PG BA S2-03 (DSC)

TWO YEAR MASTER'S DEGREE COURSE

(CBCS in Accordance with NEP 2020)

SEMESTER-II

FINANCIAL MANAGEMENT

MANAGEMENT

Maniram Dewan School of Management
KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Subject Expert

Prof. H C Gautam, Retd. Professor, Department of Commerce, Gauhati University
Dr. Mukulesh Baruah, Former Director and ONGC Chair Professor, AIM
Dr. Banajit Changkakati, Department of Business Administration, Gauhati University

Course Co-ordinator : Dr. Gobinda Deka, Associate Prof., KKHSOU

SLM Preparation Team

UNITS	CONTRIBUTORS
1, 2 & 6	Nandini Borah, Royal University
3, 4, 5, 7	Prof. Rinalini Pathak Kakati, Gauhati University
8	Rashmi Rekha Mahanta, Guwahati Commerce College
9 to 14	Sweta Jalan, NERIM

Editorial Team

Unit 1, 2 & 6	:	Prof. Chandana Goswami, Tezpur University
Unit 3, 4, 5 & 7	:	Dr. Arup Roy, Tezpur University

Structure, Format & Graphics : Dr. Chayanika Senapati, KKHSOU
Dr. Smritishikha Choudhury, KKHSOU

January, 2024

Copyright © Krishna Kanta Handiqui State Open University

This Self Learning Material (SLM) of the Krishna Kanta Handiqui State Open University is made available under a Creative Commons Attribution-Non Commercial-Share Alike 4.0 License (international): http://creativecommons.org/licenses/by-nc-sa/4.0/

Printed and published by Registrar on behalf of the Krishna Kanta Handiqui State Open University

Headquarter : Patgaon, Rani Gate, Guwahati - 781 017
City Campus: Resham Nagar, Khanapara, Guwahati - 781 022; www.kkhsou.in

MASTER IN BUSINESS ADMINISTRATION
FINANCIAL MANAGEMENT

DETAILED SYLLABUS

Page No.

UNIT 1 : Introduction to Financial Management 7-22

Financial Management : An Overview, Importance of Financial Management, Approaches to Finance Function, Aims of Finance Function, Scope of Financial Management, Goals of Financial Management, Finance Decisions and Interfaces between Finance and Other Business Functions.

UNIT 2 : Financial Planning 23-34

Meaning of Financial Planning,Objectives of Financial Planning, Benefits of Financial Planning, Steps in Financial Planning, Factors affecting Financial Planning, Estimation of financial requirements of a firm and Capitalization.

UNIT 3 : Sources of Funds 35-52

Concept of Equity shares : its Advantages and disadvantages of equity capital, Right shares, Bonus shares, Retained earnings or internal accruals, Preference shares, Debentures, Types of Debentures, Term loan, Venture Capital Finance and Features of Capital Finance.

UNIT 4 : Cost of Capital 53-71

Concept and Definition of Cost of Capital, Significance of Cost of Capital, Classification of Cost of Capital, Determination of Specific Cost and Weighted Average Cost of Capital.

UNIT 5 : Leverage 72-85

Meaning of leverage, Financial Leverage: its measures, degree and Impact of Financial Leverage on Investor's Rate of Return, Operating Leverage, Degrees of Operating Leverage and Combined effect of Financial and Operating Leverage.

UNIT 6 : Capital Structure 86-109

Meaning and Definition of Capital Structure, Features of an Ideal Capital Structure, Factors Affecting Capital Structure, Theories of Capital Structure.

UNIT 7 : Capital Budgeting Decision 110-134

Meaning of Capital Budgeting, Importance of Capital Budgeting, Types of Investments Decisions, Investment Criteria and Capital Rationing.

UNIT 8 : Risk Analysis in Capital Budgeting 135-144

Meaning and Types of Risk, Methods suggested for accounting for risk in Capital Budgeting, Risk Adjusted Discount Rate, Certainty Equivalent Approach, Probability Distribution Approach, Sensitivity Analysis, Decision Tree Approach and Simulation Analysis.

UNIT 9 : Capital Rationing 145-155

Meaning and concept of Capital Rationing, Problem and Assumption of Capital Rationing, Objective of Capital Rationing, Types and features of Capital Rationing, Steps involved in Capital Rationing and Methods of Capital Rationing

UNIT 10 : Working Capital Management 156-170

Concepts and importance of working capital, Determinants of working capital, Operating cycle, Approaches for working capital management and Estimation of working capital

UNIT 11 : Cash Management 171-185

Meaning and concept of Cash and Cash management, Importance and objectives of Cash Management, Models for Determining Optimal Cash Needs, Cash Planning, Cash forecasting and Budgeting, Methods of Accelerating Cash Inflows and Methods of Slowing Cash Outflows and Cash Budget

UNIT 12 : Inventory Management 186-198

Meaning and characteristics of of Inventory, Objective of inventory Management, Role of Inventory in working Capital, Purpose of Inventory, Cost associated with inventories, Inventory Management Techniques and Importance of Inventory Management Techniques.

UNIT 13 : Receivables Management 199-209

Meaning of Receivables, Factors influencing the Size of Receivables, Objective of Receivables Management, Cost Associated with Maintaining Receivables, Credit policy Variables, Evaluation of credit policy and Forecasting the receivable.

UNIT 14 : Dividend Decision 210-227

Meaning and concept of dividend Decision,Determinants and types of dividend policy, Traditional Approach, Dividend Relevance Model, Miller and Modigliani Model, Stability of dividends, Forms of Dividends and stock Split

COURSE INTRODUCTION

In corporate World, finance plays an important role. This course will help you in understanding the basic concepts of corporate finance, role of finance manager, as well as the goals of financial management. In this course you will came to know about the objectives, steps in preparing a financial plan, forecasting. The companies raise the required funds by various means like issue of shares, debentures etc. and in certain cases they use their reserves. At the same time they prepare various financial statements like, Profit and Loss Accout, Balance Sheet, Cash Flow etc. This course will focus on two important aspects of financial management i.e. preparation and analysis of financial statements. The topics like capital structure, cost of capital financial leverage, capital budgeting, working capital management, receivable management etc. have also been included in this course which will help you in understanding the importance of financial management in business. After completing this course, which consists of 14 units, you will be able to get a fair idea on the different concepts in Financial Management.

This course comprises the following fourteen units :

The first unit introduces us to the Introduction to Financial Management.

The second unit gives us a broad overview of the Financial Planning.

The third unit gives us an idea on Concept of Equity shares.

The fourth unit will help us in understanding the concept of Cost of Capital.

The fifth unit gives us a broad overview of Meaning of leverage, Financial Leverage etc.

The sixth unit will help us in understanding the concept of Capital Structure.

The seventh unit gives us a broad overview of the Capital Budgeting,

The eight unit introduces us to the concept of Risk management.

The ninth unit gives us a broad overview of the Meaning and concept of Capital Rationing.

The tenth unit gives us an idea on Concepts and importance of working capital.

The eleventh unit will help us in understanding the Meaning and concept of Cash and Cash management.

The twelth unit gives us a broad overview of Meaning and characteristics of of Inventory.

The thirteenth unit will help us in understanding the concept of Meaning of Receivables.

The fourteenth unit gives us a broad overview of the Meaning and concept of dividend Decision.

Each unit of these blocks includes some along-side boxes to help you know some of the difficult, unseen terms. Some “EXERCISES” have been included to help you apply your own thoughts. You may find some boxes marked with: “LET US KNOW”. These boxes will provide you with some additional interesting and relevant information. Again, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study. It will be helpful for you if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit. you in making your learning more active and efficient. And, at the end of each section, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study.

UNIT- 1 : INTRODUCTION TO FINANCIAL MANAGEMENT

UNIT STRUCTURE

1.1 Learning Objectives

1.2 Introduction

1.3 Financial Management : An Overview

- 1.3.1 Importance of Financial Management
- 1.3.2 Approaches to Finance Function
- 1.3.3 Aims of Finance Function
- 1.3.4 Scope of Financial Management

1.4 Goals of Financial Management

1.5 Finance Decisions

1.6 Interfaces between Finance and Other Business Functions

1.7 Let us Sum Up

1.8 Further Reading

1.9 Answers to Check Your Progress

1.10 Model Questions

1.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the significance and meaning of financial management
- describe the objectives of financial management
- explain the finance decisions
- discuss the relationship of finance with other business functions.

1.2 INTRODUCTION

Every organization, whether big, medium or small, requires finance not only for survival but also for growth and development. Due to this indispensability of finance, it is rightly called as the lifeblood of an

organization. Without finance no organization can possibly accomplish its objectives. This vital component of organization must be managed properly so as to result in maximum gains to the company. This chapter will throw light on the basic concepts of finance and will provide a comprehensive understanding of the finance function in business organizations.

1.3 FINANCIAL MANAGEMENT : AN OVERVIEW

Before discussing in details the functions, aims and scope of financial management, it is important to understand the meaning of 'finance'. In business, 'finance' literally means finance of business activities. However, such a simplistic view of finance does not embrace its entire scope. In the following section we will consider certain definitions of finance. Different authors have interpreted the term 'finance' differently.

According to F. W. Paish, finance may be defined as the provision of money at the time it is wanted.

According to Hampton, the term finance can be defined as the management of the flows of money through an organization.

Howard and Upton define finance as that administrative area or a set of administrative functions in an organization which relates with the arrange-ment of cash and credit so that the organization may have the means to carry out the objectives as satisfactorily as possible.

According to Guthmann and Dougall, business finance can be broadly defined as the activity concerned with the planning, raising, controlling and administering te funds used in the business.

In the words of Prather and Wert, business finance deals primarily with raising, administering, and disbursing funds by privately owned business units operating in non-financial fields of industry.

So, to sum up in simple words, finance may be defined as the management of money in organizations. Financial management refers to the part of the management activity which is concerned with the planning and controlling of firm's financial resources.

LET US KNOW

Business finance is also known as corporation finance as the present day business activities are predominantly carried on by company (corporation) form of organization. Corporation finance deals with the company form of organization.

1.3.1 Importance of Financial Management

As already mentioned in the preceding section, finance is the life blood of a business organization. No business can be started without an adequate amount of finance. Even an existing organization may require further finance for making improvements or for diversification and expansion. Thus, the importance of finance cannot be over-emphasized and finance function has become very important for academicians as well as practicing managers.



The importance of business finance has increased over time and has become utmost important in the present day because the beginning of corporate enterprises has resulted into :

i. Increase in the size and influence of business organizations,

ii. Wide distribution of corporate ownership,

iii. Separation of ownership and management.

The above mentioned factors have further increased the importance of business finance. Knowledge of financial management is important not just for the practicing managers in the corporate world but it is equally important for investors, bankers, creditors, and other such entities which are directly or indirectly involved in the financial affairs of an organization.

Financial management is indispensable for any organization as it helps in :

i. Financial planning and successful running of a firm;

ii. Acquiring funds as and when required at a minimum possible cost;

iii. Proper usage and allocation of funds;

iv. Taking sound financial decisions;

v. Improving profitability through financial controls;

vi. Increasing the wealth of the organizations and investors;

vii. Promoting and mobilizing corporate savings.

1.3.2 Approaches to Finance Function

There are two approaches to understanding the finance functions namely :

1. The Traditional Approach
2. The Modern Approach

1. The Traditional Approach : The traditional approach of finance refers to the evolutionary stages of finance during the time period between 1920s and 1930s. During this time the term 'corporation finance' was used to describe financial management. The scope of finance, according to traditional finance, was confined to only procurement of funds needed by business on most suitable terms. The utilization of funds was considered beyond the scope of the finance function. The scope of finance function thus, revolved around the study of rapidly growing capital market institutions, instruments, and practices involved in raising of external funds.

2. The Modern Approach : the modern approach to finance views the function in the broader sense. Modern approach to finance includes both raising of funds as well as their effective utilization under the purview of finance. Thus, finance function not only means merely raising funds for the organization but also, their proper utilization in the organization is also considered. Thus, according to this approach, finance function covers financial planning, raising of funds, allocation of funds, financial control, etc.

1.3.3 Aims of Finance Function

The finance function has the following aims :

1. Acquiring sufficient funds : The main aim of finance function is to assess the financial needs of an organization and finding out suitable sources for raising them.

2. **Proper utilization of funds :** The finance function also looks after the effective utilization of funds so acquired. The funds should be used in such a way that maximum benefit is derived from them.
3. **Increasing profitability :** The finance function aims at increasing the profitability of the concern. Finance function achieves this aim through proper planning and control of finances of the firm.
4. **Maximizing the firm's value :** Finance function also aims at maximizing the value of the firm by optimising the cost of funds, maintaining profitability and earnings.

1.3.4 Scope of Financial Management

The finance function aims to arrange sufficient funds for meeting both the short-term and the long-term needs of the organization. It also aims to maximize the value of the firm. Therefore, a finance manager must concentrate on the following areas of finance function:

1. **Estimating financial requirements :** The first and foremost task of a financial manager is to estimate the short-term and long-term financial requirements of the organization. These estimates must be based on sound financial principles so that there is neither shortage nor excess of funds.
2. **Deciding capital structure :** Capital structure refers to the composition or make-up of a firm's capitalization. After determining the quantum of funds required by the organization, the next step is to determine the proper composition and proportion of different securities for raising funds. A decision about the capital structure should be linked to the cost of raising funds. Capital structure decision is an important decision which influences both the short-term and long-term financial planning of an enterprise.
3. **Selecting a source of finance :** After deciding the composition of a firm's capitalization or the capital structure, the next task is to select appropriate sources of finance. Various sources from which finance may be raised include: share capital, debentures,

commercial banks, etc. The need, purpose, and cost involved in procuring finance may be the factors influencing the selection of a suitable source of financing.

4. **Selecting a pattern of investment :** After the funds have been procured then a decision about the investment pattern is to be taken. Selection of investment pattern is related to the use of funds. The decision making techniques such as capital budgeting, opportunity cost analysis, etc. may be used in making decisions about capital expenditures. A balance should be struck even in these principles.

5. **Proper cash management :** One of the major tasks of the finance manager is cash management. Finance manager must assess the various cash needs at different times and make necessary arrangements for arranging cash. Cash may be required for purchase, payments, wages, etc. Cash management should be such that neither there is a shortage of it nor it is idle at any point of time. A proper idea of the sources of cash inflow and outflows will help the finance manager to properly manage cash.

6. **Implementing financial controls :** An efficient financial management system requires the use of various control devices. Financial control devices generally used are return on investment, budgetary control, ratio analysis, audits, etc. Use of these various control techniques helps the finance manager in evaluating the financial performance of the firm and take corrective measures whenever required.

7. **Proper use of surpluses :** The utilization of profits or surpluses is an important activity in financial management. Prudent use of surpluses is essential for expansion and diversification of the organization and also helps in protecting the interests of shareholders. A balance should be struck in using the surpluses for paying off dividends to the shareholders and ploughing the profits back for diversification and expansion

plans of the organization. The finance manager must consider factors such as market value of the firm, expected earnings, trend of earnings of the organization, etc. to make judicious use of surpluses.



CHECK YOUR PROGRESS

Q.1. State any four importance of financial management.

.....

.....

Q.2. Name the two approaches to finance function.

.....

.....

Q.3. Write three scope of financial management.

.....

.....

1.4 GOALS OF FINANCIAL MANAGEMENT

Financial management, as an organizational function, started with the procurement of funds for the organization. However, financial management today is concerned with the utilization of business funds in such a way that the firm's value or earnings are maximized. The ultimate objective of business is to maximize the owner's economic welfare. This objective can be achieved by Profit Maximization and Wealth Maximization. Both are discussed in details below :

1. **Profit Maximization :** Profit earning is the main objective of any business organization. A business being an economic institution must earn profit to cover its costs and provide funds for growth. Profits serve as a measure of efficiency of a business enterprise and no business can survive without earning profit. Profits help a business to face risks in the business environment. Thus, profit maximization is considered as the main objective of business.

Following are the arguments in favour of profit maximization as the objective of financial management :

a. Since profit earning is the aim of business, therefore profit maximization should be the objective of financial management function.

b. Profitability is a measure of the efficiency of a business enterprise, and therefore profit maximization should be the obvious goal of financial management.

c. Organizations should aim at profitability as economic and business conditions do not remain same at all the times and therefore requires some past earnings to tide through the unfavourable conditions.

d. Profits also serve as the main source of finance for the growth of a business.

e. Profitability is essential for fulfilling social goals also. A firm by pursuing the objective of profit maximization also maximizes socio-economic welfare.

Although profit maximization has been adopted as a goal by several organizations, however, profit maximization has been criticized on several grounds. It is argued that a firm pursuing the objective of profit maximization starts exploiting workers as well as consumers. This leads to immoral and corrupt practices on the part of the organization. It is also argued that profit maximization should be the objective in the situation of perfect competition. However, since markets are characterized by imperfect competition, therefore, profit maximization cannot be a legitimate objective. Moreover, there are many stakeholders of a business and all the stakeholders may not be concerned with profit. Thus, profit maximization as an objective of financial management has been considered inadequate.

2. **Wealth Maximization :** Wealth maximization is the appropriate objective of an enterprise. According to financial theory, wealth maximization is the single substitute for a stockholder's utility. When the firm maximizes the stockholder's wealth, the individual stockholder can use this wealth to maximize his individual utility. Thus, by maximizing stockholder's wealth the firm is maximizing stockholder's utility.

A stockholder's current wealth in the firm is the product of the number of shares owned, multiplied with the current stock price per share :

Stockholder's current wealth in a firm = (Number of shares owned) × (Current stock price per share)

Symbolically, $W_0 = NP_0$

This means that higher the stock price per share, the greater will be the stockholder's wealth. Therefore, rather than seeking maximization of profits a firm should aim at maximizing its current stock price. This objective will help in increasing the value of shares in the market. The price of the share serves as a performance index of the firm.

The following arguments are advanced in favour of wealth maximization as the goal of financial management :

a. It serves the interests of owners as well as other stakeholders in the firm.

b. It is consistent with the objective of owner's economic welfare.

c. The objective of wealth maximization implies long-run survival and growth of the firm.

d. It takes into consideration the risk factor and the time value of money as the current present value of any particular course of action is measured.

e. The effect of dividend policy on market price of shares is also considered as the decisions are taken to increase the market value of the shares.

f. The goal of wealth maximization leads towards maximizing stockholder's utility or value maximization of equity shareholders through increase in stock price per share.

The wealth maximization objective of financial management however, has been criticized on several grounds :

a. The idea of wealth maximization is prescriptive idea.

b. The objective of wealth maximization is not necessarily socially desirable.

c. There is some controversy as to whether the objective is to maximize the stockholders wealth or the wealth of the firm which includes other financial claimholders such as debenture holders, preferred stockholders, etc.



CHECK YOUR PROGRESS

Q.4. State whether each of the following statements is *true* or *false* :

a) Traditional approach confines finance function only to raising of funds.

b) Finance function is one of the most important functions of business management.

c) Investment decisions are outside the purview of financial management.

d) Cash management is an important task of the finance manager.

e) Corporation finance is a wider term than business finance.

f) Corporation finance emerged as a distinct field of study in the beginning of eighteenth century.

g) The main aim of finance function is to maximize the profits

h) Modern approach of finance includes both raising of funds as well as their effective utilization.

i) A firm by focusing on maximizing the current stock price increases the wealth of the shareholders.

j) Finance function of a business is closely related to its other functions.

Q.5. Select the most appropriate answer :

a) The appropriate objective of an enterprise is :

i. Maximization of sales

ii. Maximization of owner's wealth

iii. Maximization of profits

b) The job of a finance manager is confined to :

i. Raising of funds

ii. Management of cash

iii. Raising of funds and their effective utilization

d. The objective of wealth maximization may also face difficulties when ownership and management are separated as is the case in most of the large corporate form of organizations.

1.5 FINANCE DECISIONS

The function of financial management, as mentioned the sections above, Is not just limited to procuring funds. The scope of financial management, over the years, has widened to cover allocation of funds, capital structure, dividend policy, financial control etc. Financial management has thus, emerged as an important activity in organizations and some of the functional areas covered in financial management are as follows :

1. **Determining Financial Needs :** The basic objective of financial management is to meet the financial needs of the organization. Determining the financial needs of the organization is one of the basic functions of financial management. Funds are needed to meet manufacturing expenses, distribution expenses, and other fixed and working capital needs. It is important to correctly determine the financial needs of the organization as a wrong assessment may jeopardize the survival of a concern.

2. **Selecting the Sources of Funds :** The next major function of financial management is to select the sources of funds. There are various sources of finance. A firm may resort to issue of shares and debentures or may approach financial institutions to meet their financial needs. The finance manager must made a judicious decision in selecting the sources of funds for the firm as it will influence the profitability of the concern.

3. **Financial Analysis and Interpretation :** Financial analysis and interpretation has become an important area of financial management as correct analysis and interpretation forms the basis of financial decision making. The analysis of financial information helps the financial manager in assessing the profitability position, liquidity position, and short-term and long-term financial position of the organization.

4. **Capital Budgeting :** Capital budgeting is the process of making investment decisions in capital expenditures. The crux of capital budgeting is the allocation of available resources to various proposals. The crucial factor which influences the capital budgeting

decision is the profitability of the prospective investment. For making correct capital budgeting decisions, the knowledge of its techniques is essential.

5. **Working Capital Management :** Working capital is the life blood of business. It refers to that part of the firm's capital which is required for financing the current assets such as cash, inventories, and receivables. It is important for the finance manager to determine the quantum of working capital required for maintaining the business activities of the firm. Proper management of working capital is thus an important area of financial management.

6. **Profit Planning and Control :** Profit planning and control is an important responsibility of the finance manager. Profit maximization is an important goal of financial management. Profit planning and control ultimately influences the declaration of dividends, creation of surpluses, etc.

7. **Dividend Policy :** Dividend is the return shareholders get for the investments made by them in the company. Shareholders want dividend out of their investments whereas management wants to retain profits for further growth and expansion. The task of the finance manager is to reconcile these two opposing interests of the shareholders and the management. A dividend policy is in turn influenced by a number of factors such as magnitude and trend of earnings, desire and type of shareholders, future requirements of the company, taxation policy, etc.

1.6 INTERFACES BETWEEN FINANCE AND OTHER BUSINESS FUNCTIONS

The finance function of any organization is closely inter-linked to its other functional areas. The flow and availability of funds affect other functions of the organization. The relationship between finance function and other business functions of an enterprise is discussed below :

1. **Purchase function :** The purchase function is responsible for procuring and maintaining the materials required for production of commodities. In this function, the finance manager plays a key role in providing finance. Several techniques such as economic order quantity (EOQ), determination of stock level, inventory system, etc.

are exercised in order to minimize cost and maximize control of materials. The task of the finance manager is to arrange the availability of cash when the bills for purchase become due.

2. **Production function :** The production process is a continuous process and one of the most important processes in an organization. This function involves heavy investment in terms of fixed assets and also in working capital. This necessitates a tighter control by the finance manager. The prime guide in allocating funds should be the cost benefit criteria.

3. **Distribution function :** The distribution function deals with the flow of goods manufactured in the firm through the various distribution channels. It is an important activity, as the flow of goods also ensures flow of cash resulting from the sale of goods. It is important to check the cost benefit criterion while choosing between different distribution channels, media of advertisement, and sales promotion devices. As every aspect of the distribution function involves cash outflow and every distributing activity is aimed at bringing about inflow of cash, both the functions are closely inter-related and hence should be carried out in close unison.

4. **Accounting function :** Scientific arrangement of records is very important in managing the inflow and outflow of cash. Efficiency of the entire organization can be greatly increased with the correct recording of financial data. The accounting tools necessary for the appraisal of finance policy can be correctly formulated if the accounting data are properly recorded. Thus, the relationship between accounting and finance is intimate and the finance manager has to depend heavily on the accuracy of the accounting data.

5. **Personnel function :** Business functions cannot be carried out efficiently unless there is a sound personnel policy backed up by efficient management of personnel. Success or failure of business is ultimately related to management of employees. A sound personnel policy includes proper wage structure, incentive schemes, and promotional opportunities which affects the finance function. Thus, the finance manager must work closely with the personnel manager to ensure that expenditure incurred on personnel management and the expected return on such investment through

labour productivity should be considered in framing a sound personnel policy.

6. **Research and development :** Organization constantly focuses on improving the quality of its products and one way to achieve this is to invest in research and development. Unless there is a constant endeavour for improvement, the firm will be gradually marketed out. Sometimes expenditure on R&D involves amounts far higher than the financial capacity of the firm. On the other hand, lesser investment in R&D blocks the scope of development of the organization. The finance manager must ensure a fair balance in the investment in R&D and the financial capacity of the firm.



CHECK YOUR PROGRESS

Q.6. Write any two functional areas in financial management.

.....

.....

Q.7. Define purchase functions.

.....

.....



1.7 LET US SUM UP

In this unit we have discussed about the following.

- Finance is called as the lifeblood of an organization.
- Finance may be defined as the management of money in organizations.
- Financial management refers to the part of the management activity which is concerned with the planning and controlling of firm's financial resources.
- Ultimate goal of financial management is wealth maximization.
- No business can be started without an adequate amount of finance.

- Even an existing organization may require further finance for making improvements or for diversification and expansion.
- Traditional finance dealt with only the procurement of funds.
- Modern finance deals with not just procurement of funds but also utilization of funds.
- Finance function is related to all the other functions of the organization.



1.8 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey(2010), *Financial Management*, Vikas Publishing House; 10th edition.



1.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 : Financial management is important because it helps in :

a) Financial planning
b) Proper usage and allocation of funds
c) Improving profitability
d) Promoting and mobilizing corporate savings.

Ans to Q. 2 : The two approaches to finance functions are :

a) The traditional apporach
b) The modern approach.

Ans to Q.3 : The three scope of financial management are :

a) Estimating financial requirement
b) Deciding capital structure

c) Proper cash management.

Ans to Q. 4 : a) True b) True c) False d) True e) False
f) False g) False h) True i) True j) True

Ans to Q. 5 : a) ii b) iii

Ans to Q. 6 : The two functional areas in financial management are :

a) Selecting the source of funds

b) Capital budgeting.

Ans to Q. 7 : Purchase function is responsible for processing and maintaining the materials required for production of commodities.



1.10 MODEL QUESTIONS

1. What is financial management ?
2. What is finance function ? What are its objectives ?
3. Explain the scope of financial management.
4. Explain the functions if a financial manager in an organization.
5. “Finance function of a business is closely related to its other functions”. Discuss.
6. “Maximization of profits is regarded as the proper objective of investment decision, but it is not as exclusive as maximizing shareholders’ wealth.” Comment.
7. ‘Finance is the life blood of an organization’. Elucidate the statement.
8. Discuss the importance of financial management in an organization.
9. Write a note on profit maximization versus wealth maximization.
10. Describe in brief the aims of the finance function.

❖❖❖

UNIT - 2 : FINANCIAL PLANNING

UNIT STRUCTURE

2.1 Learning Objectives

2.2 Introduction

2.3 Financial Planning

2.4 Objectives of Financial Planning

2.5 Benefits of Financial Planning

2.6 Steps in Financial Planning

2.7 Factors affecting Financial Planning

2.8 Estimation of financial requirements of a firm

2.9 Capitalization

2.9.1 Overcapitalization and Undercapitalization

2.10 Let us Sum Up

2.11 Further Reading

2.12 Answer to Check Your Progress

2.13 Model Questions

2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss the meaning and significance of financial planning
- learn the steps in financial planning
- learn the concepts of capitalization, over-capitalization, and under-capitalization.

2.2 INTRODUCTION

Every organization, whether it is an industrial establishment, a trading concern or a construction company requires funds for carrying on its activities successfully. Funds are required to acquire fixed assets such as machines, equipments, furniture, buildings etc., and also to purchase raw materials, to pay the creditors, and to meet other day-to-day needs.

Thus, it is of paramount importance to determine the quantum of funds required to carry on the activities of an organization successfully. Hence, every organization has to be very careful in assessing the firm's requirement of finance and they must also decide on the forms in which the funds are raised and utilized. In this unit, we shall discuss about the planning of the financial requirements of a firm.

2.3 FINANCIAL PLANNING

Financial planning is about planning and organizing the future business activities of a firm. Planning is the managerial function that involves the selection, from amongst the various alternatives of future objectives, procedures, policies, and programs. Financial planning determines the direction for future growth of the business. It helps to establish the basic premises for fund procurement and utilization for value creation. Effective financial planning helps to establish future business plans for the firm like expansion, diversification, restructuring, etc.

Thus, financial planning is a predetermination of future course of action and encompasses the following activities :

- Translating the mission, vision, and objectives of the firm into quantifiable, measurable terms.
- Predetermine the policies and functional structures of the firm for attainment of its objectives.
- Laying down the detailed procedures, guidelines, and the activities to be pursued for moving the firm in the desired direction.

Financial planning lays down the realistic financial goals and further, establishes the financial policies and procedures to attain these goals. Financial planning is all about long-term investment decisions, budgeting, and cost benefit analysis of a firm.

2.4 OBJECTIVES OF FINANCIAL PLANNING

Financial planning for a firm has the following objectives :

- To ascertain the amount of fixed capital as well as working capital required for the functioning of the firm.
- To determine the quantum of funds to be raised through the various sources of finance.

- To ensure that the funds required are raised at the lowest possible cost.
- To ensure adequate liquidity so that there are no defaults in payments and all unforeseen expenses are met without any difficulty.
- To ensure optimal use of funds so that business is neither starved of funds nor has any unnecessary surplus funds at any point of time.



CHECK YOUR PROGRESS

Q.1. Define financial planning.

.....

.....

Q.2. State any two objectives of financial planning.

a.....

b.....

2.5 BENEFITS OF FINANCIAL PLANNING

Financial planning, as discussed in the earlier section, refers to the determination of the firm's financial objective, formulating and promulgating the financial policies and developing financial procedures. Financial planning is an important activity for all kinds of organizations. Following points highlight the importance or benefit of financial planning for organizations :

1. **Forecast of cash flows :** Financial planning is necessary for the day to day activities of the business which results in discharging the obligations. This helps in forecasting of cash inflows and outflows during the course of the business cycle.
2. **Raising finances :** Financial planning helps determine the quantum of funds required to continue business operations. This helps in raising of funds from different sources and mobilizing the same for business purpose.

3. **Facilitate cost control :** A major activity of financial planning is to measure cost of production, cost of administration, cost of sales, etc. This helps in comparing the actual cost with standard, thus leading to cost control.

4. **Forecasting profits :** Financial planning is a model demonstrating comprehensive and forecasted analysis of profitability for the particular business in a specific market condition, with a pre-determined projected financial plan. A forecasted profitability plan is required to estimate the course of action.

5. **Managing assets :** Financial planning is required to manage the assets of the business. Such assets shall be properly maintained to avoid any breakdown. This also helps in determining the total investment in assets to carry out business operations properly.

6. **Managing funds :** Financial planning is required to manage funds of the investors and to conduct the activities of the business in the interest of the organization.

2.6 STEPS IN FINANCIAL PLANNING

The following are the steps involved in the financial planning process :**. Setting the financial goals :** Financial planning starts with establishing the financial goals for the overall firm and the various departments. Financial goals can be like cost reduction, increasing the market share by 7 per cent and so on.

2. **Establishing the financial policies related to various financial activities :** Once the feasible and realistic financial goals or targets are set, the firm lays down the policies regarding the various activities and course of action to be pursued to achieve the set targets.

3. **Establishing the financial procedures for attainment of financial goals :** The next step is to establish the financial procedures to be undertaken to attain the target.

4. **Monitoring the financial plan :** Once the financial plan is implemented in the organization, the firm needs to monitor the progress of the financial plan. Both real-time monitoring as well as post-activity monitoring are beneficial to control any deviation.



LET US KNOW

Financial planning includes various tools that can be used for financial analysis. Some of the financial tools are :

Financial Statements : Financial statements such as the forecasted balance sheet, the statement of income and the cash flow statement assist in the financial planning of a firm.

Ratio analysis : A tool that helps investors to evaluate the business performance and compare it with competitors.

Cost-Volume-Profit (CVP) analysis : CVP analysis establishes the relationship among cost incurred, volume produced and profits generated by the firm.

Budgeting : It involves forecasting future fund requirement for different activities of the firm. This helps in the fund raising process of the firm.

2.7 FACTORS AFFECTING FINANCIAL PLANNING

As we have seen that the main objective of financial planning is determinations of the quantum of funds, procurement of needed funds at minimum cost and establishment of effective coordination between costs and risks. A sound financial plan takes into account the long-term as well as short-term financial needs of the firm. The following are some of the important points that must be considered in the formulation of a financial plan :

1. **Nature of industry :** Nature of industry refers to whether the industry is labour intensive or capital intensive. Nature of the industry helps to determine the amount or quantum of capital. For example, banking industry is labour intensive whereas textile industry is capital intensive. Generally, labour intensive industries require less amount of capital as compared to capital intensive industries.

2. **Size of business :** The size of the business also has a great impact on the financial planning of the organization. Usually a firm working on a large scale requires heavy investment in fixed assets as it has to establish large production capacity. Hence, its capital requirement will be greater as compared to a business operating in a small scale.

3. **Types of products :** It is not only the nature of business and industry that determines the requirement of fixed capital but also the type of product involved. A firm manufacturing simple products like soap and toothpaste requires small amount of capital as against firms producing products like iron and steel.

4. **Evaluation of alternative sources of finance :** Procurement of the needed funds at the minimum cost is possible only when there is debt and equity combination. For determination of optimum debt-equity mix, finance manager needs to evaluate the various sources of finance in the light of cost, availability, limitations, etc.

5. **Attitude of management towards control :** Management's attitude towards control is another important factor which must be considered in the financial planning process. Any firm or management that is interested in retaining the control would not lie to raise funds through equity. Additional funds required for expansion, diversification or modernization may be raised by debt sources of funds if its capital structure permits.

6. **Magnitude of external capital requirements :** A financial manager needs to formulate financial plan after taking into account short-term and long-term financial needs of the enterprise. In other words, the financial manager must take into account the fixed capital requirements and the working capital requirements while formulating the financial plans for the organization. This will help in understanding how much can be funded from internal sources and the magnitude of external capital requirement.

2.8 ESTIMATION OF FINANCIAL REQUIREMENTS OF A FIRM

Forecasting or estimation of the financial or capital requirements is the most important financial decision or financial function of an enterprise. The amount of capital estimated by a firm should neither be more nor less than the amount which can be employed profitably by the organization. It is, therefore, important for a firm to assess its financial requirements properly.

The financial or capital requirements of a firm can be broadly classified into two categories. They are :

1. Fixed capital requirements or Fixed Capital, and
2. Working capital requirements or Working Capital.

Fixed capital refers to the fund requirement for meeting the permanent or long-term financial needs of the business. It is primarily used for acquiring fixed assets like land, buildings, machinery, etc. Fixed capital is required at the time of establishment of the organization. The existing business organizations also need fixed capital for meeting expansion and diversification requirements. The amount f fixed capital requirement can be determined by preparing a list of fixed assets needed by the organization and ascertaining their prices from the market.

Working capital represents the amount of funds invested in current assets like stock-in-trade, debtors, and cash required for meeting day-to-day expenses. It is also known as circulating capital because most of the amount invested in current assets is continuously recovered through realization of debtors and cash sale of goods, and is re-invested in current assets. It is important to note that a part of the working capital is permanent in nature because depending on the volume of business a certain amount of cash, debtors and stock-in-trade will always be maintained by a firm. This is known as permanent working capital. On the other hand, the remaining part of the working capital varies from time to time. This is called fluctuating or variable working capital. The permanent working capital must be financed through long-term sources whereas the fluctuating working capital should be financed through short-term sources of finance.



CHECK YOUR PROGRESS

Q.3. Name any two factors that affects fianancial Planning.

a.....

b.....

Q.4. State any two benefits of financial planning.

a.....

b.....

2.9 CAPITALIZATION

The term capitalization has various connotations. In common parlance, it refers to the amount at which a company is valued based on its capital employed. Some of the experts on finance used this concept in a narrower sense and defined it as the par value of a company's shares and debentures, while some of them interpreted it as the par value of its total long-term funds which includes owners fund, borrowed funds, reserves and surplus earnings. In the context of financial planning however, it refers to the process of determining the amount of capital required by a company.

There are two important theories to determine the amount of capitalization:

1. **The cost theory of capitalization :** According to the cost theory of capitalization, the amount of capital required by the company is calculated by adding up the cost of its fixed assets, the amount of its working capital and the cost of establishing the business. This approach is simple and used widely in case of new companies.
2. **The earnings theory of capitalization :** According to earnings theory, the capital requirement of a company is calculated on the basis of the capitalized value of its earning. For example, if the average annual earning of a company is Rs. 5 lakh and the normal rate of return on the capital employed in case of companies in the same industry is 10%, then the amount of capitalization is Rs. 50 lakh. For a new company the amount of capitalization is calculated on the basis of its estimated earning. For example, if a new company expects to earn an average annual income of Rs. 3 lakh and the normal rate of return of the industry is 5%, then the amount of capitalization or the quantum of fund it would require to run the business is Rs. 60 lakh. This approach of capitalization is considered more rational and relevant because it helps in evaluating as to how far the actual capital employed is justified by the earning of the company. If the actual rate of return is same as the normal rate of return then it is said to be proper capitalized.

2.9.1 Overcapitalization and Undercapitalization

A company is said to be over-capitalized if its capital employed is more than its proper capitalization. For example, if a company's

average annual earnings is Rs. 2,00,000 and the normal rate of return is 10%, then its proper capitalization is Rs. 20,00,000. Now, if the actual capital employed (total long term funds) is Rs. 25,00,000 it will be treated as over-capitalized. You can also put it in another simpler way i.e, if a company's actual rate of earnings is less than the normal rate of return, it is treated as a case of over-capitalization. In the above example, the company's actual rate of earnings works out as 8%, which is less than the normal rate of return i.e., 10%. So, it is considered as over-capitalized and the company is not in a position to pay interest and dividends at a fair rate. Such a situation may be caused by the following factors : (a) Excessively high price paid for the purchase of goodwill and other fixed assets. (b) Underutilization of production capacity. (c) Raising more capital in the form of shares and debentures than required. (d) Liberal dividend policy. (e) Higher rate of corporate taxation. (f) Underestimation of capitalization rate or overesti-mation of earnings while deciding on the amount of capital to be raised.

Over-capitalization is not desirable in the long run interest of the shareholders and the company. It leads to lower rate of dividend, reduction in the market value of shares and difficulty in raising more funds. Hence, there is need to rectify such situation as quickly as possible by reducing debt, efficient utilization of assets, and by following a conservative dividend policy.

Under-capitalization is just the reverse of over-capitalization. In other words, a company is said to be under-capitalized if its capital employed is less than its proper capitalization i.e., the amount of capital invested is not justified by its annual earnings. In the earlier case, for example, if the company's actual capital employed is Rs. 16,00,000 it shall be treated as under-capitalized as it is less than Rs. 20,00,000, the proper capitalization. Alternatively, if a company's actual rate of earnings is more than the normal rate of return, it is treated as a case of under-capitalization. This does not imply that the company suffers from inadequacy of capital. In fact, such a situation may be the result of underestimation of expected earnings while deciding on the amount of capital to be raised or using low capitalization rate for the purpose or by following a conservative dividend policy. Of course, improvement in earnings can also be the result of cost reduction exercise or high efficiency.

Thus, under-capitalization is indicative of a sound financial position and may lead to increase in the market value of company's shares. However, it can encourage competition as high rate of return may attract new entrants in the field. The workers of the company may demand for higher wages and other benefits. When the company earns more profit, the customers may feel that they are being over-charged by the company. So, it is better to take corrective steps like capitalization of profits (issue bonus shares) or splitting up of the shares (a share of Rs.10 may be converted into five shares of Rs. 2 each). Although under-capitalization is considered a lesser evil than over-capitalization (as the situation can be remedied more quickly) it is better to ensure a fair or proper capitalization.



2.10 LET US SUM UP

In this unit we discussed the following :

- Financial planning refers to the determination of the firm's financial objective, formulating and promulgating the financial policies and developing financial procedures.
- Financial planning lays down the realistic financial goals and further, establishes the financial policies and procedures to attain these goals.
- Forecasting or estimation of the financial or capital requirements is the most important financial decision or financial function of an enterprise.
- The financial or capital requirements of a firm can be broadly classified into two categories : fixed capital and working capital.
- Fixed capital refers to the fund requirement for meeting the permanent or long-term financial needs of the business.
- Working capital represents the amount of funds invested in current assets like stock-in-trade, debtors, and cash required for meeting day-to-day expenses. It is also known as circulating capital

- Capitalization refers to the process of determining the amount of capital required by a company.
- According to the cost theory of capitalization, the amount of capital required by the company is calculated by adding up the cost of its fixed assets, the amount of its working capital and the cost of establishing the business.
- According to earning theory, the capital requirement of a company is calculated on the basis of the capitalized value of its earning.
- A company is said to be over-capitalized if its capital employed is more than its proper capitalization.
- A company is said to be under-capitalized if its capital employed is less than its proper capitalization i.e., the amount of capital invested is not justified by its annual earnings.



2.11 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I. M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



2.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 : Financial planning is a predetermination of future course of action.

Ans to Q. 2 : a. To ascertain the amount of fixed capital
b. To determine the quantum of funds to be raised through the various sources of finance.

Ans to Q. 3 : a. Nature of the Industry

b. Size of the business

Ans to Q. 4 : a. Forecast of Cashflow

b. Raising Finances



2.13 MODEL QUESTIONS

1. What is meant by financial planning ?
2. What are the steps involved in financial planning ?
3. State the objectives of financial planning.
4. Briefly explain the factors affecting the financial planning of an organization.
5. What is the importance of financial planning for a business organization ? Explain.
6. What is meant by capitalization ?
7. What is undercapitalization and overcapitalization ? Explain with example.
8. Explain the terms fixed capital and working capital. What is the difference between them ?
9. 'Financial planning helps in establishing the basic premises for fund procurement and utilization for value creation'. Elucidate.
10. What do you understand by the term capitalization ? Explain the various theories of capitalization.

❖❖❖

UNIT - 3 : SOURCES OF FUNDS

UNIT STRUCTURE

3.1 Learning Objectives

3.2 Introduction

3.3 Equity shares
- 3.3.1 Advantages and disadvantages of equity capital

3.4 Right shares

3.5 Bonus shares

3.6 Retained earnings or internal accruals
- 3.6.1 Advantages and Disadvantages of internal accruals

3.7 Preference shares
- 3.7.1 Advantages and disadvantages of preference shares

3.8 Debentures
- 3.8.1 Types of Debentures
- 3.8.2 Advantages and disadvantages of debentures

3.9 Term loan

3.10 Venture Capital Finance
- 3.10.1 Features of Venture Capital Finance

3.11 Let us Sum Up

3.12 Further Reading

3.13 Answers to Check Your Progress

3.14 Model Questions

3.1 LEARNING OBJECTIVES

After going through this unit you will be able to :

- discuss the different sources of long term finance
- explain the features, advantages and disadvantages of equity capital
- explain rights shares and bonus shares
- outline features, types, advantages and disadvantages of preference capital and debentures
- discuss the features, advantages and disadvantages of term loans
- describe the need of venture capital

3.2 INTRODUCTION

In this unit we are going to discuss the different sources of long term finance. A company needs lot of finance of long term nature when it is first set up or it wants to expand or modernise or start a new plant. The finance needed for these investments have to be of special characteristics. Broadly the long term finance can be grouped into equity and debt. The following sections will deal in detail regarding the different sources of finance.

The features, advantages and disadvantages of equity capital, preference capital and debentures will be discussed. We will also come to know about the features, advantages and disadvantages of term loans.

We will be able to know about right shares and bonus shares and the need of venture capital.

3.3 EQUITY SHARES

Equity shares, also known as ordinary shares or common shares, represents the ownership capital in a company. The holders of these shares are the real owners of the company. Equity shares have a number of features which distinguish them from other shares and securities. These features generally relate to the rights and position of equity shareholders. The following are some of the most significant features of equity shares :

(i) **Maturity :** Equity shares provide permanent capital to the company and cannot be redeemed during the life time of the company.

(ii) **Claim / Right to income :** Equity shareholders have a residual claim on the income of a company. They have a claim on income left after paying dividend to preference shareholders. The rate of dividend on these shares is not fixed; it depends upon the earnings available after paying dividends on preference shareholders. In many cases, they may not get anything if profits are insufficient; or may get even a higher rate of dividend. That is why, equity shares

are also known as 'variable income security'.

(iii) Claim on assets : Equity shareholders have a residual claim on ownership of company's assets. In the event of liquidation of a company, the assets are utilised first to meet the claims of creditors and preference shareholders but everything left thereafter, belongs to the equity shareholders. Thus, equity shares provide a cushion to absorb losses on liquidation and may, usually, remain unpaid.

(iv) Right to control or Voting Rights : Equity shareholders are the real owners of the company. They have voting rights in the meetings of the company and have a control over the working of the company.

(v) Pre-emptive Right : To safeguard the interests of equity shareholders and enable them to maintain their proportional ownership, Section 81 of the Companies Act,1956, provides that whenever a public limited company proposes to increase its subscribed capital by the allotment of further shares, after the expiry of two years from the formation of the company or the expiry of one year from the first allotment of shares in the company , whichever is earlier, such shares must be offered to holders of existing equity shares in proportion, as nearly as circumstances admit, to the capital paid-up on these shares. Shares so offered to existing shareholders are called Right Shares and their prior right to such shares is known as pre-emptive right.

(vi) Limited Liability : Although equity shareholders are the real owners of the company, their liability is limited to the value of shares they have purchased. If a shareholder has already fully paid the share price, he cannot be held liable further for any losses of the company even at the time of liquidation. This enables the equity shareholders to enjoy the ownership of a company without risking unlimited liability as is the case in sole-proprietorship or partnership businesses.



LET US KNOW

Some important terms :

- **Authorised Capital :** The amount of capital that a company can potentially issue, as per its memorandum, represents the authorised capital. In other words, it represents the maximum amount which a company can raise from the ordinary shareholders and can be changed in the prescribed manner.
- **Issued Capital :** The amount offered by a company to the investors is called issued capital
- **Subscribed Capital :** The part of issued capital which has been subscribed to by the investors represents the subscribed capital.
- **Paid-up Capital :** The actual amount paid up by the investors is called the paid-up capital.
- **Par value :** The par value of an equity share is the value stated in the memorandum and written on the share scrip.
- **Issue Price :** The issue price is the price at which the equity share is issued. The issue price is normally higher than the par value.
- **Market Price :** The market price of an equity share is the price at which it is traded in the secondary market. The equity share of a company is listed on the stock exchange. The market price of an equity share is determined by the demand and supply of the buyers and sellers in the stock exchange.

3.3.1 Advantages and Disadvantages of Equity Capital

Equity Capital offers the following advantages :

- There is no compulsion to pay dividends. A company is not legally obliged to pay dividend. In times of financial difficulties, it can reduce or suspend payment of dividend.
- Equity Capital has no maturity date and hence the company has no obligation to redeem. It is a permanent capital, and is available for use as long as the company runs its business operation.

- Equity Capital helps to enhance the credit worthiness of the company as it provides a kind of protection to lenders. By issuing equity capital, the company increases its financial capability.

Equity Capital has the following disadvantages :

- The issuance of new ordinary shares may dilute the ownership and control of the existing shareholders.
- Ordinary shares are riskier from investors' point of view as there is uncertainty regarding dividend and capital gains.
- The cost of issuing equity shares is generally higher than the cost of issuing other types of securities.
- The scattered and unorganised shareholders are unable to exercise effective and real control over the company.
- The shareholders cannot claim dividend as a matter of right.



CHECK YOUR PROGRESS

Q. 1. Describe the followings :

a. Par value

b. Issue Price

c. Market Price

Q. 2. Name the three types of debentures.

.....

.....

.....

3.4 RIGHT SHARES

Rights shares are the shares issued to the existing shareholders of the company. It is a legal requirement that new ordinary shares must be first issued to the existing shareholders on a pro rata basis. Shareholders through a special resolution can forfeit this pre-emptive right.

In rights offerings, there is a date of record, which states the last day that

the receiver of the right must be the legal owner as reflected in the company's stock ledger or as registered in the shareholders name. Because of delay in entering the information, shares are often sold ex rights (without rights) for a few days (usually 4 days) before the record date. Before this point, the share is sold rights on, which means that purchasers receive the rights. The recipient of the rights can exercise them, sell them, or let them expire. Since stock rights are transferable, many are traded on the stock exchange. They may be exercised for a given period of time at a subscription price, which is set somewhat below the prevailing market price. After the subscription price has been determined, management must ascertain the number of rights necessary to purchase a share. The total number of shares that must be sold equals:

$$\text{Shares to be sold} = \frac{\text{Amount of funds to be obtained}}{\text{Subscription price}}$$

The number of rights needed to acquire one share equals.

$$\text{Right per share} = \frac{\text{Total shares outstanding}}{\text{Shares to be sold}}$$

Features of Rights :

- The number of rights that a shareholder gets is equal to the number of shares held by the shareholder.
- The number of rights required to subscribe to an additional share is determined by the issuing company.
- The price per share for additional equity, called subscription price, is left to the discretion of the company.
- Rights are negotiable.
- Rights can be exercised only during the period when the issue is open.



Exercise : 3.1

Q.1 : A star company wishes to obtain Rs. 800,000 by a rights offering. There are currently 100,000 shares outstanding. The subscription price is Rs 40. How many rights shares are to be sold ? How many rights will be per share ?

Solution :

$$\text{Shares to be sold} = \frac{\text{Amount of funds to be obtained}}{\text{Subscription price}}$$

$$= \frac{\text{Rs } 800{,}000}{\text{Rs. } 40} = 20{,}000 \text{ shares}$$

$$\text{Rights per share} = \frac{\text{Total shares outstanding}}{\text{Shares to be sold}} = \frac{100{,}000}{20{,}000} = 5$$

Thus, five rights will be required to purchase each new share at Rs. 40.

3.5 BONUS SHARES

Bonus shares are shares that are issued to the existing shareholders by issuing shares out of free reserves built out of the genuine profit. In India, bonus shares are issued in addition to the cash dividend and not in lieu of cash dividend.

Features of bonus Shares :

- Bonus shares are distributed proportionately to the existing shareholders.
- The declaration of bonus shares will increase the paid-up share capital and reduce the reserves and surplus of the company. However the net worth (paid-up capital plus reserves and surplus) is not affected by the bonus issue.
- Issuing of bonus shares by a company indicates that the prospects of the company have brightened.

3.6 RETAINED EARNINGS OR INTERNAL ACCRUALS

Retained earnings are that portion of equity earnings (profit after tax less preference dividends) which are ploughed back in the company. Because retained earnings are the sacrifice made by equity shareholders, they are referred to as internal equity. Companies normally retain 30 percent to 80 percent of profit after tax for financing growth, which essentially represent accumulated retained earnings, are an important source of long-term financing.

3.6.1 Advantages and Disadvantages of Internal Accruals

Internal Accruals has the following **advantages :**

(i) Retained earnings are readily available.

(ii) Use of retained earnings eliminates issue cost.

(iii) There is no dilution of control when a company relies on retained earnings.

Internal Accruals has the following **disadvantages :**

(i) The amount that can be raised by way of retained earnings may be limited.

(ii) The opportunity cost of retained earnings is quite high.

(iii) Retained earnings represent dividends foregone by equity shareholders.

3.7 PREFERENCE SHARES

These shares have certain preferences as compared to other types of shares. The first preference is for payment of dividend and the second preference for these shares is the repayment of capital at the time of liquidation of the company. Normally, preference shares are of the following types :

(a) Cumulative Preference Shares : These shares have a right to claim dividend for those years also when there are no profits. Whenever there are divisible profits, cumulative preference shares are paid dividend for all the previous years in which dividend could

not be declared.

(b) Redeemable Preference Shares: Normally the capital of a company is repaid only at the time of liquidation. Neither the company can return the share capital nor can the shareholders demand its repayment. The company, however, can issue redeemable preference shares if the articles of association allow such an issue. The company has a right to return redeemable preference share capital after a certain period.

(c) Irredeemable Preference Shares : Those shares which cannot be redeemed unless the company is liquidated are known as irredeemable preference shares.

(d) Participating Preference Shares : The holders of these shares participate in the surplus profits of the company. They are firstly paid a fixed rate of dividend and then a reasonable rate of dividend is paid on equity shares. If some profits remain after paying both these dividends, then preference shareholders participate in the surplus profits. The mode for dividing surplus profits between preference and equity shareholders is given in the articles of association.

Features of Preference shares :

1. Maturity : Generally, preference shares resemble equity shares in respect of maturity. These are perpetual (irredeemable) and the company is not required to repay the amount during its lifetime. It is only at the time of liquidation that a company has to repay the preference shareholders after meeting the claim of creditors but before paying back the equity shareholders. However, a company may issue redeemable preference shares with a limited life after which they are supposed to be retired or paid back.

2. Claims on income : A fixed rate of dividend is payable on preference shares. Preference shareholders have prior claim on income (dividend) over equity shareholders. Whenever the company has distributable profits, the dividend is first paid back on preference share capital. The rate of dividend on preference shares is usually fixed.

3. **Claims on assets :** Preference shares have a preference in the repayment of capital at the time of liquidation of a company. Their claims on assets are superior to those of equity shareholders. In the event of liquidation of the company, their claim is to be settled first before making any payment to the equity shareholders.

4. **Voting Rights :** Preference shareholders ordinarily do not have any voting rights. They may be entitled to contingent or conditional voting rights. In India, if a preference dividend is outstanding for two or more years in the preceding six years, preference shareholders can nominate a member on the board of the company.

5. **Hybrid form of security :** Preference share capital can be said to represent a hybrid form of security as it includes some features of equity and others of debt financing. It resembles equity in the sense that (a) payment of dividend is not obligatory; (b) preference dividend is payable only out of distributable profits and, (c) it is not deductible as expense while determining tax liability of the company. At the same time, it has certain characteristics of debt financing such as (a) it carries a fixed rate of dividend like interest (b) Its holders are entitled to a right prior to equity shareholders and (c) it does not provide a right to vote.

3.7.1 Advantages and Disadvantages of Preference Shares

Preference Shares offer the following advantages :

- There is no legal obligation to pay preference dividend. It provides some financial flexibility to the company since it can postpone payment of dividend.
- There is no dilution of control as preference shares do not have voting rights.
- It enhances the credit worthiness of the company.

Preference Shares offer the following disadvantages :

- It is a very expensive source of financing because the dividend paid to preference shareholders is not a tax – deductible expense.

- Preference dividend may be omitted but have to be paid because of their cumulative nature.
- Preference shareholders acquire voting rights if the company does not pay preference dividend for a certain period.

3.8 DEBENTURES

A debenture is a marketable legal contract whereby the company promises to pay whoever owns it, a specified rate of interest for a defined period of time and to repay the principal at the specific date of maturity. An alternative form of debenture in India is called as bond.

Debenture holders are the creditors of company. The interest of debenture holders is looked by a trustee and is responsible for ensuring the borrowing company fulfils all its obligations. The par value of debenture is the face value appearing on the debenture certificate. Debentures provide a greater variety of choices with respect to maturity, interest rate, security, repayment and special features.

Features of Debentures :

- The interest rate on debentures is fixed and known. It indicates the percentage of the par value of the debenture that will be paid out annually (or semi-annually or quarterly) in the form of interest.
- Debentures are issued for a specified period of time. This is called the maturity period of debentures.
- Most debentures in India are secured by mortgages on the immovable properties of the company. This provides security to the debenture holders. If the company defaults, the trustee can seize the security on behalf of the debenture holders and make payment to them.

3.8.1 Types of Debentures

Debentures can be classified on conversion, security and redemption.

1. **Non-Convertible Debenture (NCDs) :** These debentures cannot be converted into equity shares and will be redeemed at

the end of the maturity period.

2. **Fully Convertible Debentures (FCDs) :** These debentures will be converted into equity shares after a specified period of time. These debentures may or may not carry interest till the date of conversion.

3. **Partially 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 portion of these debentures will be redeemed as per the terms of the issue after the maturity period.

3.8.2 Advantages and disadvantages of debentures

The following are the advantages of debentures :

- The interest on debentures is a tax-deductible expense and therefore, the effective cost of this source is lower than the cost of equity or preference capital.
- Issue of non-convertible debentures does not result in dilution of control because debt holders are not entitled to vote.
- During periods of high inflation, debenture issue benefits the company. Their obligations of paying interest and principal decline in real terms as these are fixed.

The following are the disadvantages of debentures :

- Interest payments and capital repayments are obligatory payments, which if not paid can force the company into liquidation.
- Debentures must be paid on maturity, and sometimes involve huge cash outflow.
- Debenture trustees may give restrictive covenants which may limit the company's flexibility in future.



CHECK YOUR PROGRESS

Q. 3 : Fill in the blanks :

(a) The two sources of equity financing are..... and.....

(b) Preferred dividends are based on the total..... of the outstanding shares.

(c) The ..... right allows a stockholder to purchase new shares of stock before they are sold to the general public.

(d) A form of equity financing designed specially for funding high risk and high reward investments is known as.....

(e) Debentures can be classified on conversion, security and .....

3.9 TERM LOAN

Term loan represents long-term debt that is repayable after one year. They are obtained from banks and specially created by financial institutions. The purpose of term loans is mostly to finance the company's long term expenditures.

Features of Term Loan :

1. **Maturity :** Banks and financial institutions are the main sources of term loans in India. Loans are provided generally for a period 6 to 10 years.
2. **Security :** Term loans are always secured. Specifically the assets acquired using term loan funds becomes a guarantee for the loan.
3. **Restrictive Covenants :** The loan contract often contains restrictive covenants depending upon the nature and financial situation of the borrowing capacity. The borrowing company has generally to keep the lender informed by furnishing financial statements and other

information periodically.

4. **Convertibility :** Financial institutions provide huge amount of loan assistance to the companies. Because of huge financial stake of these institutions in the companies, the loan can be converted into the equity capital of the borrowing companies at the option of the financial institution subject to certain conditions.

Advantages and Disadvantages of Term Loan

The advantages and disadvantages of raising term loans are almost similar to the ones enumerated for debentures. The additional disadvantage associated with this option is the presence of a convertibility claim which can result in the dilution of control.

3.10 VENTURE CAPITAL FINANCE

A form of equity financing designed specially for funding high risk and high reward investments is known as 'Venture Capital'. In other words, venture capital may be described as pools of capital constituted for investing in relatively high-risk opportunities in anticipation for high rates of return. Venture capital investment is defined as an activity by which investors i.e. venture capitalists support entrepreneurial talent with finance and business skills to exploit market opportunities and thus obtain long-term capital gains. This financing may take place at any stage of implementation of the project, between start-up and commencement of commercial production. The rationale for the venture capital arises on account of the fact that there is high expectation for large gains by some entrepreneur, which acts as the motivation behind taking up risky investments that carry high return profiles. This business ventures which do not get finance from banks and Financial Institutions are being financed by venture capitalists in the form of venture capital. Venture capitalists get involved in the process of venture capital financing in the following three forms :

- **Equity participation :** Venture financing takes place through direct purchase of shares, options or convertible securities. The objective is to make capital gains by selling-off the investment once the business ventures become profitable.
- **Long-term investment :** Venture financing is a long-term illiquid

investment; it is not repayable on demand. The venture capitalists have to invest for a long period, say 5 to 10 years before exiting from the venture with large profit.

- **Participation in management :** Venture capitalists continuously participate in the management of the business ventures. They provide hands-on management experience to protect and enhance their investment by being actively involved in the business planning, production, marketing and human resource development of the business ventures.

3.10.1 Features of Venture Capital Finance

(i) New Ventures : Venture capital investment is generally made in new ventures or investments that use new technology to produce new products, in expectation of high gains or sometimes, spectacular returns.

(ii) Continuous Involvement : Venture capitalists continuously involve themselves with the venture's investments, either by providing loans or managerial skills or any other support.

(iii) Mode of Investment : Venture capital is basically an equity financing method, the investment being made in relatively new businesses when it is too early to go to the capital market to raise funds. In addition, financing also takes the form of loan finance/convertible debt to ensure a running yield on the portfolio of the venture capitalists.

(iv) Objective : The basic objective of a venture capitalist is to make capital gain on equity investment at the time of exit, and regular return on debt financing. It is a long-term investment in growth-oriented small/medium business ventures.

(v) High-risk-return ventures : Venture capitalists finance ventures having high risk. Resolving the uncertainty affecting these ventures becomes more complex because of the absence of historical information that can provide the basis for assessing the likelihood of various future outcomes of the ventures. However, some of the ventures yield very high return

in order to compensate for the heavy risks related to the ventures. Venture capitalists usually make huge capital gains at the time of exit from the business ventures.

(vi) Liquidity : Liquidity of venture capital investment depends on the success or otherwise of the new venture or product. Accordingly, there will be higher liquidity where the new ventures are highly successful.



CHECK YOUR PROGRESS

Q. 4. What is the main purpose of term loans ?

.....

.....

.....

Q. 5. State true or false :

(i) The principal sources of long-term finance for a company are: equity capital, preference capital, and debenture capital and term loans.

(ii) Equity shareholders enjoy the rewards of ownership and bear the risks of ownership.

(iii) The par value and issue price of an equity share are always equal.

(iv) All rights issue of shares involves equity shares to the existing shareholders.



3.11 LET US SUM UP

In this unit, we have discussed the following aspects :

- Equity and debt represent the two broad sources of finance for a company.
- Equity capital represents ownership capital.

- The pre-emptive right of the equity shareholders is maintained by raising new equity capital through rights offerings.
- Preference capital represents a hybrid form of financing. A fixed rate of dividend is payable on the preference shares. Preference shares could be redeemable i.e. with a maturity date or irredeemable i.e. perpetual, without maturity date.
- Debenture is a long-term promissory note. Debenture holders are long- term creditors of a company.
- Term loans are loans for more than a year of maturity.
- Term loans represent a source of debt finance provided by financial institutions and banks.



3.12 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I. M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



3.13 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

a. Par value : The par value of an equity share is the value stated in the memorandum and written on the share scrip.

b. Issue Price : The issue price is the price at which the equity share is issued. The issue price is normally higher than the par value.

c. Market Price : The market price of an equity share is the price at which it is traded in the secondary market. This price can be

established for a company which is listed on the stock market and actively traded.

Ans to Q. 2 :

Non-Convertible Debenture, Fully Convertible Debentures, Partially Convertible Debentures.

Ans to Q. 3 :

a. Equity capital and Preference capital
b. Par value
c. Pre-emptive
d. Venture capital
e. Redemption

Ans to Q. 4 :

The purpose of term loans is mostly to finance the company's long term expenditures.

Ans to Q. 5 :

(i) True (ii) True (iii) False (iv) True



3.14 MODEL QUESTIONS

1. What are the key differences between equity capital and debenture ?
2. What are advantages and disadvantages of equity capital ?
3. Write three important features of debentures.
4. Why is preference capital considered as a hybrid form of financing ?
5. What are features of venture capital ?
6. What is the difference between rights shares and bonus shares ?
7. KFC Ltd. expects to raise Rs 2 million in rights offering. Currently, there are 250,000 shares outstanding. A subscription price of Rs 40 a share is assigned.
   (i) How many shares must be sold ?
   (ii) How many rights are required to purchase one share of stock ?

❖❖❖

UNIT - 4 : COST OF CAPITAL

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Concept and Definition of Cost of Capital

4.4 Significance of Cost of Capital

4.5 Classification of Cost of Capital

4.6 Determination of Specific Cost

4.7 Weighted Average Cost of Capital

4.8 Let us Sum Up

4.9 Further Reading

4.10 Answers to Check Your Progress

4.11 Model Questions

4.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- explain the concept and definition of Cost of Capital
- discuss the significance of Cost of Capital
- describe the Classifications of Cost of Capital
- outline the determination of specific Cost
- discuss weighted average cost of capital

4.2 INTRODUCTION

In this unit, we are going to discuss the concept of cost of capital. We will be discussing on the significance, classification of cost of capital. Again we will get an idea on the determination of specific cost and weighted average cost of capital. The items on the financing side of the balance sheet are called capital components. The major capital components are equity, preference, and debt and term loan. All these sources of capital have a cost. A company's cost of capital is the average cost of the

various capital components employed by it. In other words, it is the average rate of return required by the investors who provide capital to the company. It refers to the minimum rate of return a company must earn on its investment so that the market value of the company's equity share may not fall. In the words of Hampton, John J, "cost of capital is the rate of return the company requires from investment in order to increase the value of the company in the market place".

4.3 CONCEPT AND DEFINITION OF COST OF CAPITAL

The concept of cost is perceived in different dimensions. Thus, cost of capital is an important concept in formulating a company's capital structure. Two major schools of thought have emerged having basic difference on the relevance of cost of capital. Modigliani Miller argued that a company's cost of capital is constant and it is independent of the method and level of financing. Whereas some analysts hold that cost of capital is varying and dependent on capital structure.

Some definitions are as follows :

Cost of capital is one rate of return the capital funds used should produce to justify their use within the company.

According to Solomon Ezra, "The cost of capital is the minimum required rate of earnings or the cut off rate for capital expenditure."

In the words of Haley and Schall, in a general sense, "Cost of capital is any discount rate used to value cash streams."

4.4 SIGNIFICANCE OF COST OF CAPITAL

The concept of cost of capital is very important and it is useful in the following financial management decisions.

(i) Capital budgeting decisions : In capital budgeting decisions, the cost of capital is often used as a discount rate on the basis of which the company's future cash flows are discounted to find out their present values. Thus, the cost of capital is the very basis for financial appraisal of new capital expenditure proposals. The decision of the finance manager will be irrational and wrong in case the cost of

capital is not correctly determined. This is because the business must earn at least at a rate which equals to its cost of capital in order to break-even.

(ii) Capital structure decisions : The cost of capital is also an important consideration in capital structure decisions. The finance manager must raise capital from different sources in a way that it optimizes the risk and cost factors. The sources of funds which have less cost involve high risk. Raising of loans may, therefore, be cheaper on account of income tax benefits, but it involves heavy risk because a slight fall in the earning capacity of the company may bring the company near to cash insolvency. It is, therefore, absolutely necessary that cost of each source of funds is carefully estimated and compared with the risk involved with it.

(iii) Financial Performance Appraisal : Cost of capital framework can be used to evaluate the financial performance of top management.

4.5 CLASSIFICATION OF COST OF CAPITAL

Cost of capital can be brought as under :

i) Explicit Cost

ii) Implicit Cost

iii) Specific Cost

iv) Average Cost

v) Marginal Cost

i) Explicit Cost : The explicit cost of any source of finance may be defined as the discount rate that equates the present value of the cash inflows with the present value of its expected cash outflows. When a company raises funds from different sources, it involves only a cash inflow at the beginning by the amount raised which is followed by a series of cash outflows in the form of interest payments, repayment of principal or repayment of dividends. The explicit cost may be defined as the internal rate of return the company pays for different financing. The explicit cost of capital may be computed by using the following equation :

$$I_0 = \frac{C_1}{(1+k)^1} + \frac{C_2}{(1+k)^2} + ... + \frac{C_n}{(1+k)^n}$$

Where I_0 = Net amounts of funds received by the company at time zero.

C = Outflow in the period concerned

n = Period for which the funds are provided

k = Explicit Cost of Capital

ii) Implicit Cost : The implicit cost may be defined as the rate of return associated with the best investments opportunity for the company, its shareholders and creditors that will be foregone for investing in that company. When the earnings are retained by a company, the implicit cost is the income which the shareholders could have earned if such earnings would have been distributed and invested by them.

iii) Specific Cost : The cost of each component of capital, i.e equity shares, preference shares, debentures, term loan etc is called the specific cost of capital.

iv) Average Cost or Weighted Average Cost : The combined cost of all sources of capital is called average or overall cost of capital. The component costs are combined according to the weight of each component capital to obtain the average cost of capital. Thus, the overall cost is also called the weighted average cost of capital (WACC).

v) Marginal Cost : Marginal cost of capital is the cost of additional amount of capital which is raised by a company for current and fixed capital investment. In other words, marginal cost is the new or the incremental cost that the company incurs if it were to raise capital at present or in the near future.



CHECK YOUR PROGRESS

Q.1. What do you mean by cost of capital ?

.....

.....

Q.2. Write down two different types of cost.

.....

.....

4.6 DETERMINATION OF SPECIFIC COST

A. Cost of Debt :

Companies raise debt capital through issue of debentures or raise loan from financial institution or deposits from public. All these funds need a specific rate of interest to be paid. Again, the interest payments made on debt issue qualify for tax deduction. Computation of cost of debt capital depends on the maturity, interest rate and tax rate.

B. Cost of Irredeemable Debt :

Cost of perpetual debt is the rate of return that lender expects, i.e. fixed interest rate. Debentures may be issued at (i) par or face value, (ii) discount and (iii) premium. The following formulae used to compute cost of debentures :

(i) Pre-tax Cost : $K_d = \frac{\text{Interest}}{\text{Principal amount or face value}}$

(ii) Post-tax Cost : $K_d = \frac{\text{Interest (1- tax rate)}}{\text{Principal amount or face value}}$



Exercise : 4.1

Alfa Ltd. decides to issue perpetual debt at 12 percent with a face value of Rs.100 each. The company is in 40 per cent tax bracket. Calculate cost of debenture.

Solution :

(i) Pre-tax Cost

Here interest = 0.12 × Rs 100 = Rs 12

Face value = Rs 100

$K_d = \frac{\text{Rs } 12}{\text{Rs } 100} = 12$ percent

(ii) Post-tax Cost

Here, interest = 0.12 × Rs 100 = Rs 12

Face value = Rs 100

Tax rate = 40 percent

$$K_d = \frac{\text{Rs } 12 \ (\ 1\text{- } 0.40)}{\text{Rs } 100} = 7.2 \text{ percent}$$

Solution :

Post-tax Cost : $K_d = \dfrac{\text{Interest } (1 - \text{tax rate})}{\text{Principal amount or face value}}$

(i) Issued at par : Here interest = 0.10 × Rs. 1,00,000 = Rs. 10,000



Exercise : 4.2

A company issues 10% debentures for Rs 1,00,000. Rate of tax is 50 percent. Calculate the cost of debt (post-tax) if the debentures are issued at (i) par (ii) 10% discount and (iii) 10% premium.

$$\frac{\text{Principal amount = Rs. 1,00,000}}{\text{Tax rate = 50 \%}}$$

$$K_d = \frac{\text{Rs. } 10{,}000 \ (1 - .50)}{\text{Rs } 1{,}00{,}000} = 0.05 = 5 \text{ percent}$$

(ii) Issued at 10% discount

Here interest = 0.10 × Rs. 1,00,000 = Rs. 10,000

Principal amount (at 10% discount) = Rs. 1,00,000 – Rs. 10,000

= Rs. 90,000

$$K_d = \frac{\text{Rs. } 10{,}000 \ (1 - .50)}{\text{Rs. } 90{,}000} = 0.055 = 5.5 \text{ percent}$$

(iii) Issued at 10% premium

Here interest = 0.10 × Rs. 1,00,000 = Rs. 10,000

Principal amount (at 10% premium)

=Rs. 1,00,000 + Rs. 10,000

= Rs. 110,000

$$K_d = \frac{\text{Rs. } 10{,}000 \ (1 - .50)}{\text{Rs. } 110{,}000} = 0.045 = 4.5 \text{ percent}$$

C. Cost of Redeemable Debt :

Redeemable debentures are those having a maturity period or repayable after a certain given period of time. When debentures are redeemed after the expiry of a fixed period, the cost of debt (pre tax) can be computed with the help of the following formula :

(i) Cost of debt (pre tax)

$$K_d = \frac{I + (D - P)/n}{(D + P)/2}$$

Where I = Annual Interest

D = Par value of debentures

n = Number of years to maturity

P = Net proceeds

(ii) Cost of debt (post tax)

The cost of debt (post tax) can be computed as follows :

K_d (post tax) = K_d (pre tax) × (1 – tax rate)

Exercise : 4.3



A company issues 10% debentures for Rs 1,00,000 and realises Rs. 95,000 after 5% commission to brokers. The debentures are due for maturity at the end of the 10th year. Compute the effective cost of debt (pretax).

Solution :

$$K_d = \frac{I + (D - P)/n}{(D + P)/2}$$

Where, I = Rs. 10,000 (10% of Rs. 1,00,000)

P = Rs. 95,000

D = Rs. 1,00,000

n = 10

$$K_d = \frac{\frac{10,000 + (100,000 - 95,000)}{10}}{\frac{100,000 + 95,000}{2}}$$

$$= \frac{10,000+ 500}{97,500} = 10.77\%$$

D. Cost of Preference Capital :

The cost of preference share capital is a function of the dividend expected by the investors. Though dividend payment is not obligatory, it is expected that companies should pay dividend regularly except when the companies do not make profits. The cost of redeemable and irredeemable preference shares are given below.

Cost of Irredeemable Preference Share

$$\text{(i)} \quad K_p = \frac{\text{Dividend } (D_p)}{\text{Net proceeds (NP)}}$$



Exercise : 4.4

HLL Ltd. issues 12 per cent irredeemable share of face value of Rs 200 each. Compute cost of preference share.

Solution :

Here $D_p = 0.12 \times$ Rs. 200 = Rs. 24

Net proceeds (NP) = Rs. 200

$$K_p = \frac{D_p}{NP} = \frac{24}{200} = 0.12 \text{ or } 12\%$$



Exercise : 4.5

SRT Ltd. is planning to issue irredeemable preference share at 16 percent. The face value of each preference share will be Rs. 100. The floatation costs are estimated at 3 percent. Compute cost of preference shares if these are issued at (i) face value, (ii) 10 percent premium and (iii) 5 percent discount.

Solution :

(i) Here, Face value of preference share = Rs 100

Floatation cost = 0.03 × Rs100 = Rs 3

Net proceeds = Rs 100 – Rs 3 = Rs 97

Dividend = 0.16 × Rs. 100 = Rs. 16

$$K_p = \frac{D_p}{NP} = \frac{\text{Rs. 16}}{\text{Rs. 97}} = 0.164 \text{ or } 16.4\%$$

(ii) Here, Face value of preference share = Rs. 100

10% premium on face value = Rs. 0.10 × 100 = Rs. 10

Face value with 10% premium = Rs. 100 + Rs. 10 = Rs. 110

Floatation cost = 0.03 × Rs. 100 = Rs. 3

Net proceeds = Rs. 110 – Rs. 3 = Rs. 107

Dividend = 0.16 × Rs. 100 = Rs. 16

$$K_p = \frac{D_p}{NP} = \frac{\text{Rs. 16}}{\text{Rs. 107}} = 0.149 \text{ or } 14.9\%$$

(iii) Here Face value of preference share = Rs. 100

5% of discount on face value = Rs. 0.05 × 100 = Rs. 5

Face value with 5% of discount = Rs. 100 – Rs. 5 = Rs. 95

Floatation cost = 0.03 × Rs.100 = Rs. 3

Net proceeds = Rs. 95 – Rs. 3 = Rs. 92

Dividend = 0.16 × Rs. 100 = Rs. 16

$$K_p = \frac{D_p}{NP} = \frac{\text{Rs. 16}}{\text{Rs. 92}} = 0.173 \text{ or } 17.3\%$$

E. Cost of Redeemable Preference Share :

Shares that are issued for a specific maturity period are known as redeemable preference shares. Cost of preference share is the discount rate that equates the present value of cash inflows (net proceeds) with the present value of cash outflows (dividend and principal repayment). Generally dividend is paid at the end of every year, but principal amount will be paid at the end. Cost of preference share when the principal amount is paid at the end is given below.

$$NP = \frac{D_1}{(1+K_p)^2} + \frac{D_2}{(1+K_p)^2} + ... + \frac{D_n}{(1+K_p)^n} + \frac{P_n}{(1+K_p)^n}$$

Where K_p= Cost of preference share

NP = Net proceeds after discount, floatation cost

D_i = Dividend on preference share at the end of year i, i = 1, 2, ..., n

P_n = Repayment of principal amount at the end of year 'n' years.

This equation can be simplified and written as the following :

$$K_p = \frac{C + (D - P)/n}{(D + P)/2}$$

Where, C = Annual dividend

D = Par value of preference shares

n = Number of years to maturity

P = Net Proceeds

F. Cost of Equity Capital :

Cost of this source of capital is very difficult to measure. The difficulty arises 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 dividend valuation method is discussed below.

Dividend Valuation Method

According to this method, the cost of equity capital is that discount rate which equates the current market price of the equity (P) with the sum of present value of expected dividends. That is,

$$P = \frac{D_1}{(1+K_e)} + \frac{D_2}{(1+K_e)^2} + ... + \frac{D_n}{(1+K_e)^n}$$

Where D_1, D_2 ..... are dividends expected during each time period (1, 2, ..., n) and K_e is the cost of equity or the discount rate. The above equation can be simplified and written as the following :

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

Where D = dividend at the end of year, P = Current market price of share or Net proceeds per share.

However dividends are expected to grow over years. In order to overcome this problem, a constant growth rate (g) in dividend has to be assumed. Then the cost of equity can be obtained by the following formula :

$$K_e = \frac{D_1}{P} + g$$

Where $D_1 = D(1+g)$ = dividend a year hence growing at 'g' rate;

P = Current market price of share or net proceeds per share;

g = growth in dividend.



Exercise : 4.6

SFL Ltd. offers equity shares of Rs. 10 each for public subscription. The rate of dividend expected by equity shareholders is 30%. What will be the cost of equity if the present market price of SFL share is Rs. 13 ?

Solution :

Here D = Dividend amount = 0.30 × Rs. 10 = Rs. 3

P = Current market price = Rs. 13

$$K_e = \frac{\text{Rs. } 3}{\text{Rs. } 13} = 0.23 \text{ or } 23\%$$



Exercise : 4.7

The current market price of equity of an equity share of ACC Ltd is Rs. 540. The current dividend per share is Rs. 15. Dividends are expected to grow at 7%. Calculate the cost of equity.

Solution :

Here, D = Dividend amount = Rs. 15

D_1 = Rs. 15 (1 + 0.07) = Rs. 16.05

P = Current market price = Rs. 540

g = Growth rate in dividend = 7%

$$K_e = \frac{16.05 + 0.07}{540} = 0.029 \text{ or } 2.9\%$$

G. Cost of Retained Earnings :

The part of income which is left with after paying interest on debt capital and dividend to its shareholders is called retained earnings. These also involve cost in the sense that by withholding the distribution of part of income to shareholders the company is denying them the opportunity to invest these funds elsewhere and earn income. In this sense the cost of retained earnings is the opportunity cost. In other words, the opportunity costs of retained earnings are the earnings foregone by the shareholders. However, the following adjustments are required for determining the cost of retained earnings :

(i) Income Tax Adjustment : Usually, the dividends receivable by the shareholders are subject to income tax. Thus the dividends actually received by them are the amount of net dividend (i.e. gross dividends less income tax).

(ii) Brokerage Cost Adjustment : Usually, the shareholders cannot utilize the amount of dividend received from the company for the purpose of investment as they have to incur some expenses by way of brokerage, commission etc for purchasing new shares against the dividend.

The cost of retained earnings after making proper adjustments (i.e. income tax, brokerage cost) can be computed by using the following formula :

$$K_r = K_e (1 - T) (1 - C)$$

Where K_r = Cost of retained earnings

K_e = Cost of Equity Capital

T = Tax rate applicable to the shareholders

C = Commission and Brokerage costs, etc.

4.7 WEIGHTED AVERAGE COST OF CAPITAL

The term cost of capital is used to denote the overall composite of capital or weighted average of the cost of each specific type of funds i.e weighted average cost. The weighted average cost of capital implies an average of the costs of each of the source of funds employed by the company properly weighted by the proportion they hold in the company's capital structure. The computation of weighted average cost of capital involves the following steps:

(i) Calculate the cost of each specific source of funds.

(ii) Assign proper weights to specific costs.

(iii) Multiply the cost of each source by the appropriate weight.

(iv) Divide the total weighted cost by the total weights to get the overall cost of capital.

Assignments of weights

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

(i) Book values : Book value weights are based on the values found on the balance sheet. The weight applicable to a given source of fund is simply the book value of the source of fund divided by the book value of total weights.

(ii) Market values : 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 company.

For example, let us assume that the proposed capital structure of a company after new financing would be as follows :

Equity capital	.....	25 Percent
Debt capital	.....	50 Percent
Preference capital	.....	10 Percent
Retained earnings	.....	15 Percent
Total		**100%**

Suppose the company has calculated the cost of each source of capital as follows :

Item	.....	**Cost**
Equity Capital	.....	24 Percent
Debt capital	.....	8 percent
Preference capital	.....	23 Percent
Retained earnings	.....	19 Percent

With these figures, the weighted average cost of capital is calculated for the company as shown in the following table.
The formula for the weighted cost of capital is :

$$WX / W = 1515 / 100$$
$$= 15.15\%$$

This average cost of capital provides a measure of the minimum rate of return which the proposed investment must earn to become acceptable.



4.8 LET US SUM UP

In this unit we have discussed the following :

- Cost of capital refers to the minimum rate of return a company must earn on its investments in order to satisfy the various categories of investors who have made investments in the form of shares, debentures or term loans.
- The determination of cost of capital is very significant from the point of view of (i) Capital Budgeting Decisions (ii) Capital Structure Decisions and (iii) Financial Performance.
- Cost of capital can be broadly classified as Explicit cost, Specific cost, Average cost and Marginal cost.
- Cost of irredeemable debt is calculated as :

$$\text{Pre-tax Cost : } K_d = \frac{\text{Interest}}{\text{Principal amount or face value}}$$

$$\text{Post-tax Cost : } K_d = \frac{\text{Interest (1– tax rate)}}{\text{Principal amount or face value}}$$

- Cost of redeemable debt

  Pre-tax Cost : $K_d = \frac{I + (D - P)/n}{(D+P)/2}$

  Post-tax Cost K_d = K_d (pre tax) × (1 – tax rate)

- Cost of Irredeemable Preference Share

  $K_p = \frac{\text{Dividend } (D_2)}{\text{Net proceeds (NP)}}$

- Cost of redeemable preference shares

  $K_p = \frac{C + (D - P)/n}{(D+P)/2}$

Types of capital	Proportion in the New capital structure (W)	Cost of capital (X)	(WX) (2 × 3)
1	**2**	**3**	**4**
Equity capital	25	24	600
Debt capital	50	8	400
Preference capital	10	23	230
Retained earnings	15	19	285
	100		**1515**

- Cost of equity capital can be calculated as the following

  $K_e = \frac{D_1}{P} + g$



Exercise : 4.8

The specific cost components (post tax) of E-net Ltd. are given below:

Cost of debt	4.00%
Cost of preference shares	11.5%
Cost of equity capital	15.50%
Cost of retained earnings	14.50%

Debt	3,00,000
Preference Share Capital	4,00,000
Equity Share Capital	6,00,000
Retained Earnings	2,00,000
	15, 00,000

Calculate the weighted average cost of capital using 'Book Value Weights'.

- Cost of retained earnings

  $K_r = K_e (1 - T) (1 - C)$

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

Computation of Weighted Average Cost of Capital under Book Value Weights

Sources (a)	Amount (Rs.) (b)	Proportion (c)	Post tax cost (d)	Weighted Cost (e) = (c) × (d)
Debt	3,00,000	$\frac{3,00,000}{15,00,000} = 0.200$	0.04	$0.200 \times 0.040 = 0.0080$
Preference shares capital	4,00,000	$\frac{4,00,000}{15,00,000} = 0.267$	0.115	$0.267 \times 0.115 = 0.0307$
Equity share capital	6,00,000	$\frac{6,00,000}{15,00,000} = 0.400$	0.155	$0.400 \times 0.155 = 0.0620$
Retained earnings	2,00,000	$\frac{2,00,000}{15,00,000} = 0.133$	0.145	$0.133 \times 0.145 = 0.0193$
Total	15,00,000			0.1200

Therefore, weighted average cost of capital is 12%.



CHECK YOUR PROGRESS

Q.3. Fill in the blanks with appropriate words :

i. Cost of capital is the ..... required rate of return expected by investors.

ii. The explicit cost is the ..... which equates the present value of cash inflows with present value of cash outflows.

iii. ..... is the cost associated with particular component at capital structure.

iv. ..... is the additional cost incurred to obtain additional funds required by a company.

v. An average of the cost of each source of funds employed by the company for capital formation is called as.....

Q.4. Ajax Ltd. has made an issu of debentures for Rs. 400 lakhs. The terms of the issue are as follows : each debenture has a face value of Rs. 100 and carries a rate of interest of 14 per cent. The interest is payable annually and the debenture is redeemable at a premium of 5 per cent after 10 years. If Ajax realizes Rs. 97 per debenture and the corporate tax rate is 50 per cent, what is the cost of the debenture to the company ?

Q.5. The market price per share of MDH Ltd. is Rs. 125. The dividend per share expected a year hence is Rs. 12 per share and dividend per share is expected to grow at a constant rate of 8 per cent per annum. What is the cost of the equity capital ?



4.9 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey(2010), *Financial Management*, Vikas Publishing House; 10th edition.



4.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1.

Cost of capital is one rate of return the capital funds used should produce to justify their use within the company.

Ans to Q. 2.

Explicit Cost, Implicit Cost, Specific Cost, Average Cost, Marginal Cost.

Ans to Q. 3.

i. Minimum, ii. Discount rate, iii. Specific,
iv. Marginal cost, v. Weighted average cost of capital.

Ans to Q. 4.

7.7 per cent (Hint : Interest = Rs. 14, Tax rate = 0.5, Net proceed = Rs. 97 and number of years = 10)

Ans to Q. 5.

18.4 per cent (Hint : Dividend = Rs. 12.96, growth rate = 0.08 and current market price = Rs. 125)



4.11 MODEL QUESTIONS

1. State the importance of cost of capital. How is component cost of capital calculated ?
2. How is cost of (i) debt capital (ii) preference share and (iii) equity share calculated ?
3. What are the steps involved in calculation of overall cost of capital ?
4. The XYZ Company is expected to grow at 9% p.a. Its market price per share is Rs. 40. The company pays a dividend of Rs. 3.6 per share. What is the cost of equity ?

5. The Indian Plastic Ltd has on its books the following amounts and specific after-tax current costs for each type capital.

Types of capital	Book Value	Cost of capital
Long- term debt	700000	4.5 %
Preference share	50000	6 %
Equity share	600000	10 %

Calculate the weighted average cost of capital of the firm.

❖❖❖

UNIT - 5 : LEVERAGE

UNIT STRUCTURE

5.1 Learning Objectives

5.2 Introduction

5.3 Meaning of leverage

5.4 Financial Leverage

- 5.4.1 Measures of Financial Leverage
- 5.4.2 Degree of Financial Leverage
- 5.4.3 Impact of Financial Leverage on Investor's Rate of Return

5.5 Operating Leverage

5.6 Degrees of Operating Leverage

5.7 Combined effect of Financial and Operating Leverage

5.8 Let us Sum Up

5.9 Further Reading

5.10 Answers to Check Your Progress

5.11 Model Questions

5.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- define financial leverage
- explain operating leverage
- describe measurement of operating and financial leveraging
- explain combined effect of operating and financial leveraging.

5.2 INTRODUCTION

This unit explains about leverage. It aims to provide us the information about financial leverage, its measures and degree of financial leverage. We will also discuss on the impact of financial leverage on Investor's rate of return. And at the end of this unit we will discuss about operating leverage, degrees of operating leverage and after that we will discuss the combined effect of financial and operating leverage.

5.3 MEANING OF LEVERAGE

Leverage is the existence of fixed costs among a company's cost. These fixed costs can be classified as :

- Those elements of operating expenses which are fixed in nature, and
- Those non-operating expenses, such as interest payments, which are relatively fixed in nature.

The first, namely fixed operating expenses, determine a company's operating leverage and the second, namely fixed financial expenses, determine a company's financial leverage. Operating leverage arises from fixed operating costs (fixed costs other than financing costs), such as depreciation, salaries, advertising expenditures, and taxes. Financial leverage stems from the presence of fixed financing costs such as interest.

5.4 FINANCIAL LEVERAGE

Financial leverage relates to the financing activities of a company. The sources from which funds can be raised by a company can be those which carry a fixed financial charge or cost and those which do not involve any fixed charge. The sources of funds in the first category consist of various types of long-term debt, including debentures and bonds and preference shares. The second source mainly consists of equity capital. Long-term debts carry fixed rate of interest which is a contractual obligation. The dividend on preference shares is not a contractual obligation but is a fixed charge which must be paid before anything is paid to the equity shareholders.

The use of the fixed-charges sources of funds, such as debt and preference capital along with the owners' capital is described as financial leverage. It is also commonly referred as trading on equity. This is because the financial leverage employed by a company is intended to earn more return on the fixed-charge funds than their costs. This is expected to earn more return to the shareholders. However, it is based on the assumption that the company earns more on the assets that are acquired by funds having fixed cost.

Favourable or positive leverage occurs only when the company earns more than the fixed cost. However, unfavourable or negative leverage

occurs when the company does not earn as much as the cost of funds. Therefore, in situations when the earnings of the company is depressed, financial leverage may bring risk to the company. This is because the company has to pay interest even when its earnings are declining. This is also referred to as financial risk.

5.4.1 Measures of Financial Leverage

The most common measures of financial leverage are the followings:

i. **Debt Ratio :** It is the ratio of debt to the total available funds of the company, i.e. sum of owner's equity and outside debt. The owner's equity can be measured in terms of either book value or the market value.

It is calculated as $D / D + E$
$= D / V$

Where D is the value of debt, E is the value of shareholders' equity and V is the value of total capital (i.e. D + E). D and E may be measured in terms of book value.

ii. **Debt Equity Ratio:** It is the ratio of debt to the total equity. Here too, the equity can be measured in terms of either book value or the market value.

It is calculated as **D/E**, where D is the value of debt and E is the shareholders' equity. The book value of equity is called net worth. Shareholder's equity may be measured in terms of market value.

iii **Interest Coverage :** It is the ratio of earnings before interest and taxes (EBIT) to the interest liability. This is known as coverage ratio i.e. debt coverage ratio or debt service coverage ratio.

It is calculated as $\frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest}}$

The first two measures of financial leverage are also known as measures of capital gearing. These measures show the borrowing position of the company at a point of time. The third measure, known as coverage ratio, indicates the capacity of the

company to meet fixed financial charges. This measure helps to indicate the financial risk of the company.

5.4.2 Degree of Financial Leverage

The degree of financial leverage (DFL) is defined as the percentage change in earnings per share (EPS) that results from a given percentage change in earnings before interest and taxes (EBIT) and it is calculated as follows.

DFL = Percentage change in EPS divided by Percentage change in EBIT

This calculation produces an index number which if, for example, it is 1.43, this means that a 100 percent increase in EBIT would result in a 143 percent increase in earnings per share. When the economic conditions are good and the company's Earnings before interest and tax are increasing, its EPS increases faster.

The degree of financial leverage is expressed as the percentage change in EPS due to a given percentage change in EBIT.

$$\text{DFL} = \frac{\%\text{ change in EPS}}{\%\text{ change in EBIT}}$$

Financial leverage on the one hand increases shareholders' return and on the other, it also increases their risk. For a given level of EBIT, EPS varies more with more debt. Thus financial leverage is a double edged weapon. It may assure a higher return but with a higher risk. Normally, a trade off between the return and risk will be arrived at to determine the appropriate amount of debt.

5.4.3 Impact of Financial Leverage on Investor's Rate of Return

Let us understand how financial leverage affects investor's return on equity by the following illustration. A company needs a capital of Rs 10,000 to operate. This fund may be brought by the shareholders of the company. Alternatively, a part of this amount may be brought in through debt financing. If the company has money only from the shareholders than the company is not financially leveraged and

would have the following balance sheet.

Liabilities	Rs.	Assets	Rs.
Equity Capital	10,000	Cash	10,000

The company starts operations and has the following simplified version of income statement :

Sales (Rs.)	10,000
Expenses (Rs.)	7,000
EBIT (Rs)	3,000
Tax @ 50%	1,500
Net Profit	1,500

We know calculate the return on equity (ROE) :

$$ROE = \frac{\text{Net Profit}}{\text{Equity Capital}}$$

$$= \frac{\text{Rs. 1500}}{\text{Rs. 10000}} = 15\%$$

Now, if the company takes debt at the ratio of 2 : 1 then the return on equity will change. Assuming that the company borrows 10,000 × 2/3 = Rs. 6667 at the rate of 15%, the balance sheet of the company will be as follows :

Liabilities	Rs.	Assets	Rs.
Equity Capital	3,333	Cash	10,000
Debt Capital	6,667		
Total	10,000	Total	10,000

The income statement will be now as follows :

	Rs.
Sales (Rs)	10,000
Expenses	7,000
EBIT	3,000
Interest Charges	1,000
Profit before tax (PBT)	2,000
Tax @ 50%	1,000
Net Profit	1,000

We now calculate the Return on Equity (ROE) :

$$ROE = \frac{\text{Net Profit}}{\text{Equity Capital}}$$

$$= \frac{\text{Rs. 1,000}}{\text{Rs. 3,333}} = 30\%$$

The factors that have contributed to this additional return are the followings :

- Though the company has to pay interest at 15% on borrowed capital, the company has been able to generate more than 15% which is being transferred to the shareholders.
- Interest is a tax deductible expense. The greater the tax rate, the more is the tax shield available to a company which is financially leveraged.



CHECK YOUR PROGRESS

Q.1. Define financial leverage.

.....

.....

Q.2. Define degree of financial leverage.

.....

.....

5.5 OPERATING LEVERAGE

High fixed costs and low variable costs provide the greater percentage change in profits both upward and downward. If a high percentage of a company's cost are fixed, and do not decline when demand decreases, this increases the company's business risk. This factor is called operating leverage.

If a high percentage of a company's total costs are fixed, the company is said to have a high degree of operating leverage. The degree of operating

leverage (DOL) is defined as the percentage change in operating income (or EBIT) that results from a given percentage change in sales. In effect, the DOL is an index number which measures the effect of a change in sales on operating income, or EBIT. When fixed costs are very large and variable costs consume only a small percentage of each rupee of revenue, even a slight change in revenue will have a large effect on reported profits .Operating leverage, then, refers to the magnified effect on operating earnings (EBIT) of any given change in sales. One of the most dramatic examples of operating leverage is in the airline industry, where a large portion of total costs are fixed.

Thus, in general terms, operating leverage is defined as the percentage change in the earnings before interest and taxes relative to a given percentage change in sales.

5.6 DEGREES OF OPERATING LEVERAGE

The degree of operating leverage is also defined as the change in a company's earnings before interest and tax due to change in sales. Since variable costs change in direct proportion of sales and fixed costs remain constant, the variability in EBIT when sales change is caused by fixed costs. Operating leverage refers to the use of fixed costs in the operation of a firm. A firm will not have operating leverage if its ratio of fixed costs to total cost is nil. For such a firm, a given change in sales would produce same percentage change in the operating profit or earnings before interest and taxes.

Fixed operating costs include administrative costs, depreciation, selling and advertisement expenses etc. With positive (i.e. greater than zero) fixed operating costs, a change of 1% in sales produces a more than 1% change in Earnings Before Interest and Taxes (EBIT). A measure of this effect is referred to as the Degree of Operating Leverage (DOL). Thus DOL measures the responsiveness of operating income (EBIT) to change in the level of output and indicates its impact on profits when the levels of sales vary. Specially, DOL is defined as the percentage change in operating income (EBIT) divided by the percentage change in the level of output.

$$DOL = \frac{\% \Delta \text{ EBIT}}{\% \Delta \text{ D}} = \frac{\Delta \text{ EBIT / EBIT}}{\Delta \text{ Q / D}}$$

In other words,

$$DOL = \frac{Q\ (P–V)}{Q\ (P–V) – F}$$

Where Q = Quantity produced and sold
P = Selling price per unit
V = Variable cost per unit
F = Operating fixed costs



Exercise : 5.1

A company sells products for Rs. 100 per unit, has variable operating costs of Rs. 50 per unit and fixed operating costs of Rs. 50,000 per year. Show the various levels of EBIT that would result from sale of (i) 1,000 units (ii) 2,000 units and (iii) 3,000 units.

	Decrease	Base level	Increase
Sales in units	1,000	2,000	3,000
Sales revenue (Rs.)	1,00,000	2,00,000	3,00,000
Less : Variable operating cost (Rs.)	50,000	1,00,000	1,50,000
Sales revenue-Variable cost (Rs.)	50,000	1,00,000	1,50,000
Less : Fixed Operating Cost (Rs.)	50,000	50,000	50,000
EBIT (Rs.)	0	5 0,000	1,00,000
Percentage (Decrease/Increase)	–100%		+100%

Interpretation :

From the above illustration, we get the following result :

(i) A 50 percent increase in sales (from 2,000 to 3,000 units) results in a 100 percent in EBIT (from Rs. 50,000 to Rs. 1, 00,000).

(ii) A 50 percent decrease in sales (from 2,000 to 1,000 units) results in a 100 percent decrease in EBIT (from Rs. 50,000 to zero).



Exercise : 5.2

A company sells its products for Rs. 50 per unit, has variable costs of Rs. 30 per unit and fixed operating costs of Rs. 17,000 per year. Its current level of sales is 1000 units.

(i) Determine the degree of operating leverage.

(ii) What will happen to EBIT if sales change (i) rise to 1350 units and (ii) decrease to 850 units ?

Solution : EBIT at various sales levels

Sales in units	850 units	1000 units	1250 units
Sales revenue (Rs.)	42,500	50,000	62,500
Less : Variable cost (Rs)	25,500	30,000	37,500
Sales revenue-Variable cost	17,000	20,000	25,000
Less : Fixed operating cost	17,000	17,000	17,000
EBIT	0	3,000	8,000

Interpretation :

(i) A decrease of 25% in sales volume (from 1000 units to 850 units) leads to 100 percent decline in EBIT (from Rs. 3,000 to zero).

(ii) An increase of 25% in sales volume (from 1000 units to 1250 units) results in 1.66% increase in EBIT.

The two illustrations (5.1 and 5.2) show that when a company has fixed operating costs, an increase in sales volume results in a more than proportionate increase in EBIT. Similarly, a decrease in the level of sales

has an exactly opposite effect. This is called as operating leverage, the former being favourable leverage, while the latter is unfavourable.

Thus it is clear that the greater the DOL, the more sensitive is EBIT to a given change in unit sales. DOL is therefore a measure of company's or business risk. Business risk refers to the uncertainty or variability of the company's EBIT.

5.7 COMBINED EFFECT OF FINANCIAL AND OPERATING LEVERAGE

The combined effect of two leverages can be quite significant for the earnings available to ordinary shareholders. They cause wide fluctuation in earnings per share for a given change in sales. If a company employs a high level of operating and financial leverage, even a very small change in the level of sales will cause significant effect on the earning per share.

The operating leverage has its effects on operating risk and is measured by the percentage change in EBIT due to percentage change in sales. The financial leverage has its effects on financial risk and is measured by the percentage change in EPS due to percentage change in EBIT. Since both these leverages are closely concerned with the ability to cover fixed charges, if they are combined, the result is total leverage and the risk associated with combined leverage is known as total risk.

The degree of combined leverage is expressed in the following manner

DCL = DOL × DFL, where DCL = Degree of combined leverage
DOL = Degree of operating leverage
DFL = Degree of financial leverage

Substituting the values of DOL and DFL, we have :

$$DCL = \frac{\%\text{ change in EBIT}}{\%\text{ change in sales}} \times \frac{\%\text{ change in EPS}}{\%\text{ change in EBIT}}$$

$$= \frac{\%\text{ change in EPS}}{\%\text{ change in sales}}$$

$$DCL = \frac{\text{Sales revenue} - \text{Variable cost}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBIT} - I} = \frac{\text{Sales revenue} - \text{Variable cost}}{\text{EBIT} - I}$$

A greater DOL or DFL will raise DCL. DCL is a measure of the total risk

or uncertainty associated with shareholders' earnings that arises because of operating and financial leverage. Operating and financial leverage can be obtained in a number of different ways to obtain a desirable degree of total leverage and an acceptable level of total risk.



Exercise : 5.3

Suppose company FGL ltd. sells 1000 units at Rs. 10. It has a variable cost of Rs. 3 per unit and fixed costs of Rs. 4.00. EBIT is Rs. 3000 and Interest amount is Rs. 1000. Fixed cost is Rs 4000.

(i) Calculate DCL.

Solution :

$$DCL = DOL \times DFL$$

$$DOL = \frac{Q\ (P - V)}{Q\ (P - V) - F} = \frac{1000\ (10 - 3)}{1000\ (10 - 3) - 4000} = 2.33$$

$$DFL = \frac{EBIT}{EBIT - I} = \frac{3000}{3000 - 1000} = 1.5$$

$$DCL = 2.33 \times 1.5 = 3.5$$

Interpretation :

This means that a output of 1000 units, a 1% variation in the quantity produced and sold will cause a 3.5 change in EPS.



CHECK YOUR PROGRESS

Q.3. Fill in the blanks with appropriate words :

i) _____ refers to the incurrence of fixed operating costs in the company's income statement.

ii) A simple indication of _____ is to look at how earnings are affected by a change in sales.

iii) Total leverage is a measure of _____ risk. It measures how _____ is affected by a change in sales.

iv) Total leverage is the _____ of _____ and _____.

Q.4. A company's sales, variable costs and fixed cost amount to Rs. 75,00,000, Rs. 42,00,000 and Rs. 6,00,000 respectively. It has borrowed Rs. 45,00,000 at 9 percent and its equity capital totals Rs. 55,000.

(i) What are the operating, financial and combined leverage of the company ?

(ii) If the sales drop to Rs. 50,00,000, what will the new EBIT be ?

Q.5. An income statement of ACC ltd. is as follows :

	Rs.
Sales	9,60,000
Variable Cost	5,60,000
Earning before Fixed Cost	4,00,000
Fixed Cost	2,40,000
	1,60,000
Interest	60,000
Earning before tax	1,00,000
Tax	50,000
Net Income	50,000

Compute the degree of (i) Operating Leverage (ii) Financial Leverage and (iii) Combined Leverage



5.8 LET US SUM UP

In this unit we have discussed the following :

- Leverage is the existence of fixed costs among a company's cost.
- There are three types of leverage, namely, financial, operating and combined.
- Financial leverage results from the presence of fixed financial charges such as interest on debt and dividend on preference shares.
- Financial leverage is defined as the ability of a company to use fixed financial charges to magnify the effect of changes in EBIT on the earnings per share (EPS).
- The degree of financial leverage (DFL) is defined as the percentage

change in earnings per share (EPS) that results from a given percentage change in earnings before interest and taxes (EBIT) and it is calculated as DFL = Percentage change in EPS divided by Percentage change in EBIT.

- Operating leverage refers to the company's ability to use fixed operating costs to magnify the effect of changes in sales on its operating profits (EBIT).
- The degree of operating leverage (DOL) is defined as the percentage change in operating income (or EBIT) that results from a given percentage change in sales.
- The combined leverage refers to the combination of operating leverage and financial leverage.



5.9 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



5.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

Financial leverage relates to the financing activities of a company.

Ans to Q. 2. :

The degree of financial leverage is defined as the percentage change in earnings per share that results from a given percentage change in earnings before interest and taxes.

Ans to Q. 3. :

1. Operating leverage, 2. Operating leverage, 3. Total risk, EPS, 4. Product, Operating leverage, Financial leverage.

Ans to Q. 4. :

1. (i) 1.22, 1.18, 1.44 (ii) Rs. 16,00,000

Ans to Q. 5. :

1. (i) 2.50 (ii) 1.60 (iii) 4.00



5.11 MODEL QUESTIONS

1. What is meant by the term “leverage” ?
2. What are the types of risk generally associated with financial leverage ?
3. Explain the concept of financial leverage. Show the impact of financial leverage on the Return on Equity.
4. Outline the concept of Operating leverage.
5. Write the formula for the Degree of Combined Leverage.
6. Calculate the degree of operating leverage, degree of financial leverage and degree of combined leverage :

	A	B
Output in units	70,000	25,000
Fixed costs	10,000	13,000
Variable costs / per unit	0.2	1.5
Interest on borrowed funds	5,000	18,000
Selling price per unit	0.6	0.5

❖❖❖

UNIT - 6 : CAPITAL STRUCTURE

UNIT STRUCTURE

6.1 Learning Objectives

6.2 Introduction

6.3 Meaning and Definition of Capital Structure

6.4 Difference between Captial Structure and Capitalisation

6.5 Features of an Ideal Capital Structure

6.6 Factors Affecting Capital Structure

6.7 Theories of Capital Structure
- 6.7.1 Net Income Approach
- 6.7.2 Traditional Approach
- 6.7.3 Net Operating Income Approach
- 6.7.4 Modigliani and Miller Approach

6.8 Let us Sum Up

6.9 Further Reading

6.10 Answer to Check Your Progress

6.11 Model Questions

6.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the significance and meaning of capital structure
- describe the characteristics of an ideal capital structure
- outline the factors affecting the capital structure
- learn the theories of capital structure

6.2 INTRODUCTION

Every company requires funds for its operations. Business suffers if funds are not adequate, and if funds are not managed properly then the entire organization suffers. It is important for organizations that correct estimates of capital needs are determined and an optimum capital structure is maintained at all times. In this unit, we shall be discussing about the meaning and definition of capital structure. The unit will also

cover the theories of capital structure and the characteristics of an ideal capital structure.

6.3 MEANING AND DEFINITION OF CAPITAL STRUCTURE

The term capital structure ordinarily implies the proportion of debt and equity in the capital of a company. According to Weston and Brigham (1965), "capital structure is the permanent financing of the firm represented by long-term debt, preferred stock and net worth". According to Grestenberg, "Capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources viz. : loans, reserves, shares and bonds. J. J. Hampton (1995) defines capital structure as the combination of debt and equity securities that comprise a firms financing of its assets. Thus, the capital structure of an organization refers to permanent financing and it is composed of debt and equity securities. Capital structure is made up of long-term debt, preference share capital and shareholders' fund or equity.

It is important to note here that the terms capitalization and capital structure are not synonymous. Capitalization, on one hand, refers to the total amount of securities issued by a company. On the other hand, capital structure refers to the kinds of securities and proportionate amounts that make up capitalization. As mentioned earlier, for raising long-term finances, a company may issue three types of securities, viz., equity shares, preference shares and debentures. Capital structure thus, refers to the proportion among these types of securities.

6.4 DIFFERENCE BETWEEN CAPITAL STRUCTURE AND CAPITALIZATION

Capital Structure	Capitalisation
It refers to the *kind* of securities that are used.	Refers to the *amount* of securities that are to be used
It is concerned with the composition or make-up of the amount of long-term financing.	It is concerned with the amount of long-term investment.
It is concerned with the qualitative aspect of financial planning of an enterprise.	It is concerned with the quantitative aspect of financial planning of an enterprise.
It refers to the kinds of securities and the proportionate amounts that make-up capitalization.	Its emphasis is on total amount of securities issued by a company.

Based on the three types of securities: equity shares, preference shares and debentures, the capital structure of the company may be of the following forms :

i. Equity shares only

ii. Equity and Preference shares

iii. Equity shares and Debentures

iv. Equity shares, Preference shares and Debentures.

Long term loans and retained earnings are also a part of capital structure



LET US KNOW

On the basis of nature and type of capital, capital structure is classified as simple and complex. When the capital structure is composed of a single source, it is called as *simple capital structure*. For example, a capital structure comprising only of equity shares is a simple capital structure. When the capital structure is composed of more than one source of capital, which are not identical, is called *complex capital structure*. For example, if the capital structure is composed of preference shares, equity shares, debentures, and retained earnings, it is known as complex capital structure.

6.5 FEATURES OF AN IDEAL CAPITAL STRUCTURE

The term ideal capital structure or optimum capital structure refers to the safest and the most economical capital structure or the best ratio between the various types of securities. The ideal capital structure ensures that the mixture of debt and equity securities is in relation to the amount of earnings. Thus, ideal capital structure or optimum capital structure refers to the best combination of debt and equity capital.

A sound capital structure has the following features :

1. **Profitability :**An appropriate capital structure must be advantageous for the company. The company should focus on using maximum leverage at a minimum cost. In other words, a capital structure should generate maximum returns without increasing additional costs.

2. **Solvency :** The ideal or optimum capital structure should be used to avoid the significant risk of use of excessive debt which threatens the solvency of the company.
3. **Flexibility :** The capital structure of the company should be flexible, that is, it should be possible to increase or reduce, without incurring abnormally high cost of either owned or borrowed capital. This is important to adopt changes in the capital structure based on changing conditions.
4. **Simple :** An ideal capital structure is easy and simple to understand.
5. **Economy :** A good capital structure should ensure that the cost of capital is minimum. The considerations regarding payment of interests and dividend should be carefully evaluated.
6. **Continued existence and growth :** The capital structure should not adversely affect the survival and growth of the firm. The ideal capital structure should be designed in such a way that it helps in the growth of the company in the long run.



CHECK YOUR PROGRESS

Q.1. Define Capital Structure.

.....

.....

Q.2. State two features of capital structure.

.....

.....

6.6 FACTORS AFFECTING CAPITAL STRUCTURE

The capital structure of a firm depends on a large number of factors such as leverage, nature and size of business, growth of the company, etc. The factors affecting the capital structure are discussed below :

1. **Financial leverage :** The use of long term fixed interest bearing debt and preference capital along with equity share capital is called

financial leverage or trading on equity. The use of long-term debt magnifies the earnings per share of the firm and thus yields a higher return than the cost of debt. However, leverage can operate adversely also if the rate of interest on long-term loans is more than the expected rate of earnings. The firm must therefore, maintain a balance in the use of leverage.

2. **Growth and stability :** The capital structure of a firm is greatly influenced by the growth and the stability of the sales of the firm. If the sales of the firm remain fairly stable then the firm can take the benefit of financial leverage. Similarly, greater the rate of growth of sales, greater can be the use of debt in the capital structure.

3. **Cost of capital :** Cost of capital refers to the minimum return expected by the suppliers of capital. The capital structure should aim at minimising the cost of capital. Usually, debt is a cheaper source of finance compared to preference and equity capital due to a fixed rate of interest, legal obligation to pay interest, and repayment of the loan amount. Equity, on the other hand, is costlier as the equity shareholders undertake the highest risk as they cannot be paid back except at the time of the winding up of the company. A firm should therefore, must try to minimize the overall cost of capital by formulating an ideal capital structure.

4. **Risk :** There are two types of risk, viz., business risk and financial risk. Business risk refers to the variability in the earnings before interest and taxes. Financial risk, on the other hand, refers to the risk of a firm that may not be able to cover its fixed financial costs. Financial risk of a company is directly related to the capital structure of a firm. A firm with no debt financing has no financial risk. The extent of financial risk depends on the leverage of the firm's capital structure. Thus, a firm has to reach a balance between the financial risk and the risk of non-employment of debt capital to increase its market value.

5. **Cash flow ability to service debt :** A firm which shall be able to generate larger and stable cash inflows can employ more debt in the capital structure as compared to the one which has unstable and lesser cash inflows.

6. **Nature and size of the firm :** Nature and size of the firm has a lot of influence in its capital structure. Large concerns or public utility concerns can employ more debt because of stability and continuity of earnings because of its size. On the other hand, a concern which cannot provide stable earnings due to the nature of its business will have to rely mainly on equity capital.

7. **Control :** When the management does not want to dilute the control over the firm, funds are raised through fixed interest bearing debt capital. However, caution must be exercised while employing debt funds as too much debt capital might create a lot of obligation of the firm towards the lenders. This might in turn lead to some loss of control.

8. **Flexibility :** Capital structure of the firm should be flexible. It should be such that it is capable of being adjusted according to the needs of the changing conditions. It should be possible to raise additional funds, whenever the need be, without much of difficulty and delay.

9. **Requirements of investors :** The requirement of investors is another factor that influences the capital structure of a firm. It is necessary to understand the requirements of the investors. Investors may be institutional investors or they may be individual investors. Some investors are risk averse whereas some of them are ready to take risk. Equity shares are suitable for the risk loving investors whereas debentures are more suitable for the risk averse.

6.7 THEORIES OF CAPITAL STRUCTURE

Different kinds of theories have been propounded by different authors to explain the relationship between capital structure, cost of capital and value of the firm. The capital structure theories can be demarcated into two types : i) Relevance of Capital Structure and ii) Irrelevance of Capital Structure. The relevance view states that capital structure decisions are relevant for the firm and they affect the value of the firm whereas, the irrelevance theories state the capital structure of the firm does not affect the firm value.

Two prominent theories of the relevance group are : Net Income approach and Traditional approach and two prominent theories of



LET US KNOW

It is important to understand two terms related to capital structure : *levered* and *unlevered*. Levered firms are those which have debt in their capital structure. Unlevered firms are those that do not use any debt in their capital structure; they have only equity in their capital structure.

irrelevance group are : Net Operating Income approach and Modigliani and Miller approach.

Let us now discuss these theories in the following sections.

6.7.1 Net Income Approach

The net income approach states that the capital structure of a firm creates an impact on the value of the firm. Thus, capital structure is important as a determinant of a firm's value. According to this approach, the average cost of capital (k_0) of a firm decreases as the debt proportion in its capital structure increases. The cost of equity (k_e) and cost of debt (k_d) are independent of each other. Since the cost of debt (k_d) is usually less than the cost of equity (k_e), because debt is less risky as compared to equity from investor's point of view, an increase in leverage results in a decrease in overall cost of capital (k_0).

If we assume the earnings to be constant forever, the value of the firm can be calculated.

Value of the firm 'V' is

V = EBIT (Net Income) / K_0 (Overall cost of capital)

Or K_0 = EBIT / V

The value of the firm is also the sum total of values of all its securities, i.e.,

V = D + S + P

Where D is the market value of debt, S is the market value of equity, and P is the market value of preference capital. As the cost of capital, K_0, is the weighted average cost of capital (WACC), it can also be expressed as :

$$K_0 = \frac{K_d \times D}{D+S+P} + \frac{K_e \times E}{D+S+P} + \frac{K_p \times P}{D+S+P}$$

To make the discussion simpler, let us assume that our capital structure consists only of debt and equity. Financial leverage or use of debt benefits a firm in the following ways :

i) Debt is less costly than equity

ii) Debt bears a tax advantage that lowers its effective costs

Let us take an example to understand the net income approach. Company A has INR 10,000, 5 per cent debt with EBIT of INR 5,000 and the cost of shareholders' funds is K_e = 10%. The cost of debt funds for the firm is 5 per cent per annum.

The value of the firm is :

EBIT	5,000
Interest	500
Equity Earnings	4,500
Cost of Equity	0.10
Market value of equity	45,000
Market value of debt	10,000
Value of the firm	55,000

Overall cost of capital of firm A is, K_0 = EBIT/ Value of the firm
= 5,000/ 55,000 = 9.09%

Now, consider another Company B, similar in all respects to Company A except for its capital structure. Company B has 3,500 shares at INR 10 each at par and holds debt of INR 20,000 at 5 per cent per annum. As already stated, the business risk and EBIT of the company B is same as that of company A.

The value of the firm is :

EBIT	5,000
Interest (20,000 @ 5%)	1000
Equity Earnings	4,000
Cost of Equity	0.10
Market value of equity	40,000
Market value of debt	20,000
Value of the firm	60,000

Overall cost of capital of firm A is, K_0 = EBIT/ Value of the firm
= 5,000/ 60,000 = 8.33%

Thus, we see that for Company B, there is a lower cost of capital. The reason for the decrease in overall cost of capital is increased leverage, i.e., more and more use of debt.

The net income approach states that for maximum benefit to a firm's value, its debt proportion should be increased or rather maximized. Thus, the extreme net income postulate favors maximization of debt by all firms in order to enhance their market value. Figure 6.1 shows the graphical representation of the net income approach.

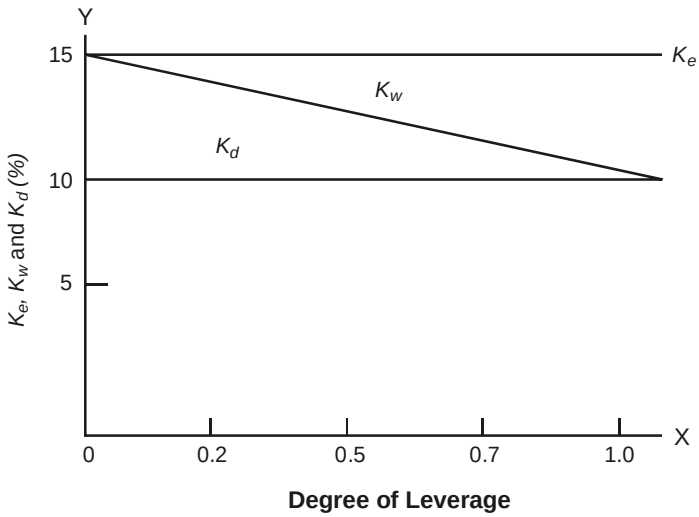


Figure - 6.1 : The effect of leverage on cost of capital under net income approach

6.7.2 Traditional Approach

The traditional view holds that there is an optimal capital structure. At this optimal capital structure, the weighted average cost of capital (WACC) is minimized thereby maximizing the value of the firm. The traditional theory is in continuation of the net income approach. Like the net income approach, the traditional view also argues that there exists benefit to the firm as well as the shareholders of the firm that employs high leverage.

According to this theory, the value of the firm can be increased initially or the cost of capital can be decreased by using more debt as debt is a cheaper source of finance as compared to equity. However, beyond a particular point, the cost of equity increases

because increased debt increases the risk perception of the equity share-holders. The advantage of cheaper debt at this point of capital structure is offset by the increase in cost of equity. Thus, the overall cost of capital, according to this theory, decreases up to a certain point, remains more or less constant for moderate increase in debt; and increases or rises beyond a certain point.

Let us take the example of firm A whose earning is INR 2,00,000. We assume three hypothetical situations : i) where the firm employs no debt ii) where the firm employs INR 4,00,000 debenture at 5 per cent per annum and iii) where the firm employs INR 6,00,000 debenture at 6 per cent per annum. The corresponding cost of equity when the firm employs no debt is 10 percent, when the firm employs INR 4,00,000 debt is 11% and when the firm employs INR 6,00,00 debt is 13%.The cost of capital of the firm in the three situations is as follows :

	No debt	**INR 4,00,000 debt**	**INR 6,00,000 debt**
EBIT	2,00,000	2,00,000	2,00,000
Less : Interest		(5% of Rs 4,00,000) =20,000	(6% of Rs 6,00,000) =36,000
Equity Earnings =(EBIT-Interest)	2,00,000	2,00,000-20,000 =1,80,000	2,00,000-36,000 =1,64,000
Cost of equity	0.10	0.11	0.13
Market value of equity = (Equity earnings / Cost of equity)	2,00,000/0.10 =20,00,000	1,80,000/0.11 =16,36,363	1,64,000/0.13 =12,61,538
Market value of debt		4,00,000	6,00,000
Market value of firm = (Market value of Equity +Market value debt)	20,00,000	20,36,363	18,61,538
Overall cost of capital = (EBIT/Market value of the firmx100)	2,00,000/20,00,000 =10%	2,00,000/20,36,363 =9.8%	2,00,000/18,61,538 =10.7%

Thus, it is clear from the above example that as the value of debt increases the cost of capital decreases but beyond a certain point of leverage the cost of capital increases and the value of the firm decreases. Figure 6.2 shows the graphical representation of the traditional approach of capital structure.

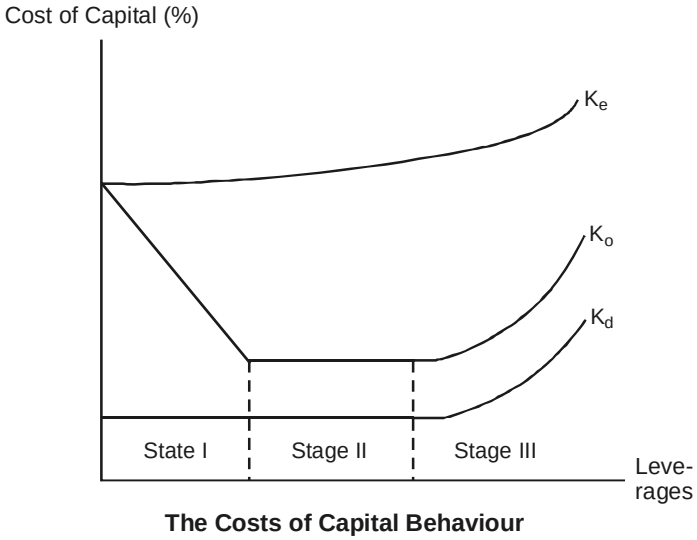


Figure - 6.2 : Traditional approach to capital structure

6.7.3 Net Operating Income Approach

According to the net operating income approach, there is no optimal capital structure for any firm, that is, capital structure is irrelevant for a given firm. It is diametrically opposite to the net income approach. According to this approach, change in the capital structure of a company does not affect the market value of the firm and the overall cost of capital remains the same irrespective of the debt-equity mix of the ratio of leverage.

This theory presumes that :

i) The market capitalizes the value of the firm as a whole

ii) The business risk remains constant at every level of debt equity mix

iii) There are no corporate taxes

The reasons propounded for such assumptions are that the increased use of debt increases the financial risk of the equity shareholders and hence the cost of equity increases. On the other

hand, the cost of debt remains constant with the increasing proportion of debt as the financial risk of the lenders is not affected. Thus, the advantage of using the cheaper source of funds is exactly offset by the increased cost of equity.

Say, for example, a firm X is under two conditions : Condition A and Condition B. Under both the conditions, the firm is similar in its functioning and size except that under condition B, the firm has more debt than under Condition A. the table below shows the financial data for the firm :

Firm X	**Condition A**	**Condition B**
EBIT	10,000	10,000
Overall cost of capital	0.16	0.16
Total value of firm	62,500	62,500
Interest on debt @10%	1,500	3,000
Total value of debt	15,000	30,000
Total value of equity	47,500	32,500
Debt-Equity ratio	0.32	0.92
PAT available to shareholders	10,000–1,500 =8,500	10,000–3,000 =7,000

Cost of equity of firm X under condition A = Equity earnings / Value of equity
= 8,500/47,500 = 17.8%

Cost of equity of firm X under condition B = Equity earnings / Value of equity
= 7,000/32,500 = 22%

Thus, we see that as the debt proportion rises in Firm X under the condition B, its cost of equity also rises as compared to the condition A. Thus, at lower cost of debt, as the firm goes on increasing the debt proportion its cost of equity rises due to increase in financial leverage resulting in financial risk. The advantage of lower cost of debt is offset by higher cost of equity. As the cost of debt increases, the cost of equity decreases. So the change in the

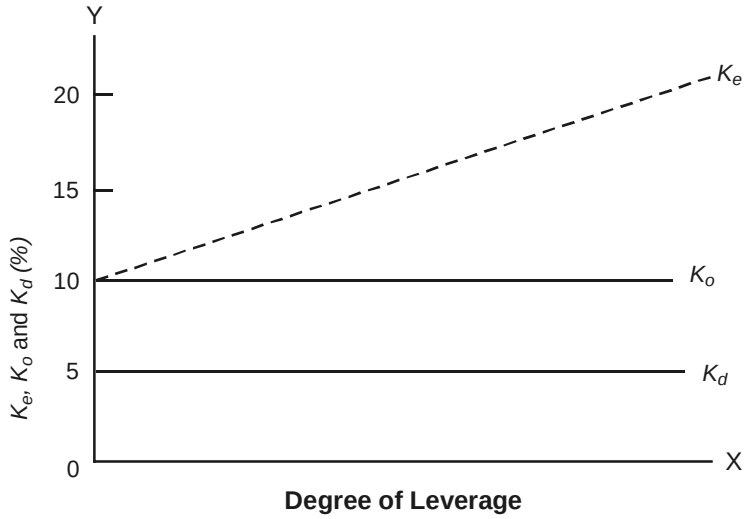


Figure - 6.3 : The Net Operating Income Approach

CHECK YOUR PROGRESS

Q.3. State four factors affecting capital structure.

.....

.....

Q.4. What is meant by Net Operating Income.

.....

.....

cost of debt proportion is offset by the change in the cost of equity proportion. Ultimately, there is no net change in the value of the firm. Figure 6.3 shows the graphical representation of the net operating income approach.

6.7.4 Modigliani and Miller Approach

In 1958, Modigliani and Miller (abbreviated as MM) published their research stating that the value of a firm does not change with the change in the firm's capital structure. However, their hypothesis was made under the assumption of no corporate taxes, and is often referred to as "MM without taxes". In 1963, they corrected their

research to show the impact of including corporate taxes on the firm's value and is often referred to as "MM with taxes".

Assumptions of the MM Model

- There are perfect capital markets with perfect information available to all investors and no transaction costs.
- The investors are rational. They evaluate risk and return of each investment proposal rationally before investing. Rational investors are able to substitute personal leverage for corporate leverage. They are able to create home-made leverage if the company is unable to provide them any advantage.
- The firms can be classified into distinct homogeneous risk classes.
- There is zero tax environment.
- Earnings are perpetual. Future earnings are known and definite.
- Investment decisions are known and definite.
- Only debt and equity are issued in case the firm needs funds and debt is risk less.
- There are no costs of financial distress and liquidation.
- Individuals can borrow as cheaply as corporations, i.e., r = k. If investors and firms can borrow at the same rate, then the investors can neutralize any capital structure decision of the firm by creating home-made leverage.
- There are no transaction costs in the arbitrage process.

Propositions

MM model propositions are based on the following premises:

- The total market value of the firm is independent of its capital structure.
- Cost of equity, k_e, increases to exactly offset the use of cheaper debt.
- Required rate of return for investment is independent of the financing decisions of the firm.
- The required rate of return for investment is dependent on the earnings of the firm.

The MM propositions can be put forward as Proposition I and Proposition II.

The first proposition of the MM model is, "the value of a firm falling in a particular risk category is equal to its expected operating income divided by the discount rate appropriate to its risk class. The value of the firm is independent of its capital structure".

Proposition I states that the value of the firms falling in a similar risk category is determined by its real assets, and not by its mode of financing its assets. The investment and financing decisions are two separate functions of the firm and the firm's value depends upon the investing decisions and not on the financing decisions. That means,

$$V_L = V_U$$

where V_L is the value of the levered firm (that has debt in its capital structure) and V_U is the value of the unlevered firm (no debt).

Proposition I of the MM theory

According to Proposition I, they argued that the value of a firm remains the same and is independent of the amount and cost of debt. Similar to the net operating income approach, they stated that as the proportion of debt is increased, the cost of equity also increases thereby having no impact on the overall cost of capital. Thus, WACC remains constant. Thus, capital structure is irrelevant for a firm.

The Arbitrage Process

It is important to understand how MM proposition I works. The simple logic of proposition I is that two firms with identical assets, irrespective of how these assets have been financed, cannot command different market values. Suppose, this were not true and two identical firms, except for their capital structures, have different market values. In this situation, arbitrage (or switching) will take place to enable investors to engage in the personal or homemade leverage as against the corporate leverage, to restore equilibrium in the market.

Suppose there are two firms U (an unlevered firm) and L (a levered firm) which have identical assets. Relevant financial particulars of the two firm are shown below :

	FIRM U	FIRM L
Operating income (EBIT)	150,000	150,000
Interest	0	60,000
Equity earnings	150,000	(150,000 – 60,000) = 90,000
Cost of equity	0.15	0.16
Market value of equity	(150,000/0.15) = 1,000,000	(90,000/0.16) = 562,500
Cost of debt	—	0.12
Market value of debt	0	500,000
Market value of the firm	1,000,000 (is same as market vaue of equity)	(500,000 + 562,500) = 1,062,500
Average cost of capital	(150,000/1,000,000) = 0.15	(150,000/1,062,500) = 0.1412

Thus, it can be seen that the value of the levered firm L is higher than that of the unlevered firm even though both the firms have the same operating income and belong to the same risk class. MM proposition I argues that such a situation cannot persist because equity investors would do well to sell their equity in firm L (the firm which is valued more) and invest in firm U (the firm which is valued less) with personal leverage. So, if an investor owns 10% equity in firm L, he would do well to :

1. Sell his equity in firm L for Rs. 56,250 (10% of 562,500)
2. Borrow Rs. 50,000, an amount equal to 10% of L's debt at an interest of 12%, and
3. Buy 10% of firm U's equity for Rs. 100,000

It is important to note that while the investor collects Rs. 106,250 (Rs. 56,250 as sale proceeds of firm L's shares and Rs. 50,000 as

borrowings), his investment is only Rs.100000 leaving him with a surplus amount of Rs. 6,250. Yet his income remains the same :

If the investor invests the surplus amount of Rs. 6,250 also, his new income will be greater than his old income. His risk exposure remains unchanged because he has merely replaced Rs. 50,000 of personal

	Old income from investment in L	**New income from investment in U**
10% of firm's equity income	9,000 (10% of equity earnings of 90,000)	15,000 (10% of equity earnings of 150,000)
12% interest on Rs. 50,000 loan	—	(6.000)
	9,000	9,000

borrowing for his share of firm L's corporate borrowing. In other words, he has substituted homemade leverage for corporate leverage.

When investors sell their equity in firm L and buy equity in firm U, the market value of the firm L will tend to decline and the market value of the firm U will tend to increase. This process continues until both the firms have the same market value.

Proposition II of the MM theory

Proposition II of the MM theory states that the cost of equity is a linear function of the firm's debt equity ratio. It states that "the expected return on equity is equal to the expected rate of return on assets, plus a premium. The premium is equal to the debt-equity ratio times the difference between the expected return on assets and the expected return on debt."

Formula for Proposition II :

$$R_E = R_O + (R_o - R_D)\ (D/S)$$

where R_E is the required return on equity, R_O is the overall required return on an unlevered firm, R_D is the required return on debt, D is

the market value of debt and S is the market value of equity in the capital structure.

Let us look at this example to understand the concept better. Xenon pharmaceuticals currently is an all-equity financed company. Its financials are as follows :

Expected operating income :	Rs. 4,000,000
Number of shares :	1,000,000
Earnings per share :	Rs. 4
Dividend per share :	Rs. 4
Price per share :	Rs. 20
Market value of shares :	Rs. 20,000,000

Since it has an all-equity capital structure, return on equity will be :

$R_E = R_O$ = equity earnings /market value of equity

= 4,000,000 / 20,000,000

= 0.20 or 20%

If Xenon pharmaceuticals switch to a debt equity ratio of 1:1 (a capital structure in which debt and equity are in equal proportions) with Rs. 1,000,000 debentures carrying an interest rate of 15%, the expected return on equity will be :

$$R_E = R_O + (R_o - R_D)\ (D/S)$$
$$R_E = 0.20 + (0.20 - 0.15)\ (1)$$
$$R_E = 0.20 + (0.05)$$
$$R_E = 0.25 \text{ or } 25\%$$

The expected rate of return on equity of a levered firm increases in proportion to the debt equity ratio, expressed as market value. This is explained by the fact that for low levels of debt, the firm's debt is considered risk free. However, as the debt proportion increases due to cheaper cost, the bankruptcy cost of the firm increases. The bankruptcy risk or default risk occurs due to the firm's inability to pay off its interest on debt from its earnings. As risk of default increases, the equity owners

demand more return to compensate for such higher risks. Thus, the cost of equity rises with the rise in the financial risk of the firm. Therefore, as the debt equity ratio increases, so does the cost of equity. Thus, the resultant effect on the firm value is zero.

Now, as the amount of debt increases due to its low cost, the financial risk of the firm continues to increase. Thus, high level of debt enhances the default risk of the firm so much so that the new debt investors demand high return because their investment with the firm is exposed to high risk of default. Now, as the cost of debt increases, the cost of equity starts increasing at a slower rate and later on starts decreasing. The cost of equity declines due to high debt payments, as low level of earnings are left for the shareholders. Also, the reason for decline in the cost of equity is that with increased debt, the firm's business risk is partially transferred to the debt holders. In extreme leveraged condition, they not only own part of the assets but also bear the risk of the firm. Thus, as risk is directly proportional to the rerun, the total value of the firm remains the same. Hence, any combination of debt/equity is as good as another. The firm's market value is independent of its capital structure.

MM Model with Corporate Tax

The real world is quite different from the world explained by MM Model and one of the differences between the MM world and the real world is the presence of taxes. In the real world, investors (both individuals and firms) do have to pay taxes. Modigliani and Miller, in their article of 1963 corrected their hypothesis for this assumption.

In the previous MM model without taxes, we discussed that with the use of cheaper debt, the cost equity increases. Now in the condition of tax environment, the debt further economizes as it incurs a tax advantage. The value of earnings available to the shareholders increases as tax liability decreases. Thus, the overall cost of capital, k_0, decreases by increasing the proportion of cheaper debt in firm's capital structure, till the point the firm incurs taxable profits. Therefore, leveraging tends to further lower the overall cost of capital of the firm and increases the value

of the firm. Under extreme leverage, we can say that the value of the firm is maximized and the overall cost of capital is minimized.

The formulas for MM model with taxes are as follows :

$$V_U = EBIT\ (1- t)\ /\ R_U$$

where V_U is the value of the unlevered firm, EBIT is the earnings before interest and taxes, *t* is the corporate tax rate and R_U is the required return for an unlevered firm.

$$V = D + S$$

Where V is the market value of the firm, D is the market value of the debt in the capital structure and S is the market value of the equity in the capital structure.

The main formulas for MM with taxes are discussed below :

$$V_L = V_U + t \times D$$

Where V_L is the value of the levered firm, V_U is the value of the unlevered firm, *t* is the corporate tax rate and D is the level of debt in the capital structure.

Now, $$R_E = R_O + (R_O - R_D)\ (D/S)\ (1- t)$$

where R_E is the required return on equity, R_O is the overall required return on an unlevered firm, R_D is the yield to maturity on outstanding bonds, D is the market value of debt in the capital structure, S is the market value of equity in the capital structure and *t* is the corporate tax rate.

As can be observed from the formula, MM proposition with taxes includes the term (1 – *t*). The value of (1 – *t*) is always less than 1. So, the required return on equity or the cost of equity does not increase as fast as it increases in the condition where there are no corporate taxes. The weighted average cost of capital now decreases as the debt proportion increases. The increase in the cost of equity or return on equity is less than the benefits that are arrived at by using higher proportion of the cheaper cost of debt. Thus, the cost of debt decreases more as compared to the marginal

increase in the cost of equity. This results in a decrease in the cost of capital, thereby increasing the value of the firm.

$$V = EBIT\ (1- t)/\ k_o$$

where EBIT is the earning of the firm before taxes, *t* is the corporate tax rate and k_o is the overall cost of capital.

Thus, the value of the firm is enhanced as debt is added to the capital structure. The debt provides an added advantage to the cost of debt, due to tax deductibility of interest payments, which reduces not only the cost of debt but the overall cost as well. And as the cost declines, the value of the firm rises.

Now, $$R_E = R_O + (R_O - R_D)\ (D/S)\ (1 - t)$$

where R_E is the required return on equity, R_O is the overall required return on an unlevered firm, R_D is the yield to maturity on outstanding bonds, D is the market value of debt in the capital structure, S is the market value of equity in the capital structure and *t* is the corporate tax rate.

As can be observed from the formula, MM proposition with taxes includes the term (1 – *t*). The value of (1 – *t*) is always less than 1. So, the required return on equity or the cost of equity does not increase as fast as it increases in the condition where there are no corporate taxes. The weighted average cost of capital now decreases as the debt proportion increases. The increase in the cost of equity or return on equity is less than the benefits that are arrived at by using higher proportiom of the cheaper cost ofdebt. Thus, the cost of debt decreases more as compared to the marginal increase in the cost of equity. This results in a decrease in the cost of capital, thereby increasing the value of the firm.

$$V = EBIT\ (1- t)\ /\ k_o$$

where EBIT is the earning of the firm before taxes, *t* is the corporate tax rate and k_o is the overall cost of capital.

Thus, the value of the firm is enhanced as debt is added to the capital structure. The debt provides an added advantage to the cost

of debt, due to tax deductibility of interest payments, which reduces not only the cost of debt but the overall cost as well. And as the cost declines, the value of the firm rises.



6.8 LET US SUM UP

In this unit we discussed the following :

- The term capital structure ordinarily implies the proportion of debt and equity in the capital of a company.
- The terms 'capitalization' and 'capital structure' are not synonymous.
- When the capital structure is composed of a single source, it is called as *simple capital structure.*
- When the capital structure is composed of more than one source of capital, which are not identical, is called *complex capital structure*.
- Levered firms are those which have debt in their capital structure. Unlevered firms are those that do not use any debt in their capital structure.
- The net income approach states that the capital structure of a firm creates an impact on the value of the firm.
- Like the net income approach, the traditional view also argues that there exists benefit to the firm as well as the shareholders of the firm that employs high leverage.
- According to the net operating income approach, there is no optimal capital structure for any firm, that is, capital structure is irrelevant for a given firm.
- MM hypothesis is identical with net operating income approach if taxes are ignored. However, when corporate taxes are assumed to exist, their hypothesis is similar to net income approach.



6.9 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.

2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.

3. I.M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



6.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

Capital structure is the permanent financing of the firm represented by long-term debt, preferred stock and net worth.

Ans to Q. 2. :

a) Profitability and b) Conservatism.

Ans to Q. 3. :

a) Financial leverage

b) Cash flow ability to service debt

c) Requirements of investors.

Ans to Q. 4. :

This approach suggests that the capital structure decisions of a firm is irrelevance and that any change in the leverage or debt will not result in a change in the total value of the firm as well as the market price of its shares.



6.11 MODEL QUESTIONS

1. Define capital structure.

2. Write a note on the importance of capital structure.

3. Differentiate between capital structure and capitalization.
4. What is meant by capital structure ? What are the major determinants of capital structure ?
5. Explain the Net Income Approach theory.
6. Explain the Net Operating Income theory.
7. Give a critical appraisal of the traditional approach and the MM approach to the problem of capital structure.
8. What do you meant by financial leverage ? What is its significance ? Explain and illustrate the impact of financial leverage.
9. What are the features of an ideal capital structure ?
10. What are the assumptions of the MM hypothesis ?

❖❖❖

UNIT - 7 : CAPITAL BUDGETING DECISION

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 Meaning and definition of Capital Budgeting

7.4 Importance of Capital Budgeting

7.5 Need for Capital Investment

7.6 Types of Investments Decisions

7.7 Investment Criteria

7.8 Capital Rationing

7.9 Let us Sum Up

7.10 Further Reading

7.11 Answers to Check Your Progress

7.12 Model Questions

7.1 LEARNING OBJECTIVES

After going through this unit you will be able to :

- discuss the meaning of capital budgeting
- explain the types of investment decision
- outline Investment criteria
- explain about capital rationing

7.2 INTRODUCTION

In this unit we are going to discuss the meaning of capital budgeting and its importance. We will also come to know about the types of investments decisions, investment criteria and capital rationing.

Capital budgeting is the process of making investment decisions in capital expenditures.

7.3 MEANING AND DEFINITION OF CAPITAL BUDGETING

Efficient allocation of capital is one of the most important functions of financial management in modern times. The function involves the firm's

decision to commit its funds in long-term assets and other profitable activities.

Capital Budgeting may be defined as "the firm's decision to invest its current funds efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years." It is the process of identifying, analyzing and selecting investment projects whose returns are expected to extend beyond one year. For example, a cement firm may want to start a new plant because of high demand; again a textile engineering graduate would like to start his own textile processing house. All these involve investment in fixed assets which will generate return in terms of cash flows to them. All these will essentially involve capital budgeting decisions.

Capital budgeting has been formally defined as follows :

1) "Capital budgeting is long-term planning for making and financing proposed capital outlay". —Charles T. Horngreen

2) "The capital budgeting generally refers to acquiring inputs with long-term returns". —Richards & Greenlaw

3) "Capital budgeting involves the planning of expenditure for assets, the returns from which will be realized in future time periods".
—Milton H. Spencer

7.4 IMPORTANCE OF CAPITAL BUDGETING

The capital budgeting decisions are important because of the following inter-related reasons :

1. **Long-term effects :** These involve decisions in long-term assets which involve high cost. As such the impacts of these investments have to be checked carefully by using modern techniques or investment criteria.

2. **Irreversibility :** Long- term assets investment decisions are not easily reversible once implementation has taken place. If these have to be reversed then huge financial loss may occur to the firm.

3. **More Risky :** Investment in long-term assets increases profit but it may lead to fluctuations in its earnings, the firm will become more risky. Hence, investment decisions decide the future of the business concern.

Capital budgeting decisions are difficult to take because (i) the decisions are based on expected future years cash inflows and (ii) the uncertainty of future.

Apart from the above mentioned imporatnce of capital budgeting, let us now discuss the some more significance of capital budgeting.

1. Capital budgeting involves capital rationing. This is the available funds that have to be allocated to competing projects in order of project potential. Normally the individuality of project poses the problem of capital rationing due to the fact that required funds and available funds may not be the same.
2. Capital budget becomes a control device when it is employed to control expenditure. Because manned outlays are limits to actual expenditure, the concern has to investigate the variation in order to keep expenditure under control.
3. A firm contemplating a major capital expenditure programme may need to arrange funds many years in advance to be sure of having the funds when required.
4. Capital budgeting provides useful tool with the help of which the management can reach prudent investment decision.
5. Capital budgeting is significant because it deals with right mind of evaluation of projects. A good project must not be rejected and a bad project must not be selected. Capital projects need to be thoroughly evaluated as to costs and benefits.
6. Capital projects involve investment in physical assets such as land building plant, machinery etc. for manufacturing a product as against financial investments which involve investment in financial assets like shares, bonds or mutual funds. The benefits from the projects last for few to many years.
7. Capital projects involve huge outlay and last for years.
8. Capital budgeting thus involves the making of decisions to earmark funds for investment in long term assets yielding considerable benefits in future, based on a careful evaluation of the prospective profitability / utility of such proposed new investment.

7.5 NEED FOR CAPITAL INVESTMENT

The factors that give rise to the need for capital investments are :

- Expansion
- Diversification
- Obsolescence
- Wear and tear of old equipment
- Productivity improvement
- Learning – curve effect
- Product improvement
- Replacement and modernization

The firm's value will increase in investments that are profitable. They add to the shareholders' wealth. The investment will add to the shareholders' wealth if it yields benefits, in excess of the minimum benefits as per the opportunity cost of capital.

It is clear from the above discussion what capital investment proposals involve :

- Longer gestation period
- Substantial capital outlay
- Technological considerations
- Irreversible decisions
- Environmental issues

7.6 TYPES OF INVESTMENT DECISIONS

There are many ways to classify investments. One classification is as follows :

- Expansion of existing business
- Establishments of new business
- Replacement and modernisation

1. **Expansion of existing buisness :** A firm may add capacity to its existing product lines to expand existing operations. A firm may expand its activities in a new business. Expansion of a new business requires investment in new products and a new kind of production activity within the firm. If a packaging manufacturing company invests in a new plant and machinery to produce ball bearings, which the

firm has not manufactured before, this represents expansion of new business or unrelated diversification. Sometimes a firm acquires existing firms to expand its business. In either case, the firm makes investment in the expectation of additional revenue.

2. **Establishment of new business :** A firm may establish entirely new business which may or may not be related to the existing business. For example a soap manufacturing company may start producing detergent or may even produce food items.

3. **Replacement and Modernization :** The main objective of modernization and replacement is to improve operating efficiency and reduce costs. Costs savings will reflect in the increased profits, but the firm's revenue may remain unchanged if the assets become outdated with technological changes. The firm must decide to replace those assets with new assets that operate more economically. If a cement company changes from dry process to wet process, it is an example of modernization and replacement. Replacement decisions help to introduce more efficient and economical assets and therefore, are also called cost reduction investments.

4. Another useful way to classify investments is as follows :

   - Mutually exclusive investments
   - Independent investments
   - Contingent investments

   a. **Mutually Exclusive Investments :** Mutually exclusive investments serve the same purpose and compete with each other. If one investment is undertaken, others will have to be excluded. A firm may, for example, either use a more labour-intensive, semi-automatic machine, or employ a more capital-intensive, highly automatic machine for production. Choosing the semi-automatic machine precludes the acceptance of the highly automatic machine.

   b. **Independent Investments :** Independent investments serve different purposes and do not complete with each other. For example, a heavy engineering firm may be considering expansion of its plant capacity to manufacture additional equipments for oil drilling firms and addition of new production

facilities to manufacture excavators for construction businesses. Depending on their profitability and availability of funds, the firm can undertake both investments.

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

7.7 INVESTMENT CRITERIA

Capital budgeting decisions form the framework for a firm's future development. Selection of a profitable investment decision will help to maximize value of the firm through the maximization of profits. A wide range of criteria has been suggested to select the investment decisions. The investment evaluation criterion used, should possess the following characteristics :

- It should provide a means of distinguishing between acceptable and unacceptable projects.
- It should provide a ranking of projects in order of their desirability.
- It should also solve the problem of choosing among alternative projects.
- It should be a criterion which is applicable to any conceivable investment project.
- It should recognize the fact that bigger benefits are preferable to smaller ones and early benefits are preferable to latter benefits.

The investment criteria are broadly divided into two categories :

1. Non-discounted Cash Flow Criteria :
   i) Payback period,
   ii) Accounting rate of return.

2. Discounted Cash Flow (DCF) criteria
   i) Net present value,
   ii) Internal rate of return,
   iii) Profitability index or Benefit-cost ratio.

It should be realized that different firms may use different methods. Which method is appropriate for a particular purpose of the firm will depend upon the circumstances. A large firm may use more than one technique for making capital budgeting decisions, while a small firm may contend with using only one technique which involves minimum funds and time. However, to avoid confusion, same method or methods should be used uniformly for every project throughout the firm. Though these selection criteria will help management in making decisions objectively, the (management) must still exercise their common sense and judgment in making the decisions.

1. NON-DISCOUNTED CASH FLOW CRITERIA :

i. Payback Period: The payback (or payout) period is one of the most popular and widely recognized criteria or technique of evaluating investment decisions. Pay back period may be defined as that period which is required to recover the original cash outflow made in the investment. In other words it is the minimum number of years required to recover the original investment. It is defined as the number of years required to recover the original cash outlay invested in a project. The cash flow after taxes are used to compute pay back period.

If the project generates constant annual cash inflows, the payback period can be computed dividing cash outlay by the annual cash inflow. That is—

$$\text{Payback period} = \frac{\text{Cash outlay (investment)}}{\text{Annual cash inflow}}$$

If the cash flows after taxes are unequal or not uniform over the periods in which these are expected to occur then the payback period can be found out by adding up the cash inflows until the total is equal to the initial cash outlay.

Acceptance Rule :

The payback period can be used as an accept-or-reject criterion as well as a method of ranking different investment decisions. If the payback period calculated for an investment budget is less than the maximum payback period set up by the management, it would be accepted, if not, it would be rejected. As a ranking method, it gives highest ranking to the capital budgets which has shortest payback period and lowest ranking to those with highest payback period. Thus, if the firm has to choose among two mutually exclusive projects, capital budgets with shorter payback period will be selected.

Advantages of Payback Period :

- It is simple, both in concept and application.
- It emphasizes earlier cash inflows; it may be sensible criterion when the firm is pressed with problems of liquidity.
- The risk of investment decision may be solved by having a shorter standard payback period as it may ensure guarantee against loss.

Disadvantages of Payback Period :

- Payback is not an appropriate method of measuring the profitability of an investment decision as it does not consider all cash inflows yielded over the life of the investment.
- It fails to consider the time value of money. Cash inflows, in the payback calculation, are simply added without suitable discounting. This violates the basic principle of financial analysis which stipulates that cash flows occurring at different points of time can be added or subtracted only after suitable compounding or discounting.
- There is no rational basis for setting a maximum payback period .It may lead to subjective decision as a firm may face difficulty in determining the maximum acceptable payback period.

ii. Accounting Rate of Return Method

The Accounting Rate of Return (ARR) is based upon accounting information rather than cash flows. There are a number of alternative methods for calculating the ARR. The most common method is as follows :

$$ARR = \frac{\text{Profit after tax}}{\text{Book value of the investments}}$$

The numerator of this ratio may be measured as the average annual post-tax profit over the life of the investment and the denomenetor is the average book value of investment in the project.

Acceptance Rule

As an accept-or-reject criterion, this method will accept all those investment outlays whose ARR is higher than the minimum rate established by management and reject those which have ARR less than the minimum rate. Alternatively, the ranking method can be used to select or reject investment proposals.

Advantages :

The following are the advantages of the accounting rate of return methods.

i. It is very simple to understand and use.

ii. It can be readily calculated using the accounting data.

iii. It uses the entire stream of incomes in calculating the accounting rate.

Disadvantages :

The Accounting Rate of Return method suffers from the following weaknesses :

i. It uses accounting profits and not cash flows.

ii. It ignores the time value of money. Profits occurring in different periods are valued equally.

iii. It does not consider the lengths of expected life of the investment.



Exercise : 7.1

Determine the Accounting Rate of Return(ARR) from the following data :

Year	Book vaslue of Investment (in Rs.)	Profit After Tax (in Rs)
1	90,000	20,000
2	80,000	22,000
3	70,000	24,000
4	60,000	26,000
5	50,000	28,000

For example, it assumes that 25 percent accounting rate for ten years is better than 20 per cent for twenty years.

iv. It is incompatible with the firm's objective of maximizing the market.

The Accounting Rate of Return (ARR) is

$$= \frac{1/5(20,000+22,000+24,000+26,000+28,000}{1/5(90,000+80,000+70,000+60,000+50,000}$$

$$= 34\%$$

The heigher the Accounting Rate of Return (ARR), the better the project.Normally, projects which have an Accounting Rate of Return equal to or greater than a pre-specified cutt off rate of return, which is usually between 20% to 30% are accepted;others are rejected.

2. DISCOUNTED CASH FLOW METHODS :

In order to overcome the limitations of Pay-back Period and Accounting Rate of Return, the discounted cash flow methods are recognized. The distinguishing feature of this method is that they take into consideration the time value of money. These methods also consider all benefits and costs that occur during the expected life of the investment. The commonly used discounted cash flow methods are (i) Net Present Value (ii) Profitability Index or Benefit Cost Ratio and (iii) Internal Rate of Return.

i. Net Present Value Method :

The Net Present Value (NPV) method is the classic economic method of evaluating the investment proposals. It is one of the Discounted Cash Flow (DCF) techniques explicitly recognizing the time value of money. The net present value may be described as the summation of the present values of cash proceeds (CFAT) in each year minus the summation of present values of the cash outflows in each year.

The steps involved in the NPV method are: First an appropriate rate of interest should be selected to discount cash flows. Generally, the appropriate rate of interest is the firm's cost of capital which is equal to the minimum rate of return expected by the investors to be earned by the firm on its investment proposal. Second, the present value of cash inflows/benefits and the present value of investment outlay/ cash outflows should be computed using cost of capital as the discounting rate. If all cash outflows are made in the initial year, then their present value will be equal to the amount of cash actually spent.

Third, the net present value should be found out by subtracting the present value of cash outflows from the present value of cash inflows.

Thus, the NPV method is a process of calculating the present value of cash flows (inflows and outflows) of an investment proposal, using the cost of capital as the appropriate discounting rate, and finding out the net present value of subtracting the present value of cash outflows from the present value of cash inflows. The equation for the net present value, assuming that all cash outflows are made in the initial year will be :

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

Where A_1, A_2..... represent cash inflows, C is the initial investment, n is the expected life of the proposal. It should be noted that the cost of capital k, is assumed to be known; otherwise the net present value cannot be calculated.

Acceptance Rule

The acceptance rule, using the NPV method, is to accept the investment decision if its net present value is positive (i.e. (NPV > 0) and to reject it if the net present value is negative (i.e. NPV < 0). If the NPV is zero, it is a matter of indifference.

Advantages :

i. It is superior to other methods of evaluating the economic worth of investments. Because present values are measured in today's rupees, the net present values of different investment proposals may be added to get the combined economic value of investments.

ii. It recognizes all cash flows throughout the life of the project.

iii. It helps to satisfy the objectives for maximizing values of tye firm.

iv. It recognizes time value of money.

Disadvantages :

i. It fails to give satisfactory answer when investment decisions under

consideration involve different amount of investments and with different expected life periods.

ii. There is problem in ascertaining the required rate of return to discount cash flows. The discount rate is the most important element used in the calculation of the present values because different discount rates will give different present values.



Exercise : 7.2

Calculate the net present value for project X which initially costs Rs. 20,000 and generates year-end cash inflows of Rs. 900, Rs. 800, Rs. 700, Rs. 600 and Rs. 500 in one through five years. The required rate of return is assumed to be 10 per cent.

Solution : Net Present Value of Project X

Year	Cash inflows	Discounting factor at 10%	PV of cash inflows
1	Rs. 900	0.909	Rs. 818
2	Rs. 800	0.826	661
3	Rs. 700	0.751	526
4	Rs. 600	0.683	410
5	Rs. 500	0.620	310
			Rs. 2,725
		(Less) Investment Outlay	20.000
		Net Present Value	Rs. 17,275

iii. The NPV is an absolute measure; hence it cannot be used to compare different investments.

The net present value for project X can be calculated by referring to present value table, where we find the appropriate discount factors. Multiplying the discount factors and cash inflows, we shall obtain the present value of cash inflows. The difference between the present value of cash inflows and the initial cash outlay will represent the net present value.

Profitability Index or Benefit Cost Ratio :

It is the ratio of the present value of future cash benefits, at the required rate of return to the initial cash outflow of the investment. It is also known as Benefit Cost Ratio because the numerator measures benefits and denominator measures costs. The formula to calculate benefit-cost ratio or profitability index is as follows :

$$\text{Benefit cost ratios or PI} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}}$$

Acceptance Rule

The accept-or-reject rule, using Benefit Cost ratio or PI, is to accept the project if it's PI is greater than one. Such a project will have positive net present value. However, in the case of mutually exclusive investments, the acceptance criterion is: the higher the index, the more profitable is the investment.

Advantages :

i. It is a conceptually sound technique of evaluating investments because it satisfies the requirements of time value of money, totality of benefits and so on.

ii. It measures net present value per rupee of outlay; hence can discriminate between large and small investments and is preferable to the net present value criterion.

Disadvantages :

i. It involves more calculations than the traditional methods (i.e. Payback and A.R.R.) and hence it is very difficult to understand.

ii. When cash outflows occur beyond the current period, the benefit-cost ratio criterion is not suitable.



Exercise : 7.3

The initial cash outlay of an investment is Rs. 100,000 and it generates cash inflows of Rs. 50,000, Rs. 60,000, Rs. 65,000 and Rs. 50,000 in the four years. Calculate PI of the investment assuming 10 percent rate of discount.

Solution : Calculation of Profitability Index			
Year	**Cash inflows (Rs)**	**Discount Factor**	**Present value (Rs)**
1	50,000	0.909	45,450
2	60,000	0.826	49,560
3	65,000	0.751	48,815
4	50,000	0.683	34,150
			177,975
		Less Outlay	–100,000
		NPV	Rs. 77,975
PI = (177975/100000) =1.77			

Internal Rate of Return Method :

The Internal Rate of Return (IRR) method is another discounted cash flow technique which takes into account of the magnitude and timing of cash flows. This method is also known as yield on investment, marginal efficiency of capital, rate of return over cost, time adjusted rate of return and so on. But it is appropriately called as internal rate of return as it exclusively depends on the initial outlay and cash inflows of the investment.

The internal rate of return can be defined as that rate which equates the present value of cash inflows with the present value of cash outflows of an investment. In other words, it is the rate at which the net present value of the investment is zero. It is called internal rate because it depends solely on the outlay and proceeds associated with the investment and not any rate determined outside the investment. It can be determined by solving the following equation :

$$C = \frac{A_1}{(1+\mathrm{r})} + \frac{A_2}{(1+\mathrm{r})^2} + \ldots\ldots\ldots + \frac{A_\mathrm{n}}{(1+\mathrm{r})^n}$$

$$0 = \sum_{t=1}^{n} \frac{A_t}{(1+\mathrm{r})^t} - \mathrm{C}$$

Where r = The internal rate of return

A_t = Cash inflows at different time periods, t = 1, 2, …, n

C = Cash outflows or Initial investment

It can be noticed that the IRR equation is the same as used for the NPV method with the difference that in the NPV method the discount rate (cost of capital), k, is assumed to be known and the net present value is found, while under the IRR method the value of r has to be determined at which the net present value is zero.



Exercise : 7.4

An investment has been assumed to costs Rs. 16,200 and is expected to generate cash inflows of Rs. 8,000, Rs. 7,000 and Rs. 6,000 over its life of three years. You are required to calculate the internal rate of return of the internal rate of return.

To start with, we select a rate of 20 per cent and calculate the present value of cash inflows.

Year	Cash inflows (Rs)	Discount Factor at 20%	Present value (Rs)
1	Rs. 8,000	0.833	Rs. 6,664
2	Rs. 7,000	0.694	Rs. 4,858
3	Rs. 6,000	0.579	Rs. 3,474
			Rs. 14,996
		(Less) Cash outlay	Rs. 16,200
		NPV (–)	Rs. 1,204

The value of r in Equation can be found out by trial and error. The approach is to select any discount rate to compute the NPV.If NPV>0, a heigher discount rate should be applied. This process will be repeated until the net present value becomes zero. The following illustration explains the procedure to calculate the internal rate of return.

The net present value indicates that this is a higher rate. Therefore, lower rates should be tried. It should be tried at 14% and 16%.

Year	Cash	Discount Factor @14%	PV	DF @16%	PV
1	8,000	.877	7,016	.862	6,896
2	7,000	.769	5,383	.743	5,201
3	6,000	.675	4,050	.641	3,846
			16,449		15,943
		Less Cash outlay	16,200		16,200
			NVP (+)Rs. 249		(–) Rs. 257

It can be observed from the above calculations that the true rate of return lies between 14 per cent and 16 per cent. It should be now tried at 15 per cent .It is seen that at 15% the net present value is zero.

Year	Cash	Discount Rate (15%)	Present value (Rs)
1	8,000	.870	6,960
2	7,000	.756	5,292
3	6,000	.658	3,948
			Rs. 16,200
		(Less) Cash outlay	Rs. 16,200
		NPV	0

Acceptance Rule :

The use of IRR as measure to accept investment decision involves a comparison of the actual IRR with the required rate of return. The investment would qualify to be accepted if the IRR (r) exceeds the cut-off rate.

Advantages :

i. Like the NPV method, it considers the time value of money.

ii. It considers cash flows over the entire life of the project.

iii. It has a psychological appeal to the users. The percentage figure calculated under this method is more meaningful and acceptable to them, because it satisfies them in terms of the rate of return on capital.

iv. The internal rate of return suggests the maximum rate of return and gives fairly good idea regarding the profitability of the project, even in the absence of the firm's cost of capital. It is also compatible with the firm's maximizing owner's welfare.

Disadvantages :

In spite of its theoretical superiority, the internal rate of return method is said to suffer from the following limitations :

i. It is difficult to understand and use in practice as it involves complicated computation problems.

ii. It may yield results inconsistent with the NPV method if the investments differ in their (a) expected lives, or (b) cash outlays, or (c) timing of cash flows.

iii. It may not give unique answer in all situations. It may yield negative rate or multiple rates under certain circumstances.

7.8 CAPITAL RATIONING

Capital rationing refers to a situation where a firm is not in a position to invest in all capital investments due to the constraints on availability of funds. It may be defined as "a situation where a constraint is placed on the total size of capital investment during a particular period." Normally resources are always limited and the demand for them far exceeds their availability. It is for this reason that the firm cannot take up all the investments though profitable, and has to select a combination of these which will yield the greatest profitability. Selection of projects for this purpose will require the taking of the following steps;

i. Ranking of investments according to profitability index or internal rate of return.

ii. Selecting investments in descending order of profitability until the



Exercise : 7.5

The H L Limited had Rs. 10, 00,000 allocated for capital expenditure purpose. The following five investments with required investment, expected annual cash inflows and expected life are under consideration. If the firms minimum required rate of returns is 12 percent, which projects can be accepted with the budget ceiling of Rs. 10,00,000 ?

Investment	Initial Investment	Cash Inflow resective life	Discount rate (12%) of Cash	Present value	Project life
A	5,00,000	169,200	3.605	609,966	5
B	1,25,000	28,600	4.968	142,085	8
C	3,50,000	74,300	5.650	419,795	10
D	3,00,000	34,000	6.811	231,574	15
E	4,00,000	57,000	6.194	353,058	12

budget figures are exhausted keeping in view the objective of maximizing the value of the firm.

Investment	A	B	C	D	E
Profitability	609,966	142,085	419,795	231,574	353,058
Index	$\frac{5,00,000}{}$ = 1.2	$\frac{1,25,000}{}$ = 1.13	$\frac{3,50,000}{}$ = 1.19	$\frac{3,00,000}{}$ 0.7	$\frac{1,00,000}{}$ 0.8

Investment	Profitability Index	Ranking
A	1.20	1
B	1.13	2
C	1.19	2
D	0.70	5
E	0.80	4

The first step is to rank the investment according to profitability index. The second step is to accept the investment in the descending order. The following three investment would be accepted :

Investment	Initial Investment (Rs.)	Profitability Index	NPV (Rs.)
A	5,00,000	1.20	109,966
C	3,50,000	1.19	69,795
B	1,25,000	1.13	17,085
Total	Rs. 975,000		Rs. 196,820



CHECK YOUR PROGRESS

Q.1. Fill in the blanks with appropriate words :

i) _____ is the process of making decisions.

ii) _____ is the _____ divided by the annual cash inflow through the expected life of the investment.

iii) Accounting rate of return does not recognize the _____

iv) Accept the investment if its IRR exceeds _____

v) _____ is used widely in ranking the investments competing for limited funds.

Q.2. The following data are given for Assam Roofing Ltd.

Initial cost of proposed machine	Rs. 75,000
Estimated useful life	7 years
Estimated annual cash inflows	Rs. 18,000
Salvage value	Rs. 3,000
Cost of capital	12%

[Note : Salvage value is cash inflow occurring at the end of the useful life]

Compute the (i) Pay back period; (ii) Present value of estimated annual cash inflows; (iii) NPV and (iv) IRR.

Q.3 P. Bose Ltd. being a traditional firm wants to appraise the investment decision by using accounting rate of return. It is planning to invest Rs. 10,00,000 in a new plant which will provide a salvage value of Rs. 80,000 at the end of its economic life of 5 years. The profits after depreciation and tax are estimated to be as under :

Year	1	2	3	4	5
Rs	50,000	75,000	1,25,000	1,30,000	80,000



Exercise : 7.6

ERM Ltd. wants to install a new machine in the place of an existing old one, which has become obsolete. The company made extensive enquiries and from the replies received short-listed two offers. The two models differ in cost, output and anticipated net revenue. The estimated life of both the machines is as follows :

Anticipated after-tax cash flow

Machine	Cost	Year 1	Year 2	Year 3	Year 4	Year 5
A	25	—	5	20	14	6
B	40	10	14	16	17	8

The firm's cost of capital is 16%. You are required to make an appraisal of the two offers and advise the firm by using the following : (i) Payback Period, (ii) Net Present Value, (iii) Profitability Index, (iv) Internal Rate of Return.

Note : Present Value of Re. 1

End of year	16%	18%	20%
1	0.862	0.847	0.833
2	0.743	0.718	0.694
3	0.641	0.609	0.579
4	0.552	0.516	0.482
5	0.476	0.437	0.402

SOLUTION :

(i) Pay-back Period :

Year	Machine A		Machine B	
	Cash Flow	Cumulative Cash Flow	Cash Flow	Cumulative Cash Flow
1	—	—	10	10
2	5	5	14	25
3	20	25	16	40
4	14	39	17	57
5	6	45	8	65

Pay-back Period is 3 years for both machines.

(ii) Net Present Value

		Machine A		Machine B	
Year	DCF @16%	Cash flow	Present Value	Cash flow	Present Value
1	0.862	—	—	10	8.620
2	0.743	5	3.715	14	10.402
3	0.641	20	12.820	16	10.256
4	0.552	14	7.728	17	9.384
5	0.476	6	2.856	8	3.808
Total Present Value			27.119		42.470
Less : Initial Cost			25.000		40.000
Net Present Value (Rs)			2.119		2.470

(iii) Profitability Index = $\frac{\text{Present value of cash inflows}}{\text{Investment}}$

Machine A = $^{27.119}/_{25}$ = 1.085 Machine B = $^{42.470}/_{40}$ = 1.062

(iv) Internal Rate of Return

Machine A

Year	Cash flow	DCF 18%	Present Value	DCF 20%	Present Value
1	—	0.847	—	0.833	—
2	5	0.718	3.590	0.694	3.470
3	20	0.609	12.180	0.579	11.580
4	14	0.516	7.224	0.482	6.748
5	6	0.437	2.622	0.402	2.412
Total Present Value			25,616		24.210
Less : Initial Cost			25.000		25.000
Net Present Value			0.616		(–) 0.790

$$\text{IRR} = 18\% - \frac{(25 - 25.616)}{(25.616 - 24.210)} \times (20\% - 18\%)$$

$$= 18\% - \frac{(-)\ .616}{1.406} \times 2\%$$

$$= 18\% + \frac{.616}{1.406} \times 2\% = 18.88\%$$

Machine B

Year	Cash flow	DCF 18%	Present Value	DCF 20%	Present Value
1	10	0.847	8.470	0.833	8.33
2	14	0.718	10.052	0.694	9.716
3	16	0.609	9.744	0.579	9.264
4	17	0.516	8.772	0.482	8.194
5	8	0.437	3.496	0.402	3.216
Total Present Value			40.534		38.720
Less : Initial Cost			40.000		40.000
Net Present Value			0.534		(–) 1.28

Thus the firm is able to utilize Rs. 975,000 out of Rs. 10,00,000. The expected net present value from these investments is Rs. 196,820.

$$\text{IRR} = 18\% - \frac{(40 - 40.534)}{(40.534 - 38.720)} \times (20\% - 18\%)$$

$$= 18\% - \frac{(-)\ .534}{1.814} \times 2\%$$

$$= 18.59\%$$

Summary of Investment Decision :

Particulars	Machine A	Machine B
i) Payback period	3 Years	3 Years
ii) Net Present Value [@ 16%]	Rs 2.119 Lakh	Rs. 2.47 Lakh
iii) Profitability Index	1.085	1.062
iv) IRR	18.8%	18.59%

Suggestion : From the analysis of the above it is observed that Profitability Index and IRR are greater in case of Machine A. Hence Machine A is to be selected even though NPV of it is slightly lesser than Machine B. Payback period of both the machines is equal.



7.9 LET US SUM UP

In this unit we have discussed the following :

i. Capital Budgeting is defined as "the firm's decision to invest its current funds efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years."

ii. A wide range of criteria can be used to judge the viability of investment decisions. They fall into two broad categories : discounting criteria and non-discounting criteria. The important discounting criteria are net present value, profitability index and internal rate of return. The major non-discounting criteria are pay back period and accounting rate of return.

iii. The Net Present Value (NPV) is the sum of the present values of all cash flows whether positive or negative that occur over the expected life of the investment decision.

iv. The profitability index is defined as the present value of benefits (cash inflows) divided by the present value of costs (cash outflows).

v. The Internal Rate of Return (IRR) of investment is the discount rate which makes its NPV equal to zero.



7.10 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.

2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.

3. I.M Pandey(2010), *Financial Management*, Vikas Publishing House; 10th edition.



7.11 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1. :

(i) Capital budgeting; long-term investment

(ii) Payback period; Initial investment

(iii) Time value of money

(iv) The cost of capital

(v) Profitability Index.

Ans to Q. 2. :

(i) 4.167 years (ii) Rs. 82,148 (iii) Rs. 8,505 (iv) 14.95%

Ans to Q. 3. :

A.R.R. = 20%



7.12 MODEL QUESTIONS

1) Define Capital Budgeting. Discus the importance of capital budgeting.

2) Define Capital Rationing. How would investments be ranked under capital rationing ?

3) Define and explain the following with their respective advantages and disadvantages

   (i) Pay-back period (ii) Average Rate of Return (iii) NPV (iv) IRR

4) Evaluate the following :

   a) Payback period

   b) Accounting rate of return

   c) Net Present Value

   d) Internal Rate of Return

e) Calculate Profitability Index for each project from the given data :

A firm is considering two mutually exclusive projects. Both require an initial cash outlay of Rs.10, 000 each and have a life of five years. The firm's required rate of return is 10% and pays tax @ 50%. The investments will be depreciated on a straight line basis. The net cash flows (before taxes) expected from the projects are as follows :

	Project 1	Project 2
Year 1	Rs. 4000	Rs. 6000
Year 2	Rs. 4000	Rs. 3000
Year 3	Rs. 4000	Rs. 2000
Year 4	Rs. 4000	Rs. 5000
Year 5	Rs. 4000	Rs. 5000

Which investment should be accepted and why ?

5) From the following information, calculate NPV and PI :

Initial outlay : Rs 50,000

Cash inflow :

Year	1	2	3	4
Cash inflow (Rs) :	20,000	15,000	25,000	10,000

Assume discount factor at 10%.

❖❖❖

UNIT - 8 : RISK ANALYSIS IN CAPITAL BUDGETING

UNIT STRUCTURE

8.1 Learning Objectives

8.2 Introduction

8.3 Meaning and concept of Risk

8.4 Sources and Types of Risk

- 8.4.1 Sources of Risk
- 8.4.1 Types of Risk

8.5 Techniques for accounting for risk in Capital Budgeting

- 8.5.1 Risk Adjusted Discount Rate
- 8.5.2 Certainty Equivalent Approach
- 8.5.3 Probability Distribution Approach
- 8.5.4 Sensitivity Analysis
- 8.5.5 Decision Tree Approach

8.6 Let us Sum Up

8.7 Further Reading

8.8 Answers to Check Your Progress

8.9 Model Questions

8.1 LEARNING OBJECTIVES

After going through this unit you will be able to :

- define the meaning of risk
- outline the types of risk
- discuss the Sources of Risk
- describe the Methods for accounting for risk in Capital Budgeting

8.2 INTRODUCTION

In the previous unit 7, we discussed the concept capital budgeting, capital investment, the various types of investment criteria and capital rationing. In this unit we are going to discuss the sources, methods suggested for accounting for risk in capital budgeting.

Risk is inherent in almost every business decisions. Capital budgeting is used to ascertain the requirements of the long-term investments of a company. In capital budgeting decisions, as they involve costs and benefits extending over a long period of time during which many things can be changes in unanticipated ways, risk is intrinsic.

Risk analysis is one of the most complex aspects of capital budgeting. The variety of techniques suggested top handle risk in capital budgeting are of two types : (i) Analysis of stand-alone Risk (ii) Analysis of Contextual Risk.

This unit discusses the different techniques of risk analysis.

8.3 MEANING AND CONCEPT OF RISK

The existence of volatility in the occurrence of an expected incident is called “risk”. The **Risk** is prevalent in all the business decisions, but it is much more inherent in the capital budgeting decisions. These decisions are the long-term decisions, which involves huge cost and whose benefits are derived over a long period of time or during the lifetime of the project. In other words, risk of an investment is the variance associated with its returns. Risk may be defined as the variation of actual cash flows from the expected cash flows. In capital budgeting risk can be defined as the variability that is likely to occur in future between the estimated and actual returns.

The risk varies according to the nature of investments. A research and development project can be much riskier than the expansion project while; the expansion project can be much riskier than the replacement project. Hence, the firm must evaluate the risk before employing its resources in any long-term investment project.

Let us now discuss the sources and types of risks.

8.4 SOURCES AND TYPES OF RISKS

8.4.1 Sources of Risks

There are several sources of risk in a project. The sources are explained as follows :

1. **Project Specific Risk :** The earning and cash flows of the project may be lower than expected because of estimation error

or some factors specific to the project like the quality of management.

2. **Competitive risk :** The unforeseen action of the competitors affects the earnings and the cash flows of the projects.
3. **Industry-specific risk :** The changes in the technology and the regulatory changes also affect the earnings and the cash flows of the projects.
4. **Market risk:** The unexpected changes in the GDP growth rate, interest rate etc has an impact on the functioning of the projects.
5. **International risk:** International risks are faced by the industries whose primary functions deals with exports and procure their raw materials from international markets. Due to the exchange rate risk or any political risk the earning and cash flows may be different than expected.

8.4.2 Types of Risks

Risk can be broadly classified into two categories : 1. Systematic Risk and 2. Unsystematic Risk.

1. **Systematic Risk :** It refers to that portion of variation in returns which is caused by factors that affects all securities. It may be due to changes in socio-economic, political conditions in the country. A significant political event, for example, could affect several of the assets in your portfolio. It is virtually impossible to protect yourself against this type of risk. Thus, we may have the following kinds of systematic risks :
   - **Market risk :** This is the most familiar of all risks. Also referred to as volatility, market risk is the day-to-day fluctuations in a stock's price. Market risk applies mainly to stocks and options.
   - **Interest rate risk :** Interest rate risk is the risk that an investment's value will change as a result of a change in interest rates. This risk affects the value of bonds more directly than stocks.
   - **Purchasing power risk :** It arises due to inflation which affects purchasing power of people.

2. **Unsystematic Risk :** Unsystematic risk is sometimes referred to as "specific risk", i.e. it is caused due to factors "unique or related to a firm or industry". This kind of risk affects a very small number of assets. An example is news that affects a specific stock such as a sudden strike by employees. Diversification is the only way to protect yourself from unsystematic risk. The different types of unsystematic risks are:

   - **Business risk :** It can be internal or external. Internal risk is caused due to improper product mix, lack of raw-materials etc.
   - **Credit risk :** Credit risk is the risk that a company or individual will be unable to pay the contractual interest or principal on its debt obligations. This type of risk is of particular concern to investors who hold bonds in their portfolios. Government bonds, especially those issued by the federal government, have the least amount of default risk and the lowest returns, while corporate bonds tend to have the highest amount of default risk but also higher interest rates.



CHECK YOUR PROGRESS

Q. 1 : Define Risk.

.....

Q. 2 : State the sources of Risk.

.....

Q. 3 : Name two types of Risk.

a.....

b.....

   - **Financial risk :** It is associated with the capital structure of the company. A company with no debt financing has no financial risk.

8.5 TECHNIQUES FOR ACCOUNTING FOR RISK IN CAPITAL BUDGETING

The following methods are generally suggested for accounting for the risk in capital budgeting :

1. Risk Adjusted Discount Rate
2. Certainty Equivalent Method
3. Probability Method
4. Sensitivity Method
5. Decision Tree Analysis
6. Simulation Technique

Let us now discuss this techniques in the following sub sections.

8.5.1 Risk Adjusted Discount Rate (RADR)

The risk-adjusted discount rate is based on the risk-free rate and a risk premium. Under this method, discount rate is adjusted in accordance with the degree of risk. That is, risk-premium rate is determined and added to the risk free rate otherwise used for calculating net present value.

Risk-adjusted discount rate = risk-free rate + risk premium

Risk free rate = computed based on the return on government securities

Risk premium= It is the additional return that investors require as compensation for assuming the additional risk associated with the project to be taken up for execution.

For example, the rate of interest (r) employed in the discounting is 10 per cent and the risk discount factor or degrees of risk (d) are 2, 4 and 5 per cent for mildly risky, moderately risky and high risk (or speculative) projects respectively then the total rate of discount (D) would respectively be 12 per cent, 14 per cent and 15 per cent.

That is RADR = 1/ (8+r+d). The idea is the greater the risk the higher the discount rate. That is, for the first year the total discount factor, D = 1 / (1+r+d) for the second year RADR = 1 / (1+r+d) 2 and so on.

Normally, risk discount factor would vary from project to project depending upon the quantum of risk. It is estimated on the basis of judgment and intention on the part of management, which in turn are subject to risk attitude of management. It may be noted that the higher the risk, the higher the risk adjusted discount rate, and the lower the discounted present value.

8.5.2 Certainty Equivalent Co-efficient Approach

This risk element in any decision is often characterized by the two Outcomes : the 'potential gain' at the one end and the 'potential loss' at the other. These are respectively called the focal gain and focal loss. In this connection, Shackle proposes the concept of "potential surprise" which is a unit of measurement indicating the decision-maker's surprise at the occurrence of an event other than what he was expecting. He also introduces "another concept - the "certainty equivalent" of risky investment. For an investment X with a given degree of risk, investor can always find another risk less investment Xi such that he is indifferent between X arid Xi. The difference between X and Xi is implicitly the risk-discount.

The risk level of the project under this method is taken into account by adjusting the expected cash inflows and the discount rate. Thus the expected cash inflows are reduced to a conservative level by a risk-adjustment factor (also called correction factor). This factor is expressed in terms of Certainty - Equivalent Co-efficient which is the ratio of risk less cash flows to risky cash lows.

Thus Certainty —Equivalent Co-efficient;

$$= \frac{\text{Risk less cash flow}}{\text{Risky cash flows}}$$

8.5.3 Probability Distribution Approach

A probability is a relative frequency with which an event may occur in the future. When future estimates of cash inflows have different probabilities the expected monetary values may be computed by multiplying cash inflow with the probability assigned. The monetary values of the inflows may further be discounted to find out the present values.

8.5.4 Sensitivity Analysis

The **Sensitivity Analysis** or **What-if Analysis** means, determining the viability of the project if some variables deviate from its expected value, such as investments or sales. In other words, since the future is uncertain and the entrepreneur wants to know the feasibility of the

project in terms of its variable assumptions viz, investments or sales change, can apply the sensitivity analysis.

Whether to accept or reject the proposed project depends on its net present value (NPV). Hence, sensitivity analysis is calculated in terms of NPV. Firstly, the base-case scenario is developed; wherein the NPV is calculated for the project based on the assumptions which are believed to be the most accurate. Then make some changes in the initial assumptions based on the other potential assumptions, and recalculate the NPV. Once the new NPV is calculated, analyze its sensitivity in terms of the changes made in the initial assumptions.



CHECK YOUR PROGRESS

Q.4 : Define Risk Adjusted Discount Ratio.

.....

.....

.....

Q.5 : What is Sensitivity Analysis ?

.....

.....

.....

Sensitivity Analysis is very useful for a firm that shows the robustness and the vulnerability of the project due to the change in the values of underlying variables. It indicates whether the project is worth to be carried forward or not with the help of NPV value. If the NPV value is highly sensitive to the changes in variables, the firm can explore the variability of that critical factor.

8.5.5 Decision Tree Analysis

Decision tree analysis is another technique which is helpful in tackling risky capital investment proposals. Decision tree is a graphic display of relationship between a present decision and possible future events, future decisions and their consequence. The sequence of event is mapped out over time in a format resembling

branches of a tree. In other words, it is pictorial representation in tree from which indicates the magnitude probability and inter-relationship of all possible outcomes.

Elements of Decision Theory : Any decision has the following elements:

1. The Decision Maker are held constant throughout the simulation, whereas the exogenous variables are randomly determined and are beyond the control of the decision maker.

    - The next step is to specify the values of the parameters and assign probabilities to the random variables that arise from the external factors.
    - Randomly, select any value from the probability distribution of each of the exogenous variables.
    - Compute the NPV for both the randomly generated values of exogenous variables and the parameter values, as specified by the decision maker.
    - Repeat the step 3 and 4 again and again, to get a large number of simulated values of NPV.

This whole process of simulation analysis compels the decision maker to consider all the interdependencies and uncertainties characterizing the project. Thus, the viability of the project is determined on the basis of number of outcomes and the probabilities realized through a series of actions performed during the simulation analysis.



8.6 LET US SUM UP

In this unit we have discussed the following :

- Risk of an investment is the variance associated with its returns. Risk may be defined as the variation of actual cash flows from the expected cash flows
- The sources of risk in a project are :
  a. Project Specific Risk

b. Competitive risk
c. Industry-specific risk
d. Market risk
e. International risk

- Risk can be broadly classified into two categories : 1. Systematic Risk and 2. Unsystematic Risk.
  - The methods for accounting for the risk in capital budgeting are:

a. Risk Adjusted Discount rate

b. Certainty Equivalent Method

c. Probability Method

d. Sensitivity Method

e. Decision Tree Analysis



8.7 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



8.8 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

Risk may be defined as the variation of actual cash flows from the expected cash flows.

Ans to Q. 2 :

The sources of risk in a project are :
a. Project Specific Risk
b. Competitive risk

c. Industry-specific risk
d. Market risk
e. International risk

Ans to Q. 3 :

Risk can be broadly classified into two categories :

a. Systematic Risk and b. Unsystematic Risk

Ans to Q. 4 :

The risk-adjusted discount rate is based on the risk-free rate and a risk premium. Under this method, discount rate is adjusted in accordance with the degree of risk. That is, risk-premium rate is determined and added to the risk free rate otherwise used for calculating net present value.

Ans to Q. 5 :

The Sensitivity Analysis determines the viability of the project if some variables deviate from its expected value, such as investments or sales.



8.9 MODEL QUESTIONS

1. What do you mean by the term “Capital Budgeting” ?
2. Explain briefly the need for capital investment.
3. Discuss the significance of capital budgeting
4. What is risk ? Mention the different types of risks.
5. What are the different methods suggested for accounting for risk in Capital Budgeting ?
6. Explain any one of the following methods used in capital budgeting:
   a. Risk Adjusted Discount Rate method.
   b. Certainty Equivalent Approach
   c. Probability Approach
   d. Sensitivity Analysis
   e. Simulation Analysis
   f. Decision Tree Approach.

❖❖❖

UNIT - 9 : CAPITAL RATIONING

UNIT STRUCTURE

9.1 Learning Objectives

9.2 Introduction

9.3 Meaning and concept of Capital Rationing

9.4 Problem and Assumption of Capital Rationing

9.5 Objective of Capital Rationing

9.6 Types of Capital Rationing

9.7 Factors leading to Capital Rationing

9.8 Steps involved in Capital Rationing

9.9 Methods of Capital Rationing

9.10 Advantages of Capital Rationing

9.11 Disadvantages of Capital Rationing

9.12 Various Approaches to Capital Rationing

9.13 Let us Sum Up

9.14 Answers to Check Your Progress

9.15 Further Reading

9.16 Model Questions

9.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- explain the meaning and concept of Capital Rationing
- outline the methods of Capital Rationing
- outline the types of Capital Rationing
- discuss the advantages and disadvantages of Capital Rationing
- explain the various approaches of capital rationing.

9.2 INTRODUCTION

This unit discusses about capital rationing, its concept and the various methods of it. Capital Rationing is a common practice in almost all companies because they have more profitable projects available for investment as compared to the capital available. The unit also describes

about the different approaches in capital rationing together with its advantages and disadvantages. The unit also focuses on the reasons behind capital rationing.

9.3 MEANING AND CONCEPT OF CAPITAL RATIONING

In simple words Capital Rationing is a form of Capital budgeting. In this we change the unlimited capital assumption of capital budgeting and thereby we try to choose projects with the finite capital that we have in hand. Capital rationing technique is used when a company has limited funds for investing in profitable investment proposals. It is of two types, Soft Capital Rationing and Hard Capital Rationing.

Capital rationing can be further defined as a process of distributing available capital among the various investment proposals in such a manner that a firm achieves maximum increase in its value.

It is the process of putting restrictions on the projects that can be undertaken by the company or the capital that can be invested by the company.

In other words, Capital Rationing refers to the situation where an organisation cannot undertake all the projects which are having positive net present value because of shortage of capital. It can also be mentioned as a strategy that firms implement to put certain limitation on the cost of new investments. It is also believed that Capital rationing is engaged when a firm has a low return in investment from its current investment due to high investment costs.



CHECK YOUR PROGRESS

Q.1. Define Capital rationing.

.....

.....

Q.2. Fill in the blanks :

a. Capital Rationing is a form of _____

b. _____ and _____ are two types of Capital Rationing

c. Capital Rationing is engaged when a firm has a _____ return on investment from its current investment due to high cost.

9.4 PROBLEM AND ASSUMPTION OF CAPITAL RATIONING

It is understood that if one desires to invest in all the projects they could all generate a profit and if a company is still relatively small and if one is unsure that if they can obtain the necessary financing, the reason is the problem of capital rationing. Wants and needs must be weighed and measured when there is scarcity of resources.

Assumptions :

The main assumption of capital rationing is that there are restrictions on capital expenditures either by internal financing or investment budget restrictions. Moreover firms do not have unlimited funds available to invest in the projects. Therefore it is assumed that capital rationing comes out with an optimal return on investment for the company by applying any mathematical technique like integer, linear or by normal trial and error process.

9.5 OBJECTIVES OF CAPITAL RATIONING

The objective of capital rationing is to select the group of projects that provides highest net present value as well as setting a higher ceiling on the cost of capital. The firm can therefore assume control over its resources and undertake fewer projects with a higher expected return on investment. In other words, the main objective is the maximisation of shareholders wealth.

9.6 TYPES OF CAPITAL RATIONING

Based on the source of restriction imposed on the capital, the two types of capital rationing are as follows :

a. Soft Capital Rationing
b. Hard Capital Rationing

Soft Capital Rationing : When a firm itself limits the amount of capital which is going to be invested in a given period of time, it is known as Soft Rationing. Moreover, soft rationing is a self-imposed restraint on capital spending. Risk is one possible reason why soft rationing must be

imposed in the business as any capital investment incurs loss. Other reasons in relation to this are as follows :

a. The promoter may have the notion that if they raise control of the too much capital they may lose control of the firm's operation. In the same way if a firm is constantly demonstrating high level of proficiency in generating returns, it may get a better valuation when raised in future.

b. The management may be worried if too much debt is raised it may increase the risk, raising the opportunity cost of capital.

c. Many Managers believe that taking decisions under imperfect market conditions i.e, they do not know about the opportunities that may be available the future. Thus, the firm must conserve some capital for the opportunity that may arise in future.

Because of firm's internal decision it is known as Soft Capital Rationing and companies usually implement this kind of rationing on a department basis.

Hard Capital Rationing : It is limitation on capital that is forced by factors external to the firm. Some medium sized companies are dependent on banks and institutional investors for their capital as many of them are not listed in stock exchange.

Again the companies large in size may face restrictions by existing investors such as banks who place a limit on debt amount that can be issued before they make a loan.

Hard rationing is the outcome of external constraints. An example of Hard Rationing-It is the capital expenditure limitations imposed by lenders upon borrowers.

Finally hard rationing arises because of market imperfections and because of limitations created by external parties.

9.7 FACTORS LEADING TO CAPITAL RATIONING

There are various reasons or factors leading to capital rationing, some of which are described below :

a. Increase in Cost of capital : The companies want to avoid the direct as well as indirect costs in order to issue new capital and

after a limit, the cost of raising further capital will increase because companies have limited assets to secure loans.

b. Lack of reliable forecast : This is another important factor which leads to capital rationing. Companies believe that the project's manager forecast a high cash flow estimates unreasonably so companies filter out the projects and a few are accepted.

c. Lack of managerial abilities and skilful employees might also be one of the reasons for capital rationing.

d. Unwillingness to broaden the equity share base for fear of losing control.

e. In order to avoid further risk, the company may be reluctant to take resort to financing by external equities.

Besides some internal factors there are some external factors which can lead to capital rationing, they are mentioned below :

a. Imperfection of capital market or deficiency in market information for making the required capital available.

b. Generally the government or the capital market itself will not supply unlimited amounts of capital to a company, even though the company has identified investment opportunities which would be able to produce the required return. Because of these reasons the company may not get sufficient amount of funds to carry out all the profitable projects.



CHECK YOUR PROGRESS

Q.3. Name the types of Capital Rationing ?

.....

.....

Q.4. Name any two factors leading to Capital Rationing ?

.....

.....

9.8 STEPS INVOLVED IN CAPITAL RATIONING

An effective capital rationing usually consists of the following steps :

a. Evaluating all the investment proposals using the capital budgeting techniques of Net present value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI). The management sets maximum desired payback period and minimum desired rate of return for all the projects which are computed first then compared with the management's desired payback period and accounting rate of return.

b. The projects are required to be ranked and further analysed using Net present value (NPV) and Internal rate of return.

c. Select the project in descending order of the profitability till the capital budget exhaust based on a technique.

d. Selecting the best alternative by comparing the result of each technique with respect to total Npv.

9.9 METHODS OF CAPITAL RATIONING

The methods of capital rationing can be bifurcated in four steps. The steps are mentioned below :

a. Using the capital budgeting techniques of Net Present Value (NPV), Internal rate of return (IRR), and Profitability Index (PI) in evaluating of all the investment proposals.

b. Next ranking them based on various criterion i.e. NPV, IRR, and PI.

c. Selecting the projects in descending order of their profitability till the capital budget exhaust based on any technique.

d. Lastly, comparing the result of each technique with respect of total NPV and select the best alternative.



CHECK YOUR PROGRESS

Q.5. Give one assumption of Capital Rationing ?

.....

.....

Q.6. Mention the different methods of Capital Rationing ?

.....

.....

9.10 ADVANTAGES OF CAPITAL RATIONING

The various advantages of capital rationing are as follows :

- **Eradicating wastages :** Capital rationing prevents wastages of resources by not investing in each and every new project available for investment.
- **Budget :** Capital rationing introduces a sense of strict budgeting of corporate resources of a company. Whenever there is increase of capital in the form of more borrowings, the resources are properly handled and invested in profitable projects.
- **Fewer projects :** It ensures that less number of projects are selected by imposing capital restrictions which ultimately helps in keeping the number of active projects to a minimum and manage them all well.
- **Higher Returns :** Companies invest only in the projects where the expected return is high and eliminating projects with lower returns on capital, which is possible through capital rationing.
- **More stability :** As the company is not investing in every project, it helps in having adequate finances for tough times and ensures stability and increase in the stock price of the company.

9.11 DISADVANTAGES OF CAPITAL RATIONING

The various disadvantages of capital rationing are as follows :

- **Efficient Capital Markets :** Under efficient capital markets theory, all the projects that increase shareholders wealth or company's value should be invested therein. However by following capital rationing and investing in certain projects this theory is violated.
- **Small Projects :** Capital Rationing may lead to the selection of small projects rather than large scale investments.
- **Cost of Capital :** Capital rationing places a selective criteria on the cost of capital of the projects selected. In order to follow such restriction a firm has to be very accurate in calculating the cost of capital and any miscalculation could result in selecting a less profitable projects.
- **Intermediate Cash Flows :** While evaluating the projects, capital rationing does not add intermediate cash flows from a project. It bases its decision only on final returns from the project.

Even though capital rationing has disadvantages but it is followed widely in selecting investment projects.

9.12 VARIOUS APPROACHES TO CAPITAL RATIONING

Capital Rationing is a method which is used to select a project mix in a situation when the total funds actually available for investment are less than the total investment needed by all the projects under consideration. The two basic approaches used in Capital Rationing are as follows :

a. **Internal Rate of Return Approach :** This approach involves graphing project IRRs in descending order against the total investment. This graph is also known as Investment opportunities schedule. With the help of drawing a cost of capital line and then imposing a budget constraint, the group of acceptable projects can be determined. The main problem in this technique is that it does not guarantee the maximum return to the firm. It simply provides a satisfactory solution to capital rationing problems.

b. **Net Present Value Approach :** This approach is based on the use of present values to determine the projects that will maximise

owner's wealth. Firstly, the projects are ranked on the basis of IRRs and then evaluation of the present value of the benefits from each project is ascertained to determine the combination of projects with the highest overall present value.

Again any portion of the firm's budget that is not used does not increase the firm's value, so, the unused money can be either invested in marketable securities or can be returned to the owners in the form of cash dividends.



9.13 LET US SUM UP

After going through the unit we have come through the following :

In this unit we have discussed the following :

- Capital rationing is defined as a process of distributing available capital among the various investment proposals in such a manner that a firm achieves maximum increase in its value
- The main assumption of capital rationing is that there are restrictions on capital expenditures either by internal financing or investment budget restrictions.
- The objective of capital rationing is to select the group of projects that provides highest net present value as well as setting a higher ceiling on the cost of capital.
- There are two types of capital rationing :
  a. Soft Capital Rationing
  b. Hard Capital Rationing
- The factors leading to capital rationing are :
  a. Increase in Cost of capital
  b. Lack of reliable forecast
  c. Lack of managerial abilities and skilful employees
- The various advantages of capital rationing are as follows :
  a. Eradicating wastages
  b. Budget

c. Fewer projects
d. Higher Returns
e. More stability

- The various disadvantages of capital rationing are as follows:
  a. Efficient Capital Markets
  b. Cost of Capital
  c. Intermediate Cash Flows
- The two basic approaches used in Capital Rationing are as follows:
  a. Internal Rate of Return approach
  b. Net Present Value approach



9.14 FURTHER READING

1. S. K. Gupta & R. K. Sharma (2016), Financial Management : Theory and Practice, 8th Edition, Kalyani Publishers.
2. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press.
3. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.
4. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.
5. R. M Shrivastava (2010), Financial Management And Policy, Himalaya Publishing House.



9.15 ANSWER TO CHECK YOUR PROGRESS

Ans to Q. 1 :

Capital Rationing is a form of Capital budgeting. Capital rationing technique is used when has the firm limited fund for investing in profitable investment proposals.

Ans to Q. 2 :

a. Capital budgeting
b. Hard and Soft Capital rationing

c. Low

Ans to Q. 3 :

1. Hard Capital Rationing
2. Soft Capital Rationing

Ans to Q. 4 :

1. Increase in Cost of capital
2. Lack of reliable forecast

Ans to Q. 5 :

1. The main assumption of capital rationing is that there are restrictions on capital expenditures either by internal financing or investment budget restrictions.

Ans to Q. 6 :

1. Using the capital budgeting techniques of Net Present Value (NPV), Internal rate of return (IRR), and Profitability Index (PI) in evaluating of all the investment proposals.
2. Next ranking them based on various criterion i.e. NPV, IRR, and PI
3. Selecting the projects in descending order of their profitability till the capital budget exhaust based on any technique.
4. Lastly, comparing the result of each technique with respect of total NPV and select the best alternative.



9.16 MODEL QUESTIONS

1. Define Capital Rationing.
2. Give two advantages and two disadvantages of Capital rationing.
3. Explain the types of Capital Rationing.
4. What are the steps involved in capital rationing ?
5. Describe the various methods of Capital Rationing.
6. What are the different approaches of Capital Rationing ?
7. What are the assumptions of Capital Rationing ?
8. Mention the factors that lead to Capital Rationing.

❖❖❖

UNIT - 10 : WORKING CAPITAL MANAGEMENT

UNIT STRUCTURE

10.1 Learning Objectives

10.2 Introduction

10.3 Components of current assets and current liabilities

10.4 Concepts of working capital

10.5 Importance of Working capital management

10.6 Need for working capital

10.7 Determinants of working capital

10.8 Operating cycle

10.9 Approaches for working capital management

10.10 Estimation of working capital

10.11 Let Us Sum Up

10.12 Further Reading

10.13 Answers to Check Your Progress

10.14 Model Questions

10.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the meaning and concept of working capital
- know the various components of working capital
- describe the objectives of working capital
- discuss the various approaches required for working capital
- outline the various determinants of working capital
- know the factors requiring consideration while estimating working capital.

10.2 INTRODUCTION

This unit discusses the concept of working capital together with its objectives. Every business needs funds for two purposes for its establishments and to carry out its day to day operations. Long term funds are required to create production facilities through purchase of fixed assets such as land, building etc. Funds are also needed for the

purchase of short term purposes of raw materials, wages, and other day to day expenses etc. these funds are working capital. The various determinants of the working capital are discussed in the unit. It also throws the impact on various factors requiring consideration while estimating working capital. The importance of working capital is also discussed in this unit.

10.3 COMPONENTS OF CURRENT ASSETS AND LIABILITIES

The term working capital refers to the gross working capital and represents the amount of funds invested in current assets. Thus, the gross working capital is the capital invested in total current assets of the enterprise.

The components of the current assets are as follows :

1. Cash in hand and bank balance.
2. Bills receivables.
3. Sundry Debtors
4. Short term loans and advances.
5. Inventories of stocks are Raw Materials, Work in progress, Stores and spares and finished goods.
6. Prepaid expenses
7. Temporary Investment of surplus funds
8. Accrued Incomes.

The components of current liabilities are as follows :

1. Bills payable.
2. Sundry creditors
3. Accrued or outstanding expenses
4. Short term loans, advances and deposits.
5. Dividends payable
6. Bank overdraft.
7. Provision for taxation



CHECK YOUR PROGRESS

Q.1. Define Working Capital.

.....

.....

Q.2. Give three components of current assets.

.....

Q.3. Give two components of current liabilities.

.....

10.4 CONCEPTS OF WORKING CAPITAL

In the words of Shubin, "Working capital is the amount of funds necessary to cover the cost of operating the enterprise." Also, Circulating capital means current assets of a company that are changed in the ordinary course of business from one form to another, such as Cash to inventories, inventories to receivables etc. In simple words working capital refers to that part of the firm's capital which is required for financing short term or current asset such as cash, marketable securities, debtors and inventories. It is also known as short term capital, circulating capital or revolving capital.

There are basically two concepts of working capital :

a. Balance sheet concept.

b. Operating cycle or circular flow concept.

Now, this **balance sheet** concept has two interpretations of working capital :

1. Gross working capital : It is the capital invested in total current assets of the enterprise.

2. Net working capital : It is the excess of current assets over current liabilities, or Net working capital = Current assets – Current liabilities.

When the current asset exceeds current liabilities the working capital is positive and the negative working capital results when the current liabilities are more than the current assets.

Again, the above mentioned **operating cycle** refers to that part of firm's capital which is required for financing short term or current assets such as cash, marketable securities, debtors, and inventories.

The gross working capital concept is financial or going concern concept whereas net working capital is an accounting concept of working capital. These two concepts of working capital are not exclusive rather both have their own merits. The gross concept is sometimes preferred to the net concept of working capital for the following reasons :

1. It enables the enterprise to provide correct amount of working capital at the right time.
2. The gross concept of working capital is more useful in determining the rate of return on investment in working capital.
3. Every management is more interested in the total current assets with which it has to operate than the sources from where it is made available.

The net working capital is also important for the following reasons :

1. It is a qualitative concept which indicates the firm's ability to meet its operating expenses and short term expenses.
2. It is an indicator of the financial soundness of an enterprise.
3. It suggests the need for financing a part of the working capital requirements out of permanent sources of funds.

Rather gross and net concepts of working capital are important aspects of the working capital management. The net working capital may be suitable only for proprietory form of organisation such as sole-trader or partnership firm but the gross concept is very suitable to the company form of organisation.

10.5 IMPORTANCE OF WORKING CAPITAL MANAGEMENT

Working capital is the life blood and the nerve centre of a business. The circulation of blood is essential in the human body and as such working capital is also very essential to maintain smooth running of a business. The various importance's of working capital are as follows :

a. Solvency of the business : Adequate working capital helps in maintaining solvency of the business by providing the flow of production uninterruptedly.

b. Easy loans : A concern having adequate working capital, high solvency can arrange loans from banks and others on easy and favourable terms.

c. Goodwill : Sufficient working capital enables a business concern to make prompt payments and helps in creating and maintaining goodwill.

d. Cash discounts : Adequate working capital also enables concern to avail cash discounts on the purchases and hence it reduces costs.

e. The regular supply of raw materials is possible due to sufficient working capital.

f. Ability to face crisis : The Adequate working capital enables a concern to face business crisis in emergencies because during such periods there is much requirement of working capital.

g. Regular payment of salaries wages and other day to day commitments : Enough working capital enables regular payment of salaries wages and other day to day expenses which also raises the morale of its employees also increases their efficiency, and enhances production and profits.

h. High Morale : An environment of security, confidence, high morale and overall efficiency in a business can be created through adequacy of working capital.

i. Exploitation of favourable market condition : Only concerns with adequate working capital can exploit this condition such as purchasing its requirement in bulk when the prices are lower.

Finally, sufficiency of working capital enables a concern to pay quick and regular dividend to its investors as they are not under much pressure to plough back profits.

10.6 NEED FOR WORKING CAPITAL

The need for working capital cannot be overemphasised. The need for working capital arises due to the time gap between production and realisation of cash from sales. There is an operating cycle involved in the sales and realisation of cash. There are time gaps in purchase of raw

materials and production, production and sales and sales and realisation of cash.

Working capital is needed for the following purposes :

a. To pay wages and salaries

b. To incur day to day expenses and overhead costs such as fuel, power and office expenses etc

c. For the purchase of raw materials components and spares.

d. To meet the selling costs as packaging, advertising etc.

e. To provide credit facilities to the customers.

f. To maintain the inventories of raw materials, work in progress finished stock.

For need of working capital in a business, one has to study the business from various concerns. The amount needed as working capital in a new concern depends primarily upon its size. Greater the size of the business unit generally larger will be the requirements of working capital and keeps on increasing with the growth and expansion of business.

10.7 DETERMINANTS OF WORKING CAPITAL

The working capital requirements of a concern depends upon large number of factors such as size of business, the character of their operations, the length of production cycle and the state of economic situation etc. the other following factors generally influencing the working capital requirements are as follows :

1. **Nature or Character of business :** The requirement of working capital depends upon the nature of its business. Just like trading and financial firms require less investment in fixed assets but large amount of investments in current assets like inventories, cash etc as such the requirement of working capital is more than the public utility undertakings like electricity, water supply and railways need very limited working capital because they offer cash sales only and supply services. But the manufacturing firms require relatively sizable amount of working capital between these two extremes.

2. **Production policy :** The production should be kept steady by accumulating inventories during slack period and with a view to meet high demand during the peak season. If the policy is to keep production steady by accumulating inventories it will require higher working capital. The demand is subject to wide fluctuations due to seasonal variations and in such cases the requirements of working capital depend upon the production policy.

3. **Size of Business :** This requirement of a concern is directly influenced by the size of its business which may be measured in terms of scale of operations. Greater the size of business unit, generally larger will be the requirements of working capital. But however, in some cases even a smaller concern may need more working capital due to inefficient use of available resources.

4. **Seasonal variations :** When the raw material is not available to some industries they have to buy the raw materials in bulk during the season so as to ensure an uninterrupted flow and likewise a huge amount is blocked in the form of material inventories which gives rise to more working capital requirements.

5. **Manufacturing process :** In this factor the requirement of working capital increases in direct proportion to length of manufacturing process. Longer the period of manufacture, larger is the amount of working capital required and vice-versa. If the manufacturing process is longer than the raw materials and other supplies will be carried for a longer period and the cost of progressive increment of labour and service will also increase before the final product is obtained.

6. **Working Capital cycle :** In a manufacturing concern the working capital cycle starts with buying of raw materials and ends with the realisation of cash by the sale of finished products. This cycle involves purchasing, storing, service cost, debtors, and conversion of finished stock into sales and it continues so on. The longer the period of cycle larger is the requirement of working capital.

7. **Credit policy :** The requirement of working capital is considerably influenced by the firm's dealings with debtors and creditors. A concern purchasing its requirements on credit and selling its product on cash requires lesser amount of working capital. Whereas the concern buying its requirements for cash and allowing credit to its customers shall need larger amount of working capital.

8. **Rate of stock turnover :** A firm having a high rate of stock turnover will need lower amount of working capital as compared to a firm having a low rate of turnover. For example : the precious stone dealers have to maintain a large variety of stocks and the movement of stock is very slow. Thus the working capital requirement of such a dealer shall be higher as compared to a provision store.

9. **Price level changes :** Generally the rising prices will require the firm to maintain larger amount of working capital as more funds will be required to maintain the same current assets. Some firms may be affected much while some others may not be affected at all by the rise in prices.

   Certain other factors like management ability, irregularities of supply, import policy, asset structure, importance of labour, banking facilities etc also influence the requirements of working capital.



CHECK YOUR PROGRESS

Q.4. Give two importance of Working Capital.

.....

.....

Q.5. Mention three needs of Working Capital.

.....

.....

10.8 OPERATING CYCLE

Working capital refers to that part of firm's capital which is required for financing short term or current assets such as cash, marketable securities debtors and inventories. Funds which are invested in current assets keep revolving fast and are easily converted to cash and this cash flow out again in exchange for other current assets. Therefore, it is known as revolving or circulating capital. The circular flow concept of working capital is based upon this operating or working capital cycle. The cycle starts with the purchase of raw material and other resources and ends with the realisation of cash from the sale of finished goods. It involves purchase of raw materials and stores, its conversion into stock of finished goods through work- in- progress progressive increment of labour and service costs, debtors and receivables and finally realisation of cash and the cycle continues again from purchase of raw materials and so on. The speed or time required to complete one cycle determines the requirements of working capital. The longer the period of cycle, larger is the requirement of working capital and vice-versa.Working capital cycle is one of the essential parameters to be recorded in working capital management.

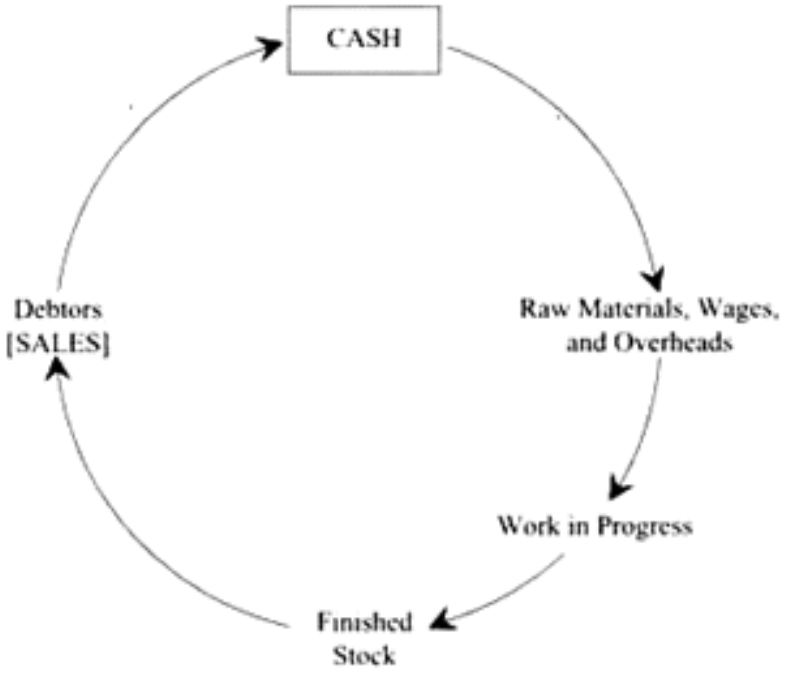


Fig 10.1 : Operating Cycle of Working Capital

10.9 APPROACHES FOR WORKING CAPITAL MANAGEMENT

There are three basic approaches for determining working capital management :

a. Matching or Hedging approach
b. Conservative approach
c. Aggressive approach.

Hedging or matching approach :

The term “Hedging” usually refers to two-off selling transactions of a simultaneous but opposite nature which counterbalance the effect of each other. According to this approach, the maturity of sources of funds should match the nature of assets to be financed. Therefore, it is also known as ‘matching concept’. The requirement of working capital in this approach is classified in two categories.

1. Fixed working capital which is the minimum amount required to carry out the normal business operation. It does not vary over time.
2. Temporary working capital which is required to meet special exigencies and it fluctuates over time.

Hedging approach suggests that the permanent working capital requirements should be financed with funds from long term sources while the temporary or seasonal working capital requirements should be financed with short term funds.

Conservative Approach :

This approach suggests that the entire estimated investment in current assets should be financed from long term sources and the short term sources should be used only for emergency requirements. The short term funds will be used only to meet emergencies. The various distinct features of this approach are as follows :

a. Liquidity is severally greater.
b. Risk is minimised and
c. The cost of financing is relatively more as interest has to be paid even on seasonal requirements for the entire period.

Aggressive Approach :

This approach suggests that the entire estimated requirements of current asset should be financed from short- term sources and even a part of fixed assets investments be financed from short term sources. The aggressive approach makes the finance-mix more risky, less costly and more profitable.



CHECK YOUR PROGRESS

Q.6. Mention two approaches for Working Capital Management ?

.....

.....

Q.7. Write four determinants of Working Capital ?

.....

.....

10.10 ESTIMATION OF WORKING CAPITAL

Working capital is the life blood of a business. No business can be successfully run without an adequate working capital. To avoid any shortage of working capital at once an estimate of working capital requirements is very necessary in advance so that arrangements can be made to procure the adequate working capital. A large number of factors have to be considered while estimating the working capital requirements. The following factors have to be taken into consideration while making an estimate of working capital requirements :

1. Total costs incurred on material wages and overheads.
2. The length of the production cycle i.e. the time taken for conversion of raw material into finished goods.
3. The length of time for which raw materials are to remain in stores before they are issued to production.
4. The length of sales cycle during which finished goods are to be kept waiting for sales.

5. The amount of cash required to pay day to day expenses of the business.
6. The average period of credit allowed to customers.
7. The average credit period expected to be allowed by suppliers
8. The average amount of cash required to make advance payments if any
9. Time-lag in the payments of wages and other expenses.



CHECK YOUR PROGRESS

Q.8. What is Operating Cycle ?

.....

.....

Q.9. Mention one factor required for estimating working capital ?

a) .....

.....



10.11 LET US SUM UP

In this unit we have discussed the following :

- The term working capital refers to the gross working capital and represents the amount of funds invested in current assets. It is the amount of funds necessary to cover the cost operating the enterprise.
- The various importance's of working capital are as follows :
  a. Solvency of the business
  b. Easy loans
  c. Goodwill
  d. Cash discounts
  e. Ability to face crisis
  f. Regular payment of salaries wages
  g. Exploitation of favorable market condition

- Working capital is needed for the following purposes :
  a. To pay wages and salaries
  b. To incur day to day expenses and overhead costs such as fuel, power and office expenses etc
  c. For the purchase of raw materials components and spares.
  d. To meet the selling costs as packaging, advertising etc.
  e. To provide credit facilities to the customers.
  f. To maintain the inventories of raw materials, work in progress finished stock.
- The factors influencing the working capital requirements are :
  a. Nature or character of business policy
  b. Size of Business
  c. Seasonal variations
  d. Manufacturing process
  e. Working Capital cycle
  f. Credit policy
  g. Rate of stock turnover
- The volume of working capital depends on the amount blocked in current assets. These amounts are released over a time period and gradually changes shape from one item to another. This changing process rotates in a cyclical order. The length of the cycle or the time taken to rotate the cycle once is known as the working capital cycle or the operating cycle.
- There are three basic approaches for determining working capital management :
  a. Matching or Hedging approach
  b. Conservative approach
  c. Aggressive approach.



10.12 FURTHER READING

1. S. K. Gupta & R. K. Sharma (2016), Financial Management : Theory and Practice, 8th Edition, Kalyani Publishers.
2. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press

3. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.

4. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.

5. R. M Shrivastava (2010),Financial Management And Policy , Himalaya Publishing House.



10.13 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1. :

The term working capital refers to the gross working capital and represents the amount of funds invested in current assets. Thus, the gross working capital is the capital invested in total current assets of the enterprise.

Ans to Q. 2. :

1. Cash in hand and bank balance.
2. Bills receivables.
3. Sundry Debtors

Ans to Q. 3. :

1. Bills payable.
2. Sundry creditors

Ans to Q. 4. :

1. Easy loans : A concern having adequate working capital, high solvency can arrange loans from banks and others on easy and favourable terms.
2. Ability to face crisis : The Adequate working capital enables a concern to face business crisis in emergencies because during such periods there is much requirement of working capital.

Ans to Q. 5. :

a. To pay wages and salaries

b. To incur day to day expenses and overhead costs such as fuel, power and office expenses etc.

c. To provide credit facilities to the customers.

Ans to Q. 6. :

a. Matching or Hedging approach

b. Conservative approach

Ans to Q. 7. :

1. Nature or character of business.
2. Working capital cycle.
3. Credit policy.
4. Price level changes.

Ans to Q. 8. :

Operating cycle : Funds which are invested in current assets keep revolving fast and are easily converted to cash and this cash flow out again in exchange for other current assets. Therefore it is known as revolving or circulating capital.

Ans to Q. 9. :

1. The length of the production cycle i.e. the time taken for conversion of raw material into finished goods.



10.14 MODEL QUESTIONS

1. Explain the various determinants of working capital.
2. What the various needs of working capital.
3. Describe the three approaches of working capital.
4. Name some factors essential for estimating the working capital
5. Describe the operating cycle.

❖❖❖

UNIT - 11 : CASH MANAGEMENT

UNIT STRUCTURE

11.1 Learning Objectives

11.2 Introduction

11.3 Meaning and concept of Cash and Cash management

11.4 Importance of Cash Management

11.5 Objectives of Cash Management

11.6 Motives for Holding Cash

11.7 Models for Determining Optimal Cash Needs

11.8 Cash Planning

11.9 Cash forecasting and Budgeting

11.10 Methods of Accelerating Cash Inflows

11.11 Methods of Slowing Cash Outflows

11.12 Cash Budget

11.13 Let us Sum Up

11.14 Further Reading

11.15 Answers to Check Your Progress

11.16 Model Questions

11.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the meaning and concept of Cash and Cash Management
- outline the objectives of Cash Management
- describe the importance of Cash Management
- discuss the motives of Holding Cash
- explain the Concept of Cash planning, Cash forecasting and Budgeting
- explain the methods of cash inflow and outflow.

11.2 INTRODUCTION

Cash is one of the current assets of a business. To keep the business going, cash is needed at all times and sufficient cash is necessary for meeting its obligations. As because in case of any shortage of cash will hamper the operations of a concern. Cash is considered as one of the most unproductive of all the assets while current assets like inventory will help the business in increasing its earning capacity whereas cash in hand will not add anything to the concern. It is because of this that cash management has assumed much importance.

11.3 MEANING AND CONCEPT OF CASH AND CASH MANAGEMENT

In simple words Cash means only money in the form of currency (cash in hand). For Some Cash means both Cash in hand and Cash at bank. Some even take marketable securities too as part of cash which can be easily converted into cash. These viewpoints reflect the degree of freedom of the persons using the cash.

By the term 'cash' we mean coins, currency, cheques, draft, and deposits in banks. The broader view of cash includes near cash assets such as short term marketable securities and time deposits in banks.

Cash itself does not produce goods or services. It is a medium to acquire other assets. It is also considered as an asset which is used in manufacturing goods or providing services.

A business has to keep required cash for meeting various needs. The assets acquired by cash again help the business in producing cash. The goods manufactured are sold to acquire cash. A critical level of cash is required to be maintained by a firm as because if at a time it does not have sufficient cash with it, it will have to borrow from the market for reaching the required level. There remains a gap between cash inflows and cash outflows. Sometimes cash receipts are more than the payments or may be vice-versa at another time. A financial manager tries to synchronise the cash inflow and cash outflows.

Cash Management has assumed importance because it is the most significant of all the current assets. Cash is required to meet business obligation. Cash Management deals with the Cash inflows and outflows,

Cash flows within the firm, Cash balances held by the firm at a point of time.



CHECK YOUR PROGRESS

Q.1. Define Cash.

.....

.....

Q.2. Fill in the blanks :

a. Cash is one of the _____ assets of business.

b. Cash means both _____ and _____

c. Marketable securities are securities which can easily converted to _____

11.4 IMPORTANCE OF CASH MANAGEMENT

As discussed earlier, cash is one of the current assets of a business. It is the common denominator for all the other forms of current assets as well as current liabilities. Sundry debtors, inventories and so on are ultimately liquidated in the form of cash.

Cash management is one of the most significant components of working capital management. Effective management of cash is important in the sense that firm/companies need to meet their obligations on time. Failure to do so may earn a bad reputation for the company, in extreme cases brings the possibility of litigation and subsequent liquidation of the company.

Cash management is significant because of the following reasons :

- **Cash planning and management :** If the company keeps too much cash, the returns will be negligible. On the other hand, if the company lacks adequate cash reserve, it may fail to pay obligations on time. So, proper synchronisation between cash inflows and outflows should be maintained at all time.

- **Maintenance of optimum cash balance :** The company should identify the level of optimum cash balance that it should maintain. The cost of maintaining excess cash vis-a vis the danger of keeping inadequate cash should be identified for determining the optimum cash balance.
- **Investment of excess cash :** Extra cash, which the company may not require immediately, should be invested in suitable financial instruments. This earns the company some return, rather than keeping it idle.

11.5 OBJECTIVES OF CASH MANAGEMEMNT

Companies devote time and energy to manage cash with other important objectives, which are as follows :

1) **Meet the payments schedule :** Default in making payments by the due date may bring serious trouble for the company. It may also result in a bad reputation. The company should maintain adequate cash balance to meet the payment schedule.

2) **Maintain credit rating :** Suppliers prefer companies with a good credit rating as customers. Timely payment to suppliers helps in improving the credit rating and receiving additional discounts from suppliers.

3) **Meet contingencies :** Firms also keep some cash balance to meet contingencies such as strikes sudden rise in demand and so on.

11.6 MOTIVES FOR HOLDING CASH

The various motives for holding cash are : Transactions motive, Precautionary motive, Compensation motive and Speculative motive. These motives are described below :

1) Transaction Motive : A firm needs cash for making transactions in the day to day operations. The cash is needed to make purchases, pay expenses, dividend etc. The cash needs arise due to the fact that there is no complete synchronisation between the cash receipts and cash payments. The transaction needs of cash can be predictable because the expected payments in the near future can be estimated. If more cash is needed for payments than receipts, it

may be raised through bank overdraft. And if more cash receipts are there it can be spent on marketable securities. The maturity of securities can be adjusted to the interest or dividend payments in future.

2) **Precautionary Motive :** A firm also keep certain amount of cash for meeting certain emergency or contingencies. Though cash inflows and outflows can be anticipated but there may be variations in these estimates. As for example : sudden increase in cost of raw materials, strikes, may need additional cash with a shorter notice; again a debtor who has to pay after seven (7) days may inform of his inability to pay, on the other hand a supplier who used to give credit for 20 days may not have the stock to supply. In these situations cash receipts will be less than expected and cash purchases will b more as cash payment may have to be made. These contingencies often arise in business. A firm should be in a position to raise finance at a short period so as to meet the contingencies.

   There are a couple of factors that influences the amount of cash balance to be held under the precautionary motive- first, the predictability of cash flows and second the availability of short-term credit. Increased unpredicta-bility in future cash flows increases the need to maintained a higher cash balance with precautionary motive.

3) **Compensation Motive :** A firm may also maintain some cash balance with a motive to compensate banks and other financial institutions for providing certain services and loans. This motive is termed as compensation motive.

4) **Speculative Motive :** This motive relates to holding of cash for investing in profitable opportunities as and when they arise. These opportunities do not come in a regular manner but it can be scientifically predicted. For example: the prices of share and debenture may be low at a time with an expectation that these will go up shortly. Similarly the prices of raw materials may fall and the firm may like to make purchases in the future when the price really declines. And these opportunities can be availed only when a firm has cash balance in hand. Therefore, these transactions are considered speculative because prices may not move in a direction in which we supposed it to be. The main motive of a firm is to make investment at times and not to indulge in speculative transaction.

11.7 MODELS FOR DETERMINING OPTIMAL CASH NEEDS

There are a number of mathematical models which have been developed to determine the optimal cash balance such as : Operating cycle model, Inventory model, stochastic model, and probability model. The objective of these models is to ensure that the firm should not keep extra cash and should also not face any cash shortage. However, the Inventory model as developed by William. J. Baumol and the stochastic model by M. H. Miller and Daniel Orr are mainly used to determine the optimum balance of cash and these are described below :

William J. Baumol's model

This model (An inventory theoretical approach) is basically used in inventory management but it has its application in determining optimal cash needs also. Baumol found similarities in inventory management and cash management. The economic order quantity (EOQ) model of cash management was developed by William J. Baumol in 1952. EOQ implies the optimum level of cash that a company should hold at a given point of time. As in case of inventory management an Economic Order Quantity (EOQ) involves trade off between carrying costs and ordering cost, similarly in case of optimal cash balance it involves the trade off between opportunity cost or holding cash (i.e. the interest foregone by not investing in financial securities) and the transaction cost (i.e. the cost of converting marketable securities into cash for example brokerage, taxes etc).

According to Baumol's model, the optimum cash balance is that point at which the transaction cost and the holding cost are lowest. The optimum cash balance can be determined by using the formula :

$$C = \sqrt{\frac{2UP}{S}} \qquad C = \sqrt{(2 \times U \times P/S)}$$

Where, C = Optimum Cash Balance, U = Annual cash disbursement, P = Fixed cost per transaction, S = Opportunity cost of one rupee per annum (or per month)

The model is based on the following assumptions :

a. The cash needs of the firm are known as certainity.

b. The holding cost is known with certainity and is constant.

c. The transaction cost remains constant.

d. The use of cash over the period of time is uniform.

Miller-Orr Model :

The Miller and Orr model overcomes the shortcomings of Baumol model. M.H Miller and Daniel Orr (A model of the Demand for Money) expanded on the Baumol model and developed Stochastic model for firms with uncertain cash inflows and cash outflows. The Miller Orr (MO) model aims towards determining the optimum cash balance level that minimizes the cost of cash management. The model may be described by the following equation :

$$C = bE(N)/t + iE(M)$$

Where, C = Total cost of cash management, b = Fixed cost per conversion, E(N) = Expected number of conversions, t = Number of days, i = The lost opportunity cost, E(M) = Average daily cash balance.

The MO model assumes that the cash balance fluctuates between the upper bound and the lower bound. According to the model, as the cash balance reaches upper bound, a part of the cash balance should be converted into marketable securities, by investing in them. On the other hand when the cash balance reaches the lower level, a part of marketable securities should be converted into cash to keep the cash balance at the optimum level.

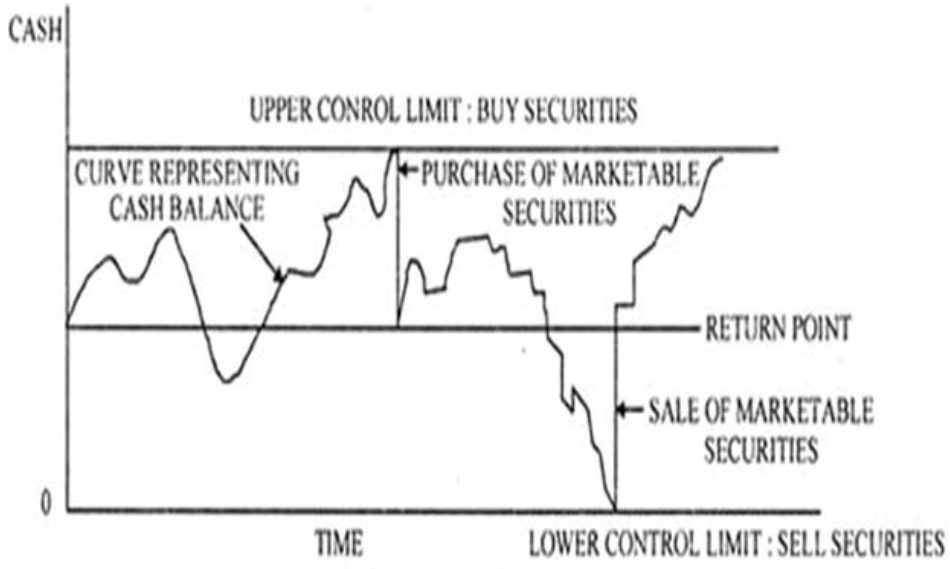


Fig 11.1 Miller Orr Model

CHECK YOUR PROGRESS

Q.3. Mention two objectives of Cash Management ?

.....

.....

Q.4. What are the motives of Cash Management ?

.....

.....

11.8 CASH PLANNING

Cash planning is a technique to plan and control the use of cash. A projected cash flow statement may be prepared based on the present business operations and anticipated future activities. The cash inflows from various sources may be anticipated and cash outflows will determine the possible uses of cash.

11.9 CASH FORECASTING AND BUDGETING

A Cash budget is the most important device for the control of receipts and payments of cash. A cash budget is an estimate of cash receipts and disbursements during a future period of time. It is a forecast of expected cash intake and outlay. Cash budget is an analysis of flow of cash in a business over a future, short or long period of time.

The short-term forecasts can be made with the help of cash flow projections. The finance manager will make estimates of likely receipts in the near future and the expected disbursement in that period. The estimates of cash flows can help the planners to make arrangements for cash needs even if it is not possible to make exact forecasts. At times, the expected cash receipts may fall short or payment may exceed and a financial manager should keep in mind the sources from where he will meet short-term needs. The long term cash forecasts indicate company's future financial needs for working capital, capital projects etc. and is also essential for cash planning.

Both the short term and long term cash forecast may be made with the help of following methods :

a. Receipts and disbursements method.

b. Adjusted net income method.

1. **Receipts and Disbursement Method :** In this method the receipts and payments of cash are estimated. The cash receipts may be from cash sales, collections from debtors, sale of fixed assets, receipts of dividend, or other income of all the items, it is difficult to forecast sales. The sales may be on cash as well as credit basis. Cash sales will bring receipts at the time of sale while credit sales will bring cash later on. Any fluctuation in sales will disturb the receipts of cash. Payments may be made for cash purchases, purchase of fixed assets etc.

   This method is to be equalled over a short as well as long periods. Any shortfall in receipts will have to be met from banks or other sources. The payments are to be made by outsiders, so there may be some problem in finding out the exact receipts at a particular period. So, because of uncertainty the reliability of this method may be reduced.

2. **Adjusted Net Income Method :** This method has three sections-sources of cash, uses of cash and adjusted cash balance. It helps in projecting the company's need for cash at some future date and to see whether the company will be able to generate sufficient cash. The estimation of working capital movement becomes difficult because items like receivables and inventories are influenced by factors such as fluctuations in raw material costs etc. This method helps in keeping a control on working capital and anticipating financial requirements.

11.10 METHODS OF ACCELERATING CASH INFLOWS

Cash management will be successful only if cash collections are accelerated and cash disbursement as far as cash possible are delayed. The following methods of cash management will help :

Methods of accelerating cash inflows

1. Prompt payment by customers which is possible only by prompt billing. The customers must be promptly informed about the amount payable and the time by which it should be paid. Cash discount can also attract prompt payment by the customers.

2. Quick conversion of payment into cash is yet another method by which the cash inflows can be accelerated. An efficient cash management will be possible only if the time taken in deposits float is reduced and make the money available for use.

3. Decentralised collection system can accelerate collections, as it saves the mailing time and processing time as well and thus reduces the financial requirements.

4. Lock box system is another technique of reducing mailing processing and collecting time. Under this system the firm hires a post box in a post office and the parties are asked to send the cheques in that post box number. A local bank is authorised to operate the post box. This system ultimately expedites the collection process and avoids delays due to mailing and processing time at the accounting department. By transferring clerical function to the bank the firm may reduce its cost improves internal control and reduces the possibility of fraud.



CHECK YOUR PROGRESS

Q.5. Give the importance of cash management ?

.....

.....

Q.6. What do you mean by cash planning ?

.....

.....

11.11 METHODS OF SLOWING CASH OUTFLOWS

A company can keep cash by effectively controlling disbursements. By slowing down the payments the cash outflows can be controlled. It can be done by delaying on making payments on the last due date only. If the credit is for 10 days then payment should be made on 10th day only.

Again, by issuing drafts to the suppliers instead of cheques, company can delay payments. When a cheque is issued then the company will have to keep a balance in its account so that the cheque is paid, whenever it comes. But a draft is payable only on presentation to the issuer. It takes a number of days before it is actually paid .Some economy can be exercised on payroll funds also. It can be done by reducing the frequency of payments. If the payments are made weekly then this period can be extended to a month. The finance manager can also plan the issuing of salary cheques and disbursements.

Centralisation of payments i.e. cheques issued from the main office will take time for the cheques to be cleared through post. Also, an efficient use of cash is also possible by inter-bank transfers that mean if the company has account with more than one bank then it will help in avoiding excess amount in one bank. Again, float is a difference between the balance shown in company's cash book (bank column) and balance in pass book of the bank. Whenever a cheque is issued the balance at bank in cash book is reduced. Until the time the cheques are not presented to bank for payment there will be a balance in the bank. If the company can make the estimate correctly it can make use of this float.

11.12 CASH BUDGET

A cash budget is an estimate of cash receipts and disbursements of cash during a future period of time. A cash budget is an analysis of flow of cash in a business over a future short or long period of time. It is a forecast of expected cash intake and outlay. The cash budget pin points the period when there is likely to be excess or shortage of cash. Thus, a firm by preparing a cash budget can plan the use of excess cash and make arrangements for the necessary cash as and when required. Cash receipts from various sources are anticipated. The estimated cash collections for sales debts, bills receivables and other income and sale of investments will be taken into account. The amounts to be spent on

purchase of materials, payments to creditors, meeting various revenue and capital expenditure needs should be considered.

The cash budget should be co-ordinated with other activities of the business. The functional budgets may be adjusted according to the cash budget. The available funds should be fruitfully used and the concern should not suffer for want of funds.



CHECK YOUR PROGRESS

Q. 7. What are the models of optimal cash needs ?

a. .....

b. .....

c. .....

Q. 8. Define Cash forecasting and Cash Budgeting.

a. .....

b. .....



11.13 LET US SUM UP

After going through the unit we have come through the following :

- Cash Management deals with the Cash inflows and outflows, Cash flows within the firm, Cash balances held by the firm at a point of time.
- Cash management is significant because of the following reasons :
  a. Cash planning and management
  b. Maintenance of optimum cash balance
  c. Investment of excess cash
- The objectives of Cash Management are :
  a. Meet the payments schedule
  b. Maintain credit rating
  c. Meet contingencies

- The various motives of a firm are attributed as: Transactions motive, Precautionary motive, Compensation motive and Speculative motive.
- There are a number of mathematical models which have been developed to determine the optimal cash balance such as: Operating cycle model, Inventory model, stochastic model, and probability model.
- Cash planning is a technique to plan and control the use of cash.
- A cash budget is an estimate of cash receipts and disbursements during a future period of time.
- Methods of accelerating cash inflows are :
  a. Prompt payment by customers
  b. Quick conversion of payment into cash
  c. Decentralized collection system
  d. Lock box system
- A cash budget is an estimate of cash receipts and disbursements of cash during a future period of time. A cash budget is an analysis of flow of cash in a business over a future short or long period of time.



11.14 FURTHER READING

1. S. K. Gupta & R. K. Sharma (2016), Financial Management: Theory and Practice, 8th Edition, Kalyani Publishers.
2. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press.
3. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.
4. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.
5. R. M Shrivastava (2010),Financial Management And Policy, Himalaya Publishing House.



11.15 ANSWER TO CHECK YOUR PROGRESS

Ans to Q. 1. :

Cash means only money in the form of currency (cash in hand). It is needed at all times to keep the business going. Cash is one of the current assets of a business.

Ans to Q. 2. :

a. Current

b. Cash in hand and Cash at Bank

c. Cash

Ans to Q. 3. :

1. Meet the payment schedule
2. Maintain credit Rating

Ans to Q. 4. :

1. Transaction Motive
2. Precautionary Motive

Ans to Q. 5. :

1. Maintenance of optimum cash Balance
2. Investment of excess cash

Ans to Q. 6. :

Cash planning is a technique to plan and control the use of cash. A projected cash flow statement may be prepared based on the present business operations and anticipated future activities.

Ans to Q. 7. :

1. Operating Cycle Model
2. Inventory Model
3. Stochastic Mo

Ans to Q. 8. :

A cash budget is an estimate of cash receipts and disbursements during a future period of time. It is a forecast of expected cash intake and outlay. Cash budget is an analysis of flow of cash in a business over a future, short or long period of time.



11.16 MODEL QUESTIONS

1. Define Cash.
2. What do you understand by Cash Management ? How can it be undertaken ?
3. Name various motives for holding cash
4. Define cash budget.
5. What are the objectives of cash management ?
6. What is the importance of cash management ?
7. What are the methods of cash management ? Explain.
8. What do you mean by cash planning ?

❖❖❖

UNIT - 12 : INVENTORY MANAGEMENT

UNIT STRUCTURE

12.1 Learning Objectives

12.2 Introduction

12.3 Meaning and concept of Inventory

12.4 Characteristics of Inventory

12.5 Objective of inventory Management

12.6 Role of Inventory in working Capital

12.7 Purpose of Inventory

12.8 Cost associated with inventories

12.9 Inventory Management Techniques

12.10 Importance of Inventory Management Techniques

12.11 Let us Sum Up

12.12 Further Reading

12.13 Answers to Check Your Progress

12.14 Model Questions

12.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- state the meaning and concept of Inventory
- outline the characteristics of Inventory
- discuss the role of inventory in working capital
- discuss the cost associated with inventories
- explain the various tools and techniques of inventory management
- know the importance of inventory management techniques

12.2 INTRODUCTION

This unit discusses the concept of inventory together with its nature and importance. This unit will help us to know the role of inventory in working capital. In addition to this, the unit will discuss about various inventory techniques like ABC analysis, VED analysis, Determination of Economic Order Quantity etc.

In this unit we shall also discuss the concept of various cost associated with techniques.

12.3 MEANING AND CONCEPT OF INVENTORY

In simple words inventories are probably the most strategic component in the structure of working capital of many of the business enterprises. It constitutes the major component of current assets in many business enterprises, especially the manufacturing concerns.

Every enterprises needs inventory for smooth running of its activities. It is also a link between production and distribution processes. The investment in inventories constitutes the most significant part of current assets or working capital in most of the undertaking. The unforeseen fluctuations in demand and supply of goods also necessitate the need for inventory. The purpose of inventory management is to ensure availability of materials in sufficient quantity as and when required and also to minimise investment in inventories.

Let us discuss some definition of inventory from dictionary and other general definitions :

The meaning of inventory is an itemized list of current assets as

1. a catalogue of the property of an individual or estate;
2. a list of goods on hand. Inventory is the collection of any item or resource used in an organisation.

The dictionary meaning of inventory is ‘stock of goods or a list of goods.’ In accounting language it may mean stock of finished goods only, and in a manufacturing concern it may include raw materials, work in progress and stores etc. In retail companies, inventories are carried for immediate sale to customers. And in service oriented companies, inventory generally refers to the material to be sold and the supplies necessary to manage the service.

A set of policies and controls is followed by the organisation to monitor the issues like :

- Determining the current levels of inventory
- Determining the levels of inventory that should be maintained
- Determine when stock should be replenished
- Determining the size of each other to replenish the inventory.

Therefore, a proper planning of purchasing, handling, storing and accounting should form a part of inventory management.



CHECK YOUR PROGRESS

Q.1. Define Inventory.

.....

.....

Q.2. Fill in the blanks :

a. Inventory Management is another _____ element of working capital.

b. Investment in _____ constitutes the most significant part of current assets.

c. Inventory is a link between _____ and _____ Tprocesses.

12.4 CHARACTERISTICS OF INVENTORIES

To understand the meaning of the word inventory we may study it from the usage side or from the side of point of entry in the operations. It includes the following things :

a. Raw material form a major input into the organisation so as to carry out the production process uninterruptedly. The quantity of raw materials required will be determined by the rate of consumption and the time required for replenishing the supplies.

b. Secondly the work in progress is that stage of stocks which are in between raw materials and finished goods. It depends upon the time taken in the manufacturing process. The more the time taken in manufacturing the more will be the amount of work in progress.

c. Consumables are the materials which are needed to smoothen the process of production and these do not directly enter production but they act as catalysts etc.

d. Finished goods are the goods which are ready for consumers. The stock of finished goods provides a buffer between production and market. The main purpose of maintaining inventory is to ensure proper supply of goods to consumers.

e. Spares also form a part of inventory, and stocking policies of spares are different from industry to industry. The costly spares parts like engines maintenance spares etc are rather kept for further use and are not discarded.

12.5 OBJECTIVE OF INVENTORY MANAGEMENT

The main objectives of inventory management are operational and financial. Operational means that the materials and spares should be available in sufficient quantity so that the work is not disrupted for want of inventory. The financial objective means that investments in inventories should not remain idle.

The basic objective of keeping a supply of inventory and effectively managing it are the following :

a. **To allow flexibility in production scheduling :** A stock of inventory relieves the strain on the production system. Wherever the set-up cost is high, companies prefer to keep a large inventory so that the set-up cost is minimised.

b. **To meet variation in product demand :** The demand for the product is not known beforehand always, so in case of sudden variation in demand the ready inventory comes handy in meeting them.

c. **To maintain independence of operation :** The number of set-ups or the cost of production can be reduced when the inventory is ready in the work station. So, independence of workstation is desirable to reduce the number of set-ups.

d. **To keep a buffer stock in case of deviation in raw material delivery time :** There can be loss of production due to delay in delivery of raw material by the supplier, in such a case, the company may keep a buffer stock in order to avoid stoppage of production line and loss of earning. Other objectives of inventory management are as follows :

1. To avoid both over-stocking and under-stocking of inventory.
2. To maintain investments in inventories at the optimum level as required by the operational and sales activities.
3. To eliminate duplication in ordering or replenishing stocks. This is possible with the help of centralising purchases.
4. To minimise losses through deterioration, pilferage, wastages etc
5. To ensure right quality goods at reasonable prices. Suitable quality standards will ensure proper quality of stocks.
6. To facilitate furnishing of data for short-term and long-term planning and control of inventory.
7. To keep material cost under control so that they contribute in reducing cost of production and overall costs.

12.6 ROLE OF INVENTORY IN WORKING CAPITAL

Inventories are probably the most strategic component in the structure of working capital of many of the business enterprises. Inventory constitutes the major component of current assets in many business enterprises, basically the manufacturing concerns. Thus, it is very important to have proper control and management of inventories.

Inventory provides a cushion for future price fluctuations. In the area of working capital the efficient control of inventory is one of the most serious issues to the manufacturing concerns, because a large portion of current assets of companies are blocked in inventories. The turnover of working capital is largely governed by the turnover of inventories. Thus, for maximising the value of the company, an efficient inventory management is important.

A proper inventory control not only helps in solving the acute problem of liquidity but also increases profits and causes substantial reduction in the working capital of the concern.

12.7 PURPOSE OF INVENTORY

Every business enterprise has to maintain a certain level of inventories to facilitate uninterrupted production and smooth running of the business. In case of shortages, the firm has to buy as soon as it receives orders.

It means loss of time and delays in execution of orders which may sometime lead to loss of customer and business as well. In order to reduce ordering costs and availing quantity discounts, a firm has to maintain inventories.

There are basically three purposes of holding inventories :

The transaction motive facilitates continuous production and timely execution. The precautionary motive necessitates the holding of inventories for meeting the unpredictable changes in demand and the speculative motive induces to stock inventories for taking the advantage of price fluctuations, quantity discounts etc.



CHECK YOUR PROGRESS

Q.3. Give two objectives of Inventory Management.

.....

.....

Q.4. Mention three main purposes of holding inventories.

.....

.....

12.8 COST ASSOCIATED WITH INVENTORIES

Inventories block the firm's funds and incurrence of capital and other costs. Excess inventory may lead to additional working capital requirement ultimately increasing the cost. The various costs and risks involved in holding inventories are as follows :

- **Holding Cost :** This broad category includes the costs for storage facilities, insurance, handling, breakage, pilferage, depreciation, taxes and the opportunity cost. It is observed that high holding costs have a tendency to favour low inventory levels and frequent replacement.
- **Ordering Cost :** Ordering cost includes the managerial and clerical cost needed to prepare the purchase and production order. It

includes all the overhead cost details such as floating tenders inviting quotations, maintaining record and so on.

- **Capital Cost :** The firm has to arrange for additional funds to meet the cost of inventories which can be arranged either from own resources or from outsiders. In both the situations the firm incurs a cost. In the first case there is opportunity cost and in the later the firm has to pay interest to the outsiders.
- **Set-up Cost (Production change) :** It is often seen that different products need different set-ups to initiate the production. It includes arrangements of necessary equipment, filing documentation, changing previous moulds etc.
- **Shortage Cost :** Stoppage of production and cancellation of orders may result in loss of opportunity. These are referred as shortage costs. It is not easy to measure the exact quantification of such costs.

12.9 INVENTORY MANAGEMENT TECHNIQUES

Companies follow an inventory system that defines the operating structure and policies for maintaining and controlling goods to be stocked. The system tracks the suppliers and flow the commodities end-to-end. Also, if any error creeps in during the execution process the system should be able to identify and rectify the same.

The two models : fixed order quantity models (for eg- EOQ) and Fixed time period models. The re-order takes place on reaching the stock level at some minimum in case of fixed order models and in case of fixed time models the re-order takes place at a regular time interval.

EOQ is the quantity fixed at the point where the total cost of ordering and the cost of carrying the inventory, will be the minimum. If the quantity of purchases is increased the cost of ordering decreases, while the cost of carrying increases. But here the total of both the costs should be kept at minimum.

EOQ may also be worked out mathematically by using the following formula :

EOQ = $\sqrt{}$(2AB/C), where,

A = Annual units consumed

B = Buying or ordering cost

C = Cost of carrying one unit expressed as percentage.



CHECK YOUR PROGRESS

Q.5. Mention two costs associated with inventories.

.....

.....

Q.6. What are the tools and techniques of inventory management ?

.....

.....

12.10 IMPORTANCE OF INVENTORY MANAGEMENT TECHNIQUES

Effective inventory management requires an effective control system, for inventories. The problem of liquidity can be solved by proper inventory control and also increases profit and causes substantial reduction in the working capital of the concern. The main tools of inventory management and control are :

a. Determination of stock levels.

b. Selecting a proper system of ordering for inventory

c. Determination of Economic order quantity

d. ABC analysis

e. VED analysis

f. Classification and codification of inventories

g. Preparation of inventory reports, etc

- **Determination of stock levels :** An efficient inventory management requires that a firm should maintain an optimum level of inventory where inventory costs are the minimum and at the same time there is no stock-out which may result in loss of sale or stoppage of production. The various levels are Minimum level, re-ordering level, Maximum level, Danger level, Average stock level, Determination of safety stocks.

- **Ordering system of Inventory :** The main problem of inventory is to decide the re-order point. The re-order point is the inventory unit quantity that triggers the purchase of a predetermined amount of replenishment inventory.

- **Economic Order Quantity :** The quantity to be purchased must be neither small or big, because costs of buying and carrying materials are very high.EOQ is the size of the lot to be purchased which is economically viable. In determining economic order quantity it is assumed that cost of managing inventory is made up solely of two parts, i.e. ordering cost and carrying costs.

- **ABC analysis :** The materials are divided into a number of categories for adopting a selective approach for material control. Under ABC analysis the materials are divided into three categories i.e. A.B.C. It is seen that almost 10% of the items contribute to 70% of value of consumption; this category is known as 'A' Category. About 20% of items contribute 20 percent of value of consumption and this is known as category 'B'. And category 'C' covers about 70% of items of materials which contribute only 10% of value of consumption.

- **VED analysis :** This analysis is generally used for spare parts. Requirement of spare parts is different from that of materials. The demand for spares depends upon the performance of the plant and machinery. Spare parts are classified as vital (V), essential (E) and desirable (D). The stocking of D types of spares can be avoided at times, whereas E type of spares can be kept at low figures. But V types of spares are necessary for smooth functioning and non-availability of it may cause havoc in the organisation.

- **Codification of inventories :** For proper recording and control of inventory, a proper classification and codification of various types of material is necessary. The inventories should be first classified and then code numbers should be assigned which may help in their

identification. This is useful not only for large concern but also small concerns. If there is any problem in classification it may lead to reduction in production. The codification helps in maintaining secrecy of description.

- **Inventory Reports :** By preparing periodical inventory reports the management can have effective inventory control and take corrective actions wherever necessary.

Likewise there are many more tools and techniques in relating to inventory management which may help in reduction of cost control and smooth functioning of the organisation. These tools and techniques play a very important role in smooth functioning of the organisation.



CHECK YOUR PROGRESS

Q.7. What is EOQ ?

.....

.....

Q.8. What is the basic purpose of holding inventory ?

a. .....

b. .....



12.11 LET US SUM UP

After going through the unit we have come through the following :

- Inventory is an itemized list of current assets as :
  1. a catalogue of the property of an individual or estate;
  2. a list of goods on hand. Inventory is the collection of any item or resource used in an organisation.
- The basic objective of keeping a supply of inventory and effectively managing are :
  a. To allow flexibility in production scheduling
  b. To meet variation in product demand

c. To maintain independence of operation
d. To keep a buffer stock in case of deviation in raw material delivery time

- There are basically three purposes of holding inventories:
  1. The transaction motive facilitates continuous production and timely execution
  2. The precautionary motive necessitates the holding of inventories for meeting the unpredictable changes in demand and
  3. The speculative motive induces to keep inventories for taking the advantage of price fluctuations, quantity discounts etc.
- The various costs and risks involved in holding inventories are as follows :
  a. Holding Cost
  b. Ordering Cost
  c. Capital Cost
  d. Set-up Cost (production change)
  e. Shortage Cost
- The tools of inventory management and control are :
  a. Determination of stock levels.
  b. Selecting a proper system of ordering for inventory
  c. Determination of Economic order quantity
  d. ABC analysis
  e. VED analysis
  f. Classification and codification of inventories
  g. Preparation of inventory reports



12.12 FURTHER READING

1. S. K. Gupta & R. K. Sharma (2016), Financial Management : Theory and Practice, 8th Edition, Kalyani Publishers.
2. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press.
3. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.

4. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.

5. R. M Shrivastava (2010), Financial Management And Policy, Himalaya Publishing House.



12.13 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1. :

The meaning of inventory is an itemized list of current assets as 1. a catalogue of the property of an individual or estate; 2. a list of goods on hand. Inventory is the collection of any item or resource used in an organisation.

Ans to Q. 2. :

a. Crucial

b. Inventories

c. Production and Distribution

Ans to Q. 3. :

a. To meet variation in product demand.

b. To minimise losses through deterioration, pilferage, wastages etc.

Ans to Q. 4. :

a. Transaction Motive

b. Precautionary Motive

c. Speculative Motive

Ans to Q. 5. :

a. Ordering Costs and

b. Capital Costs

Ans to Q. 6. :

a. Determination of stock levels.

b. Selecting a proper system of ordering for inventory

c. Determination of Economic order quantity

d. ABC analysis

e. VED analysis

Ans to Q. 7. :

EOQ is the quantity fixed at the point where the total cost of ordering and the cost of carrying the inventory, will be the minimum. If the quantity of purchases is increased the cost of ordering decreases, while the cost of carrying increases. But here the total of both the costs should be kept at minimum.

Ans to Q. 8. :

The basic purposes of holding of inventories for meeting the unpredictable changes in demand and the speculative motive induces to keep inventories for taking the advantage of price fluctuations, quantity discounts etc.



12.14 MODEL QUESTIONS

1. What is inventory ?
2. Mention the objectives of Inventory Management ?
3. What are the various characteristics of inventory management ?
4. What are the different costs associated with inventory management ?
5. Explain the tools and techniques of inventory management.

❖❖❖

UNIT - 13 : RECEIVABLES MANAGEMENT

UNIT STRUCTURE

13.1 Learning Objectives

13.2 Introduction

13.3 Meaning of Receivables

13.4 Factors influencing the Size of Receivables

13.5 Objective of Receivables Management

13.6 Cost Associated with Maintaining Receivables

13.7 Credit policy Variables

13.8 Evaluation of credit policy

13.9 Forecasting the receivable

13.10 Let us Sum Up

13.11 Further Reading

13.12 Answers to Check Your Progress

13.13 Model Questions

13.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the meaning of receivables
- explain the factors influencing the size of receivables
- outline the objectives of receivable management
- discuss the cost associated with maintaining receivables
- explain the credit policy variables
- know the factors helping in forecasting receivables

13.2 INTRODUCTION

This unit discusses the concept of receivables. Receivables constitute a significant portion of current assets of a firm. But, for this investment in receivables a firm has to incur certain costs. And it has a risk of bad debts also. Therefore a proper control and management of receivables is necessary. This unit mentions about the proper definition of receivables, also the objectives and the various costs associated with the receivables.

It explains the dimensions of receivables management. The unit also specifies that the size of the receivables can be forecast with the help of various factors which are described in details in the chapter ahead.

13.3 MEANING OF RECEIVABLES

In simple words, receivables represent amount owed to a firm as a result of sale of goods or services in the usual course of business. Receivables form a part of current assets of a firm. These are also known as Trade receivables, accounts receivables, or book debts. The period of credit and the extent of receivables depend on the credit policy followed by the firm. Every firm has a dream of achieving greater heights and to face the competition in the world of business, at any point of time. So, the main purpose of maintaining or investing in receivables is to meet competition and to increase the sales and profit.



CHECK YOUR PROGRESS

Q.1. Define Receivables.

.....

.....

Q.2. Fill in the blanks :

a. Receivables are also known as _____

b. Risk of _____ is involved in receivable management

c. One of the cost associated with receivable management is _____

13.4 FACTORS INFLUENCING THE SIZE OF RECEIVABES

The factors which influence or affect the size of receivables directly or indirectly are as follows :

1. **Size of credit sales :** The size of receivables can be increased or decreased by the volume of credit sales which is considered as one of the important factor. It can be implied that if an organisation sells only on cash basis as in the case of Bata shoe Company then there will be no receivables. In case of credit sales out of the total sales,

if the proportion of credit sale is of high receivables will also be high and if the figure of credit sale is less than the receivables will also be less.

2. **Credit policies :** A firm with a conservative pattern of credit policy will have a low size of receivables while in case of a firm with a liberal credit policy the size of the receivables will be more. If collections are prompt then even if credit is liberally extended the size of receivables will remain under control. And there is always a possibility of bad debt in case the receivables remain outstanding for a longer period.

3. **Terms of trade :** This is yet another important factor on which the size of receivables depends. The period of credit allowed and the rates of discount given are linked with receivables. If the credit period allowed is more, then receivables is more. The terms of trade once allowed cannot be changed without adversely affecting sales opportunities.

4. **Expansion plans :** When a concern wants to expand its activities, it will have to enter new markets. To attract more of customers the firm will give incentives in the form of credit facilities which can be reduced once it gets permanent customers. In the early stages of expansion the credit facilities provided is more which is essential for increasing sale and hence size of receivables will be more.

5. **Relation with profits :** When sales increase beyond a certain level the additional costs incurred are less than increase in revenues. It is advantageous to increase sales because it will ultimately bring more profits. The size of receivables increases with increase in profits.

6. **Credit collection efforts :** Efforts should be made in order to give periodical reminders to the customers if they fail to pay in time. And if adequate attention is not paid towards credit collection then the concern can land itself in a serious financial problem. An efficient credit collection method will reduce the size of receivables or vice-versa.

7. **Habits of customers :** The size of receivables is also related with the paying habits of customers. The customers may be in the habit of delaying payments even though they are financially sound. The

concern should remain in touch with the customers and should make the customers realise the urgency of the firm's needs.

13.5 OBJECTIVE OF RECEIVABLE MANAGEMENT

The main objective of receivable management is to take a sound decision as regards investment in debtors. Receivables management is the process of making decision relating to investment in trade debtors. It is seen that certain investment in receivables is necessary to increase the sales and the profits of a firm. But it is also found that such investment in the receiva-bles involves cost consideration also. There is also risk of bad debts too.

The other important reason of maintaining or investing in receivables is to meet competition and to increase the sales and profit. Again a sound managerial control requires proper management of liquid assets and inventory and these assets are a part of working capital of the business. It is already mentioned that the receivables result from credit sales. A concern is required to allow credit sales in order to expand its sales volume as the increase in sales is also essential to increase profitability.

13.6 COST ASSOCIATED WITH MAINTAINING RECEIVABLES

The allowing of credit to customers means giving of funds for the use of customers. For maintaining receivables the following costs can be incurred by the concern :

1. **Cost of Financing Receivables :** The customers are allowed to use the capital of the concern, only when the goods and services are provided on credit. The receivables are financed from the funds supplied by shareholders for long term financing and through retained earnings.
2. **Cost of collection :** For receivable management, a proper collection of receivables is essential. The customers who do not pay the money on time are sent reminders for early payments. Sometimes some persons are sent for collecting the amount and in some cases legal recourse are necessary to be taken for collecting receivables. All these costs required to be incurred by a concern are known as collection costs.

3. **Bad debts :** Sometimes some customers fail to pay the amounts due and such amounts are known as bad debts. Now at times a concern may be able to reduce bad debts through efficient collection machinery, but cannot rule out all together.

13.7 CREDIT POLICY VARIABLES

The most important factor that determines the amount of account receivables is the credit policy followed by the firm. This factor is controllable by the finance manager. The terms of sale, the quality of the customer and the collection efforts and so on, are part of the credit policy.

Credit policy consists of a set of rules used for regulation of credit terms. Merchants who bring in large volume of sales, and particularly those engaged in wholesale business approach the company for seeking credit terms. Credit is the time lag allowed by the supplier to the buyer for payment of goods sold. To grant appropriate credit limit to each such customer, it is necessary to evolve a procedure for evaluation of the customers. In sanctioning the credit limit factors such as the merchant's assets, selling capacity bank reference and past dealings are considered.



CHECK YOUR PROGRESS

Q.3. Mention the objectives of Receivables.

.....

.....

Q.4. What are the factors involving the size of variables.

.....

.....

Credit terms of each customer should be reviewed every year, and sanction should be renewed with appropriated modification if needed. In reviewing the credit policy, a company may consider extending the credit

period or offering cash discount facility with a view to increasing the sales demand for the company's products.

A major cost of extending the credit period is the cost of financing the additional investment blocked by the extended credit facility. Other costs include increase in costs of account maintenance and risk of bad debts.

13.8 EVALUATION OF CREDIT POLICY

Evaluation of credit policy after formulation is very important. It is necessary to find out the credit worthiness of customers. The following are the ways to formulate the same.

a. **Collecting Credit information :** The foremost step will be to gather credit information about the customers. This information should be such that proper analysis about the financial position of the customer is possible. The credit information will surely help in improving the quality of receivables but the cost of collecting information should not increase the reduction of bad debts losses.

   The information may be available from financial statements, credit rating agencies, reports from banks, etc. The balance sheet will help in finding out short term and long term position of the concern. Similarly the income statement will show the profitability position of the concern. A proper analysis of financial statements will be helpful in determining the creditworthiness of customers. The credit rating agencies supply information about various concerns through sources and keep the information up to date.

   Credit information may be available with banks too. The banks have their credit departments to analyze the financial position of a customer. The credit limit allowed, frequency of amount deposited etc may be also help in knowing about the customers. In case of old customers, business's own records may help to know their credit worthiness. The frequency of payments, cash discounts availed etc. may help to form an opinion about the quality of credit.

b. **Credit Analysis :** After the information is gathered, the finance manager should analyze and find out the credit worthiness of the potential customers and also see that whether they satisfy the norms of the concern or not. This analysis will determine the degree

of risks involved, the capacity of the customer to borrow and their willingness to pay.

c. **Credit Decision :** After analyzing the creditworthiness of the customer, the finance manager has to take decision whether the credit is to be extended or not. It is only in marginal cases that decision of credit becomes difficult to be made. In such cases the benefit of extending the credit should be compared to the likely bad debt losses and then a decision should be taken. Various alternative facilities must be given to the customers who are below the company's credit standards rather than out rightly refusing them. They must be allowed to pay on delivery of goods, invoices must be sent through banks etc. Such a course may help in retaining the customers at present.

d. **Financing Investments in Receivables :** Account receivable block a part of working capital. Efforts should be made that funds are not tied up in receivables for longer periods. The finance manager should make efforts to get the receivables financed so that working capital needs are met in time.

The banks allow raising of loans against security of receivables. The quality of receivables will determine the amount of loan. The bank will accept receivables of dependable parties only. Another method of getting funds against receivables is their outright sale to the bank. The bank will credit the amount to the party after deducting discount and will collect the money from the customers later.

13.9 FORECASTING THE RECEIVABLES

A concern should be very clear about its credit policies as to the size of the receivables on the basis of present policies. This is an important estimation which will help the concern in planning its working capital. Even though it is not possible to forecast the exact receivables in the future but some estimation is possible on the basis of past experience and credit policies etc. There are some factors which will help in forecasting receivable, they are discussed below :

1. **Credit Period allowed :** The ageing of receivables is helpful in forecasting. The size of the receivables will be higher depending on the period of amount due. There will be increase in profits with the increase in receivables and that leads to increase in costs too. The

bad debts and collection expenses will also be more. And if credit period is less then the size of the receivables will also be less.

2. **Effect of Cost of goods sold :** Sometimes an increase in sales results in decrease in cost of goods sold. The increase in sales will also increase the amount of receivables and the estimate for sales will enable the estimation of receivables too.
3. **Forecasting Expenses :** The receivables are associated with a number of expenses. These expenses are administrative expenses on collection of amounts, bad debts etc. The increase in receivables will bring more profits by increasing sales. If the costs of receivables are more than the increase in income, further credit sales should not be allowed. And if revenue earned is more than cost, the sales should be expanded.
4. **Average size of receivables :** It helps in forecasting receivable. Average size of receivables is calculated as :

   Average size of receivables = Estimated annual sales × Average collection period.
5. **Forecasting Average collection period and discounts :** The credit collection policies spells out the time for making payments and the time allowed for availing discounts. If the average collection period is more then the size of receivables will be more and vice-versa. The formula is given below :

   Average collection period = Trade debtors × No of working days/Net sales.



CHECK YOUR PROGRESS

Q.5. Mention two costs associated with receivables management ?

.....

.....

Q.6. What is credit policy ?

.....

.....

The Average collection period should be kept under control by the concern and the number of customers availing discounts should be determined. If 40 percent of the customers are not availing discount facility it means that the payments by 40 percent customers are over due. These factors will also be helpful in forecasting the size of receivables.



13.10 LET US SUM UP

After going through the unit we have come through the following :

- Receivables represent amount owed to a firm as a result of sale of goods or services in the usual course of business.
- The factors which influence or affect the size of receivables are:
  1. Size of credit sales
  2. Credit policies
  3. Terms of trade
  4. Expansion plans
  5. Relation with profits
  6. Credit collection efforts
  7. Habits of customers
- For maintaining receivables the following costs can be incurred by the concern :
  1. Cost of Financing Receivables
  2. Cost of collection
  3. Bad debts
- Evaluation of credit policy after formulation is very important. It is necessary to find out the credit worthiness of customers. The following are the ways to evaluate credit policy :
  a. Collecting Credit information
  b. Credit Analysis
  c. Credit Decision
  d. Financing Investments in Receivables

- There are some factors which help in forecasting receivable: Credit Period allowed :
  a. Effect of Cost of goods sold:
  b. Forecasting Expenses
  c. Forecasting Average collection period and discounts
  d. Average size of receivables



13.11 FURTHER READING

1. S. K. Gupta & R. K. Sharma (2016), Financial Management : Theory and Practice, 8th Edition, Kalyani Publishers.
2. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press.
3. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.
4. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.
5. R. M Shrivastava (2010), Financial Management And Policy, Himalaya Publishing House.



13.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1. :

Receivables constitute a significant portion of current assets of a firm. But, for this investment in receivables a firm has to incur certain costs. And it has a risk of bad debts also.

Answer to Q. 2. :

a. Trade receivables
b. Bad debts
c. Cost of collection

Ans to Q. 3. :

a. To meet variation in product demand.

b. To minimise losses through deterioration, pilferage, wastages etc.

Ans to Q. 4. :

a. Transaction Motive

b. Precautionary Motive

c. Speculative Motive

Ans to Q. 5. :

a. Ordering Costs and

b. Capital Costs

Ans to Q. 6. :

a. Determination of stock levels.

b. Selecting a proper system of ordering for inventory

c. Determination of Economic order quantity

d. ABC analysis

e. VED analysis.



13.13 MODEL QUESTIONS

1. What is Receivables ?
2. Mention the objectives of receivable Management ?
3. What are the various credit policy variables ?
4. What are the different costs associated with Receivables Management ?
5. What are the various ways to evaluate the credit policy ?
6. What are the factors that influence the size of the receivables ?

❖❖❖

UNIT - 14 : DIVIDEND DECISION

UNIT STRUCTURE

14.1 Learning Objectives

14.2 Introduction

14.3 Meaning and concept of dividend Decision

14.4 Determinants of dividend policy

14.5 Stability of Dividend

14.6 Forms of Dividend

14.7 Types of dividend policy.

14.8 Traditional Approach.

14.9 Dividend Relevance Model / Approach

14.10 Dividend Irrelevance Model / Approach

14.11 Stock Split

14.12 Let Us Sum Up

14.13 Further Reading

14.14 Answers to Check your progress

14.15 Model Questions

14.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the meaning and concept of dividend decision
- outline the determinants of dividend policy
- describe the different types of dividend policy
- discuss the various models related to dividend
- explain the different forms of dividend
- describe the stability of dividends.

14.2 INTRODUCTION

Dividend is that part of profit which is distributed among the shareholders by the company in which the shareholders are the members. It is a kind of reward given by the company to its shareholders for the investments made by them in shares of the company. Companies usually follow a set of policies to decide the quantum of dividends to be paid to shareholders. These are termed as dividend policies. Dividend decisions are important decisions for any company.

Dividend is a right of shareholders to participate in the profits and surplus of the company for their investment in the share capital of the company, and they should receive fair amount of the profits.

Therefore a company should distribute a reasonable amount as dividend to its members and retain the rest for its growth and survival.

14.3 MEANING AND CONCEPT OF DIVIDEND DECISION

Dividend policy is one of the most critical areas of decision making for companies. According to one school of thought, dividend decision does not affect the shareholders wealth and hence the valuation of the firm and according to another school of thought, dividend decision materially affects the shareholders wealth and also the valuation of the firm. The views of these schools of thoughts are under two groups :

a. The theory of Irrelevance and
b. The theory of Relevance.

Shareholders and management of the company play a major role in formulating the dividend policy. In case of ONGC the major shareholder is the government of India and it plays major role in structuring the dividend policy. For eg : Infosys Ltd a leading player in the information technology sector prescribes distribution of up to 50 percent of profit after tax (PAT) as dividend. It is usually found that the dividend policy of a company is formulated by the top management. For eg: the Board of directors, major shareholders etc.

Before declaring dividend the board takes several critical factors into consideration including cash flow position, future capital expansion plans, taxation and so on.



CHECK YOUR PROGRESS

Q.1. Define Dividend.

.....

.....

Q.2. What is the meaning of dividend decision ?

.....

.....

Q.3. Fill in the blanks :

a. _____ and _____ of a company plays an important role in decision policy.

b. Dividend decisions are important decision for any _____

14.4 DETERMINANTS OF DIVIDEND POLICY

The payment of dividend involves some legal as well as financial consideration. It is difficult to determine a general dividend policy which can be followed by different firms at different times because dividend decision has to be taken considering the special circumstances of an individual case. The main factors are as follows :

a. **Legal Restrictions :** These provisions require that dividend can be paid only out of current profits or past profits after providing for depreciation or out of the moneys provided by government for payments of dividend. Legal provisions relating to dividends as laid down in sections 93, 205, 205A, 206, 207 of the Companies Act 1956 are significant because they lay down a framework within which dividend policy is formulated.

b. **Magnitude and Trend of earnings :** The amount and trend of earnings is an important aspect of dividend policy. As dividends can be paid only out of present or past year's profits, earnings of a company fix the upper limits on dividends. The past trend of the company's earnings should be noted while making the dividend decision. The dividend should be paid out of current year's earnings only as the previous year's earnings become a part of permanent investments in order to earn current profits in business.

c. **Desire and types of shareholders :** Desire of shareholders for dividend depends upon their economic status. Investors such as retired persons, widows and other economically weaker persons view dividends as a source of funds to meet their day to day living expenses. To benefit such investors the companies should pay regular dividends. On the other hand a wealthy investor in a high income tax bracket may not benefit by high current dividend income. Such an investor may be interested in lower current dividends and high capital gains.

d. **Age of the company :** The dividend decisions are also influenced by the age of the company. For a newly established company it has to limit payment of dividend and retain a part of earnings for financing its future growth and development, while older companies which have sufficient reserves can afford to pay liberal dividends.

e. **Nature of Industry :** This factor also considerably affects the dividend policy as certain industries have a considerably steady and stable demand irrespective of the prevailing economic conditions. Firms which expect regular earnings follow a consistent dividend policy. Again if the earnings are uncertain as in the case of luxury goods, conservative policy should be followed. Thus industries with steady demand of their products can follow a higher dividend payout ratio while cyclical industries should follow a lower payout ratio.

f. **Taxation policy :** A higher or lower rate of business taxation affects the net earnings of the company (after tax) and thereby its dividend policy. Thus, a taxation policy of the government also affects the dividend decision of a firm.

g. **Dividend Destribution Tax :** Dividend Destribution Tax (DDT) is an additional amont of tax (under section 115 of Income Tax Act, 1961) to be paid, in addition to the income tax chargeable in respect of the total income or even if there is no income tax payable on total income computed in accordance with Income Tax Act, 1961, by every company which declares, distributes or pays dividend to its share-holders for a particular assesment year.

h. **Inflation :** Inflation acts as a constraint in the payment of dividends. When price rises, funds generated by depreciation would not be adequate to replace fixed assets, and hence to maintain the same

assets, and keep capital intact, substantial part of the current earnings would be retained. Or else, the inflated book profits in the days of rising prices would amount to payments of dividend much more than warranted by the real profits out of the equity capital.

i. **Requirements of institutional investors :** The requirements of the institutional investors such as banks, financial institutions, banks insurance etc also affects the dividend policy of the company. These investors usually favour a policy of regular payments of cash dividend and stipulate their own terms with regard to payment of dividend on equity shares.

j. **Liquid Resources :** The availability of the liquid resources also affects the dividend policy. Although the firms may have a sufficient amount of funds to declare dividends but still may not be desirable to pay dividends if it does not have sufficient liquid resources. If the company does not have liquid resources it is better to declare stock dividend i.e. issue bonus shares to the existing shareholders.

k. **Government Economic policy :** The dividend policy of a firm has also to be adjusted to the economic policy of the government. In 1974 and 1975 the companies were allowed to pay not more than 33 % dividend out of their profits or 12% on the paid up value of the shares, whichever was lower.

l. **Future financial Requirements :** The future financial requirements of a company must also be taken into consideration while making a dividend decision. As for example if a company has high profitable investment opportunities it can convince the shareholders to accept with limited amount of dividends and plough back the profits to increase the future earnings but when the company has no such opportunity then it would not be justified in retaining the substantial part of its current earnings by paying less amount of dividend to the shareholders.

14.5 STABILITY OF DIVIDEND

One of the most important guideline or principle in the formulation of a dividend policy is Stability of Dividends. It simply refers to the payment of dividends regularly and shareholders generally prefer such payments of dividends. Some companies follow a policy of constant dividend per share, whereas some companies follow policy of constant pay-out ratio, and some follow constant low dividend per share plus an extra dividend

in the years of high profit. Now it is seen that a policy of constant dividend per share is most suitable to concern whose earnings are expected to be stable over a number of years or in those companies where there are sufficient reserves to pay dividends in the years of low profits. The policy of constant payout ratio i.e paying a fixed percentage of net earnings every year may be supported by a firm because it is related to a firm whose ability is there to pay dividends. Again, the policy of constant low dividend per share is suitable to the firm having fluctuating earnings from year to year.



CHECK YOUR PROGRESS

Q.4. Give the determinants of dividend policy ?

.....

.....

Q.5. What do you mean by stability of dividend ?

.....

.....

14.6 FORMS OF DIVIDEND

There are various forms of dividend. In ordinary course of business dividends paid are known as Profit dividends, while dividends paid out of capital are known as Liquidation dividends. Dividend may be classified as Cash dividend, Scrips Dividend, Property dividend, and Stock dividend.

- **Cash Dividend :** It is a usual method of paying dividends. Payment of dividend in cash results in outflow of funds and reduces the company's net worth though the shareholders get an opportunity to invest the cash in any manner they desire. That is the reason the shareholders prefer to receive dividends in cash. But in other hand the firm must provide for adequate liquid resources so that its liquidity position is not adversely affected on account of cash dividends.
- **Scrips or Bond dividend :** A scrips dividend promises to pay the shareholders at a future specific date. In case of insufficiency of funds to pay dividend in cash it may issue bonds for amounts due

to the shareholders. The main objective of this dividend is to postpone the immediate payment of cash. It is also accepted as a collateral security.

- **Property Dividend :** These dividends are paid in the form of some assets other than cash. This dividend is distributed under exceptional circumstances and is also not popular in India.
- **Stock dividend :** It means the issue of bonus shares to the existing shareholders. If there is lack of liquid resources in a company, it is better to declare stock dividend. It amounts to capitalisation of earnings and distribution of profits among the existing shareholders without affecting the cash position of the firm.

14.7 TYPES OF DIVIDEND POLICY

There are various types of dividend policy which are described below :

1. **Regular Dividend Policy :** The dividend which is paid at the usual rate is known as regular dividend. The investors who prefer to get regular dividends are the retired persons, widows, economically weaker section etc. This also creates confidence among the shareholders. A regular dividend policy aids in long term financing and renders finance easier.

   However, regular dividends can be maintained only by companies of long standing and stable earnings.

2. **Irregular Dividend policy :** On account of uncertainty of earnings, unsuccessful business operations, Lack of liquid resources, and fear of adverse effects of regular dividends on the financial standing of the company, some of the companies follow irregular dividend payments.

3. **No dividend Policy :** A company may follow a policy of paying no dividend because of its unfavourable working capital position or on account of requirements of funds for future expansion.

4. **Stable dividend policy :** It means payment of certain amount of dividend regularly. A stable dividend policy may be established in any of the following three forms: Constant dividend per share, Constant pay out ratio, Stable rupee dividend plus extra dividend.

The term Stability of dividends means consistency or lack of variability in the stream of dividend payments. It means payment of certain minimum amount of dividend regularly. The three forms of stable dividend policy are :

a. **Constant dividend per share :** Some companies follow a policy of paying fixed dividend per share irrespective of any earnings. Such firms usually create a reserve for dividend equalisation to enable them pay the fixed dividend even in a year when the earnings are not sufficient or when there are losses.

b. **Constant payout ratio :** Constant pay-out ratio means payment of a fixed percentage of net earnings as dividend every year. The amount of dividend in such a policy fluctuates in direct proportion to the earnings of the company.

c. **Stable rupee dividend plus extra dividend :** Some companies follow a policy of paying constant low dividend per share plus an extra dividend in the year of high profits.

A stable dividend policy has its importance for both the investors and the company on the following grounds :

a. It stabilises the market value of shares.

b. It creates confidence among the investors.

c. It meets the requirements of institutional investors who prefer companies with stable dividends.

d. It results in a continuous flow to the national income stream and thus stabilises the national economy.

Together with the advantages the stable dividend policy suffers from certain limitations. It is not easier to change the stable dividend policy followed by the company. The financial standing of the company is damaged in the minds of the investors, if the stable dividends are not paid to the shareholders on any account. It adversely affects the market price of shares of the company.

14.8 TRADITIONAL APPROACH

According to the traditional approach expounded by Graham and Dodd, the stock market places considerably more weight on dividends than on retained earnings, For them, the stock market is overwhelmingly in favour of liberal dividends as against niggardly dividends. Their view is expressed quantitatively in the following valuation model :

$$P = m\ (D + E/3)$$

Where,

P = Market price per share

D = Dividend per share

E = Earnings per share

m = a Multiplier.

As per this model in the valuation of shares the weight attached to dividends is equal to four times the weight attached to retained earnings. In the model prescribed, E is replaced by D+R (where R = Internal Rate of Return) so that

$$P = m\ \{D + (D+R)/3\}$$
$$= m\ \{4D/3\} + m\ \{R/3\}$$

These weights provided by Graham and Dodd are based on their subjective judgements and not on objective empirical analysis. Notwithstanding the subjectivity of these weights, the major contention of the traditional approach is that a liberal payout policy has a favourable impact on stock prices.



CHECK YOUR PROGRESS

Q.6. Mention two types of dividend policy ?

.....

.....

Q.7. What is stable dividend policy ?

.....

.....

14.9 DIVIDEND RELEVANCE MODEL / APPROACH

The other school of thought on dividend decision holds that the dividend decisions considerably affect the value of the firm.

The theories relating to the relevance concept is described below :

1. Walter's Approach
2. Gordon's Approach

1. Walter's Approach :

This approach supports the doctrine that dividend decisions are relevant and affect the value of the firm. Prof. Walter's model is based on the relationship between the firm's return on investment i.e. (r), and the cost of capital or the required rate of return i.e. (k).

If r > k i.e. if the firm earns a higher rate of return on its investment than the required rate of return, the firm should retain the earnings. Such firms are termed as growth firms and this would maximise the value of shares.

If r < k i.e. in case of declining firms which do not have profitable investments, the shareholders would stand to gain if the firm distributes its earnings as dividends.

If r = k i.e. in case of normal firms the dividend policy will not affect the market value of shares as shareholders will get the same return as expected. And there would be no change in the value of the firm with the change in the dividend rate.

Assumptions :

a. Earnings and dividends do not change while determining the value.

b. The firm has a very long life.

c. Both internal rate of return and the cost of capital of the firm are constant.

d. No external sources of funds are used by the firm to make investments. They are financed only through retained earnings.

Formula for determining the value of a share :

The equation is based on the following share valuation model :

$P = D/(K_e - g)$, where,

P = price of equity share.

D = Initial dividend per share

K_e = Cost of equity capital

g = Expected growth rate of earnings

Criticism of Walter's model :

a. The assumption that the firm do not use external source of funds for investment is not true in the real world. Firms do raise funds through external financing.

b. Secondly, the Internal Rate of Return (r) do not remain constant, it changes with the change in investments.

c. The assumption that the cost of capital (k) will remain constant also does not hold good. As the firm's risk doesnot remain constant so also k will also never remain constant.

2. Gordon's Approach :

Myron Gordon has also developed a model suggesting that dividends are relevant and the dividend decision of the firm affects its value. The implication of his model is described below :

a. When r > k i.e., the firm earns higher rate of return on its investment than required rate of return, the price per share decreases as the dividend payout ratio increases.

b. When r = k i.e., the firms earns a higher rate of return on its investment than required rate of return, the price per share remains unchanged as it is not affected by dividend policy.

c. When r < k i.e., the firm earns a higher rate of return on its investment than required rate of return, the price per share increases as the dividend payout ratio decreases.

Assumptions :

a. The firm is an all equity firm.

b. The rate of return on the firm investment is constant.

c. The cost of capital for the firm remains constant and is greater than the growth rate.

d. Corporate taxes do not exist.

e. The firm has a perpetual life.

f. No external financing is used, only retained earnings represent the source of financing investments.

The formula for basic valuation is as follows :

$P = E (1-b)/ ke – br$

Where, P = Price of shares, E = Earnings per share, b = Retention ratio, ke = cost of equity capital, br = g = Growth rate i.e. rate of return on investment.

14.10 DIVIDEND IRRELEVANCE MODEL / APPROACH

Modigliani and Miller (MM) model maintain that dividend policy has no effect on the market price of the shares and the value of the firm is determined by the earning capacity of the firm or its investment policy. As observed by the MM, "Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of the shares."

Assumptions of MM Hypothesis

The MM Hypothesis of irrelevance of dividends is based on the following assumptions :

a. There are capital markets.

b. Investors behave rationally.

c. There are no floatation and transaction costs.

d. Information about the company is available to all without any cost.

e. The firm has a rigid investment policy.

f. There are either no taxes or there are no differences in the tax rate applicable to dividends.

g. No investor is large enough to effect the market price of shares.

h. There is no risk or uncertainty in regard to the future of the firm. (This assumption was dropped later)

The Argument of MM

The Argument given by MM in support of their hypothesis is that whatever increase in the value of the firm that results from the payment of dividend, will be exactly off set by the decline in the market price of shares because of external financing and there will be no change in the total wealth of the shareholders. For example, if a company having investment opportunities distributes all its earnings among the shareholders, it will have to raise additional funds from external sources. This will result in the increase in number of shares or payment if interest charges, resulting in fall in the earnings per share in the future. This MM model can be explained with the help of above formula :

$$Po = \frac{1}{(1 + Ke)} \quad (D1 + P1)$$

Where : Po = Market price per share at the beginning of the period.

D1 = Dividend to be received at the end of the period.

P1 = Market price per share at the end of the period.

Ke = Cost of equity capital.

Criticism of MM Approach

MM hypothesis has been criticised on account of various unrealistic assumptions as given :

a. Perfect capital market does not exist in reality.

b. The firms have to incur floating costs while issuing securities.

c. Information about the company is not available to all the persons.

d. Taxes do exit and there is normally different tax treatment.

e. The firms do not follow a rigid investment policy.

f. Shareholders may prefer current income as compared to further gains.

14.11 STOCK SPLIT

Stock split is a process adopted by companies to increase the number of freely floated shares, without issuing new shares. This can be done by splitting the existing shares into smaller denominations. An equity share of face value of Rs 10 may be split into 10 equity shares of Rs 2 each. After the stock split the par value of shares gets changed. However, the share capital remains unchanged.

Many companies prefer stock split with an exponential rise in the Indian share market.

The advantages of stock split are as follows :

a. Stock split brings down the par value as well as the market value of shares. This makes the shares readily available or more accessible to large number of investors and the volume of transaction in the stock market also increases. The right price of a share can also be determined. It indicates increase in share liquidity.

b. The share price of the companies having high growth rise fast. Stock split also gives indication towards the possibility of a higher profit in the future.

The disadvantages of stock split are as follows :

a. The price of the share generally comes down due to stock split. The investors may perceive the stock as cheap and act negatively.



CHECK YOUR PROGRESS

Q.8. Give two advantages of Stock Split ?

a. .....

b. .....

Q.9. Define— Stock Split.

a. .....

b. The stock split may result in increased administrative and legal cost for the company.



14.12 LET US SUM UP

In this unit we have discussed the following :

- Dividend is a right of shareholders to participate in the profits and surplus of the company for their investment in the share capital of the company, and they should receive fair amount of the profits.
- Dividend may be classified as Cash dividend, Scrips Dividend, Property dividend, and Stock dividend.
- The determinants of dividend policies are :
  a. Legal Restrictions
  b. Magnitude and Trend of earnings
  c. Desire and types of shareholders
  d. Age of the company
  e. Nature of Industry
  f. Taxation policy
  g. Inflation
  h. Requirements of institutional investors
  i. Liquid Resources
  j. Government Economic policy
  k. Future financial Requirements.
- There are various types of dividend policy which are described below :
  1. Regular Dividend Policy
  2. Irregular Dividend policy
  3. No dividend Policy
  4. Stable dividend policy
- The three forms of stable dividend policy are :
  a. Constant dividend per share
  b. Constant payout ratio
  c. Stable rupee dividend plus extra dividend

- The theories relating to the relevance concept is described below :
  1. Walter's Approach
  2. Gordon's Approach
- Modigliani and Miller Model, "Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of the shares."
- Stock split is a process adopted by companies to increase the number of freely floated shares, without issuing new shares.



14.13 FURTHER READING

1. S. K. Gupta & R. K. Sharma (2016), Financial Management: Theory and Practice, 8th Edition, Kalyani Publishers.
2. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press.
3. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.
4. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.
5. R. M Shrivastava (2010), Financial Management And Policy, Himalaya Publishing House.



14.14 ANSWER TO CHECK YOUR PROGRESS

Ans to Q. 1. :

Dividend is a right of shareholders to participate in the profits and surplus of the company for their investment in the share capital of the company, and they should receive fair amount of the profits.

Ans to Q. 2. :

Dividend policy is one of the most critical areas of decision making for companies. According to one school of thought, dividend decision does

not affect the shareholders wealth and hence the valuation of the firm and according to another school of thought, dividend decision materially affects the shareholders wealth and also the valuation of the firm.

Ans to Q. 3. :

a. Shareholders and Management

b. Company

Ans to Q. 4. :

Some determinants of dividend policy are given below :

a. Legal Restriction

b. Desire and types of shareholders

c. Nature of Industry

d. Age of the Company

e. Government's Economic Policy

Ans to Q. 5. :

One of the most important guideline or principle in the formulation of a dividend policy is Stability of Dividends. It simply refers to the payment of dividends regularly and shareholders generally prefer such payments of dividends.

Ans to Q. 6. :

a. Regular Dividend Policy.

b. Stable Dividend Policy.

Ans to Q. 7. :

The term Stability of dividends means consistency or lack of variability in the stream of dividend payments. It means payment of certain minimum amount of dividend regularly.

Ans to Q. 8. :

The two advantages of Stock Splits are :

- Stock split brings down the par value as well as the market value of shares.
- The share price of the companies having high growth rise fast. Stock split also gives indication towards the possibility of a higher profit in the future.

Ans to Q. 9. :

Stock split is a process adopted by companies to increase the number of freely floated shares, without issuing new shares. This can be done by splitting the existing shares into smaller denominations.



14.15 MODEL QUESTIONS

1. Define Dividend.
2. What do you understand by Dividend decision ?
3. Name various determinants of the dividend policies.
4. Define Stock Split.
5. What are the Disadvantages of stock split ?
6. What are the various forms of dividend ?
7. Name the two theories of dividend ?
8. What is stability of dividend ?
9. What do you understand by a stable dividend policy ? Why it should be followed ?
10. Explain the two theories of dividend policy in details.
    a. Dividend Relevance Model
    b. Miller and Modigliani Model
11. Explain the various factors which influence the dividend decision of a firm.

❖❖❖



REFERENCES

1. P K Jain & M. Y Khan (2014); Financial Management : Text, Problems and Cases. Mcgraw Hill Education
2. Prasanna Chandra (2011). Financial Management : Theory and Practice; McGraw Hill Education; 8 edition
3. I. M. Pandey (2010), Financial Management, Vikas Publishing House; 10th edition
4. S.K. Gupta & R.K. Sharma (2016), Financial Management : Theory and Practice, 8th Edition, Kalyani Publishers
5. Arindam Banerjee 2016), Financial Management, 1st Edition; Oxford University Press
6. M Y Khan (2017), Financial Management, 7th Edition McGraw Hill Education.
7. Rajiv Srivastava & Anil Mishra (2011); Financial Management, 2nd Ediotion, Oxford University Press.
8. R. M Shrivastava (2010), Financial Management And Policy, Himalaya Publishing House.

❖❖❖