pay dividends, although does not cause bankruptcy, yet it can be a serious matter from the common (ordinary) shareholders' point of view. The non payment of dividends on preference capital may result in voting rights and control to the preference shareholders. More than this, the firm's credit standing may be damaged. The accumulation of preference dividend arrears may adversely affect the prospect of ordinary shareholders. For receiving any dividends, because dividends on preference capital represent a prior claim on profits. As a consequence, the firm may find difficulty in raising funds by issuing preference on equity shares. Also, the market value of the equity shares can be adversely affected if dividends are not paid to the preference shareholders, and therefore, to the equity shareholders. For these reasons, dividends on preference capital should be paid regularly except when the firm does not make profits, or it is in a very tight cash position. Like debentures, preference shares can also be Irredeemable (when treated as a perpetual security) and redeemable. The cost of Irredeemable preference shares can be calculated with the help of following equation.

$$K_p = \frac{D}{NP}$$

Where: K_p = cost of preference share,

D = Preference dividend, and

NP = net Proceed

Example 3: A company issues 10 percent irredeemable preference shares. The face value per share is Rs. 100, but the issue price is Rs. 105. What is the cost of a preference share?

Solution: By Formula:

$$K_p = \frac{D}{NP}$$

$$K_p = \frac{10}{105} = .0952 \text{ or } 9.52\%.$$

Example 4: A company wishes to issue 2,000, 9% preference shares of Rs. 100 each. The expenses of the capital issue are underwriting commission 2.50%, Brokerage 0.50% and Printing etc. Rs. 2,000. Calculate Cost of Capital if the shares are issued (I) at par, (II) at a discount of 5% and (III) at a premium of 10%.The corporate tax rate is 50% what will be the before-tax Cost of Capital?

Solution: By Formula:

$$K_p = \frac{D}{NP}$$

(I) When preference shares are issued at par:

$$K_p = \frac{9}{96} = .09375 \text{ or } 9.375\%$$

Here: NP = Face value – Issue expenses (i.e. Underwriting commission @ 2.50%, Brokerage @ 0.50% and Printing etc. Re. 1 per share)

NP = 100 – (2.50 + 0.50 + 1) = 96

(II) When preference shares are issued at 5% discount:

$$K_p = \frac{9}{91} = .0989 \text{ or } 9.89\%$$

Here: NP = Face value – Discount @ 5% - Issue expenses (i.e. Underwriting commission @ 2.50%, Brokerage @ 0.50% and Printing etc. Re. 1 per share)

NP = 100 – 5 - (2.50 + 0.50 + 1) = 91

(III) When preference shares are issued at 10% premium:

$$K_p = \frac{9}{106} = .0849 \text{ or } 8.49\%$$

Here: NP = Face value + Premium @ 10% - Issue expenses (i.e. Underwriting commission @ 2.50%, Brokerage @ 0.50% and Printing etc. Re. 1 per share)

NP = 100 + 10 - (2.50 + 0.50 + 1) = 106

Redeemable preference shares (i.e., preference share with finite maturity) are also issued in practice. Following formula is used to compute the cost of redeemable preference share:

$$K_p = \frac{D + \frac{MV - NP}{N}}{\frac{MV + NP}{2}}$$

Where; K_p = cost of preference share

D = Amount of Preference dividend

MV = Maturity value

NP = Net Proceed (i.e. Face value of debenture $\pm$ Premium/Discount – Expenses on arranging Preference shares)

N = Number of years (Maturity period)

$\frac{MV+NP}{2}$ = Average amount of Preference shares

Example 5: The terms of the preference share issue made by Hind Ltd. are as follows: Each preference share has a face value of Rs. 100 and carries a dividend rate of 14 percent payable annually. The share is redeemable after 12 years at par. If the net amount realized per share is Rs.95, what is the cost of the preference capital?

Solution: By Formula:

$$K_p = \frac{14 + \frac{100 - 95}{12}}{\frac{100 + 95}{2}} = 0.148 \text{ or } 14.8\%$$

The cost preference share is not adjusted for taxes because preference dividend is paid after the corporate taxes have been paid. Preference dividends do not save any taxes. Thus, the cost of preference share is automatically computed on after-tax basis. Since interest is tax deductible and preference dividend is not, the after-tax cost of preference is substantially higher than the after-tax cost of debt.

3.2.9 COST OF EQUITY CAPITAL

Firms may raise equity capital internally by retaining earnings. Alternatively, they could distribute the entire earnings to equity shareholders and raise equity capital externally by issuing new shares. In both cases, shareholders are providing funds to the firms to finance their capital

expenditures. Therefore, the equity shareholders' required rate of return will be the same whether they supply funds by purchasing new shares or by forgoing dividends which could have been distributed to them. There is, however, a difference between retained earnings and issues of equity shares from the firm's point of view. The firm may have to issue new shares at a price lower than the current market price. Also, it may have to incur flotation costs. Thus, external equity will cost more to firm than the internal equity.

It is sometime argued that the equity capital is free of cost. The reason for such argument is that it is not legally binding for firms to pay dividends to ordinary shareholders. Further, unlike the interest rate of preference dividend rate, the equity dividend rate is not fixed. It is erroneous to assume equity capital to be free of cost. As we have discussed earlier, equity capital involves an opportunity cost. Ordinary shareholders supply funds to the firm in expectation of dividends (including capital gains) commensurate with there risk of investment. The market value of the shares determined by the demand and supply forces in a well functioning capital market reflects the return required by ordinary shareholders. Thus, the shareholders required rate of return which equates the present value of the expected dividends with the market value of the share is the cost of equity. The cost of external equity could, however, be different from the shareholders' required rate of return if the issue price is different from the market price of the share.

There are three basic approaches for computing the cost of equity. These are: Dividend Yield Approach; Dividend Yield plus Growth Approach; and Earning Yield Approach:

1) Dividend Yield Approach: In this, we begin our understanding with the basic form of the dividend valuation model as a technique of computing the cost of equity.

$$K_e = \frac{D}{P_o}$$

Where: K_e = Cost of equity; D = Annual Dividend; and P_o = Market Value of Equity (Ex-dividend)

This model assumes that dividends shall be paid at a constant rate to perpetuity. It ignores taxations.

Example 6: A company's equity shares of Rs 10 each are quoted in the stock market at Rs 25, dividend just paid of Rs**.** 2 per share. Calculate cost of equity.

Solution:

$$K_e = \frac{D}{P_o} = \frac{2}{25} = 0.08 \text{ or } 8\%$$

In the above example, if the share price is quoted, as cum dividend or the dividend proposed to be paid was Rs 2, then P_o shall need to be adjusted to ex-dividend as below.

$$K_e = \frac{D}{P_o - D} = \frac{2}{25 - 2} = 0.0869 \text{ or } 8.69\%$$

2. Dividend Yield plus Growth Approach: In the above mentioned approach (Dividend Yield Approach), the growth expected in the payment of dividends in the future years is not incorporated. Hence, extending the above approach to incorporate growth, this approach provide following equation for calculating cost of equity.

$$K_e = \frac{D\ (1+G)}{P_o\ (\text{Ex dividend})} + G$$

In the above Example No. 6, assuming G to be constant at 5% to perpetuity, market price of share Rs. 25 and the current dividend of Rs 2, the cost of equity will be:

$$K_e = \frac{D\ (1+G)}{P_o\ (\text{Ex dividend})} + G$$

$$K_e = \frac{2\ (1+.05)}{25} + .05 = 0.134 \text{ Or } 13.4\%$$

Example 7: ABC Ltd. is considering to raise funds by issue of new equity shares. For this, equity shares of Rs. 10 each will be issued at a premium of Rs. 17 per share. The issue expenses will amount to Rs. 2 per share. The present rate of dividend of the company is 30%. The earnings of the company indicate a growth rate of 5% p.a. Find out the cost of the newly issued equity shares.

Solution:

$$K_e = \frac{D}{NP} + G = \frac{3}{25} + .05 = 0.170 \text{ or } 17\%$$

Here NP = Face value + Premium – Issue expenses

So, NP = 10 + 17 – 2 = 25

Note: In case of new equity market price of shares is not available so we consider net proceed in place of market price.

Example 8: Suppose the current market price of a company's share is Rs. 90 and the expected dividends per share next year is Rs. 4.50. If the dividends are expected to grow at a constant rate of 8%, what is the shareholder's required rate of return:

Solution:

$$K_e = \frac{D}{P_o} + G = \frac{4.50}{90} + .08 = 0.13 \text{ or } 13\%$$

If the company intends to return earnings, it should at least return an earning of 13 % on retained earnings to keep the current market price unchanged.

Example 9: The share of a company is currently selling for Rs.100. It wants to finance its capital expenditures of Rs.1, 00,000 either by retaining earnings or selling new shares. If the company sells new shares, the issue price will be Rs. 95. The dividend per share next year, DIV_1, is Rs.4.75 and it is expected to grow at 6%. Calculate (I) the cost of internal equity (retained earnings) and (II) can be used to calculate the cost of internal equity (new issue of shares).

Solution:

(I) Cost of Internal Equity:

$$K_e = \frac{D}{P_o} + G = \frac{4.75}{100} + .06 = 0.1075 \text{ or } 10.75\%$$

(II) Cost of External Equity:

$$K_e = \frac{D}{P_o} + G = \frac{4.75}{95} + .06 = 0.11 \text{ or } 11\%.$$

It is obvious that the cost of external equity is greater than the cost of internal equity because of the under-pricing (cost of external equity = 11% > cost of internal equity = 10.75%).

Example 10: A firm is currently earning Rs. 100,000 and its share is selling at a market price of Rs. 80. The firm has 10,000 shares outstanding and has no debt. The earnings of the firm are expected to remain stable, and it has a payout ratio of 100 %. What is the cost of equity? If the payout ratio is assumed to be 60% and that it earns 15% rate of return on its investment opportunities, then, what would be the firm's cost of equity?

Solution: In the first case since expected growth rate is zero, we can use expected earnings-price ratio to compute the cost of equity. Thus,

$$K_e = \frac{D}{P_o} = \frac{10}{80} = 0.125 \text{ or } 12.5\%.$$

In the second case, the earnings per share are Rs. 100,000 / Rs. 10,000 = Rs. 10. If the firm pays out 60 % its earnings the dividends per share will be: Rs. 10× (.6) = Rs. 6, and the

retention ratio will be 40%. The expected return on interval investments opportunities is 15%, so the firm's expected growth is: 4×(.15) = .06 or 6%.

$$K_e = \frac{D}{P_o} + G = \frac{6}{80} + .06 = 0.135 \text{ or } 13.5\%.$$

3. Earning Yield Approach: The advocates of this approach correlate the earnings of the company with the market price of its share. Accordingly, the cost of ordinary share capital would be based upon the expected rate of earnings of a company. The argument is that each investor expects a certain amount of earnings, whether distributed or not from the company in whose shares he invests.

Thus, if an investor expects that the company in which he is going to subscribe for shares should have at least a 20% rate of earning, the cost of ordinary share capital can be construed on this basis. Suppose the company is expected to earn 30% the investor will be prepared to pay Rs. 150 (Rs. $\frac{20}{30} \times 100$) for each share of Rs. 100.

This approach is similar to the dividend price approach. It only seeks to nullify the effect of changes in the dividend policy. This approach also does not seem to be a complete answer to the problem of determining the cost of ordinary share since it ignores the factor of capital appreciation or depreciation in the market value of shares. The formula for calculating cost of equity in this approach is:

$$K_e = \frac{E}{P_o}$$

Where: K_e = Cost of equity; E = Annual Earnings; and P_o = Market Value of Equity (Ex-dividend)

Example 11: X Ltd. has issued 5,000 equity shares of Rs. 100 each fully paid. It has earned after-tax profit of Rs. 50,000. The company has paid a dividend of 8%. The market price of these shares is Rs. 160 per share. Calculate the cost of equity capital on the basis of Dividend Yield Method and Earnings Yield Method.

(I) Dividend Yield Method:

$$K_e = \frac{D}{P_o} = \frac{8}{160} = 0.05 \text{ or } 5\%$$

(II) Earnings Yield Method:

$$K_e = \frac{E}{P_o} = \frac{10}{160} = 0.0625 \text{ or } 6.25\%$$

Here the important question may be: which method of calculating cost of equity is better. Hence, in the case of companies with stable income and with stable dividend policies the dividend yield approach may be a good way of measuring the cost of ordinary share capital. In the case of companies whose earnings accrue in cycles, it would be better if the earnings yield approach is used, but representative figures should be taken into account to include complete cycle. In the case of growth companies, where expectations of growth are more important, the cost of ordinary share capital may be determined on the basis of the dividend yield plus growth approach.

The basic factor behind determining the cost of ordinary share capital is to measure the expectation of investors from the ordinary shares of that particular company. Therefore, the whole question of determining the cost of ordinary shares hinges upon the factors which go into the expectations of particular group of investors in a company of a particular risk class.

In practice, it is the difficult task to measure the cost of equity. The difficulty derived from two factors: First, it is very difficult to estimate the expected dividends Second, the future earnings and dividends are expected to grow over time. Growth in dividends should be estimated and incorporated in the computation of the cost of equity. The estimation of growth is not an easy task. Keeping these difficulties in mind,

3.2.10 COST OF RETAINED EARNINGS

In the case of retained earnings, firms are not required to pay any dividends; no cash outflow takes place. Therefore, retained earnings have no explicit cost of capital. But the have a definite opportunity cost. The opportunity cost of the retained earnings is the rate of return which the ordinary shareholders would have earned on these funds, if they would have been distributed as dividends to them. The firm must earn a rate of return on retained at least equal to the rate that shareholders could earn on these funds to justify their retention.

The opportunity cost of retained earnings (internal equity) is the rate of return on dividends foregone of equity shareholders. The shareholders generally expect dividend and capital gain from their investments. The required rate of return of shareholders can be determined from the dividend valuation model. The equation for calculating cost of equity in this approach is:

$$K_r = \frac{D\ (1 - ti)(1 - B)}{P_o\ (1 - tc)}$$

Where K_r= Cost of retained earnings

D = Dividend per Share

ti = Income Tax Rate of Individual Shareholder

B = Brokerage Payable on Investment of Dividend received

tc = Capital gain tax rate applicable to individual shareholder

P_o = Market Price per share

Example 12: From the following information find out cost of retained earnings:

Dividend per share: Rs. 3

Personal income tax rate: 30%

Market Price per share: Rs.25

Brokerage on investment of dividend: 3%

Solution:

$$K_r = \frac{3\ (1-.30)(1-.03)}{25} = 0.08148 \text{ or } 8.15\%$$

Many people do not calculate the cost of capital of retained earnings on the basis of the procedure listed above. They take the cost of retained earnings as the same as that of the equity shares. The question of working out a separate cost of reserves is not relevant since the cost of reserves is automatically included in the cost of equity share capital.

3.2.11 SUMMARY

Cost of capital may be viewed in different meanings. (i) From investors' view point – the measurement of the sacrifice made by him in order to capital formation, (ii) Firm's view point- it is the minimum required rate of return needed to justify the use of capital , and (iii) Capital expenditure view point- it is the minimum required rate of return used to value cash flows. Cost of capital highly beneficial in designing optimal capital structure, investment evaluation, and financial performance appraisal. There are different approaches for calculating cost of various components of capital, which a firm can use according to its choice and need.

3.2.12 CHECK YOURSELF

(A) Objective Questions

1. Retained earnings do not have explicit cost. Yes / No
2. Debentures are risky but a cheaper source of capital. Yes / No
3. During recession firms should go for debt financing. Yes / No
4. Generally, the component cost of a specific source of capital is equal to the investor's required rate of return. Yes / No

5. Interest payment made by the firm on debt issue qualifies tax deduction in determining net taxable income. Yes / No
6. The cost preference share is not adjusted for taxes because preference dividend is paid after the corporate taxes have been paid. Yes / No
7. The market value of the equity shares can be adversely affected if dividends are not paid to the equity shareholders. Yes / No

(B) Class Assignment

1. How do we calculate cost of debentures? Explain with the help of suitable examples.
2. Explain clearly the methods to calculate cost of Equity capital?

(c) Home Assignment

1. What are various sources of capital? Explain in detail.
2. Explain briefly the approaches for determining cost of equity capital. Also give suitable examples.
3. What do you understand by Cost of Capital? How will you measure the following (a) Cost of equity capital (b) Cost of retained earnings (c) Cost of debt capital.

(D) Numerical Questions

1. A company issues 2000 10% irredeemable debentures (perpetual debt) of Rs. 100 each. The effective tax rate is 55 %. Determine the cost of debt before as well as after tax. Assuming that the debt is issued at (i) par, (ii) 10% discount, (iii) 10% premium.
2. A company issues 10 % debentures of the face value of Rs. 1000 redeemable at par after 10 years. Assuming 55 % tax rate and 4% flotation cost, determine the before and after tax cost of debt, if debentures are issued at (i) par, (ii) 10% discount, (iii) 10 % premium.
3. A company issues 1000 10% irredeemable preference shares of the face value of Rs. 100 each. Flotation cost is estimated at 5% of the face value of shares and the tax rate is 55%. Calculate the cost of preference share capital both after tax and before tax is these shares are issued at (i) par, (ii) 10 % discount, (iii) 10% premium.
4. A company issues 1000 10% preference shares of Rs. 100 each redeemable at par after 10 years. Assuming 5% flotation cost on face value of shares and 55% tax rate, determine the after and before tax cost of preference capital, if the preference shares are issued at (i) par, (ii) 5 % discount, (iii) 10% premium.
5. A company issues 10000 equity shares of Rs. 10 each at a premium of 10%. The flotation cost for the sale of new equity shares is estimated at 10% of sale price. The rate of dividend expected by shareholders is 20%. Calculate the cost of new equity capital.
6. The average rate of dividend paid by Y ltd. For the last 5 years is 25%. The earnings of the company have recorded a growth rate of 4% per annum every

year. The market value of the equity share is estimated to be Rs. 110. Find the cost of equity capital.

7. X ltd. has issued 2000 equity shares of Rs. 100 each as fully paid. The company has earned a profit of Rs. 20000 after tax. The market price of these shares is Rs. 160 per share. The company has paid a dividend of Rs. 8 per share. Find out the cost of equity capital.
8. X holds 110 shares of Rs. 100 each in Y ltd. Y ltd. Has earned Rs. 10 per share and distributed Rs. 6 per share as dividend among shareholders and the balance is retained. The market price of shares in Y ltd is Rs. 110. If personal income tax applicable to Mr. X is 40%. Find out the cost of retained earnings.

3.2.13 SUGGESTED READINGS

- Corporate Finance: Kulkarni PV & Kulkarni SP
- Financial Management: Jain MY & Jain PK
- Financial Management: Prasanna Chandra
- Financial Management-An Analytical & Conceptual Approach: Kuchhal SC
- Financial Management of Corporations: Kulshrestha RS

LESSON 9

WEIGHTED AVERAGE COST OF CAPITAL

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of weighted average cost of capital.
- To discuss various steps involved in cost of capital.
- To explain methods assigning weights.
- To illustrate the method for calculating WACC.

3.3.1 INTRODUCTION

The composite or overall cost of capital of a firm is the weighted average of the costs of various sources of funds. Weights are taken to be the proportion of each source of funds in the capital structure. While making financial decisions this overall or weighted cost is used. Each investment is financed from a pool of funds which represents the various sources from which funds have been raised. Any decision of investment therefore has to be made with reference to the overall cost of capital and not with reference to cost of a specific source of fund used in that investment decisions.

3.3.2 CONCEPT OF WEIGHTED AVERAGE COST OF CAPITAL (WACC)

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

3.3.3 STEPS INVOLVED IN CALCULATION OF WEIGHTED AVERAGE COST OF CAPITAL (WACC)

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

1. Determination of the source of funds to be raised and their individual share in the total capitalization of the firm,
2. Computation of cost of specific source of funds,
3. Assignment of weight to specific source of funds,
4. Multiply the cost of each source by the appropriate assigned weights, and
5. Add individual source weight cost to get cost of capital.

Thus, WACC is $K_o = K_1 W_1 + K_2 W_2 + \ldots\ldots\ldots K_n W_n$

Where: K_1 , K_2 are component costs and W_1, W_2 are weights.

In financial decision making, the cost of capital the cost of capital should be on an after-tax basis. Therefore, the components cost to be used to measure the weighted cost of capital should be the after-tax costs. If we assume that a firm has only debt and equity in its capital structure, then its weighted average capital (K_0) will be:

$$K_o = K_d(1-t) W_d + K_p W_p + K_e W_e$$

Here K_d , K_p , and K_e denote cost of debt / debenture, cost of preference capital, and the cost of equity. W_d, W_p , and , W_e are respective weights.

3.3.4 ASSIGNMENT OF WEIGHTS

Once the company decides the funds that will be raised from different sources and then computation of specific cost of each component or source is completed, then the third step in computation of cost of capital is assignment of weights to specific costs or specific source of funds. Now the most relevant questions are: How to assign weights? Is there any base to assign weights? Are there any types of weights?

The weights to specific funds may be assigned based on the following:

(I) Book Value Weights: Book value weights are based on the values fund on the balance sheet. The weight applicable to the given sources of fund is simply the book value of the source of fund divided by the book value of total funds. Merits of the book values weights are:

- Calculation of weights is simple
- Book values provide a usable base, when firm is not listed or not actively traded.

- Book values are easily available from the published record of the firm,
- Analysis of capital structure of capital debt-equity ratio is based on the book values

Some disadvantages of book value weights are:

- There is no relation between book value and present economic value various sources of capital.
- Book value proportions are not consistent with the concept of Cost of capital because the latter is defined as the minimum rate of return to maintain the market value of the firm.

(II) Capital Structure Weights: Under this method weights are assigned to the components of capital structure based on the targeted capital structure. Depending on target, capital structures have some difficulties in using it. They are

- A company may have not well defined target capital structure,
- It may be difficult to precisely estimate the component capital costs, if the target capital is different from present capital structure.

(III) Market Value Weights: Under this method, assigned weights to a particular component of capital structure is equal to the market value of the component of capital divided by the market value of all components of capital and capital employed by the firm. Advantages of market value weights are:

- Market values of securities are closely approximates the actual amount to be received from their scale.
- Costs of the specific sources of funds that constitute the capital structure of the firm are calculated using prevailing market price.

Disadvantages of market value weights are:

- Market values may not be available when a firm is not listed or when the securities of the firm are very thinly traded.
- Market value may be distorted when securities price are influenced by manipulation loading.
- Equity capital gets greater importance.

Most of the financial analysts prefer to use market value weights because it is theoretically consistent and sound.

EXAMPLE 1: A firm has the following capital structure as the latest statement

Source of finance	Amount (Rs.)	After tax cost %
Debt capital	30,00,000	4.0
Preference share capital	10,00,000	8.5
Equity share capital	20,00,000	11.5
Retained earnings	40,00,000	10.0
Total	100,00,000	

Based on the book values compute costs of capital.

Solution:

COMPUTATION OF WEIGHTED AVERAGE COST OF CAPITAL

Source of finance	Weights (W)	Specific cost (%) (X)	Weighted cost (WX)
Debt capital	0.30	4.0	1.2
Preference share capital	0.10	8.5	8.5
Equity share capital	0.20	11.5	2.3
Retained earnings	0.40	10.0	4.0
	1.00		8.35

EXAMPLE 2: Excel Company Ltd. supplied the following information to you and requested to compute cost capital based on book values and market values.

Source of finance	Book value (Rs.)	Market value (Rs.)	After tax cost (%)
Equity capital	10,00,000	15,00,000	12
Long term debt	8,00,000	7,50,000	7
Short term debt	2,00,000	2,00,000	4
Total	20,00,000	24,50,000	

Solution:

COMPUTATION OF WEIGHTED AVERAGE COST OF CAPITAL
(BASED ON BOOK VALUE WEIGHTS)

Source of finance (1)	Book value (Rs.) (2)	Weights (3)	Specific cost (%) (4)	Weighted cost (5)=(3)x(4)
Equity capital	10,00,000	0.50	12	6.0
Long term debt	8,00,000	o.40	07	2.8
Short term debt	2,00,000	o.10	04	0.4
Total	20,00,000	1.00		9.2

Hence, Cost of capital = 9.2 %

COMPUTATION OF WEIGHTED AVERAGE COST OF CAPITAL

(BASED ON MARKET VALUE WEIGHTS)

Source of finance (1)	Market value (Rs.) (2)	Weights (3)	Specific cost (%) (4)	Weighted cost (5)=(3)x(4)
Equity capital	15,00,000	0.613	12	7.356
Long term debt	7,50,000	0.307	07	2.149
Short term debt	2,00,000	0.080	04	0.320
Total	24,50,000	1.000		9.825

Hence, Cost of capital = 9.825 %

EXAMPLE 3: The following is the capital structure of Simons Company Ltd. as on 31.12.1998:

	Rs.
Equity shares : 10,000 shares (of Rs. 100 each)	10,00,000
10% Preference Shares (of Rs. 100 each)	4,00,000
12% Debentures	6,00,000
	20,00,000

The market price of the company's share is Rs. 110 and it is expected that a dividend of Rs. 10 per share would be declared for the year 1998. The dividend growth rate is 6%:

(i) If the company is in the 50% tax bracket, compute the weighted average cost of capital.

(ii) Assuming that in order to finance an expansion plan, the company intends to borrow a fund of Rs. 10 lakhs bearing 14% rate of interest, what will be the company's received weighted average cost of capital? This financing decision is

expected to increase dividend from Rs. 10 to Rs. 12 per share. However, the market price of equity share is expected to decline from Rs. 110 to Rs. 105 per share.

Solution:

Cost of equity shares (k_e)

$$K_e = \frac{\text{Dividend per share}}{\text{Market price per share}} + \text{Growth rate} = \frac{10}{100} + 0.06 = 0.1509 \text{ or } 15.09\%$$

Revised cost of equity shares (k_e)

$$\text{Revised } k_e = \frac{12}{105} + 0.06 = 0.1742 \text{ or } 17.42\%$$

Weighted average cost of capital

Source of finance	Weight	After tax cost (%)	WACC (%)
Equity share	0.5	15.09	7.54
10% Preference share	0.2	10.00	2.00
12% Debentures	0.3	6.00	1.80
Weighted average cost of capital			11.34

Revised Weighted Average Cost of Capital

Source of finance	Weight	After tax cost (%)	WACC (%)
Equity shares	0.333	17.42	5.80
10% Preference shares	0.133	10.00	1.33
12% Debentures	0.200	6.00	1.20
14% Loan	0.333	7.00	2.33
Revised WACC			10.66

EXAMPLE 4: XYZ Ltd. has the following book value capital structure:

	Rs.
Equity Capital (in shares of Rs. 10 each, fully paid up- at par)	15 Crore
11% Preference Capital (shares of Rs. 100 each)	1 Crore
Retained Earnings	20 Crore
13.5% Debentures (of Rs. 100 each)	10 crore
15% Term Loans	12.5 crore

The next expected dividend on equity shares per share is Rs. 3.60; the dividend per share is expected to grow at the rate of 7%. The market price per share is Rs. 40.

Preference stock, redeemable after ten years, is currently selling at Rs. 75 per share. Debentures, redeemable after six years, are selling at Rs. 80 per debenture.

The Income tax rate for the company is 40%.

Calculate the weighted average cost of capital using:

- Book value proportions; and
- Market value proportions.

Solution:

1. Cost of equity capital and retained earnings (K_e)

   Given: D_1 = Rs. 3.60, P_0 = Rs. 40 and g= 7%

   Therefore, $K_e = \frac{Rs.3.60}{Rs.40} + 0.07 = 16\%$

2. Cost of preference capital (K_p)

   Given: D= 11%, F=Rs. 100, P= Rs. 75 and n= 10 years

   Therefore $K_p = \frac{11 + \left[\frac{Rs.100 - Rs.75}{10}\right]}{\left[\frac{Rs.100 + Rs.75}{2}\right]} \times 100 = 15.43\ \%$

3. Cost of debentures (K_d)

   Given: r= 13.5%, t=40%, F=Rs. 100, P=Rs. 80 and n=6 years

   Therefore, $K_d = \frac{13.5(1-0.40) + \left[\frac{Rs.100 - Rs.80}{6}\right]}{\left[\frac{Rs.100 + Rs.80}{2}\right]} \times 100 = 12.70\%$

4. Cost of term loans (K_t)

   Given: r = 15% and t = 40%

   Therefore, K_t = 15% (1- 0.40) = 9%

Computation of WACC

(Book Value Weights)

Source	Amount (Book value) (Rs. in	Weight (Book value proportion)	Cost of capital	WACC

	crores)			
Equity capital	15	0.256	0.16	0.04096
11% Preference capital	1	0.017	0.1543	0.00262
Retained earnings	20	0.342	0.16	0.05472
13.5% Debentures	10	0.171	0.127	0.02171
15% term loans	12.5	0.214	0.09	0.01926
WACC	58.5	1.00		0.013927 or 13.93%

Computation of WACC
(Market Value Weights)

Source	Amount (Market value) (Rs. crores)	Weight (Market value proportion)	Cost of Capital	WACC
Equity capital (1.5 crores x 40)	60.00	0.739	0.16	0.11824
11% Preference capital (1 lakh x 75)	0.75	0.009	0.1543	0.00138
13.5% Debentures (10 lakhs x Rs. 80)	8.00	0.098	0.127	0.01245
15% Term loans	12.50	0.154	0.09	0.01386
WACC	81.25	1.00		0.14593 or 14.59%

Note: Since retained earnings are treated as equity capital for purposes of calculation of cost of specific source of finance, the market value of the ordinary shares may be taken to represent the combined market value of equity shares and retained earnings. The separate market values of retained earnings and ordinary shares may also be worked out by allocating to each of these a percentage of total market value equal to their percentage share of the total based on book value.

3.3.5 MARGINAL COST OF CAPITAL

Companies may raise additional funds for expansion. Here, a financial manager may be required to calculate the cost of additional costs to be raised. The cost of additional funds is called as additional cost of capital. For example, a firm at present has Rs. 1, 00, 00,000 capitals with WACC of 12%, but it is planed to raise Rs. 5, 00,000 for expansion, such as additional funds, the cost that is related to this Rs. 5 lakhs is marginal cost of capital.

The weighted average cost of new or incremental capital us known as the marginal cost of capital. The marginal cost of capital is the weighted average cost of new capital using the

marginal weights. The marginal weights represent the proportion of various sources of funds to be employed in raising additional funds. Marginal cost of capital shall be equal to WACC, when a firm employs the existing proportion of capital structure and some cost of component of capital structure. But in practice WACC may not equal to marginal cost of capital due to change in proportion and cost of various sources of funds used in raising new capital. The marginal cost of capital ignores the long term implication of the new financing plans. Hence, WACC should be preferred to maximize shareholders wealth in the long term.

3.3.6 SIGNIFICANCE OF COST OF CAPITAL

The concept of cost of capital is very important and is used to take the financial decisions. The important areas concerned are as follows:

(A) Designing Optimal Capital Structure: Cost of capital is helpful in formulating a sound and economical capital structure for a firm. The debt policy of a firm is significantly influenced by the cost consideration. Capital structure involves determination of proportion of debt and equity in capital structure where cost of capital is minimum. While designing firm's capital structure financial executives always keep in mind minimization of the overall cost of capital and to maximize value of the firm. The measurement of specific cost of each source of fund and calculation of weighted average cost of capital helps to come to a balanced capital structure. The cost of capital can also be useful in deciding about the methods of financing at a point of time. For example, cost may be compared in choosing between leasing and borrowing.

(B) Investment (Capital Budgeting) Evaluation: The primary purpose of measuring the cost of capital is its use as a financial standard for evaluating the investment projects. Wilson, states that the cost of capital is a concept, which should be expressed in quantitative terms if it is to be useful, as a cut-off rate for capital expenses. Capital expenditure means investment in long term projects like investment on new machinery. It is also known as capital budgeting expenditure. Capital budgeting decisions require a financial standard (cost of capital) for evaluation.

In the NPV method, an investment project is accepted if it has a positive NPV. The project's NPV is calculated by discounting its cash flows by the cost of capital. In this sense, the cost of capital is the discount rate used for evaluating the desirability of the investment project. In the IRR method, the investment project is accepted if it has an internal rate of return greater than

the cost of capital. In this context, the cost of capital is the minimum required rate of return on the investment project. It is also known as the cut off, or the target, or the hurdle rate.

(C) Financial Performance Appraisal: Cost of capital framework can be used to evaluate the financial performance of top management. Financial performance evaluation involves a comparison of actual profitabilities of the investment projects undertaken by the firm with the projected overall cost of capital, and the appraisal of the actual cost incurred by management in raising the required funds. If the actual profitability rate is more than the projected cost of capital, then the financial performance may said to be satisfactory and vice versa.

The cost of capital also plays useful role in dividend decision and investment in current assets.

3.3.7 SUMMARY

A company has to employ a combination of creditors and owners funds. The composite cost of capital lies between the least and the most expensive funds. This approach enables the maximization of profits and the wealth of the equity shareholders by investing the funds in projects earning in excess of the overall cost of capital.

The composite cost of capital implies an average of the costs of each of the source of funds employed by the firm properly weighted by the proportion they hold they hold in the firm's capital structure.

3.3.8 SELF CHECK QUESTIONS

(A) Objective Questions

1. Book value weights are based on the values fund on the balance sheet. Yes/No
2. Book value and present economic value of various sources of capital are closely related. Yes/No
3. Market values may easily be calculated if a firm is not listed on a stock exchange. Yes/No

(B) Class Assignment

1. How do we calculate WACC? Explain the steps involved in it.
2. Explain with suitable example the methods for calculating WACC.
3. Illustrate the concept of Marginal Cost of Capital.

(C) Home Assignment

1. Define cost of capital. Explain the significance of cost capital in financial management.
2. What is the relevance of cost of capital in capital investment decisions?
3. “Evaluating capital budgeting proposals without cost of capital is not possible”. Discuss.
4. Examine critically the conceptual framework relating to cost of capital. How far is this approach relevant (a) In designing of corporate capital structure (b) In the allocation of financial resources?
5. What do you understand by Cost of Capital? What is the utility of computing weighted average cost of capital? Calculate the weighted average cost of Capital on the basis of assumed figures.
6. Discuss the relationship between Cost of Capital and Investment decisions.
7. Explain the problems faced in determining the cost of capital. How is the cost of capital relevant in capital budgeting decision?

(E) Numerical Questions

1. The capital structure of Cobra Ltd. is as under:

2000	6% Rs. 100 debentures (first issue)	2,00,000
1000	7% Rs. 100 debentures (second issue)	1,00,000
2000	8% cumulative preference shares of Rs. 100 each	2,00,000
4000	Equity shares of Rs. 100 each	4,00,000
	Retained earnings	1,00,000

The earning per share of the company in the past many years has been Rs. 15.00 the shares of the company are sold in the market at book value. The company tax rate is 50% and personal tax rate is 25%. Find out the weighted average cost of capital.

2. A company’s cost of capital for specific sources is as under:

Cost of debenture	5%
Cost of preference shares	10%
Cost of equity shares	14%
Cost of retained earnings	13%

The company wishes to raise Rs. 5, 00,000 for the expansion of its plant. It is estimated that Rs. 1, 00,000 will be available as retained earnings and the balance of additional funds will be raised as under:

Debenture issue	3, 00,000
Preference shares issue	1, 00,000

Using marginal weights, calculate weighted average cost of capital.

3. Jim Ltd. has obtained capital from the following sources; the specific costs are also noted done against them.

Source of capital	Book value	Market value	Cost of capital
Debentures	4,00,000	3,80,000	5%
Preference Shares	1,00,000	1,10,000	8%
Equity Shares	6,00,000	12,00,000	13%
Retained earnings	2,00,000	--	9%

You are required to calculate weighted average cost of capital using (i) book value weights, (ii) Market value weights.

4. A company was recently formed to manufacture a product. It has the following capital structure.

9% Debentures	6, 00,000
7% Preference Shares	2, 00,000
Equity Shares (24000)	6, 00,000
Retained earnings	4, 00,000

The market price of equity shares is Rs. 40. A dividend of Rs. 4 per share is proposed. The company has a marginal tax rate of 50%. Compute the weighted average cost of capital.

3.3.9 SUGGESTED READINGS

7. Kulkarni PV & Kulkarni SP: Corporate Finance
8. Chandra Prasanna: Financial Management
9. Pandey IM: Financial Management
10. Kulshreshtra R S: Financial Management of Corporation
11. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
12. Khan MY & Jain PK: Financial Management

LESSON 10

WORKING CAPITAL: CONCEPT, NEED & DETERMINANTS

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of Working Capital.
- To explain the Risk profitability trade-off and Financing mix.
- To explain the need and determinants of Working Capital.

4.1.1 INTRODUCTION

Assets can be defined as “any thing that generates future benefits”. Traditionally Assets have been categorized as Fixed & Current. Fixed Assets result from application of Long Term Funds (Owner’s Equity+ Long Term Loans) to procure Machines, Land & Building & other factors of production that have a Productive life in excess of a year’s term. Returns from these are realized over the productive life of these assets. These do not produce returns all by themselves until put to use; in normal course.

Businesses require deployment of capital by the promoters to operate & remain economically viable. a typical manufacturing outfit will be required to invest capital in purchase of machinery for production, besides provisioning for the raw materials required for processing, payment of wages to machine operator, electricity bills, maintenance charges etc..

4.1.2 CONCEPT OF WORKING CAPITAL

The capital spent towards obtaining fixed assets in non productive till it turns operational. A new machine if allowed to remain idle will produce negative returns by way of depreciation charge. It is imperative that provisions of 'capital' be made to have the business 'working'. Thus, the concept of working capital can be best understood as "the capital that is working". Let us look into deeper.

Current Assets refers to those assets which in ordinary course of Business can be, or will be converted to cash within a year without undergoing diminution in value and without disrupting the operations of the firm. The major Current Assets are Cash, Accounts Receivable, Inventories & marketable Securities. Current Assets alone are non productive. The operation cycle of a Business determines the levels of Current Assets maintained. It is essentially the desired mix of Fixed Assets & Current Assets that produces the returns in any business.

Current Assets essentially represent the means for turning the Fixed Assets productive by application of Funds. This can be likened to the Fuel required by a Vehicle to Justify the Vehicle's existence / Purpose / Utility. In a manufacturing concern Cash / Bank Balances required to honor Wages, Purchase Raw Material, Pay for Spares / maintenance, Rent, Electricity Bills, etc.; Inventories to keep the Plant & Machines running; Creation of Debtors as a function of sales on Credit, are all examples of Current Assets. Current Assets typically undergo transformation i.e. Cash → Raw Material → Work in Progress → Finished Goods → Debtors → Cash. This transformation completes within a Financial Year.

It would be appropriate here to identify the Dimensions of Working Capital Ingredients before we can proceed to comprehending the concept of Working Capital. The working capital can broadly be divided in two categories, i.e. gross working capital and net working capital.

(A) Gross Working Capital: The Gross Working Capital Concept identifies all Current Assets as the Working Capital. Buying Raw materials credit, deferring payments of expenses, Short Term Loans facilitate the Business operations without creating demands on the Capital. These are termed as Current Liabilities, and are to be honored in a Financial Year. Business Partners contributing resources in Business interests like Creditors for the supply of Raw Material. Current Liabilities represent sources of Short Term Funds.

Current Liabilities are those liabilities that are to be paid in ordinary course of Business within a year, out of the Current Assets or earnings of the concern. The basic Current Liabilities are Accounts Payable, Bills Payable, Bank Overdraft and Outstanding expenses.

(B) Net Working Capital: Net Working Capital is conceptualized as the difference between the Current Assets & the Current Liabilities alternatively the extent to which the Long term funds are employed to finance the Current Assets. This can be understood with the help of following Balance Sheet.

Liabilities	Amount (Rs Crore)	Assets	Amount (Rs Crore)
Owner's Equity	6	Fixed Assets	8
Long Term Loans	4	Current Assets	7
Current Liabilities	5		
Total Liabilities	15	Total Assets	15

Here: Gross Working Capital = Current Assets = 7 Crore

And, Net Working Capital = Current Assets – Current Liabilities = (7- 5) = 2 Crore

The Quantum of Net Working Capital is dependent on the nature of Business / Industry. It measures the Liquidity of the firm, i.e. the ability of the firm to meet the short term obligations when due. The level of Current Assets requirement depends on the Operational Cycle and the levels of Current Liabilities depends on external factors. If the Current Liabilities fall short in meeting the Current Asset requirements; the deficit so created is catered to by the Long Term funds. Net Working Capital is necessary as the Cash Inflows & Cash Outflows do not coincide in practice. The Cash Outflows are more predictable as compared to the Cash Inflows.

The Business activity does not come to an end with the realization of cash from customers; the process is continuous & necessitates a regular supply of working capital. The magnitude of Working Capital requirement varies because of:

- Changes in Level of Sales/Operating expenses, arising out of secular upward trend of prices necessitating holding of large inventories; Cyclical changes in economy influencing business levels impacting the levels of Working Capital requirement; Seasonality in sales requires maintaining higher levels of Current Assets during the peak season.
- Changes in policy, adoption of Hedging or Conservative approach by the management impact the levels of Working Capital.

- Technological Changes, Technological break through allow to compress the Production/Operating Cycle reducing the need of Working Capital.

Despite the Variations in the Levels of Working Capital, a certain minimum level of Working Capital is necessary to sustain business on a continuous & uninterrupted basis. This minimum level of Working Capital requirement is to be met with Fixed Assets and is termed as Permanent or Fixed Working Capital.

Any amount of Working Capital over & above the permanent level of Working Capital is termed as Temporary or Fluctuating or Variable Working Capital. The variation is attributable to the above mentioned causes.

4.1.3 NEED OF WORKING CAPITAL

Working Capital involves application of Capital to fund the Current Assets in a Business. The Current Assets provide for the routine operational needs. Goal of Working Capital Management is to ensure that

1. The operations of the business are not hampered for the want of adequate levels of Current Assets.
2. An excess of Current Assets over Current Liabilities is maintained to ward off risks of insolvency.
3. The short term obligations are met when due.
4. A prudent mix of Current Assets exists to deliver optimal profitability
5. The cost of Current liabilities justifies the benefits accruing to the business.

4.1.4 TRADE OFF: RISK vs. PROFITABILITY

Risk arises from the inability of the concern to honor short term financial obligations when due for the want of Funds/Liquidity. Lower Net Working Capital is associated with Increased Risk Perception. With specific reference to the manufacturing entities, it is observed that the Current Assets are less profitable than the Fixed Assets and that the Short Term funds are less expensive than the long term funds.

It is important that Risk is proportional to the Profitability. Efforts to improve on the profitability increase the risk perception. Less Net Working Capital improves profitability & also the risk. More Net Working Capital reduces profitability on account of application of costlier Long Term Funds & reduces the risk perception.

From above it can be drawn that if the ratio of Current Assets to Total Assets is reduced then the profitability of the firm improves on account of improvement in the FA values. The Risk perception also increases. The reverse is true if the ratio of Current Assets to Total Assets is increased. On the same lines if the ratio of Current Liabilities to Total Liabilities is increased the profitability improves on account of availability of cheap Short Term Funding. Alternatively less of the Long Term Sources of Funds are used to fund the reduced Working Capital. The reduced cost is bound to improve the profitability.

4.1.5 FINANCING MIX

Financing Mix decides the proportion of Current Assets to Long Term Funds. There are basically two approaches regarding financing mix, e.g. Matching/Hedging Approach, and the Conservative Approach

(A) Matching/Hedging Approach: It advocates the use of Long Term Funds to finance the fixed portion of Current Assets that are required to maintain a given level of operations and grow in line with the operations. Current Liabilities should be used to meet the seasonal variations over and above the permanent financing needs.

(B) Conservative Approach: As opposed to the Matching Approach, the Conservative Approach of determining Financing mix advocates the use of Long Term Capital to finance the Current Assets required for operation. The use of short term funds is restricted to emergency situations.

The Conservative approach tends to be costly compared to the Matching approach as it tends to rely more on the Long term sources which are costlier and looses on the opportunity to use the low cost funds to meet the requirements, besides this the long term provisions made for meeting the requirements remain idle when the short term sources are available. On the contrary, the Conservative approach of financing is less risky as the firm has sufficient short term borrowing capacity to cover unexpected financial needs.

To summarize, Matching Approach is more profitable & more risky as compared to Conservative approach which is less profitable and less risky.

4.1.6 ESTIMATION OF WORKING CAPITAL

As we know that Net Working Capital is the excess of current assets over current liabilities, we can estimate it in the following manner.

ESTIMATED WORKING CAPITAL

S.N.	Particulars	Amount
1	Minimum desired Cash & Bank Balance	√
2	Inventories of Raw Material	√
3	Inventories of Work in Process	√
4	Inventories of Finished Goods	√
5	Debtors	√
6	Total Current Assets (1+2+3+4+5)	√
7	Creditors	√
8	Wages	√
9	Overheads	√
10	Total Current Liabilities (7+8+9)	√
	Estimated Net Working Capital (6-10)	√

Various components of current assets and current liabilities can be calculated with the help of following ratios.

(I) Raw Materials Inventory:

$$RM = \frac{Q \times C \times H}{T}$$

Where: RM = Raw Materials Inventory
Q = Budgeted production in Units
C = Cost of Raw material per unit
H = Average Raw Material inventory holding Period in Days or Months
T = Days (365) or Months (12)

(II) Work In Process Inventory

$$WIP = \frac{Q \times C \times TS}{T}$$

Where: WIP = Work In Process Inventory
Q = Budgeted production in Units
C = Estimated Cost of WIP per unit
TS = Average Time span of WIP Inventory in Days or Months
T = Days (365) or Months (12)

(III) Finished Goods Inventory

$$FG = \frac{Q \times (C - D) \times H}{T}$$

Where: FG = Finished Goods Inventory
Q = Budgeted production in Units
C-D = Cost of Goods produced per unit - Depreciation
H = Finished Goods holding period in Days or Months
T = Days (365) or Months (12)

(IV) Debtors

$$DRS = \frac{S \times (C - D) \times CP}{T}$$

Where: DRS = Debtors
S = Budgeted Credit Sales
C-D = Cost of sales per unit - Depreciation
CP = Average Debt Collection Period in Days or Months
T = Days (365) or Months (12)

(V) Trade Creditors

$$CRS = \frac{Q \times C \times PP}{T}$$

Where: CRS = Creditors
Q = Budgeted Production in Units
C = Cost of Raw Material per unit
PP = Average Credit / Payment Period Allowed in Days or Months
T = Days (365) or Months (12)

(VI) Direct Wages

$$DW = \frac{Q \times C \times L}{T}$$

Where: DW = Direct Wage
Q = Budgeted Production in Units
C = Direct Labor Cost per unit
L = Average Time Lag in Payment of Wages in Days or Months
T = Days (365) or Months (12)

(VII) Overheads

$$OH = \frac{Q \times C \times L}{T}$$

Where: OH = Overheads
Q = Budgeted Production in Units
C = Overhead Cost per unit

L = Average Time Lag in Payment of Overheads in Days or Months
T = Days (365) or Months (12)

4.1.7 OPERATING CYCLE

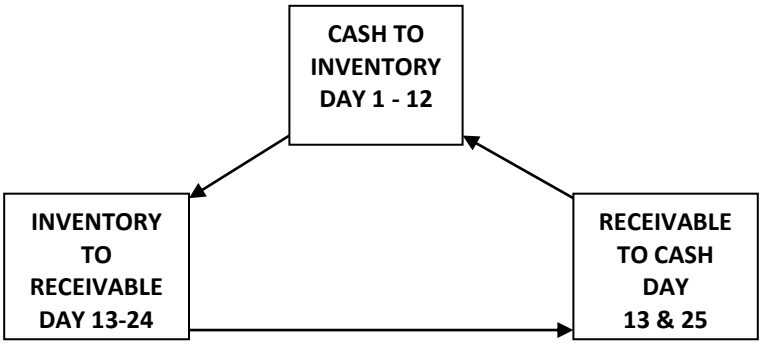
Business is about investing capital, acquiring the resources, adding value & realizing investments along with profits. There is an identifiable time lag between the purchase of Raw Materials & realization of Sales. The non synchronous nature of cash outflows & inflows requires the firms to keep cash or invest in short term liquid securities to allow them to meet obligations when due. The entity is also required to maintain an inventory of raw materials & finished goods to prevent the loss of production or loss of business opportunity.

To understand this concept, we should have a look on the following table.

Day	Particulars	Cash (-)	Cash (+)	(+/-)
1	Purchase order placed for 50000 (20% Paid Advance; 80% Credit 5 Days)	-10000		-10000
2	Goods Dispatched by supplier			-10000
3	Raw Material in Transit			-10000
4	Goods received (80% remaining & Cartage 500 Paid)	-40500		-50500
5	Goods Stored in Godown; Wages Paid	-2000		-52500
6	Processing of Raw Material	-2000		-54500
7	Work in progress; Wages Paid	-2000		-56500
8	Work in progress; Wages Paid	-2000		-58500
9	Work in progress; Wages Paid	-2000		-60500
10	Work in progress; Wages Paid	-2000		-62500
11	Finished Goods packed; Wages Paid	-2000		-64500
12	Goods Dispatched to Buyer; Wages Paid	-2000		-66500
13	Goods Sold 75000 (30% Cash, 70% Credit for 10 Days)		22500	-44000
14	Debtor; Day 2			-44000
15	Debtor; Day 3			-44000
16	Debtor; Day 4			-44000
17	Debtor; Day 5			-44000

18	Debtor; Day 6			-44000
19	Debtor; Day 7			-44000
20	Debtor; Day 8			-44000
21	Debtor; Day 9			-44000
22	Debtor; Day 10			-44000
23	Cheque Received & Banked			-44000
24	Cheque in Clearing			-44000
25	Cheque Realized		52500	8500

From the table we can observe three distinct phases in an Operation Cycle. These phases can be understood with help of following diagram.



Phase I: Involves conversion of cash to Inventory, through purchase, processing of Work in Progress & conversion to Finished Goods. This phase is non existent in service industry. In case of Trading concerns the phase is shorter as compared to the manufacturing setups as the cash is spent to procure the tradable finished goods.

Phase II: Involves conversion of Inventory to Receivables through sales affected on Credit terms. Entities selling their output on Delivery against Payment terms or Advances do not have this Phase.

Phase III: Involves conversion of Book Debts/Accounts Receivables into Cash.

4.1.8 DETERMINANTS OF WORKING CAPITAL

The following factors determine the appropriate levels of Working Capital for a given concern.

- General Nature of Business: Concerns that are into Cash Sales or selling of Services have lower level of Working Capital Requirements as compared to the Manufacturing,

Trading or Financial Enterprises as the levels of Current Assets & Current Liabilities required to conduct operations vary.

- Production Cycle: Production/Manufacturing Cycle refers to the time involved in converting the Raw Materials into Finished Goods, the requirement of Working Capital increases with in increase in the length of the Production Cycle. The level of Technology employed in the process is a critical determinant of the Length Production Cycle.
- Business Cycle: Business Cycles alter the Working Capital requirements, the “Boom” is marked by an upswing in the business activity with an increased demand for Working Capital to meet the increased sales & expansions in scale of operations. The “Declining Business Cycle Phase” is marked with reduced Working Capital requirement.
- Credit Policy: The Credit policy pertaining to purchase & sale also impacts the requirement of Working Capital. The credit offered to the Customers increases the requirement of the Working Capital with the creation of Book Debts & the credit available from the Suppliers acts towards shortening the Working Capital requirement with the creation of Creditors.
- Growth & Expansion: Growth & expansion in a concern lead to an increased requirement of Working Capital by way of increased inventories required to support the increased production capacities.
- Availability of Raw Material: In case of difficulty in procurement of a given raw material or seasonal/sporadic availability, the entity may be forced to stock the same in higher quantities than required to meet the normal production needs.
- Profit Levels: Net Profit is a source of Working Capital to the extent it has been earned in cash. Higher profit margin improves the prospects of generating more internal funds contributing to the Working Capital. Cash Profit is found by adjusting Depreciation, Outstanding Expenses & Losses written off in the Net Profit.
- Level of Taxes: Taxes have often to be paid in advance & Is construed as a short term Liability payable in cash.
- Dividend Policy: Retention of profits leads to an increased availability of Working Capital, payment of Dividend leads to depletion in Cash resources affecting the Working Capital adversely. Bonus Shares help the company to preserve cash without reducing the Working Capital.

- Depreciation Policy: Depreciation is a non cash charge against the profits, it impacts in lowering the Tax Liability. Enhancing the Depreciation rate lowers the profits & the tax liability & increased cash profits. Lower profits mean lower dividend payments.
- Price Level Changes: Rising prices warrant the use of more funds for maintaining an existing level of activity/operations. Higher investment is required to be made for having the same levels of Current Assets.
- Operating Efficiency: Effective & efficient utilization of available resources by the management helps with the reduced requirement of Working Capital. Elimination of waste, optimal utilization of existing resources allow the management to realize every bit of investment by way of faster cash realization cycle & improved turnover. This improves profitability & the internal capacity to generate & save funds.

4.1.9 SUMMARY

Working capital means the funds available for day today operations of the enterprise. It also represents the excess of current assets over the current liabilities. The working capital requirements are normally estimated to the tune of production policies, nature of the business, length of manufacturing process, credit policy and so on. The need of the working capital is determined on the basis of duration of the production cycle. The time duration taken by the manufacturing process should be considered from the stage of raw materials to the stage of finished goods. The cycle of the business should be relatively considered for the need of working capital. The credit policy of the firm is another determinant for the determination of the working capital.

4.1.10 SELF CHECK QUESTIONS

(A) Objective Questions

1. What would be the effect of following on the working capital? Mention Increase / Decrease / No Effect.
   - Decrease in credit period allowed to customers.
   - Changing the method of packing, which will result in a more attractive packet, but the inventory level of packing material remains the same.
   - Implementing a scheme which cuts down the production period to half.
   - Increase in production expenses.
   - Purchase of fixed assets.

(B) Class Assignment

1. Define working capital. Distinguish between gross working capital and net working capital.
2. Discuss various factors affecting working capital.
3. Write short notes on: (I) Optimum working capital (II) Risk Vs Profitability (III) Operating cycle

(C) Class Assignment

1. "Expenses reduce working capital, whereas charging depreciation does not". Do you agree?
2. What do you mean by working capital management? Explain how working capital management policies affect profitability, liquidity and structural health.

4.1.11 SUGGESTED READINGS

13. Kulkarni PV & Kulkarni SP: Corporate Finance
14. Chandra Prasanna: Financial Management
15. Kulshreshtra R S: Financial Management of Corporation
16. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
17. Khan MY & Jain PK: Financial Management

LESSON 11

SOURCES OF WORKING CAPITAL

Structure of the Lesson:

Objectives of the Lesson:

- To understand the sources of Working Capital Finance.
- To explain the concept of Trade Credit, Bank Credit etc.
- To discuss the aspects related to Commercial Papers and Factoring.

4.2.1 INTRODUCTION

After discussing meaning and the level of working capital, it is important to understand the sources from which working capital is available. The sources of finance for working capital finance are divided in two categories. (1) Long term sources comprising equity capital and long term borrowings; and (2) the Short term sources comprising trade credit, bank credit, and the current provisions of non-bank short term borrowings.

4.2.2 SOURCES OF WORKING CAPITAL

Some important short term sources of working capital finance are as follows.

(A) Trade Credit:

Trade Credit refers to the credit extended by the suppliers of goods & services in the normal course of business. This facilitates the processing & sale of the product before paying for the purchases. No formal agreement exists between the transacting parties & the transactions are carried on an open account basis. The credit so received is recorded as creditors / accounts payable in the books of accounts. The availability of trade credit depends on the firm's past record of payments, vintage & the size of transactions. Trade credit is easily available without formal agreements and it is free form restrictions. But, it carries an implicit cost in terms of cash discount foregone that is available to the purchaser in case the payment is made immediately.

(B) Bank Credit:

The bank credit is the primary institutional source of financing working capital. The amount approved by bank for the company working capital **i**s called credit limit. Credit limit thus denotes the maximum limit of finances which the fir**m** can raise in the form of loan from the bank. Sometimes the bank may approve separate limits for peak season and non-peak season. Banks offer working capital finance in the two forms; i.e. Fund Based Facilities, and Non Fund Based Facilities. Fund based facilities make funds available to the customer for application. Whereas Non fund based facilities do not require cash outlays by the banks, at least in the initial stage.

Fund Based Facilities include: Cash Credit, Overdraft, Demand Loans, Working Capital Term Loans, Export Finance, and Bill Purchase / Discounting. The Non Fund Based Facilities consist of Letter of Credit, and Bank Guarantees.

(I) Cash Credit: Under Cash Credit a borrower is sanctioned a line of credit and is allowed to make withdrawals up to the sanctioned levels. The interest is charged on the usage and not on the sanctioned limits. Cash Credit is made available depending on the Drawing Power which is a function of the Current Assets & Current Liabilities, Current Assets in the form stocks & receivables form the Primary Security This form of Credit is repayable on demand & cost effective as the interest is payable on the amounts outstanding and not on the Sanctioned Limits.

(II) Overdraft: Under this arrangement the borrower is allowed to withdraw the amount up to a certain limit from his current account over and above his actual credit balance. Within the stipulated limits any number of withdrawals is permitted by the bank.

(III) Demand Loans: In compliance of RBI directions, banks presently grant only a small part of the fund-based working capital facilities to a borrower by the way of running cash credit account; a major portion is in the form of working capital demand loan. This arrangement is presently applicable to borrowers having working capital facilities of Rs. 10 crores or above. The minimum period of such demand loans which is basically non-operable account keep on changing from time to time. These loans granted for a fixed term on the carrying of which it has to be liquidated, renewed of rolled over.

(IV) Term Loans: Advance allowed for a fixed period either in Lump Sum or in installments, repayable as per the schedule of repayment and not on demand at a time. Term Loans are granted for a 3 to 7 years period and repayable in installment mode at agreed intervals. These are generally granted to meet capital expenditures against the security of immovable property, plant & machinery etc. Term loans are granted in different forms. These are

- Hypothecation: When the underlying asset securing the Bank's exposure is movable in nature the asset is considered to have been hypothecated. The Hypothecated assets continue to remain in the custody of the Borrower but the Bank reserves the legal right to sell the goods to realize the outstanding loan.
- Pledge: Under Pledge, the Borrower forgoes the possession of the asset. The goods are pledged by the pledgor (borrower) to the Pledgee (financier).
- Mortgage: Mortgage involves transfer of legal interest in an immovable property to secure the payment of a debt. The Mortgagor transfers the interest in the property to the

Mortgagee through the Mortgage Deed. Mortgages are taken as collateral security by the Banks to secure the exposure

- Lien: It is the right of a creditor to retain in his possession the goods and securities owned by the debtor until the debt has been discharged, but has no right to sell the goods and securities so retained. A Particular Lien refers to the right of a creditor to retain the possession only of goods in respect of which the dues have arisen. A General Lien gives the right to retain possession until the whole amount is paid. A banker has a right of general lien against his borrowers.
- Charge: When an immovable property is made the security for payment of money to another by the act of parties or by the operation of Law, a Charge is said to have been created and all the provisions of Simple Mortgage apply. As against mortgage the interest in the property is not transferred, it is optional to have the charge created in writing & the charge cannot be enforced against the transferee for consideration without notice.
- Assignment: Assignment means transfer of a right of an actionable claim, existing or Future. The assignee enjoys absolute right over the debts assigned & other creditor of assignor cannot get priority over the assignee. Assignment is obtained from borrower on Book debts, supply bills & LIC Policies.

(V) Export Credit: Export Credit is the assistance granted by the Banks under the various directives & policies issued by the Reserve Bank of India, FEDAI Rules, EXIM Policy etc. It is classified into Pre Shipment & Post Shipment Finance. Pre Shipment Finance is extended prior to the Shipment of Goods & the assistance extended subsequent to shipment is termed as Post Shipment Finance.

(VI) Bills Purchase / Discounting: These represent advances against Bills of Exchange drawn by the customers on their clients. Bills accompanied by documents to Title of Goods are called Documentary Bills & without such documents are called Clean Bills (e.g. Cheque). Documents under bills are either deliverable against acceptance or against payment. The finance against bills can take three forms.

When a bill, either clean or documentary is made payable on demand / sight then it is termed as a Demand Bill. The Buyer is expected to honor the bill immediately at sight. In case of a Documentary Bills, the documents to the title of goods are delivered to the buyer only against the payment of Bill. (DP: Document against Payment). When a Bill whether Clean or Documentary is made payable after a certain period the bill is termed as usance Bill. The usance Bill is first presented for acceptance & then at the end of usance period for Payment to

the buyer. In case of Documentary Usance Bill the documents are delivered to the buyer against the acceptance (DA: Document against Acceptance)

Demand / Sight Bills are purchased & Usance Bills Discounted. As a working capital facility post sale Bill purchase is extended against clean demand bills like cheques / drafts / hundies / bill of exchange and demand documentary bills whereby the bank lends money to the payee / drawer against tendering of such bills by Payee / Drawer. The bank in turn sends the bills for collection. Bill Discounting is extended against the usance bills. The seller tenders the usance bill along with the Title documents to his banker for discounting. The Bank levies discount on the usance duration of the Bill & credits the balance to the account. The Bill is then sent for collection with instructions for release of documents to title against acceptance & to recover the bill amount on due date.

This links the credit availability with the purchase / sale transaction and mitigates the risk of misuse/diversion of credit. This counters the demerits of Cash Credit wherein the availability of credit was not precisely related to the production needs, borrowers enjoyed limits in excess of their genuine needs & scope of double financing existed with cash credit being availed on goods purchased on credit.

(VII) Letter of Credit: A Letter of Credit is a written Instrument issued by a Banker at the request of a buyer (applicant) in favour of the seller (beneficiary) undertaking to honor the documents or drafts drawn by the seller in accordance with the terms & conditions specified; within a specified time. Under this arrangement the purchaser of Goods on credit arranges for a “Letter of Credit” from his Banker whereby the Banker undertakes the responsibility to make payment to the supplier in case the purchaser fails to honor the obligation on due date.

(VIII) Bank Guarantee: The Indian Contract Act defines a Contract of Guarantee as a contract to perform the promise or discharge the liability of a third person in case of his default. As against this, a contract of Indemnity, the party promises to save another person from loss caused to him by the conduct of the promisor himself or by any other person. Bank guarantees are sought by clients under situations wherein the client is asked to provide guarantee from his banker in lieu of some money owed by the client to others or likely loss/damage that may be caused by the client’s performing/non-performing of specified tasks. Bank Guarantees are categorized into Financial, Performance & Deferred Payment Guarantees

In Financial Guarantee (favoring tax/customs/excise authorities in respect of disputed claims and guarantees covering security deposit/earnest money/mobilization advance etc.) the bank

guarantees, the customer's financial worth, credit worthiness & his capacity to take up financial risks. Guarantees are examples of Financial Guarantees.

In Performance Guarantee the bank guarantees the client's performance as per the contract terms, due discharge of the contractual obligations etc. In the event of failure to perform as per the contract terms, the bank will make payment under the guarantee.

Deferred Payment Guarantee refers to financial guarantee to facilitate raising long term resources for acquiring fixed assets/capital goods by securing guarantee of repayment of principal & interest on due dates from his banker to the supplier of capital goods.

(C) COMMERCIAL PAPERS

Commercial Paper is a short-term usance promissory note issued by a company, negotiable by endorsement and delivery, issued at such a discount on face value as may be determined by the issuing company. Each Commercial Paper will bear a certificate from the bank verifying the signatures of the executants.

The companies, which are financially sound and has a good track record can access to an instrument known as the Commercial Paper. To give a boost to the money market and for reducing the dependence of highly rated corporate borrowers on bank finance for meeting their working capital requirements, corporate borrowers were permitted to arrange short term borrowings by issue of Commercial Paper with effect from 1st January, 1990. In India Commercial Paper can be issued under following conditions:

- Corporate with minimum tangible assets net worth is 400 Lakh can issue commercial papers. The Corporate must be financially sound with good track record of profits.
- Commercial papers are issued for a period 7 Days to 1 Year.
- The instrument must have high credit rating given by reputed agency like CRISIL, ICRA, CARE, or Duff & Phelps.
- Commercial papers are issued for minimum of Rs 5 lakh or multiple thereof, subject to a maximum of Rs. 25 Lakh.
- The Maximum Permissible amount of Commercial Papers is 100% of Working Capital Limit.

Some important features of Commercial Paper are:

- Commercial Paper is a short-term money market instrument comprising usance promissory note with a fixed maturity value.
- It is a certificate evidencing an unsecured corporate debt of short-term maturity.

- Commercial Paper is issued at a discount to face value basis but it can also be issued in interest bearing form.
- The issuer promises to pay the buyer some fixed amount on some future period but pledges no assets, only his liquidity and established earning power, to guarantee that promise.
- Commercial Paper can be issued directly by a company to investors or through banks / merchant bankers.

(D) FACTORING

Factoring is an agreement in which the Book Debts arising out of sales are sold by the firm to a Financial Intermediary known as a Factor. The Factoring Agent is entitled to receive the proceeds arising out of the receivables; he may even be required to bear the losses arising out of any Book debts turning bad in case of a Full Service Factoring (without Recourse facility).

A Factor Purchases the trade debts at a price by the way of advances against the debts assigned. In case the debts are factored with recourse, the Client will have to refund the finance granted against the debt in case of non-realization of such book debt. As a part of this service the Factor also maintains a record of all outstanding payments & reports are shared periodically with the client.

Factor allows the client to focus on the business without bothering about the collections impairing his business. The Factor has the desired setup to effect timely collection & relieve the client of the efforts, time & money required to realize the Book Debts. The Factoring agents are suitably poised to advise the client on the credit worthiness of the customers & effect better credit control. The Factoring cost comprises of the Collection & Account administration commission and discount charge for the period between the date of advance payment & the date of realization of debt.

Factoring offers the following advantages which makes it quite attractive to many firms:

- The firm can convert accounts receivables into cash without bothering about repayment.
- Factoring ensures a definite pattern of cash inflows.
- Continuous factoring almost eliminates the need for the credit department. That is why receivable financing through factoring is gaining popularity as useful source of financing working capital requirements of business enterprises.
- The seller firm may continue to finance its receivables on a more or less automatic basis. Its sales expand or contract, it can vary the financing proportionately.

- Unlike an unsecured loan, compensating balances are not required in this case. Another advantage consists of relieving the borrowing firm of substantial credit and collection costs and to a degree from a considerable part of cash management.

4.2.3 SUMMARY

Any company will need to maintain a minimum level of working capital at any point of time. This level can be termed as the permanent or fixed component of working capital. Above this level, the working capital varies as per the level of activity of the company - higher the level of activity, more the working capital required. Since the permanent component of working capital are locked up permanently within the organization just as fixed assets, this component needs to be financed from long term sources of finances such as internal accruals, equity shares, preference shares, debentures and to an extent, term loans. The fluctuating or variable component of working capital can be financed through short term sources such as trade credit, bank credit, public deposits and the current provisions of non-bank short term borrowings. Some other sources of financing working capital include commercial paper and factoring.

4.2.4 SELF CHECK QUESTIONS

(A) Objective Questions

1. Term Loans are granted for a period up to 5 years.
2. Demand bills are purchased whereas Usance Bills Discounted.
3. Under Pledge, the Borrower do not have right to use the asset.
4. Assignment means transfer of a right of an actionable claim, existing or future.
5. Factoring is an agreement in which the book debts arising out of sales are sold by the firm to the Factor.

(B) Class Assignment

1. Explain means and ways of bank credit as a source of working capital finance.
2. What are term loans? Explain the conditions of term loans.
3. Write short notes on: (I) Bank Guarantee (II) Letter of Credit (III) Bill discounting

(C) Home Assignment

1. What do you mean by factoring? Explain its features and advantages.
2. Who can issue commercial papers? Discuss the features and conditions of issuing commercial papers

4.2.5 SUGGESTED READINGS

18. Kulkarni PV & Kulkarni SP: Corporate Finance
19. Chandra Prasanna: Financial Management
20. Kulshreshtra R S: Financial Management of Corporation
21. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
22. Khan MY & Jain PK: Financial Management

LESSON 12

MANAGEMENT OF CASH, STOCK AND ACCOUNTS RECEIVABLES

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of Management of Current Assets
- To understand the management of
  - Cash & Marketable Securities
  - Management of Receivables
  - Management of Inventories

4.3.1 INTRODUCTION

We know that the level of current Assets is determined by the level of operations and that the requirement of working capital is a function of the current assets & current liability position. The current assets except cash represent application of funds & the current liabilities are the sources of funds.

The non-synchronous nature of cash inflow & outflow requires a concern to maintain an excess of current Asset to facilitate uninterrupted production. This is done by managing various individual components of current assets as against this the level of current liabilities is governed by external factors. It becomes imperative to manage the levels of current assets for maximizing the profitability of the firm & increasing the shareholder value.

4.3.2 MANAGEMENT OF CASH

Cash happens to be the most liquid of the Current Assets; also it represents value for any given Current Asset in the Cash Cycle. The organizations work towards reducing the cash cycle & minimizing the cash holding as it does not yield returns. Any surplus Cash is invariably converted to a Short term investment to reap returns on investment without sacrificing liquidity. However Cash in a narrow sense covers currency & generally acceptable cash equivalents like Cheques, Drafts, Demand Deposits with Banks. Cash may also be considered to include near cash assets as marketable securities & Fixed Deposits with Banks.

Objectives of Cash Management:

Cash happens to be a necessary Current Asset in any Business enterprise but is not productive by itself. Cash Management is thus oriented towards determining optimal levels of cash & cash equivalents that allow for the smooth operations; minimize the loss on account of idle cash balances along with efforts to improve the cash cycle.

Motives of holding Cash:

Transaction: Holding cash to meet routine cash requirements. The routine Business requires payments to be made in cash & payments being realized from sales/debtors. These payments & receipts of cash don't coincide. Holding of cash balances to ensure payments in time is the Transactional motive to hold cash.

Precautionary: The cash balances held in reserve to address the unforeseen need of cash is the Precautionary motive. The unexpected cash requirements may spring from accidents, strike, failure of key customers, unexpected slowdown of collection, sharp increase in cost of raw material. Precautionary cash Balances provide the required cushion to meet unexpected contingencies/obligations. These balances are held in the form of marketable securities so that they can earn a return, alternatively short term borrowings can also provide for Precautionary requirements.

Speculative: Holding cash balances to take advantage of business opportunities falling outside the normal course of business. For example make purchase at reduced price on paying cash down.

Dimensions of Cash Management:

There are mainly four dimensions of cash management.

- Cash planning: preparing cash budgets for projecting cash inflows & outflows & identifying surplus & deficits.
- Managing the Cash Flows: Accelerating the cash inflows & decelerating the cash outflows to allow for matching cash inflows with cash outflows.
- Determining optimum cash level: Balancing the cost of excess cash with the loss through deficiency & assessing the optimal cash balances.
- Investment of Surplus cash: Cash being unproductive, any surplus should be invested to earn profits

Costs / Risks Associated with Inadequate Cash Balance:

- Cost of Borrowing: Interest expended to avail required funds.
- Transaction Cost: Costs arising out of commission, brokerage & other expenses/Costs incidental to Borrowing to bridge the shortage.
- Cost of Lost Opportunity: Losses arising from lost Cash Discounts, temporary shifts in prices creating opportunities to book profits/windfall gains.
- Loss of Interest Income: This relates to the interest income loss on the cash balances maintained over the optimal / desired levels of cash.

- Risk of Loss of Image: It arises due to delay in payments to creditors, bankers, staff, vendors etc.
- Inability to address emergencies.

Cash Budget:

Cash Budget states the projected/expected cash Inflows against the cash Outflows over a period (Planning Horizon). Forecasting cash Inflows & Outflows helps the firm to know of the Deficits & Surpluses of cash & plan effectively. Cash Budget allows to Identify periods of Cash Surplus & Deficit, and Provision for Borrowing & Investment as required.

A typical Cash Budget may include following items through which there may be inflows and outflows of cash.

FORMAT OF CASH BUDGET

Receipts / Inflows	Amount (Rs.)	Payments / Outflows	Amount (Rs.)
OPERATIONAL INFLOWS Cash Sales Collection from Debtors Sale of Fixed Assets **FINANCIAL INFLOWS** Capital Infusion Borrowings Sale of Investments Interest / Dividend Received Rent Received Refund of Income Tax		**OPERATIONAL OUTFLOWS** Cash Purchases Payments to Creditors Manufacturing Expenses Administrative Expenses Selling & Distribution Expenses Payment of Utility Bills Purchase of Fixed Assets **FINANCIAL OUTFLOWS** Repayment of Loan Redemption of Pref. Shares Redemption of Debentures Payment of Interest / Dividend Payment of Income Tax	
Total		Total	

Case Management Strategies:

It is imperative for us to understand the Cash Cycle before we move to the Cash Management Strategies.

Day	Particulars	Cash		
		Outflow	Inflow	Balance
1st	Purchase for 50,000; 20% Advance; 80% Credit 3 Days	10,000		-10,000
2nd	Goods Dispatched by supplier			-10,000
3rd	Raw Material in Transit			-10,000

4th	Goods Received; 80% Remaining & Cartage 500 Paid	40,500		-50,500
5th	Wages Paid for Storage of goods in Godown	2,000		-52,500
6th	Processing of Raw Material	2,000		-54,500
7th	Work in progress; Wages Paid	2,000		-56,500
8th	Work in progress; Wages Paid	2,000		-58,500
9th	Work in progress; Wages Paid	2,000		-60,500
10th	Work in progress; Wages Paid	2,000		-62,500
11th	Finished Goods Packed; Wages Paid	2,000		-64,500
12th	Goods Dispatched to Buyer; Wages Paid	2,000		-66,500
13th	Goods Sold 75,000; 30% Cash, 70% Credit for 10 Days		22,500	-44,000
14th- 22nd	Debtors Realizable (Day 2 to 10)			-44,000
23rd	Cheque Received & deposited in Bank			-44,000
24th	Cheque in Clearing			-44,000
25th	Cheque Realized		52,500	8,500

From the above it is clear that the Cash Cycle of the concern is 25 Days. From a Turnover perspective the Business will be rotating cash (365/25) times annually i.e. 14.6 times. This can be calculated by the following formula.

$$\text{Cash Turnover} = \frac{\text{Days in a Year}}{\text{Cash Cycle}}$$

Here:

$$\text{Cash Turnover} = \frac{365}{25} = 14.6$$

The Shorter the cash cycle means lesser Cash holding & a higher Cash Turnover; examples of Businesses with a High Cash Turnover are Restaurants, Merchant establishments, Hospitals etc. contrary to this a Manufacturing firm is required to hold relatively large balance of cash as its cash cycle is comparatively longer & the cash turnover is less.

The Cash turnover can be used to compute the minimum operating cash requirement. In context to the above example where the Cash Turnover is 14.6 times say the firm requires Rs. 146 thousand a year to operate then it would be required to hold (146/14.6) i.e. 10 thousand at any given time to meet its cash obligations when due. Also a higher cash turnover would result in a lower operating cash requirement. The Operating Cash Requirements can be calculated as:

$$\text{Operating Cash Turnover} = \frac{\text{Total Annual Cash Requirement}}{\text{Cash turnover}}$$

Or

$$\text{Operating Cash Turnover} = \frac{\text{Total Annual Cash Requirement} \times \text{Sach Cycle in Days}}{\text{Days in a Year}}$$

The cash management strategies are oriented towards maximizing the cash turnover & minimizing the operating cash requirement. Operating Cash requirement carries a cost in terms of an opportunity cost, minimizing the operating cash balances results in opportunity cost savings. The actions leading to the desired results may be as follows:

- Stretching payments to creditors: advocates paying the creditors as late as possible without any adverse implication on credit standing, however opportunities of availing cash discount should not be forgone.
- Expediting collection from Debtors: Attempting to improve the Debtor collection period & reduce the Cash Cycle by altering the credit terms, setting the credit standards & the collection policy. Credit Terms require deciding over the terms of credit like days, cash discount. Determining the Credit Terms require discretion as to whom to extend credit on what grounds and Collection policy determines the collection strategies & focus on collection.
- Improving Inventory Turnover: Efforts to increase the inventory turnover lead to the reduction in the Production Cycle; this in turn reduces the Cash Cycle and the required operating cash leading to cost savings.

Some important techniques of maximizing the cash turnover & minimizing the operating cash requirement are:

- Offering Cash Discounts on prompt payments.
- Using the New age collection products: The firm can subscribe to the following products being available today like Online Bill pay facility, Mobile Banking, Electronic Clearing Service (ECS), National Electronic Fund Transfer (NEFT) & Real Time Gross Settlement (RTGS). These products improve the collections dramatically & leave the conventional methods of cheque collections lagging far behind.
- Decentralized Collections: Identification of strategically located collection centers to reduce the Deposit Float. Deposit Float refers to the cheques that are drawn by the customer but not yet realized by the firm. Deposit Float arises on account of Postal Float & Bank Float. Postal Float refers to the delay caused by way of cheque being in transit from Drawer to Payee. Bank Float refers to the time taken by the bank for affording credit to the client’s account.
- Concentration Banking: This is a subset of the Decentralized Collection wherein collections at the spokes (Collection Centers) are pooled at the Hubs (Central/

Concentration/ disbursement account). This is primarily aimed at reducing the Postal Float.

- Lock Box System: The Lock Box System eliminates the stage wherein the Cheque is delivered to the Payee for accounting & is then submitted to the Bank for collection. In this arrangement the bank is allowed to operate a Lock Box available with the postal authorities and bank the cheques without any significant delays in collection. However under this kind of a setup, the bank is required to submit the records of deposits made to the account for reconciliation purposes.
- Avoiding early Payments: In case the Cash Discount is not availed by the firm than payment before due date should be avoided. It should ideally be effected only on the due date and not before or later.
- Centralized Disbursements: This involves paying the Creditors from a central account to benefit from the postal float. Usage of a designated account for disbursements allows a better control over the operating cash balances.
- Paying cheques from a remote location: Earlier it used to provide with ample Postal float but now with the advent of Online Banking, NEFT & RTGS this tactic is fast turning obsolete.
- Accruals: Accruals stand for the Current Liabilities arising out of services not paid for. The longer the accrual period, the less the cash balance required. Example, Payrolls, Utility payments.

4.3.3 MANAGEMENT OF MARKETABLE SECURITIES

Temporary Surpluses of Cash do not produce returns and are hence employed in Securities that allow for prompt redemption of principal with returns & do not risk the loss of principal. Such securities are termed as Marketable Securities. Marketable securities are short term liquid investment instruments that yield returns on temporary cash surpluses of the firm.

The presence of surplus funds with the firm poses a problem in terms of determining the mix of cash & marketable securities. The choice is based on the cost benefit equation. The Cost arises out of Brokerage payable on purchase & sale of securities and the opportunity cost of Cash holding. The benefits are in the form of returns earned on the investment.

Considerations While Making Investment in Marketable Securities:

As stated earlier the firm has various motives behind maintaining balances of cash & Marketable Securities. However the selection of marketable securities should be done considering the following factors

- Liquidity Position of the Firm
- Yield or Return on Investment
- Tax Liabilities on Investment
- Investment Channels and Avenues: These may include Treasury Bills, Certificate of Deposits, Commercial Paper, Units, Inter-corporate Deposits, Liquid Funds etc.
- Interest Rate Risk: Uncertainty of returns from investments due to changes in the interest rate. If the Interest rates rise compared to those of securities lying in the portfolio, the market value of portfolio will decline.
- Default Risk: The risk of default of redemption of principal & returns.

4.3.4 RECEIVABLES MANAGEMENT

Receivables are an outcome of sales for which the proceeds are not received immediately at the time of sale but deferred for certain duration. This allowance of credit results in a deficit created by the flow of working funds from the business to the buyer who enjoys credit at the cost of the seller. The allowance of credit to the buyer is known as Trade Credit in the normal business terminology and gives rise to Account Receivables or Trade Debtors.

It would be necessary to explore the need, cost and the benefits associated with the grant and management of receivables. Trade Debtors represent the flow of working funds from business to the external entities (Buyer's). It is similar to funding the other's business. Attempts to realize the funds in the minimum possible time ensure that the funds are safe & have been granted to creditworthy entities form the crux of Receivables Management.

Benefits and Costs of Investment in Receivables:

Benefits: Trade Credit happens to be an essential practice in the markets; on the positive side it helps the concern to add new sales and retain the existing levels of sales, improving profits.

Costs: Outflow of working funds in the form of credit sales requires the concern to provide for the deficit in order to continue with the operations. The Debtors have the following costs associated with them

- Capital Costs – Account Receivables are a constituent of the Current Assets, Current Assets require application of funds. Account Receivables have to be financed and hence

carry a Cost in terms of arranging additional funds to meet its own obligations while waiting for payments to come from the customers.

- Collection Overheads – The costs incurred consequent to the administration and collection of the outstanding receivables. It typically includes salary to the credit department, cost of credit information & related office overheads.
- Delinquency Costs – It includes Costs associated with blockage of funds for extended period. When there is delay in realization of trade debts, certain expenses may arise, viz. expenses on facilitating collections, administrative expenses, legal charges etc.
- Default Costs: It refers to the loss incurred in the event of Debts turning bad i.e. or default in payment. For e.g. non realization / partial realization of money from debtors due to insolvency.

Cost Benefit Tradeoff:

The decision to grant Credit is about striking a balance between the incremental sales and the incremental cost incurred in financing the Book Debts. The levels of receivables in a given trade are primarily dependent on the trade practices in the given industry, but the levels can be carefully controlled at the desired levels by the internal controls exercised by the company.

Measures to control the investment in receivables:

Some of the measures to control the investment in receivables are as follows.

- Credit Analysis: Credit Analysis refers to the efforts undertaken for assessment of Credit eligibility in terms of the decision to grant credit or not or to what extent. Analysis requires Information for deciding and can be obtained from internal records and additionally arranged from external sources. Internal records like the past payment records & trade references help in assessing the credit worthiness of an applicant. Externally the firm can check out for details like Financial Statements, Bank Statements & Credit Bureau reports.
- Credit Policy: Credit Policy refers to the broad guidelines governing the grant of credit. Credit Policy lays down the Credit Standards & methods of appraising credit worthiness i.e. Credit Analysis. Credit Standards or Credit Norms lay out the criterion governing the grant of Credit in Quantitative terms.

A Stringent Credit Policy aims at improving the quality of Trade Debtors, ensuring a reduced probability of Default. It also translates into reduced sales, lower levels of average account receivables and extension of credit to credit worthy customers. On the contrary a Relaxed Credit Policy will lead to increased sales, higher levels of average account receivable and an increased Debtor collection period.

The above information can be quantitatively & qualitatively processed to appraise the credit. Accordingly, the firm can determine Credit Terms or conditions for grant of credit to its customers. The firm can have strict or lenient Credit Collection Policy in a particular period of time or for a particular type of customers. The collection efforts on the part of the firm may include; Sending Reminders, Following up on Phone, Personal visits, using the services of Collection Agencies, Legal action etc.

4.3.5 MANAGEMENT OF INVENTORIES

Inventories refer to the stocks of Raw Materials, Work in Progress and Finished Goods that are maintained at various stages of production to sustain the routine operations of a concern. The Production operation gradually adds value to the raw inputs during the course of Production Cycle. This happens at the incidence of application of Labor, Overheads and other expenses that are paid for during the course of production.

The levels of Inventory are the joint concern of various departments like Production, Purchase & Marketing. The levels of Inventory have to be carefully examined to ensure that the production goes unhampered and no opportunities are lost with respect to procurement of Raw materials. Maintenance of Inventory represents an investment or application of working funds thus the primary goal of inventory management is to maintain such levels of inventory where the investment in inventories is the minimum & the production goes uninterrupted. The Motives of holding inventories are similar to motives of holding cash, i.e. Transaction, Precautionary, and Speculative.

The main objectives of inventory control are:

- Maintaining adequate inventory so as to avoid production held up leading to customer dissatisfaction, loss of revenue and increase in cost for emergency purchases.
- Avoiding excessive investment in inventory and consequently reducing carrying costs.
- Relieving management in taking inventory decisions for each and every item of inventory.

Dimensions of Inventory Management:

Inventory management utilizes the principles of planning the demand for and supply of each item at the lowest cost possible and the lowest possible inventory consistent with operating requirements. Economic purchasing and manufacturing lot sizes are developed to minimize the total cost of procuring, storing and utilizing each type of material. In order to use this method, certain terms must be known. These are:

- Average usage: Average consumption per month or week of each item.
- Lead time: It is the average time elapsed between the initiation of the order and the receipt of materials from suppliers. Lead Time refers to the time required for the supplies to reach the production facility post the placement of order.
- Reserve stock: An extra amount of stock which is kept on hand to take care of greater than normal usage during the replenishment lead time or an average usage during a greater than the normal lead time or a combination of the two.
- Maximum and minimum levels: Materials must not be allowed to exceed the maximum level and fall below the minimum level.
- Reorder point: The quantity expected to be consumed during replenishment lead time plus a reserve.
- Danger level: This is generally a level below the minimum level. When stock reaches this level urgent action is needed for replenishment of stock.
- Economic ordering quantity: The quantity which is most economical to order and to stock considering all factors bearing on the situation.

There are mainly four dimensions of inventory control; e.g. Determination of the Type of Control required: ABC System, Determining Levels of Safety Stocks, Determination of Reorder Level, and Determination of the Order Size i.e. EOQ Model

(1) ABC System:

In the case of a manufacturing company of reasonable size the number of items of inventory runs into hundreds, if not more. From the point of view of monitoring information for control it becomes extremely difficult to consider each one of these items. The ABC analysis comes in quite handy and enables the management to concentrate attention and keep a close watch on a relatively less number of items which account for a high percentage of the value of annual usage of all items of inventory.

A firm using the ABC system segregates its inventory into three groups: A, B, and C. Category A items are those in which it has the largest rupee investment. These are the most costly or the

slowest turning items of inventory. The B group consists of the items accounting for the next largest investment. Similarly, C group typically consists of a large number of items accounting for a small rupee investment.

Dividing its inventory into A, B, and C items allows the firm to determine the level and types of inventory control procedures needed. Control of the A items should be most intensive due to the high rupee investments involved, while the B and C items would be subject to correspondingly less sophisticated control procedures.

(2) Determining Levels of Safety Stocks:

Though, various safety stock levels are already explained, let us examine again some of them in more detail.

(A) Maximum stock: The maximum stock level is that quantity above which the stock of any item should not be allowed to exceed. A maximum stock is generally fixed by taking into consideration the following factors, namely,

- Average rate of consumption.
- Recorder level and delivery time to obtain supplies.
- Amount of capital necessitated and available, economy in prices and other financial considerations.
- Keeping qualities of materials.
- Storage space and cost of storage.
- Extent to which price fluctuation may be important.
- Risk of obsolescence, depletion and natural waste.
- Economic ordering quantities.
- Incidence of insurance costs, which may be important for some materials.
- Any restrictions imposed by local or national authority in regard to materials.

Maximum level = Reorder level - Expected minimum consumption in units during minimum weeks required to obtain delivery + Reordering quantity in use.

(B) Minimum stock: The minimum stock level is that quantity below which the stock of any item should not be allowed to fall. A minimum stock level is fixed by taking into account (I) Reorder level, (II) Average rate of consumption of material, and (III) Average time required to obtain delivery of fresh supplies.

Minimum level = Reorder level – (Normal or average usage per period x Average number of periods required to obtain delivery)

(C) Danger level: Danger level is the level below the minimum level. When the stock reaches this danger level urgent action for purchase is necessary. As normal lead time is not available, it is necessary to resort to unorthodox purchase procedure resulting in higher purchase cost.

(3) Reordering level: It is the point laying between the maximum and minimum levels at which time it is essential to initiate purchase orders for fresh supplies of the material. This point will usually be slightly higher than the minimum stock, to cover such emergencies as abnormal usage of the material or unexpected delay in delivery of fresh supplies. Reordering level depends on lead time, rate of consumption, and economic ordering quantity.

Reorder level = Average consumption per week + Delivery time in weeks

Or

Reorder level = Maximum reorder period x Maximum usage.

Or

Reorder Level = Lead Time in Days × Average Daily Consumption

Example: Given an Average consumption of 60 Units Daily and a transit time of 10 Days, compute the Reorder levels

Solution: Reorder Level = Lead Time in Days × Average Daily Consumption

Reorder Level = 10 Days × 60 Units per day = 600 Units

Reordering quantity is the normal quantity to be placed on order when the stock has reached its reorder level. The factors governing reorder quantity are cost of placing orders, average consumption, cost of storage, interest on capital, etc.

(4) Economic Ordering Quantity (EOQ): Economic Ordering Quantity refers to that Quantum of order which minimizes both the ordering and the carrying costs. The EOQ model addresses the following:

- How much to be ordered at a time?
- What should be the frequency of purchase?

We know the optimum level of stock to be carried depends on two factors, viz., carrying costs and costs of holding inventory. It is imperative to understand these Costs of Inventory. These are:

- Ordering Costs: Costs pertaining to acquisition & ordering of Inventory, these costs are generally fixed in nature & remain constant irrespective to the Quantum of Order size. This cost is directly proportional to the number of orders placed. Hence, if order size is large, firm will place less number of orders, and thus total ordering costs will be less.

Order Size ↑ ⇒ Ordering Costs ↓

- Carrying Costs: These are also termed as holding costs. These costs pertain to securing and maintaining the Inventories and include the cost of storage space, material handling costs, Insurance covers, interest on funds employed, spoilage and wastage of material, Obsolescence etc. This also includes the opportunity cost of funds tied up in Inventories. Here, if order size is large, firm will be holding huge inventories, and thus total carrying costs will be more.

Order Size ↑ ⇒ Carrying Costs ↑

Or

Levels of Inventory ↑ ⇒ Carrying Costs ↑

Buying huge quantities leads to high carrying costs, loss through pilferage, risk of obsolescence, high insurance costs and other related overheads; but ensures that the production goes on smoothly and the ordering costs are reduced. A decision to procure in smaller quantities risks production with non availability of raw material, availability at higher cost and higher ordering costs.

This model is subject to the following assumptions:

- Consumption of Inventory with respect to time is known with certainty,
- Standard consumption rates of Inventory exists,
- The replenishments are received Just in Time, and
- Ordering & carrying costs are constant.

The formula for calculating EOQ is as follows.

$$EOQ = \sqrt{\frac{2AS}{C}}$$

Where: A – Annual Consumption of Inventory in Units

S – Ordering Cost per order

C – Carrying Cost per Unit

Example: For a planning period of one year a requirement of 3600 Units is expected, given that the cost to place an order is Rs. 100 and a Carrying cost of Rs. 2 per unit exists. How much should be ordered at one time.

Solution:

$$EOQ = \sqrt{\frac{2 \times 3600 \times 100}{2}} = 600 \text{ Units}$$

Example: A refrigerator manufacturer purchases 800 units of a certain component @ Rs. 30 per unit from outside supplier. The annual usage is 800 units, order pacing and receiving cost is Rs. 100 and cost of carrying one unit for one year is Rs. 4. Calculate the economic ordering quantity.

Solution:

$$EOQ = \sqrt{\frac{2 \times 800 \times 100}{4}} = 200 \text{ Units}$$

4.3.6 SUMMARY

The need for holding cash arises from a variety of reasons, viz. Transaction Motive, Speculative Motive and Precautionary Motive. The objective of cash management can be regarded as one of making short term forecasts of cash position, finding avenues for financing during periods when cash deficits are anticipated and arranging for repayment / investment during periods when cash surplus are anticipated with a view to minimize ideal cash as far as possible.

Cash budget becomes a part of the total budgeting process under which other budgets and statements are prepared. Short-term cash forecasting is prepared under the receipts and payment method. The finance manager of a firm would like to consider the appropriate balance between cash and marketable securities. This is because the optimal level of cash and marketable securities would reduce and minimize the transaction cost, inconvenience cost and opportunity cost.

The principal objective of receivables management is to boost sales to a point where the returns that the company gets from the receivables is less than the cost that the company has to incur in order to fund these receivables. Maintaining receivables is no free job. The cost of maintaining receivables includes the additional funding required by the company, administrative costs, collection costs and default costs. Every company requires a proper credit policy to make sure that the cost of maintaining receivables is minimum. The credit policy looks at ways for a trade-off between increase credit sales leading to increased profits and the cost of having a larger amount of cash locked up in receivables as well as the losses due to bad debts. The variables associated with credit policy include credit standards, credit period, cash discount and collection program.

Inventory forms a substantial part of current assets for any organization and includes raw materials, stores and spares, work-in-progress and finished goods. Maintaining an inventory is absolutely essential for most companies for five main reasons: avoiding lost sales, gaining quantity discounts, reducing order costs, achieving efficient production runs and reducing the risk of production shortages.

The objective of inventory management is to minimize total cost of inventory. While in increase an the size of the order can decrease the ordering costs, this will however increase the carrying costs. Therefore, a proper balance between the two is required to minimize the total costs of holding inventory. Economic order quantity is the optimal order size that will result in the lowest total ordering and carrying costs for a given usage level, and given ordering costs and carrying costs.

4.3.7 SELF CHECK QUESTIONS

(A) Class Assignment

4. Explain means and ways of Management of Cash.
5. Write short notes on: (I) ABC Analysis (II) Economic Ordering Quantity (III) Reordering Level (IV) Motives of holding Cash

(B) Home Assignment

3. Write a detailed note on Management of Receivables.
4. Give an outline of techniques of Inventory control.

4.3.8 SUGGESTED READINGS

1. Kulkarni PV & Kulkarni SP: Corporate Finance
2. Chandra Prasanna: Financial Management
3. Kulshreshtra R S: Financial Management of Corporation
4. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
5. Khan MY & Jain PK: Financial Management

LESSON 13
BASICS OF CAPITAL BUDGETING

Structure of the Lesson:

Objectives of the Lesson:

- To explain the concept of Capital Budgeting.
- To highlight the need and importance of capital budgeting.
- To discuss types of capital budgeting decisions and underlying principles.
- To explain concept of Capital rationing.

5.1.1 INTRODUCTION

Investment and financing of funds are two crucial functions of finance manager. The investment of funds requires a number of decisions to be taken in a situation in which funds are invested and benefits are expected over a long period. The finance manager of concern has to decide about the asset composition of the firm. The assets of the firm are broadly classified into two categories viz., fixed and current. The aspect of taking the financial decision with regard to fixed assets is known as capital budgeting

5.1.2 MEANING OF CAPITAL BUDGETING

Capital budgeting means planning for capital assets. The capital budgeting decision means a decision as to whether or not money should be invested in long-term projects. Such projects may include the setting up of a factory or installing machinery or creating additional capacities to manufacture a part which at present may be purchased from out side. It includes a financial analysis of the various proposals regarding capital expenditure to evaluate their impact on the financial condition of the company for the

purpose to choose the best out of the various alternatives. The finance manager has various tools and techniques by means of which he assists the management in taking a proper capital budgeting decisions.

The capital budgeting decisions therefore evaluate expenditure decisions which involve current outlays but are likely to produce benefits over a period of time longer then one year. The benefit which may arise from capital budgeting decisions may be either in the form of increased revenues or reduction in costs. A capital budgeting decision requires evaluation of a proposed project to forecast the likely or expected return from the project and determine whether return from the project is adequate. Further, since business is a part of society, it is therefore also the moral responsibility of a finance manager to undertake only those projects which are socially desirable.

5.1.3 NEED OF CAPITAL BUDGETING

- To make rational investment: The study of capital budgeting on capital expenditures evades not only over capitalization but also under capitalization. The long-term investment normally demands heavy volume of investment which is met out by the firm either through external or internal source of financing. Hence, the amount of capital raised by the firm should neither greater nor lesser than the investment.
- Locking up of capital: The amount invested requires long gestation for recovery. The longer gestation is connected with future horizon in getting back the investment. The future is uncertain unlike the present. If the longer is the gestation in the future leads to greater risk involved.
- Effect on the profitability of the enterprise: The profitability of the enterprise is mainly depending on the proper planning of the capital expenditure.
- Nature of Irreversibility: The improper/ unwise capital expenditure decision cannot be immediately corrected as soon as it was found. Once it is invested is invested which cannot be reversed. The poor investment decision will require the firm either to keep it as an idle in the form of investment or to unnecessarily meet out fixed commitment charge of the capital which excessively rose more than the requirement.

5.1.4 IMPORTANCE OF CAPITAL BUDGETING

Capital expenditure decisions occupy a very important place in corporate finance for the following reasons:

- Once the decision is taken, it has far-reaching consequences which extend over a considerably long period, and influences the risk complexion of the firm.
- These decisions involve huge amounts of money.
- These decisions are irreversible once taken.
- These decisions are among the most difficult to make when the company is faced with various potentially viable investment opportunities.

While capital expenditure decisions are extremely important, managers find it extremely difficult to analyze the pros and cons and arrive at a decision because:

- Measuring costs and benefits of an investment proposal is difficult because all costs and benefits cannot be expressed in tangible terms.
- The benefits of capital expenditure are expected to occur for a number of years in the future which is highly uncertain.
- Because the costs and benefits occur at different points of time, investment proposal, for a proper analysis of the viability of the all these have to be brought to a common time-frame. Hence time value of money becomes very relevant here.

5.1.5 TYPES OF CAPITAL INVESTMENT DECISIONS

The capital budgeting decisions are taken by both newly incorporated firms as well as by existing firms. The new firms may be required to take decision in respect of selection of a plant to be installed. The existing firm may be required to take decisions to meet the requirement of new environment or to face the challenges of competition. These decisions may be classified into:

- Replacement and Modernization decisions: The replacement and modernization decisions aim at to improve operating efficiency and to reduce cost. Generally all types of plant and machinery require replacement either because of the economic life of the plant or machinery is over or because it has become

technologically outdated. The former decision is known as replacement decisions and later one is known as modernization decisions. Both replacement and modernization decisions are called cost reduction decisions.

- Expansion decisions: Existing successful firms may experience growth in demand of their product line. If such firms experience shortage or delay in the delivery of their products due to inadequate production facilities, they may consider proposal to add capacity to existing product line.
- Diversification decisions: These decisions require evaluation of proposals to diversify into new product lines, new markets etc. for reducing the risk of failure by dealing in different products or by operating in several markets.

5.1.6 PRINCIPLES OF CAPITAL BUDGETING

Important principles of capital budgeting (Measurement of costs i.e. outflows and inflows i.e. benefits are as follows:

- All costs and benefits must be measured in terms of cash flows. This implies that all non-cash expenses like depreciation which are considered for the purpose of determining the profit after tax must be added back to arrive at the net cash flows for our purpose.
- Since the net cash flows relevant from the firm's point of view are what that accrue to the firm after paying tax, cash flows for the purpose of appraisal must be defined in post-tax terms.
- The cash flows must be measured in incremental terms, i.e. increments in the present levels of costs and benefits that arise due to adoption of the project.
- Usually the net cash flows are defined from the point of view of the suppliers of long term funds (i.e., suppliers of equity capital plus long-term loans).
- Sunk costs (Past costs) must be ignored money has already been sunk in it and no additional or incremental money is spent on it for the purposes of this project.
- Opportunity costs associated with the utilization of the resources available with the firm must be considered.
- Interest on long-term loans must not be included for determining the net cash flows.

5.1.7 CAPITAL RATIONING

Generally, firms determine maximum amount that can be invested in capital projects, during a given period of time and select a combination of investment proposals that will be within the specific limits providing maximum profitability and rank them in descending order according to their rate of return, such a situation is of capital rationing. A firm should accept all investment projects with positive NPV, with an objective to maximize the wealth of shareholders. However, there may be resource constraints due to which a firm may have to select from among various projects.

Thus, situation of capital rationing arise specially when there are internal or external constraints on procurement of necessary funds to invest in all investment proposals with positive NPVs. Capital rationing important because of external factors such as imperfections in capital markets which may lead to non-availability of market information, investor attitude etc. Internal capital rationing arises mainly due to restrictions imposed by management like not to raise additional debt or laying down a specified minimum rate of return on each project.

There are various ways of resorting to capital rationing e.g. a firm may effect capital rationing through budgets. It may also put up a ceiling when it has been financing investment proposals only by way of retained earnings. Since the amount of capital expenditure in that situation cannot exceed the amount of retained earnings, it is said to be an example of capital rationing.

In capital rationing selection of project involves two steps, viz. identification of the projects which can be accepted by using the technique of project appraisal, and selection of combination of projects. In capital rationing it may also be more desirable to accept several small investment proposals than a few large investment proposals so that there may be full utilization of budgeted amount. This may result in accepting relatively less profitable investment proposals if full utilization of budget is a primary consideration.

5.1.8 SUMMARY

Capital expenditure decisions, also referred as capital budgeting or investment decisions may be defined as the company's decisions to invest its current funds most efficiently in long-term assets in anticipation of an expected flow of benefits over a series of years. The capital budgeting decisions are crucial business decisions because they involve the investment of substantial amount of funds. It is therefore necessary for a firm to make such decisions after a thoughtful consideration so as to result in the profitable use of its scarce resources. The capital investment decisions involve an assessment of future events, which in fact is difficult to predict. Further it is quite difficult to estimate in quantitative terms all the benefits or the costs relating to a particular investment decision. Most of the investment decisions are irreversible. Once they are taken, the firm may not be in a position to reverse them back. This is because, as it is difficult to find a buyer for the second-hand capital items. The capital budgeting decision has its effect over a long period of time. These decisions not only affect the future benefits and costs of the firm but also influence the rate and direction of growth of the firm.

5.1.9 SELF CHECK QUESTIONS

(D) Objective Questions

Choose the appropriate answer

1. Capital budgeting means a study of (I) Budgeting of long-term capital (II) Budgeting of short-term capital (III) Budgeting of long-term assets (IV) Budgeting of short-term assets
2. The utility of discounting principle is (I) to determine the future value of the cash inflow (II) to convert the present value of Initial outlay into future value (III) to determine the present value of the future cash inflows for comparison with the Initial outlay (IV) None of the above
3. To derive the cash flows, depreciation is added in profit after tax because: (I) it is a recurring charge (II) it is considered as tax shield (III) it is a non recurring charge (IV) none of the above
4. Discounted cash flows method is considered superior than the traditional methods because: (I) It is simple to understand (II) It is accurate (III) it considers time value of money (IV) It is easy to calculate

(E) Class Assignment

1. What do you mean by capital budgeting? Discuss its need and importance.
2. Write detailed note on (I) Types of capital budgeting decisions (II) Principles of capital budgeting

(F) Home Assignment

1. Explain the underlying principles of project appraisal.
2. Write a detailed nota on Capital Rationing
3. "Success of the firm relies upon the rational capital budgeting decisions"- Discuss.

5.1.10 SUGGESTED READINGS

23. Kulkarni PV & Kulkarni SP: Corporate Finance
24. Chandra Prasanna: Financial Management
25. Kulshreshtra R S: Financial Management of Corporation
26. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
27. Khan MY & Jain PK: Financial Management

LESSON 14
TIME VALUE OF MONEY

Structure of the Lesson:

Objectives of the Lesson:

- To familiarize students with the concept of Time Value of Money.
- To develop the understanding of Future value and Present value of money

5.2.1 INTRODUCTION

It has been pointed out that the finance manager is required to make decisions on investment, financing and dividend keeping in view the objectives of the company. The investment / financing decisions such as purchase of assets or procurement of funds affect the cash flows in different time period. For example, if a fixed asset is purchased it will require cash outflow immediately and cash inflows will generate over a period of time. Similarly, in the case of borrowing from bank cash is received immediately and it is required to be repaid over a period of time. These cash inflows and cash outflow at different point of time are not comparable because a rupee received now is not comparable with a rupee to be received in future. However, they can be made comparable by introducing the interest factor. In the theory of finance the' interest factor is one of the crucial and exclusive concept. This concept is known as time value of money.

5.2.2 MEANING OF TIME VALUE OF MONEY

The time value of money has gained importance in studying the viability of the project by comparing the initial investment with the anticipated future benefits. If the anticipated future benefits are more than the initial investment then the investment is found to be viable in generating the economic benefits.

5.2.3 NEED OF TIME VALUE OF MONEY

The main reasons of time preference of money are

- There is uncertainty about the receipt of money in future.
- Most of the persons and the companies has a preference for present consumption then future consumption either because of urgency of need e.g. consumer durable or otherwise.
- Most of the persons and the companies have a preference for present money because of availabilities of opportunities of investment for earning additional cash flows.

- In an inflationary period, a rupee today has greater purchasing power than rupee in the future. So, they want to find the real rate of return with reference to money employment in productive assets.

5.2.4 COMPONENTS OF TIME VALUE OF MONEY

Time value of money normally contains three different components viz.:

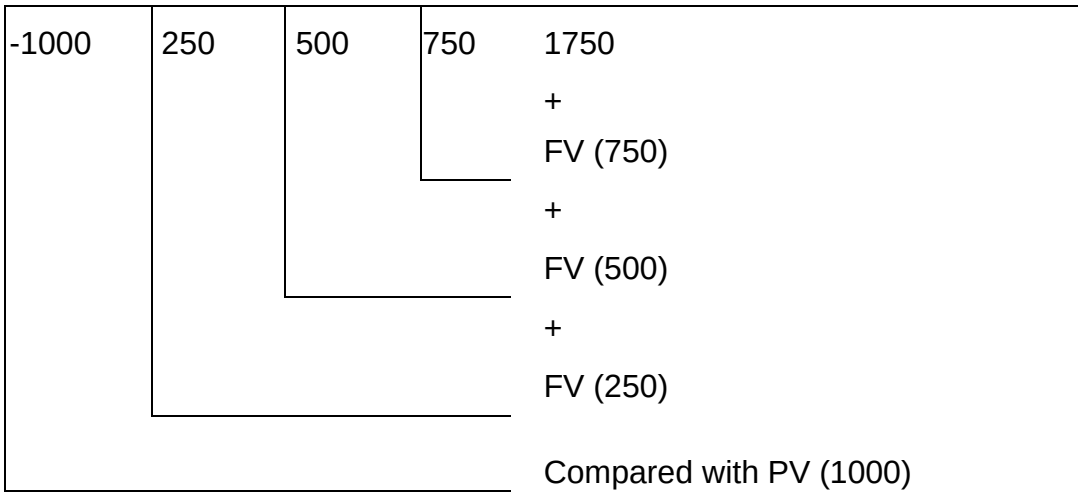
- Real rate of return: It is the return which considers original return on investment but it never considers the inflation rate.
- Expected / anticipated rate of return: It is the positive rate of return normally expected by every one on the amount of investment from the future.
- Risk premium: This is an allowance normally given to the investors to compensate the uncertainty.

5.2.5 CLASSIFICATIONS OF THE TIME VALUE OF MONEY

The concept of time value of money can be classified into two major categories, Future value of money (i.e. compounding), and Present value of money (i.e. discounting)

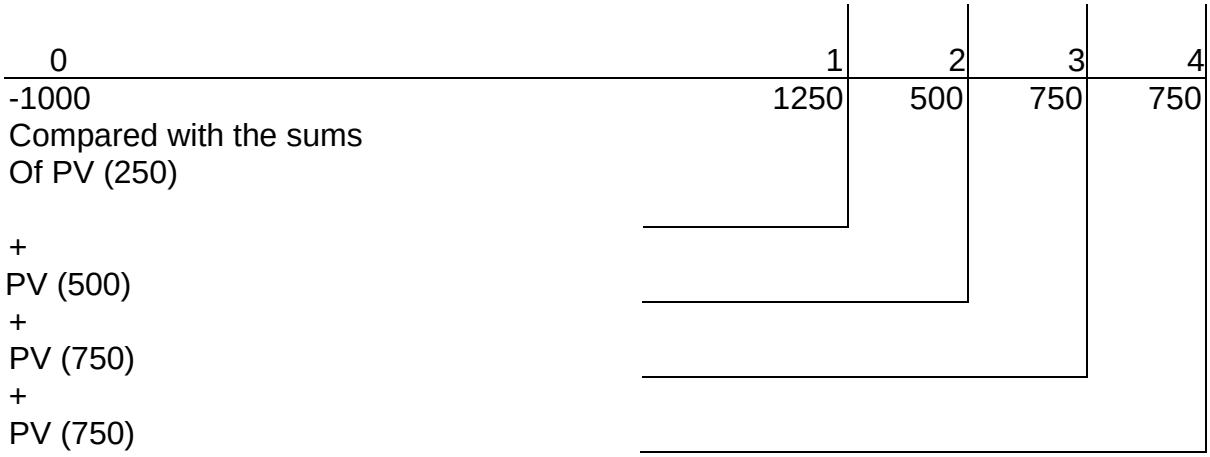
1. FUTURE VALUE OF MONEY (PROCESS OF COMPOUNDING)

Under the method of compounding, we find the Future Values (FV) of all the cash flows at the end of the time horizon at a particular rate of interest. Therefore, in this case we will be comparing the future value of the initial outflow of Rs. 1, 000 as at the end of year 4 with the sum of the future values of the yearly cash inflows at the end of year 4. This process can be schematically represented as follows:



2. PRESENT VALUE OF MONEY (PROCESS OF DISCOUNTING)

Under the method of discounting, we reckon the time value of money now i.e. at time 0 on the time line. So, we will be comparing the initial outflow with the sum of the Present Values (PV) of the future inflows at a given rate of interest. This process can be diagrammatically represented as follows:



5.2.6 FUTURE VALUE OF MONEY

This can be explained in following categories.

(A) FUTURE VALUE OF A SINGLE FLOW (LUMP SUM):

A generalized procedure for calculating the future value of a single cash flow compounded annually is as follows:

$$FV_n = PV (I + k)^n$$

Where, FV_n = Future value of the initial flow n years hence

PV = Initial cash flow

k = Annual rate of interest

n = Life of investment

In the above formula, the expression $(I + k)^n$ represents the future value of an initial investment of Re.1 (one rupee invested today) at the end of n years at a rate of interest k referred to as Future Value Interest Factor (FVIF, hereafter). To simplify calculations, this expression has been evaluated for various combinations of k and n and these values are presented in Table at the end of this book. To calculate the future value of

any investment for a given value of 'k' and 'n', the corresponding value of $(I + k)^n$ from the table has to be multiplied with the initial investment.

Example: The fixed deposit scheme of a bank offers 11% interest rate for 3 years. Find the maturity value of FD after 3 years.

$$FV_n = PV (I + k)^n$$

$$FV_n = 10,000 (I + 11)^3 = 10,000 (1.368) = Rs.13, 680$$

(B) DOUBLING PERIOD:

A frequently asked question of investor is, "How long will it take for the amount invested to be doubled for a given rate of interest". This question can be answered by a rule known as 'Rule of 72 '.

Under this approach, the period within which the amount will be doubled is obtained by the following formula:

Doubling period = 72 / Rate of interest.

Example: If the rate of interest is 8 percent, find the doubling period.

Solution: Doubling period is 72 / 8 = 9 years

However, an accurate way of calculating doubling period is the 'Rule of 69'. According to which, doubling period can be calculated by the following formula:

Doubling period = 0.35 + 69 / Interest rate

Example: Find the period in which a certain amount of investment will be doubled, the rates of interest offered by two schemes are 6% and 12%.

Solution: Rate of interest: 6%

Doubling period = 0.35 + 69/6 = 0.35 + 11.5 = 11.85 years.

Rate of interest: 12%

Doubling period = 0.35 + 69/12 = 0.35 + 5.75 = 6.1 years.

(C) FUTURE VALUE OF SINGLE FLOW:
(IN CASE OF INCREASED FREQUENCY OF COMPOUNDING)

Increased frequency of compounding can be understood with the help of an example. For example, a bank offers 10% interest per annum compounded semi-annually then it means interest is paid every six months. In this case $FV\ n$ can be calculated by the following formula:

$$\mathrm{FV\ n} = \mathrm{PV}\left(1 + \frac{\mathrm{k}}{\mathrm{m}}\right)^{\mathrm{m \times n}}$$

Where: $\mathrm{FV\ n}$ = Future value after n years
PV = Cash flow today
k = Nominal interest rate per annum
m = Number of times compounding is done during a year
n = Number of years for which compounding is done.

Example: An investor deposited Rs. 1,000 in a scheme for 2 years. The scheme offers 10% interest with quarterly compounding. Find the maturity value of the scheme.

Solution: By formula:

$$\mathrm{FV\ n} = 1{,}000\left(1 + \frac{0.10}{4}\right)^{4 \times 2} = 1{,}000\ (1.025)^{8} = \text{Rs. } 1{,}218$$

(D) EFFECTIVE VS NOMINAL RATE OF INTEREST:

The future value in schemes in which compounding is done more then once in a year, exceeds the accumulation under the annual compounding schemes. This means that if rate of interest is 10% (called as “Nominal Rate of Interest”), amount in annual compounding will grow at 10% per annum, while under the scheme where compounding is done half yearly or quarterly basis, the principal amount will grow at the rate more than 10% per annum. This rate is called as “Effective Rate of Interest”. The general relationship between the effective and nominal rates of

$$\mathrm{r} = \left(1 + \frac{\mathrm{k}}{\mathrm{m}}\right)^{\mathrm{m}} - 1$$

Where: r = Effective rate of interest

k = Nominal rate of interest

m = Frequency of compounding per year

Example:

Find out the effective rate of interest, if the nominal rate of interest is 12% and interest is quarterly compounded.

Solution:

$$r = \left(1 + \frac{0.12}{4}\right)^4 - 1$$

$$= (1 + 0.03)^4 - 1$$

$$= 1.126 - 1 = 0.126 = 12.6\% \text{ p.a.}$$

Thus, here nominal rate of interest is 12% and effective rate of interest is 12.6% p.a.

(E) FUTURE VALUE OF ANNUITY:

Annuity is the term used to describe a series of periodic flows of equal amounts. These flows can be either receipts or payments. For example, if an investor is required to pay Rs.2, 000 per annum as life insurance premium for the next 20 years, he can classify this stream of payments as an annuity. If the equal amounts of cash flow occur at the at the end of each period over the specified time horizon, then this stream of cash flows is defined as a regular annuity or deferred annuity. When cash flows occur at the beginning of each period the annuity is known as an annuity due. The future value of a regular annuity for a period of n years at given rate of interest 'k' can be calculated by the formula:

$$FVA_n = A(I + k)^{n-1} + A(I + k)^{n-2} + A(I + k)^{n-3} + \ldots\ldots$$

This can be written as:

$$FVA\,n = A\left(\frac{(1+k)^n - 1}{k}\right)$$

Where: FVA_n = Accumulation at the end of n years

A = Amount deposited at the end of every year for n years

k = Rate of interest

n = Time period

Example: A person is required to pay four equal annual payments of Rs. 5,000 each in his deposit account that pays 8% interest per year. Find out the future value of annuity at the end of 4 years.

Solution:

$$\text{FVA n} = 5{,}000\left(\frac{(1+0.08)^4 - 1}{0.08}\right)$$

= Rs.5, 000 × 4.507

= Rs.22, 535

5.2.7 PRESENT VALUE OF MONEY

This can be explained in two categories.

(A) PRESENT VALUE OF A SINGLE AMOUNT:

Using the discounting approach, we can determine the present value of a future cash flow or a stream of future cash flows. This is the commonly followed approach for evaluating the financial viability of projects. The present value of future cash flows can be calculated by the following formula:

$$\text{PV} = \left(\frac{\text{FV n}}{(1+\text{k})^{\text{n}}}\right)$$

Example: A company offers a bond for a period of 5 years having redemption value of Rs. 1,611. Prevailing rate of interest is 10%. Find the present value the bond.

Solution:

$$\text{PV} = \left(\frac{1{,}611}{(1+0.10)^5}\right)$$

= Rs. 1, 000

Example: A bank is planning to offers deposit certificates under reinvestment plan having redemption value of Rs. 100 and interest @12%. Interest on deposit earns, is as it is reinvested at quarterly rests. What should be the issue price of these certificates?

Solution: Since interest is reinvested at quarterly rests, we will have to calculate effective rate of interest.

$$r = \left(1 + \frac{0.12}{4}\right)^4 - 1$$

= 0.1255 i.e. 12.55%

The issue price of the cash certificate should be:

$$PV = \left(\frac{100}{(1+0.12)^1}\right) = Rs.88.55$$

(B) PRESENT VALUE OF AN ANNUITY:

The present value of an annuity receivable at the end of every year for a period of n years at a given rate of interest is equal to:

$$PVA\ n = \left(\frac{A}{(1+k)^1}\right) + \left(\frac{A}{(1+k)^2}\right) + \left(\frac{A}{(1+k)^3}\right) + \cdots + \left(\frac{A}{(1+k)^n}\right) +$$

This equation in reduced form can be written as:

$$PVA\ n = A\left(\frac{(1+k)^n - 1}{k(1+k)^n}\right)$$

It must be noted that these values can be used in any present value problem only if the following conditions are satisfied: (a) the cash flows are equal; and (b) the cash flows occur at the end of every year.

Example: Bank of Baroda is offering a deposit scheme in which a lump sum deposit of certain sum of amount will give a monthly return of Rs. 100 (principle and interest). The interest is compounded at quarterly intervals. Calculate the offer price (present value) of the deposit scheme.

Solution: The amount of initial deposit to receive a monthly installment of Rs.100 for 12 months can be calculated as below:

Firstly, we will have to calculate annual effective rate of interest.

$$r = \left(1 + \frac{0.12}{4}\right)^4 - 1$$

= 0.1255 i.e. 12.55%

After calculating the effective rate of interest per annum, the effective rate of interest per month has to be calculated which is nothing but:

$$(1.1255)^{\frac{1}{12}} - 1$$

$$= 0.0099$$

The initial deposit can now be calculated as below:

$$\text{PVA n} = 100\left(\frac{(1+0.0099)^{12}-1}{0.0099(1+0.0099)^{12}}\right)$$

$$= 100 \times \frac{0.1255}{0.01114} = 100 \times 11.26 = \text{Rs. } 1{,}126$$

5.2.8 SUMMARY

Inflation, uncertainty and opportunity cost, whatever may be the reason, money has time value. A rupee today is certainly more valuable than a rupee a year hence, the difference usually represented by interest. Therefore, two cash flows occurring at different points of time are not comparable. Compounding and discounting are two methods used to take care of time value of money. Discounting involves determining the present values of all the future cash flows so that they are comparable to the initial outflow. The rate of interest usually employed is the cost of capital of the firm.

i. SELF CHECK QUESTIONS

(A) Class Assignment

3. What is the relevance of time value of money in financial decision making?
4. Write detailed note on (I) Doubling period (II) Present value of Annuity

(B) Home Assignment

4. Explain the discounting and compounding techniques of time value of money.
5. Write short notes on (I) Effective vs. Nominal rate of interest (II) Future value of Annuity

(C) Numerical Questions

1. If a person deposits Rs. 1,000 today in a bank which pays 10% interest, find out the future value of money after 3 years.
2. What is the present value of an annuity of Rs.2, 000 at 10%?
3. What is the present value of a 4 year annuity of Rs, 10,000 discounted at 10%?
4. If you expect to receive Rs.1, 000 annually for 3 years, each receipt is expected to be at the end of the years. What would be the present value of future cash inflows @ discount rate of 10%?
5. How much does a deposit of Rs. 5,000 grow to at the end of 6 years. If the nominal rate of interest is 12% and frequency is 4 times a year?
6. The amount of the investment is Rs. 1, 000. The annual rate of interest is 11%. When this amount of Rs 1,000 will get doubled?
7. Suppose you deposit Rs.1, 000 annually in a bank for 5 years and your deposits earn a compound interest rate of 10%. What will be value of the deposit at the end of 5 years? Assuming the each deposit occurs at the end of the year, the future value of this annuity?
8. A bank offers 8% nominal rate of interest with quarterly compounding. What is the effective rate of interest?

5.2.10 SUGGESTED READINGS

1. Kulkarni PV & Kulkarni SP: Corporate Finance
2. Chandra Prasanna: Financial Management
3. Kulshreshtra R S: Financial Management of Corporation
4. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
5. Khan MY & Jain PK: Financial Management

LESSON 15
APPRAISAL OF CAPITAL BUDGETING PROPOSALS

Structure of the Lesson:

Objectives of the Lesson:

- To explain various methods of capital budgeting.
- To illustrate the procedure used for evaluating investment proposal.

5.3.1 INTRODUCTION

The capital budgeting is the decision of long term investments, which mainly focuses the acquisition or improvement on fixed assets. The importance of the capital budgeting is only due to the benefits of the long term assets stretched to many number of years in the future. It is a tool of analysis which mainly focuses on the quality of earning pattern of the fixed assets. The capital budgeting decision is a decision of capital expenditure or long term investment or long term commitment of funds on the fixed assets.

5.3.2 METHODS OF CAPITAL BUDGETING / PROJECT APPRAISAL

The capital budgeting methods are the instruments of appraising the project proposal to study the quality of the investments / fixed assets. The feasibility of investments proposals is studied by the firms from different angles, such as:

- Based on the number of years taken for getting back the investment:

- Pay Back Period Method

- Based on the profits accrued out of the investment:
  - Accounting Rate of Return / Average Rate of Return Method
- Based on the timing of benefits / Present value of future benefits of the investment:
  - Discounted cash flow methods
- Based on the comparison in between the cash outlay and receipts discounted with the help of minimum rate of return:
  - Net present value method
- Based on the identification of maximum rate of return, in between the initial cash outlay and discounted expected future receipts:
  - Internal Rate of return method
- Based on the ration in between the present values of cash inflows and outflows:
  - Present value index method

The methods of project appraisal are classified in two categories:

(A) Traditional methods:
- Pay Back Period method
- Accounting Rate of Return

(B) Discounted cash flow methods:
- Present Value / Net Present Value method
- Internal Rate of Return method
- Present value index Profitability Index method
- Discounted pay back period method

5.3.3 PAY BACK PERIOD METHOD

Pay back period is the period taken by the firm to get back the investment. The pay back period is nothing but number of years/months/ days required by the firm to get back its investment invested in the project.

To find out the pay back period, the following are two important covenants required:

- Initial outlay / Initial investment / Original investment
- Cash inflows. Here, cash flow means Profit tax but before depreciation.

The pay back period is calculated by way of establishing the relationship between the volume of investment and the annual earnings. While calculating the pay back period, the nature of annual earnings should be identified. The nature of the annual earnings can be classified into two categories:

- Cash flows are equivalent or constant
- Cash flows are not equivalent or constant

(A) If the cash flows are equivalent, the pay back period is calculated by the following formula.

$$\text{Pay Back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

(B) If the cash flows are not equivalent, calculation of pay back period requires two steps.

- Calculation of cumulative cash flows, and
- Application of following formula.

$$\text{Pay Back Period} = \text{Completed years} + \frac{\text{Unrecovered Investment}}{\text{Cash Inflow in next year}} \text{ X } 12$$

CRITERION FOR SELECTION: If two or more projects are given for appraisal, considered to be mutually exclusive to each other for selection, the pay back period of the projects should tabulated in accordance with the ascending order. The project, whose pay back period is minimum, will be selected over the other projects given for scrutiny. The reason behind is that the project which has lesser pay back period got faster recovery of the initial investment through cash inflows/Net income. Thus, lesser the pay back period is better for acceptance of the project.

Besides pay back period, we can further calculate following two measures for judging the performance of the project.

1. POST PAY BACK PERIOD: It is calculated by the following formula:

Post Pay Back Period = Life - Pay Back Period

CRITERION FOR SELECTION: The project whose Post Pay Back Period is higher is selected.

2. POST PAY BACK PERIOD PROFIT: It is calculated in two ways.

If cash flows are even then,

Post Pay Back Period Profit = (Post Pay Back Period × Annual cash floes) + Scrap

If cash flows are even then,

Post Pay Back Period Profit = Cash flow in Post Pay Back Period + Scrap

CRITERION FOR SELECTION: The project whose Post Pay Back Period Profit is higher is selected.

MERITS OF THE METHOD:

- It is a simple method to calculate and understand.
- It gives due consideration to liquidity dimension.
- It is a method in terms of years for easier appraisal.
- Pay back period can be compared with Break-even point, the point at which the costs are fully recovered but profits are yet to commence.
- It can be used to measure uncertainty. A shorter the pay back period means that the uncertainty with respect to the project is resolved faster.

DEMERITS OF THE METHOD:

- It is a method rigid.
- It has completely discarded the principle of time value of money.
- It has not given any due weightage to cash inflows after the pay back period.
- It has sidelined the profitability of the project.

Example 1: The cost of the project is Rs. 1, 00,000. The annual earnings of the project are Rs.20, 000. Calculate the pay back period.

Solution:

$$\text{Pay Back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

$$\text{Pay Back Period} = \frac{100000}{20000} = 5 \text{ Years}$$

It is obviously understood that, Rs. 20, 000 of annual earnings (cash inflows) requires 5 years time period to get back the original volume of the investment.

Example 2: The management of Prontos Ltd Wants to buy a new machine whose cost is expected to be covered in five years. You advise the management whether the machine should be purchased or not on the basis of following information:

Cost of the machine	Rs. 5, 00,000
Annual Sales revenue generated by the new machine	Rs. 6, 00,000
Variable Cost	50% of Sales
Annual Fixed cost other than depreciation	Rs. 25,000

Life of the machine is 10 years. Depreciation is provided on straight line method. Taxation is to be charged at 50% of profit.

Solution:

PROFITABILITY STASTEMENT

Particulars	Amount (Rs.)	Amount (Rs.)
Annual Sales revenue		6,00,000
Less: Variable cost (@50% of Sales)	3,00,000	
Fixed Cost	25,000	
Depreciation	50,000	3,75,000
Profit before tax		2,25,000
Less: Tax @ 50%		1,12,500
Profit after tax		1,12,500
Add: Depreciation		50,000
Annual Cash Inflow		1,62,500

$$\text{Pay Back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

$$\text{Pay Back Period} = \frac{5,00,000}{1,62,500}$$

$$= 3.08 \text{ Years}$$

Example 3: The cost of a project having life of 5 years is Rs. 1, 00,000. The annual earnings of the project during life of project are Rs. 40000, 30000, 20000, 20000, 20000. Calculate Pay Back Period.

Solution:

CALCULATION OF CUMULATIVE CASH FLOWS

Year	Annual Net Incomes (Rs.)	Cumulative cash flows (Rs.)
1.	40,000	40,000
2.	30,000	70,000
3.	20,000	90,000
4.	20,000	1,10,000
5.	20,000	1,30,000

3 years full time required to recover the major portion of investment Rs.90, 000. However, the uncollected / unrecovered portion of the investment is Rs, 1 0,000. This Rs. 10,000 is collected from the 4th year's net income / cash inflows of the enterprise. During the 4th year the total earnings amounts to Rs.20, 000 but the amount required to recover is only Rs. 10,000. For earning Rs.20, 000 one full year is required but the amount required to collect it back is amounted Rs. 10,000.

Hence, by formula:

$$\text{Pay Back Period} = 4 + \frac{10000}{20000} \text{ X } 12 = 3 \text{ Years and 6 months}$$

Example 4:

Following are the details of three projects:

	A	B	C
Cost (Rs.)	1, 00,000	1, 40,000	7,000
Life (years)	10	12	14
Estimated scrap (Rs.)	10,000	20,000	700
Annual Profit after tax	10,000	12,000	550

Select the best one using:

(I) Pay-back period, and

(II) Post pay-back profit as the decision criteria.

Solution:

STATEMENT SHOWING ANNUAL CASH INFLOWS

	A	B	C
Annual Profit after tax	10,000	12,000	550
Add: Depreciation	9,000	10,000	450
Annual Cash Inflow	19,000	22,000	1,000

Depreciation is calculated by applying formula:

$$\text{Depreciation} = \frac{\text{Cost} - \text{Scrap}}{\text{Life of Asset}}$$

(I) Now, by formula: Pay Back Period

$$\text{Pay Back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

$$\text{Pay Back Period (A)} = \frac{1,00,000}{19,000} = 5.3 \text{ Years}$$

$$\text{Pay Back Period (B)} = \frac{1,40,000}{22,000} = 6.4 \text{ Years}$$

$$\text{Pay Back Period (C)} = \frac{7,000}{1,000} = 7 \text{ Years}$$

According to pay-back period method project A is selected.

(II) Post Pay-Back Profit:

Post Pay-Back Profit = Total Cash Inflows in life – Initial Investment

Or

Post Pay-Back Profit = (Total Cash Inflows + Scrap) – Initial Investment

Post Pay-Back Profit (A) = [(19,000 × 10) + 10,000] – 1, 00,000

= 2, 00,000 – 1, 00,000

= 1, 00,000

Post Pay-Back Profit (B) = [(22,000 × 12) + 20,000] – 1, 40,000

= 2, 84,000 – 1, 40,000

= 1, 44,000

Post Pay-Back Profit (C) = [(1,000 × 14) + 700] – 7,000

= 14,700 - 7,000

= 7,700

According to post pay-back Profit method Project B is selected.

5.3.4 ACCOUNTING OR AVERAGE RATE OF RETURN

Accounting or average rate of return means the average annual yield on the project. Under this method, the profits are extracted from the book of accounts to denominate the rate of return. The profits which are extracted are nothing but after depreciation and taxation. It means here we do not consider cash inflows. The Accounting Rate of Return or Average Rate of Return can be calculated by following formulae:

$$\text{Average Rate of Return} = \frac{\text{Average Annual Cash Inflow} - \text{Depreciation}}{\text{Average Investment}} \text{ X } 100$$

Or

$$\text{Average Rate of Return} = \frac{\text{Average Annual Income after and Tax}}{\text{Average Investment}} \mathbf{X\ 100}$$

Here Average Income after tax means Average Annual Profit after depreciation, interest

and tax.

$$\text{Average Annual Cash Inflow} = \frac{\text{Total Cash Inflow in life}}{\text{Life of Asset}}$$

$$\text{Average Investment} = \frac{\text{Opening Investment} - \text{Closing Investment}}{2}$$

$$\text{Average Investment} = \frac{\text{Initial Investment}}{2}$$

CRITERION FOR SELECTION: Highest rate of return of the project only is given weightage.

MERITS OF THE METHOD:

- It is simple method to compute the rate of return.
- Average return is calculated from the total earnings of the enterprise throughout the life of the firm.
- The entire rate of return is being computed on the basis of the available accounting data.

DEMERITS OF THE METHOD:

- Under this method, the rate of return is calculated on the basis of profits extracted from the books but not on the basis of cash inflows.
- The time value of money is not considered.
- It does not consider the life period of the project.
- The accounting profits are different from one concept to another which leads to greater confusion in determining the accounting rate of return of the projects.

Example 5: Calculate the average rate of return for Projects X and Y from the following.

Particulars	Project X	Project Y
Investments	40,000	60,000
Expected Life.	4 years	5 years

Projected net income (after interest, depreciation and taxes)

Year	Project X (Rs.)	Project Y (Rs.)
1.	4,000	6,000
2.	3,000	6,000
3.	3,000	4,000
4.	2,000	2,000
5.	--	2,000
Total	12,000	20,000

If the required rate of return is 10% which project should be undertaken?

Solution:

$$\text{Average Rate of Return} = \frac{\text{Average Annual Income after and Tax}}{\text{Average Investment}} \text{ X } 100$$

Here: Average Income after tax = Total Income during the life of project ÷ Life

So, Average Income after tax (X) = 12000 ÷ 4 = Rs. 3000

Average Income after tax (Y) = 20000 ÷ 5 = Rs. 4000

$$\text{Average Rate of Return (X)} = \frac{3000}{40000} \text{ X } 100 = 7.5\%$$

$$\text{Average Rate of Return (Y)} = \frac{4000}{60000} \text{ X } 100 = 6.67\%$$

Example 6**:** Escorts Ltd., is considering the purchase of a machines. The related details in respect of two alternative projects are as follows:

	X	Y
(Rs.)	1, 00,000	1, 00,000
ears)	3	3
al Cash flow: Year 1	80,000	20,000
Year 2	60,000	70,000
Year 3	40,000	1,00,000

Estimate the profitability of two machines under:

(i) Pay-back Method, and

(ii) Return on Investment Method.

Solution:

Given: Initial Investment = 1, 00,000

Year	Machine X		Machine Y	
	Annual Cash Inflow	Cumulative Cash Inflows	Annual Cash Inflow	Cumulative Cash Inflows

1	80,000	80,000	20,000	20,000
2	60,000	1, 40,000	70,000	90,000
3	40,000	1, 80,000	1, 00,000	1, 90,000

(I) Pay Back Method

$$\text{Pay Back Period} = \text{Completed years} + \frac{\text{Unrecovered Investment}}{\text{Cash Inflow in next year}} \text{ X } 12$$

$$\text{Pay Back Period (X)} = 1 + \frac{20,000}{60,000} \text{ X } 12 = 1 \text{ Year } 4 \text{ months}$$

$$\text{Pay Back Period (Y)} = 2 + \frac{10,000}{1,00,000} \text{ X } 12 = 2 \text{ Year } 1.2 \text{ months}$$

(II) Return on Investment Method

$$\text{ROI} = \frac{\text{Average Annual Cash Inflow} - \text{Depreciation}}{\text{Average Investment}} \text{ X } 100$$

(III) Where:

$$\text{Average Annual Cash Inflow} = \frac{\text{Total Cash Inflow in life}}{\text{Life of Asset}}$$

$$\text{Average Investment} = \frac{\text{Initial Investment}}{2}$$

Machine X:

$$\text{AACF} = \frac{1,80,000}{3} = 60,000$$

$$\text{ROI} = \frac{60,000 - 33,333}{1,00,000/2} \text{ X } 100 = 53.33\%$$

Machine Y:

$$\text{AACF} = \frac{1,90,000}{3} = 63,333$$

$$\text{ROI} = \frac{63,333 - 33,333}{1,00,000/2} \text{ X } 100 = 60\%$$

5.3.5 DISCOUNTED CASH FLOWS METHOD

The discounted cash flows method is the only method which nullifies the drawbacks associated with the traditional methods viz. Pay back period method and Accounting rate of return method. The underlying principle of the method is time value of money. The value of 1 Re which is going to be received on today bears greater value than that

of 1 Re expected to receive on one month or one year later. The main reason is that "Earlier the benefits better the principle". It means that the benefits whatever are going to be accrued during the present will be immediately reinvested again to maximize the earnings, so that the earlier benefits are weighed greater than the later benefits. The later benefits are expected to receive only during the future which is connected with the future i.e., future is uncertain. It means that there is greater uncertainty involved in the receipt of the benefits connected with the future.

Now the question is why the time value of money concept is inserted on the capital budgeting tools? The main reason is that the capital expenditure is expected to extend the benefits for many numbers of years. The 1 Re is expected to receive one year later cannot be treated at par with the 1 Re of 2 years later. This is the only method considers the profitability as well as the timing of benefits. This method gives an appropriate qualitative consideration to the benefits of various time periods.

The time value of money principle is used for an analysis to study about the quality of the investments in receiving the future benefits. There are three approaches to analyze the project proposals by using time value of money. These are (I) Net present value method, (II) Present value index method, and (III) Internal rate of return method**.**

MERITS OF DCF METHOD:

- It is only the best method incorporates the timing of benefits - time value of money. It considers the economic life of the project.
- It is a best method for both even and uneven cash inflows.

DEMERITS OF DCF METHODS:

- It involves with tedious method of computation
- It is very difficult to locate or identify the exact discounting factor
- It never performs functions of discounting to the tune of accounting concepts.

5.3.6 PRESENT VALUE METHOD

Under this method, the initial outlay or initial investment available in terms of present value is compared with the present value of future earnings of the enterprise. The reason to find out the present value of future earnings is that the comparison in between

inflows and outflows should be meaningful as well as effective. The present value of the initial outlay cannot be converted into the future value for comparison. Even otherwise the conversion takes place, the comparison cannot be meaningful. To be meaningful comparison, the future earnings are converted into the present value which is known as discounting process through the discount rate. The rate at which the future earnings are discounted is known as required rate of return.

CRITERION FOR SELECTION:

If the present value of future cash inflows are greater than the present value of initial investment; the proposal has to be accepted.

Initial Outlay < Present value of Benefits ⇒ Positive NPV ⇒ Project should be accepted.

If the present value of future cash inflows are lesser than the present value of initial investment; the proposal has to be rejected.

Initial Outlay > Present value of Benefits ⇒ Negative NPV ⇒ Project should be rejected.

If the present value of future cash inflows are equal to the present value of initial investment; the proposal can be accepted. Here NPV will be Zero. This is termed as Cut off Point.

Initial Outlay = Present value of Benefits ⇒ Zero NPV ⇒ Project can be accepted.

5.3.7 NET PRESENT VALUE (NPV) METHOD

The net present value is equal to the present value of future cash flows and any immediate cash outflow. In the case of a project, the immediate cash flow will be investment (cash outflow) and the net present value will be therefore equal to the present value of future cash inflows minus the initial investment or present value of cash outflows.

NPV = Present Value of Future Cash Inflows - Present Value of Cash Outflows

CRITERION FOR SELECTION: Project with high NPV is preferred.

MERITS OF NPV METHOD

- NPV method takes into account the time value of money. The NPVs of different projects therefore can be compared.
- The whole stream of cash flows is considered.
- The net present value can be seen as the addition to the wealth of share holders.

DEMERITS OF NPV METHOD

- Difficult to calculate.
- Forecasting of cash flows and discount rate is not easy, so it may lack accuracy.

5.3.8 PRESENT VALUE INDEX / PROFITABILITY INDEX METHOD

The major lacuna of the Net present value method is that it is unable to rank the projects one after the other, only due to the volume of the investment involved. To rank the projects meaningfully, the present value index method is used. Present value index is also termed as Profitability Index. The present value index of the investment can be calculated with the help of following formula:

$$\text{Profitability Index} = \frac{\text{Present value of cash Inflows}}{\text{Present value of cash Outflows}} \times 100$$

CRITERION FOR SELECTION: If the present value index is greater than1 or 100 (in case of percentage), accept the proposal; otherwise it should be rejected.

Present value index > 1 ⇒ accept the investment proposal.

Present value index< 1 ⇒ reject the investment proposal.

MERITS OF PROFITABILITY INDEX METHOD

- This method also uses the concept of time value of money.
- It is a better project evaluation technique than NPV.

LIMITATIONS OF PROFITABILITY INDEX METHOD

- Profitability index fails as a guide in resolving capital where projects are indivisible. Once a single large project with high NPV is selected, possibility of accepting several small projects which together may have higher NPV than the single project is excluded.

Example 7: Cash inflows and cash outflows of a project are given below:

Year	Cash Outflows	Cash Inflows
0	15000	---
1	3,000	2,000
2		3,000
3		6,000

4		8,000
5		3,000

The salvage value at the end of the 5th year is Rs. 4,000. The cost of capital is 10%. Is the investment desirable? Discuss it according to Net Present Value and Profitability Index Method.

The present value of Re. 1 for five years at 10% discount factor is 0.909, 0.826, 0.751, and 0.620 respectively.

Solution:

CALCULATION OF PRESENT VALUE OF CASH OUTFLOWS

Year	Cash Outflows (Rs.)	P.V. Factor at 10%	Present Value (Rs.)
0	15,000	1.00	15,000
1	3,000	0.909	2,727
Total Present Value of Cash Outflows			17,727

CALCULATION OF PRESENT VALUE OF CASH INFLOWS

Year	Cash Inflows	P.V. Factor at 10%	Present Value
1	2,000	.909	1,818
2	3,000	.826	2,478
3	6,000	.751	4,506
4	8,000	.683	5,464
5	3,000	.621	1,863
5 (Salvage)	4,000	.621	2,484
Total Present Value of Cash Inflows			18,613

NPV = Present Value of Cash Inflows – Present Value of Cash Outflows.

NPV = 18,613 - 17,727 = 886

$$\text{Profitability Index} = \frac{\text{Present value of cash Inflows}}{\text{Present value of cash Outflows}} \times 100$$

$$\text{Profitability Index} = \frac{18,613}{17,727} \times 100 = 10.50\%$$

Investment is desirable according to both the methods.

5.3.9 INTERNAL RATE OF RETURN METHOD

The internal rate of return is that rate of interest at which the net present value of a project is equal to zero, or in other words, it is the rate which equates the present value of the cash inflows to the present value of the cash outflows. While under NPV method

the rate of discounting is known (the firm's cost of capital), under IRR this rate which makes NPV zero has to be found out.

CRITERION FOR SELECTION The use of IRR, as a criterion to accept capital investment decision involves a comparison of IRR with the required rate of return known as cut off rate. The project should the accepted if IRR is greater than cut-off rate. If IRR is equal to cut off rate the firm is indifferent. If IRR is less than cut off rate the project is rejected.

MERITS OF INTERNAL RATE OF RETURN METHOD*:*

- This method makes use of the concept of time value of money.
- All the cash flows in the project are considered.
- IRR is easier to use as direct understanding of desirability of the project.
- IRR technique is helpful in achieving the objective of minimization of shareholders wealth.

DEMERITS OF INTERNAL RATE OF RETURN METHOD*:*

- The calculation process is tedious.
- There can be multiple IRRs, the interpretation of which is difficult.
- The IRR approach creates a peculiar situation if we compare two projects with different inflow/outflow patterns.
- It is assumed that under this method all the future cash inflows of a proposal are reinvested at a rate equal to the IRR. It is ridiculous to imagine that the same firm has an ability to reinvest the cash flows at a rate equal to IRR.
- If mutually exclusive projects are considered as investment options which have considerably different cash outlays. A project with a larger fund commitment but lower IRR

contributes more in terms of absolute NPV and increases the shareholders' wealth. In such situation decisions based only on IRR criterion may not be correct.

Example 8:

An Automobile Company is considering an investment proposal to install new machine which will cost Rs. 50,000. The facility has a life expectancy of 5 years and no salvage value. The company's tax rate is 55% and no investment allowance is allowed. The firm uses straight line depreciation. The estimated cash flows before tax (CFBT) from the proposed investment proposal are as follows:

Year	Cash Inflows Before Tax
1	10,000
2	11,000
3	14,000
4	15,000
5	25,000

Compute (I) Pay back period (II) Average rate of return (III) Net present value at 10% discount rate (IV) Profitability index at 10% discount rate (V) Internal rate of return.

Solution:

CALCULATION AT AVERAGE INCOME AFTER DEPRECIATION & TAX

Year	1	2	3	4	5	Total	Average
Income before tax & Dep.	10,000	11,000	14,000	15,000	25,000	75,000	15,000
Less: Dep.	10,000	10,000	10,000	10,000	10,000	50,000	10,000
Income before tax & Dep.	-	1,000	4,000	5,000	15,000	25,000	5,000
Less: Tax 55%	-	550	2,200	2,750	8,250	13,750	2,750
Net Income after tax & Dep.	-	450	1,800	2,250	6750	11,250	2,250
Add: Dep.	10,000	10,000	10,000	10,000	10,000	50,000	10,000
Annual Cash Inflows	10,000	10,450	11,800	12,250	16,750	61250	12,250
Cumulative Cash Inflows	10,000	20,450	32,250	44,500	61,250	-	-

(I) Pay Back Period

$$\text{Pay Back Period} = \text{Completed years} + \frac{\text{Unrecovered Investment}}{\text{Cash Inflow in next year}} \text{ X } 12$$

$$\text{Pay Back Period} = 4 + \frac{5500}{16750} \text{ X } 12 = 4 \text{ Years } 4 \text{ Months approx.}$$

(II) Average Rate of Return

$$\text{ROI} = \frac{\text{Average Annual Cash Inflow} - \text{Depreciation}}{\text{Average Investment}} \text{ X } 100$$

Or

$$\text{ROI} = \frac{\text{Average Annual Income After Tax}}{\text{Average Investment}} \text{ X } 100$$

$$\text{ROI} = \frac{2250}{25000} \text{ X } 100 = 9\%$$

(III) Net Present Value:

Year	Cash Inflow	Present Value at 10% Dis. Rate	Present Value of Cash Inflows
1	10,000	0.909	9090.00
2	10,450	0.826	8631.70
3	11,800	0.751	8861.80
4	12,250	0.683	8366.75
5	16,750	0.621	10,401.75
Total			45,352.00

Net Present Value = Present Value of Cash Inflows – Initial Investment

= 45,352 – 50,000

= (-) 4,648

(IV) Profitability Index:

$$\text{Profitability Index} = \frac{\text{Present value of cash Inflows}}{\text{Present value of cash Outflows}} \times 100$$

$$\text{Profitability Index} = \frac{45352}{50000} \times 100 = 90.70\%$$

(V) Internal Rate of Return:

Above calculation shows that Present Value of cash inflows at 10% rate of return is Rs. 45,352 which is less than initial investment of Rs. 50,000. Hence next rate of return (lower rate) i.e.8% will be tried. The PVCF at 8% rate of return are:

Year	Cash Inflow	Present Value at 10% Dis. Rate	Present Value of Cash Inflows
1	10,000	0.926	9,260
2	10,450	0.857	8,956
3	11,800	0.794	9,369
4	12,250	0.735	9,004
5	16,750	0.681	11,407

Total			47,996

Since present value at 8% rate of return i.e. Rs. 47,996 is less than initial investment of Rs. 50,000, again lower rate (6%) will be tried. The PVCF at 8% rate of return are:

Year	Cash Inflow	Present Value at 10% Dis. Rate	Present Value of Cash Inflows
1	10,000	0.943	9,430
2	10,450	0.890	9,301
3	11,800	0.840	9,912
4	12,250	0.792	9,702
5	16,750	0.747	12,512
Total			50,857

Present value of Cash Inflows (Rs. 50,857) is more than the cost of project. Therefore, the internal rate of return will be more than 6% Actual Rate of return will be calculated with the help of following formula:

$$\text{IRR} = r_l + \frac{(\text{PVCF}_l - \text{PVCF}_{co})}{(\text{PVCF}_h - \text{PVCF}_l)} \times \Delta r$$

Where: IRR = Internal Rate of Return

R_l = Lower Rate of Return

$PVCF_l$ = PV of Cash Inflows at Lower Rate of Return

$PVCF_{co}$ = PV of Cash Outflows

$PVCF_h$ = PV of Cash Inflows at Higher Rate of Return

Δ r = difference in Higher and Lower Rate of Return

$$\text{IRR} = 6 + \frac{(50857 - 50000)}{(50857 - 47996)} \times (8 - 6)$$

$$\text{IRR} = 6 + \frac{857}{2861} \times 2 = 6.59\%$$

Example 9: An operation which is presently done entirely by manual methods has a labor cost of Rs. 46,000 a year. It is proposed to install a machine to do the job, which involves an investment of Rs. 80,000 and an annual operating cost of Rs. 10,000. Assume the machine can be written off in 5 years on straight line depreciation basis for tax purposes. Salvage value at the end of its economic life is zero. The tax rate is 55%. Analyze the economic implications of the proposal by the internal rate of return method.

Solution:

CALCULATION OF NET CASH INFLOWS

Particulars	Amount (Rs.)
Savings in Labor Cost	46,000
Less: Additional Operating Cost	10,000
	36,000
Less: Depreciation (80,000 ÷ 5)	16,000
	20,000
Less: Tax @ 55%	11,000
Net Savings After Tax	9,000
Add: Depreciation	16,000
Annual Cash Inflow	25,000

$$\text{PV Factor} = \frac{\text{Initial Investment}}{\text{Average Annual Cash Flow}}$$

$$\text{PV Factor} = \frac{80000}{25000} = 3.2$$

In Present Value Factor of Annuity table this PV Factor 3.2 falls between 16% and 18% in the line of 5th year. Present Value Factor of Annuity at 16% and 18% are 3.274 and 3.127 respectively. Hence PVCF at 16% and 18% will be:

PV at 16% = 3.274 × 25,000 = 81,850

PV at 18% = 3.127 × 25,000 = 78,175

Actual Internal Rate of Return will be:

$$\text{IRR} = r_l + \frac{(\text{PVCF}_l - \text{PVCF}_{co})}{(\text{PVCF}_h - \text{PVCF}_l)} \times \Delta r$$

$$\text{IRR} = 16 + \frac{(81850 - 80000)}{(81850 - 78175)} \times (18 - 16)$$

$$\text{IRR} = 16 + \frac{1850}{3675} \times 2 = 17\%$$

5.3.10 SUMMARY

Capital expenditure decisions occupy an important place in corporate finance. The huge sums involved and the irreversible and long-term nature of the decisions make them very important. Investment decisions begin with identification of the investment opportunities, followed by preliminary screening, feasibility study, implementation and performance review.

Various appraisal criteria are used for evaluating the financial viability of a project. While the first two are simple additive measures, the latter methods make use of discounted cash flow techniques. The payback period of an investment enables the manager to calculate the number of years required to recover the initial capital outlay in the project. Although this is a rough measure of liquidity of the project, it makes a poor job of measuring profitability as it ignores cash flows occurring after the payback period and the time value of money using a crudely determined subjective cut-off point to appraise a project. The accounting rate of return is the ratio of average profit after tax to average book value of the investment.

A kin to payback period, the criterion ignores the time value of money. Although it considers the returns over the entire life of the project and therefore is a measure of profitability, it depends largely on accounting income rather than cash flows. In addition, any company using ARR needs to determine a yardstick to compare the returns of any project. In most cases, the yardsticks themselves suffer from subjectivity. The net present value is the present value of the project's net cash flows less the initial outflow. A project is acceptable only when its NPV is greater than or equal to zero. The internal rate of return is the discount rate that equates the present value of the net cash flows of the project with the initial cash outlay. Any project is acceptable if the internal rate of return is greater than or equal to the required rate of return, usually the company's cost of capital.

5.3.11 CHECK YOURSELF

(A) Class Assignment

1. Explain traditional methods of capital budgeting. Also give advantages and disadvantages of the traditional approach.
2. What are various methods of project appraisal? Explain Pay back period method with suitable examples.

(B) Home Assignment

1. Explain the procedure, merits and demerits of accounting rate of return method of project appraisal.
2. Explain the meaning and the steps involved in calculation of IRR. Also give decision criterion of under IRR approach.
3. What do you mean by discounted cash flows? Explain the merits and demerits of discounted cash flow methods.

(C) Numerical Questions

1. A project costs Rs.2, 00,000 and yields and an annual cash inflow of Rs 40,000 for 7 years. Calculate pay back period
2. Calculate the pay back period for a project which requires a cash outlay of Rs.20, 000 and generates cash inflows of Rs 4,000, Rs.8,000, Rs. 6,000 and Rs. 4,000 in the first, second, third, and fourth year respectively
3. A project costs Rs. 10, 00,000 and yields annually a profit of Rs. 1, 60,000 after depreciation at 12% per annum but before tax 50%. Calculate pay back period.
4. BLS Scales Ltd. is considering the purchase of a new leather cutting machine to replace an existing machine that has a book value of Rs.3, 000 and can be sold for Rs. l, 500. The estimated salvage value of the old machine in four years would be zero, and it is depreciated on a straight-line basis. The new machine will reduce costs (before tax) by Rs.7, 000 per year, i.e., Rs.7, 000 cash savings over the old machine. The new machine has a four year life, costs Rs.14, 000 and can be sold for an expected amount of Rs.2, 000 at the end of the fourth year. Assuming straight-line depreciation, and a 40% tax rate, defines the cash flows associated with the investment.
5. An investment of Rs. 1, 36,000 yields the cash inflows (profits before depreciation but after tax) of Rs. 30000, 40000, 60000, 30000, and Rs. 20000 during its life of 5 years. Determine internal rate of return.

6. The following details relate to the two machines X and Y

	Machine X	Machine Y
Cost	56,125	56,125
Estimated life (in years)	5	5
Estimated salvage value	3,000	3,000
Annual income after tax and depreciation		
Year I	3,375	11,375
Year II	5,375	9,375
Year III	7,375	7,375
Year IV	9,375	5,375
Year V	11,375	3,375

Overhauling charges at the end of the third year Rs. 25000 incase of machine X. Depreciation has been charged at straight-line method. Using present value method, suggest which machine should be chosen.

7. The following particulars relate to two projects :

	Project I	Project II
Cost (in Rs.)	90,000	1,00,000
Estimated savings (in Rs.)	15,000	20,000
Economic life (in years)	10	8

Compute time-adjusted rate of return and state which of the two projects is better.

8. The following particulars are available in respect on three investment proposals :

	Proposal X	Proposal Y	Proposal Z
Cost (in Rs.)	50,000	60,000	70,000
Annual savings (in Rs.)	15,000	16,000	17,000
Estimated scrap (in Rs.)	8,000	10,000	15,000
Life (in Years)	12	10	9

Taking interest rate to be 9% rank these proposals by using Net Present value method and profitability index method.

9. A choice is to be made between two competing projects, which require an equal investment of Rs. 50000 each and are expected to generate net cashes as under. The cost of capital is 10%. Using discounted cash flow method, recommend which project is to be preferred.

End of year	Project – A	Project – B
1	25,000	10,000
2	15,000	12,000

3	10,000	18,000
4	Nil	25,000
5	12,000	8,000
6	6,000	4,000

10. A Company has to select one of the following two projects. Using the internal rate of return method, suggest which project is preferable.

Particulars		Project A	Project B
Cost		11,000	10,000
Cash inflow :	Year 1	6,000	1,000
	Year 2	2,000	1,000
	Year 3	1,000	2,000
	Year 4	5,000	10,000

5.3.12 SUGGESTED READINGS

1. Kulkarni PV & Kulkarni SP: Corporate Finance
2. Chandra Prasanna: Financial Management
3. Kulshreshtra R S: Financial Management of Corporation
4. Kuchhal SC: Financial management- An Analytical & Conceptual Approach
5. Khan MY & Jain PK: Financial Management