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# Financial Management

## MBACC202

CENTRE FOR DISTANCE AND ONLINE EDUCATION


# FINANCIAL MANAGEMENT
# (MBACC202)

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# Content


| | | |
|---|---|---|
| **Unit 1:** | **Financial Management** | **1** |
| **Unit 2:** | **Financial Management Functions** | **8** |
| **Unit 3:** | **Sources of Finance** | **16** |
| **Unit 4:** | **Time Value of Money** | **26** |
| **Unit 5:** | **Practical Applications of Time value of Money** | **39** |
| **Unit 6:** | **Cost of Capital** | **52** |
| **Unit 7:** | **Capital Structure** | **64** |
| **Unit 8:** | **Capital Budgeting** | **74** |
| **Unit 9:** | **Leverage** | **90** |
| **Unit 10:** | **Dividend Theory** | **106** |
| **Unit 11:** | **Working Capital Management** | **124** |
| **Unit 12:** | **Inventory Management** | **134** |
| **Unit 13:** | **Cash Management** | **153** |
| **Unit 14:** | **Receivables Management** | **168** |

# Unit 01: Financial Management

CONTENTS

Objectives

Introduction

1.1 Nature and Characteristics of Financial Management

1.2 Scope of Financial Management

1.3 Goals of Financial Management

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

After studying this unit, you should be able

- understanding the meaning and definition of financial management,
- analyze the nature and characteristics of financial management.
- understand the scope of financial management.
- Interpret profit and wealth maximisation as a goal of financial management,

## Introduction

Finance is the life-blood of business. Without finance neither any business can be started nor successfully run. The term "finance" in our simple understanding it is perceived as equivalent to

Financial Management is in simple words management of money or "funds" management. It is a managerial activity that is concerned with the management of financial resources. That is it covers all decisions having monetary implications.

### 1. Evolution & Definition of Financial Management

It was a branch of economics **till 1890**.

**From earlier to 1930** there was a great depression the finance manager was responsible for raising resources for the organization which continued till 1950.

So, the job of a finance manager was descriptive in nature rather than analytical.

**From 1950 to 1960** there was a change in the business environment the job of the finance manager was rather to make analyses and there after the name of business finance was known as financial management.

Financial Management is that managerial activity that is concerned with the management of financial resources. That is, it covers all decisions having monetary implications.

Some key definition of financial management is-

**"Financial Management is the Operational Activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operation."** By Joseph Massie

"**Financial Management is an area of financial decision making, harmonizing individual motives and enterprise goals."** By Weston and Brigham

## 1.1 Nature and Characteristics of Financial Management

- It is indispensable organ of business management
- It is more analytical and less descriptive
- Applicable to all organization
- It is continuous Process
- Coordination with another department
- Helpful in decision making

## 1.2 Scope of Financial Management

Financial management as an academic discipline has undergone fundamental changes with regard to its scope and coverage.

In earlier years, it was treated synonymously with the raising of funds. In the later years, its broader scope, including in addition to the procurement of funds, efficient use of resources.

The important tasks of financial management, as may be categorized as follows:

- Financial Analysis, Planning, and Control
- Analysis of financial condition and preference
- Profit planning
- Financial forecasting
- Financial control

**Important Topics in Financial Management**

- Capital Structure
- Cost of Capital
- Working Capital
- Capital Budgeting
- Security Analysis
- Cash Management
- Receivable Management
- Inventory Management
- Return on Equity
- Gross Profit Margin
- Revenue Risk
- Business Risk
- Finance Risk

**Why is financial management critical?**

- It helps companies in acquiring funds and doing better financial planning.
- Helps businesses efficiently use and assign received funds
- Improves the organization's value

- Offers economic stability
- Aids businesses in making quick and crucial financial decisions

### Relation of Finance with other Domains

**Relation of Finance with Economics**: The field of finance is closely related to economics like supply-demand analysis, profit-maximizing strategies, and price theory.

**Relation to Accounting**: The field of finance is closely related to accounting in relation to Cash Flow and operations.

**Manufacturing Marketing and Personal Finance**: The field of finance is closely related to manufacturing functions necessitating a large investment. Also, many aspects of marketing management have financial implications like holding inventories and extension of credit facilities to customers to increase sales.

In the global competitive scenario, business firms are moving to leaner and flat organizations. Investments in Human Resource Development are also bound to increase. Restructuring of remuneration structure, voluntary retirement schemes, sweat equity etc., has become major financial decisions in the area of human resource management.

For enhanced experience and profits, businesses must ensure that the modern approach to financial management closely deals with the fund's availability, management, and allocation.

Also, it should ensure where and how these funds should be invested, monitoring and planning the estimated ROI, working capital, and more. If an effective financial management plan is deployed in an organization, its profit and growth are certain.

## 1.3 Goals of Financial Management

It reconciles the varied, often conflicting, interest of the stakeholders. Managers satisfy reconciling conflicting objectives of stakeholders.

Traditionally the goal of financial management was considered to be profit maximisation.

However according to modern thinking, the goal of financial management is wealth maximisation which is consistent with profit maximisation.

### Forms of Business Organization

The three most common forms of business organization are sole proprietorship, partnership, and company. Other specialized forms of business organizations also exist.

**Sole proprietorship** is the most in terms of total receipts and in net profits the corporate form of business dominates.

Sole Proprietorship A sole proprietorship is a business owned by one person who runs for his own profit. The majority of business firms are sole proprietorships.

**A partnership firm** is a business run by two or more persons for profit. Partnership accounts for the next majority of business and they are typically larger than sole proprietorship.

**A company form** of business is a legal entity, separated from the owners, with perpetual succession.

Just like an individual, the company can sue and be sued, make and be party to contracts and acquire property in its own name. The company form of organization is the dominant form of business organization in terms of receipts and profits.

**Goals or Objectives of financial management**

A) **Macro level**: Efficient use of Scarce resource.

B) **Micro Level**: At micro level maximisation of firm welfare. The two widely accepted approach is

- Profit Maximisation
- Wealth Maximisation

**Profit Maximization**

- Maximizing the rupee income of the firm
- Resources are efficiently utilized
- Appropriate measure of firm performance
- Serves the interest of society also

**Objections to Profit Maximization-**

- It is Vague
- It Ignores the Timing of Returns
- It Ignores the Risk
- In new business environment profit maximization is regarded as

  Unrealistic

  Difficult

  Inappropriate

  Immoral

**Shareholders' Wealth Maximization**

Maximizes the net present value of a course of action to shareholders.

The wealth maximizing objective means maximizing the net present value, i.e., the wealth of the owner.

Accounts for the timing and risk of the expected benefits.

Benefits are measured in terms of cash flows.

Fundamental objective—maximize the market value of the firm's shares.

**What is the Goal of the Firm?**

- Maximization of Shareholder Wealth!
- Value creation occurs when we maximize the share price for current shareholders

**Wealth Maximising Objective Superior to the Profit Maximization Objective**

The wealth maximising objective means maximising the net present value, i.e., the wealth of the owner.

The profit maximizing objective tries to maximize the profit after tax, i.e., net profit, which in the long term may reduce the net worth of the owner.

The profit maximisation concept basically ignores the time value of money and the risk involved in the firm's activities, which are very well taken care of by the wealth maximisation concept.

## Summary

Finance is a life blood of any business. Any business cannot be started nor grown without financial management. Financial management is management of financial resources of the organization. It is concerned with all the decisions of organizations having monetary implications.

Evolution of finance discipline is generally classified in three phases: It was a branch of economics till 1890. From earlier to 1930 there was a great depression the finance manager was responsible for raising resources for the organization which continued till 1950. From 1950 to 1960 there was a change in the business environment the job of the finance manager was rather to make analyses and there after the name of business finance was known as financial management.

The profit maximisation concept basically ignores the time value of money and the risk involved in the firm's activities, which are very well taken care of by the wealth maximisation concept.

## Keywords

**Financial Management:** Financial Management is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operation.

**Sole Proprietorship:** It is a form of business which is owned by one person who runs for his own profit.

**Partnership firm: It is a form of business which is** run by two or more persons for profit.

**Company:** A company form of business is a legal entity, separated from the owners, with perpetual succession.

## Self Assessment

1. Profits do not have to be shared in which of the following organization type

A. Partnership

B. Sole proprietorship

C. Company

D. None of the above

2. ---------- is a managerial activity that is concerned with the management of financial resources. That is, it covers all decisions having monetary implications.

A. Financial Management

B. Operational Management

C. Software Management

D. None

3. The criticism of the Profit maximization goal is/are?

A. It is vague concept.

B. It ignores timing of return

C. It ignores the risk factor

D. All of the above

4. The main goal of financial management is

A. Fund transfer

B. Profit Maximisation

C. Wealth Maximisation

D. None of the above

5. Traditionally ----------is the goal of business but in modern business ---------- is the goal of business

A. Profit Maximization, Wealth Maximization

B. Wealth Maximization, Profit Maximization

C. Both of the above

D. None of the above

6. Wealth maximisation is ---------- comparison to profit maximisation.

A. Superior
B. Inferior
C. Equal
D. No difference

7. ---------- takes into accounts for the timing and risk of the expected benefits.

A. Wealth Maximization
B. Profit Maximization
C. Both of the above
D. None of the above

8. Financial Management is applicable to ---------organization

A. All
B. Profit making
C. Loss making
D. Can't say

9. Financial Management is ----------process.

A. Static
B. Continues
C. Neither of the above
D. Not Applicable

10. The field of financial management can be done in coordination with another department

A. Yes
B. No
C. Can't say
D. Not Applicable

11. ----------Wealth maximisation maximizes the net present value of a course of action to shareholders

A. Yes
B. No
C. Can't say
D. Not Applicable

12. Financial Management is not an indispensable organ of business management. It is more analytical and less descriptive.

A. True

B. False

13. A partnership is a business owned by one person who runs for his own profit.

A. True

B. False

14. A company form of business is a legal entity, separated from the owners, with perpetual succession.

A. True

B. False

15. A partnership firm is a business run by two or more persons for profit.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | B | 2. | A | 3. | D | 4. | C | 5. | A |
| 6. | A | 7. | A | 8. | A | 9. | B | 10. | A |
| 11. | A | 12. | B | 13. | B | 14. | A | 15. | B |

## Review Questions

1. What do you mean by financial management?
2. Elaborate nature and characteristics of financial management.
3. State the scope of financial management.
4. Discuss goals of financial management.
5. Wealth maximisation is better than profit maximisation. Comment.

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# Unit 02: Financial Management Functions

CONTENTS

Objectives

Introduction

2.1 Functions of Financial Management

2.2 Financial Management & Manager

2.3 Controller Versus Treasurer

2.4 Comparison

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

After studying this unit, you should be able

- interpret finance and investment decisions of financial management,
- analyze dividend and working capital decisions of financial management.
- interpret the role and decisions of a financial manager
- deduce the difference in the role of controller and treasurer.

## Introduction

A business constitutes two major things: money and the decision through which the business runs efficiently. Without money, the survival of the company could be impossible and without decisions, the survival of money could be impossible.

The lifetime of the company completely depends on the countless decisions an administration makes. Probably, the most important things are regarding money. The money decisions related are called 'Financing Decisions.'

Financial decisions are the decisions taken by managers about an organization's finances. These decisions are of great significance for the organization's financial well-being.

## 2.1 Functions of Financial Management

Financial decision-making involves procurement of funds and their optimal utilization through:

- Financing
- Investment
- Dividend
- Working Capital Decision

### Financing Decisions

Financing decisions are also referred to as capital structure decisions. They are mainly concerned with:

- Identifying suitable sources of funds
- Tapping of these sources.
- Determine the financial risk.

The thrust is to bring down the cost of financing.

### The main issues involved are:

- Where from to procure the requisite funds?
- What should be the optimal mix of various sources of capital?
- How much should be the proportion of short-term and long-term funds?
- How do the expectations of providers of each source of capital change with alteration in the capital mix?

### Investment Decisions

Investment decisions are aimed at selecting the most productive avenues that maximize the ROI.

Examples include:

- Expansion
- Modernization and replacement
- R&D expenditure.

Also referred to as capital budgeting decisions. These decisions are critical for long-term survival and growth. They are taken in the light of their probable impact on the wealth of shareholders. These decisions are usually irreversible.

### Dividend Decisions

These decisions are mainly concerned with deciding the mix of profits to be distributed as dividends and those to be ploughed back for future financing needs of business.

Depend on trade-off between future financing needs of the firm and current consumption requirements of the shareholders.

Generally, firms in sectors with a high-growth rate follow a policy of high retention and low payout**.**

### Working Capital Decisions

These decisions are concerned with the management of current assets. The two key decision points in working capital management are:

- Level of investment in current assets
- Financing of current assets.

The four key decision areas in finance are the part of an integrated decision-making framework in finance. They are directly linked and reinforce each other. All the decisions have a common objective function-shareholders' wealth maximization.

## 2.2 Financial Management & Manager

Financial Management can be defined as the science and art of managing money. Financial Management (or business finance) is concerned with managing a corporation`s money.

A financial manager is a person who manages the finances of a business entity both efficiently and effectively. The financial activities of a firm are one of the most important and complex activities of a firm. Therefore, in order to take care of these activities a financial manager performs all the requisite financial activities.

## Role of Finance Manager

This role requires a financial manager to monitor the Inflow and outflow of funds as per the requirement of the organization. He is responsible for handling investments of excess funds on hand, cash flow forecasting, and arranging loans to meet day-to-day and long-term requirements of the organization.

The person in charge should maintain a far-sightedness in order to ensure that the funds are utilized in the most efficient manner. His/her actions directly affect the Profitability, growth, and goodwill of the firm.

Nowadays, Finance Managers spend less time producing financial reports and prefer to invest more time in conducting data analysis, planning, and strategizing, or advising senior managers or top executives.

- Raising of Funds
- Allocation of Funds
- Profit Planning
- Understanding Capital Markets

**Raising of funds**: to meet the needs of the business, it is essential to have cash and liquidity so, that a firm can raise funds by way of equity or debt.

A financial manager is responsible for maintaining the right balance between equity and debt.

**Allocation of funds**: After the funds are raised, the next important thing is to allocate the funds. The best possible manner of allocating the funds:

- Size of the organizations and their growth capability
- Status of assets about long term or short term
- The mode by which the funds are raised

**Profit Planning**: It is one of the primary functions of any business organization. Profit earning is essential for the survival and livelihood of any organization.

Profits emerge due to various factors such as pricing, industry competition, state of the economy, mechanism of demand and supply, and cost and output.

**Understanding capital markets**: Shares of a company are traded on the stock exchange for continuous sale and purchase. It is understood that the capital market is an essential factor for a financial manager.

Hence, it is the responsibility of a concerned person to understand and calculate the risk involved in this trading of shares debts.

The role of a financial manager is rapidly increasing due to advanced technology which has significantly reduced the amount of time that was occupied to produce financial reports.

- They analyze market trends to find opportunities for expansion or for acquiring companies.
- They have to do some tasks that are specific to their organization or industry
- They manage company credit
- Make some dividend pay-out decisions
- Keep in touch with the stock market if the company is listed
- Appreciate the financial performance concerning return investments
- They maximize the wealth of company shareholders
- To handle financial negotiations with banks and financial institutions

Finance Manager responsible for the raising of funds, allocation of funds, profit planning, and understanding of capital markets.

## 2.3 Controller Versus Treasurer

The controller is more involved in the presentation of financial statements, while the treasurer takes over to decide how to handle the money.

The treasurer builds relationships with investment banks to agree on the best ventures to grow the company's funds, while the controller discusses the best interest for loans.

A controller is the head of the accountant of the company. They supervise other accountants and oversee the preparation of financial reports. It exercises a line function. They are the ones responsible for ensuring that all accounting allocations are appropriately made and documented.

### Controller Functions:

A controller is the head of the accountant of the company. They supervise other accountants and oversee the preparation of financial reports. It exercises a line function. They are the ones responsible for ensuring that all accounting allocations are appropriately made and documented.

In smaller companies, the controller may also perform cash management functions and oversee accounts payable, accounts receivable, cash disbursements payroll, and bank reconciliation functions.

The main duties of a controller are as follows:

- Prepare budgets and determines expectations regarding future outcomes of different courses of action (Control Planning)
- Summarize financial data and present to the different levels of management (Internal Reporting and Interpreting)
- Analyze financial data and give advice to management in making decisions (Evaluation and Consulting)
- Supervising formulation and implementation of tax policies and considering its implications for tax-related decisions (Tax Administration)
- Prepare financial statements according to the accounting standards (External reporting)
- Implement internal controls to protect company assets against fraud, natural disasters, etc.
- Assess the impact of economic, social and government influences to the business (Economic Appraisal)

### Treasurer Functions

A treasurer, on the other hand, serves as the protector of a company's value and finances from financial risk that arises from business activities. He manages the company's cash flows and ensures that the company meets the financial goals expressed in the budget.

The treasurer has a watchdog role over all aspects of financial management, working closely with other members of the Management Committee to safeguard the organization's finances.

It exercises a staff function.

Staff function provides support to the organization. They support the company by providing vital information to the management's decision-making process.

A treasurer has the following responsibilities:

- Interact with shareholders, bankers, current and potential investors (Investor Relations)
- Obtain loans and other forms of credit from outside sources (Capital Provision)
- Manage the cash flow of the business

- Oversee the extension of credits to customers (Credits and Collection)
- Analyze investment prospects to maximize the use of the company's unused cash and assets (Investment)
- Use various hedging strategies in order to reduce risk related to changes in the value of company assets, interest rates, etc.
- Keep the bankers of the company updated on the company's financial condition and projections as well as its possible needing of borrowed funds

## 2.4 Comparison

To summarize its differences, see the following comparison

| CONTROLLER | TREASURER |
|---|---|
| Control Planning | Capital Provision |
| Reporting and Interpreting | Investor Relations |
| Evaluating and Consulting | Short-Term Financing |
| Administrating Tax | Banking and Custody |
| Government Reporting | Credits and Collections |
| Asset Protection | Investments |
| Appraising the Economy | Insurance |

## Summary

Financial decisions are the decisions taken by managers about an organization's finances. These decisions are of great significance for the organization's financial well-being. Finance decisions are divided into finance, investment, dividend and working capital decisions.

Financing decisions are also referred to as capital structure decisions. They are mainly concerned with Identifying suitable sources of funds and tapping of these sources. Investment decisions are aimed at selecting the most productive avenues that maximize the ROI. Dividend decisions are mainly concerned with deciding the mix of profits to be distributed as dividends and those to be ploughed back for future financing needs of business. These decisions are concerned with the management of current assets. The two key decision points in working capital management are level of investment in current assets and financing of current assets.

## Keywords

Financing Decisions: These decisions are concerned with procurement of funds.

Investment Decisions- These decisions are concerned with putting money to get maximum return on investment.

Dividend Decisions: These decisions are mainly concerned with deciding the mix of profits to be distributed as dividends and those to be ploughed back for future financing needs of business.

Working capital Decision: These decisions are mainly concerned with short term financing needs of the organizations.

## Self Assessment

1. Finance decisions are concerned with

A. Procurement

B. Selecting Avenue for Maximizing ROI
C. Distributing Profit
D. Investment in Current Assets

2. Investment decisions are concerned with

A. Procurement
B. Selecting Avenue for Maximizing ROI
C. Distributing Profit
D. Investment in Current Assets

3. Dividend decisions are concerned with

A. Procurement
B. Selecting Avenue for Maximizing ROI
C. Distributing Profit
D. Investment in Current Assets

4. Working capital decisions are concerned with

A. Procurement
B. Selecting Avenue for Maximizing ROI
C. Distributing Profit
D. Investment in Current Assets

5. Investment decisions are taken in the light of their probable impact on the wealth of shareholders.

A. True
B. False
C. Can't Say
D. None of the above

6. Investment decisions are usually ----------.

A. Irreversible
B. Reversible
C. All facts are not given
D. Not Applicable

7. Generally, firms in sectors with a high-growth rate follow a policy of ----------retention and low dividend pay-out.

A. High
B. Low
C. Equal
D. Not Applicable

8. All the finance decisions are

A. Interrelated
B. Not Interrelated
C. Both of the above
D. Not Applicable

9. In financing decision the thrust is to bring ---------- the cost of financing

A. Up
B. Down
C. Both of the above
D. Not Applicable

10. In Investment decision the thrust is to---------- return on investment.

A. Maximize
B. Minimize
C. No change
D. Not applicable

11. ----------decisions are critical for long-term survival and growth

A. Dividend
B. Investment
C. Working capital
D. Not applicable

12. Working capital decisions are also referred to as capital structure decisions.

A. True

B. False

13. The controller is more involved in the presentation of financial statements, while the treasurer takes over to decide how to handle the money.

A. True

B. False

14. This role requires a financial manager to monitor the Inflow and outflow of funds as per the requirement of the organization.

A. True

B. False

15. Working capital is concerned with short term sources of finance.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | B | 3. | C | 4. | D | 5. | A |
| 6. | A | 7. | B | 8. | A | 9. | B | 10. | A |
| 11. | A | 12. | B | 13. | A | 14. | A | 15. | A |

## Review Questions

1. What are the various functions that are performed by finance manager?
2. What do you mean by dividend decisions?
3. What do you mean working capital decisions?
4. Enumerate the role of finance manager in the organization.
5. Explain the functions of controller and treasurer in the organization.

## Further Readings

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# Unit 03: Sources of Finance

CONTENTS

Objectives

Introduction

3.1 Short Term Source of Finance

3.2 Medium Term Source of Finance

3.3 Long Term Sources of Finance

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

After studying this unit, you should be able

- understand meaning and types of sources of finance.
- analyze the difference in various types of sources of finance.
- Interpret short, medium- and long-term sources of finance.
- apply advantages and disadvantages of different sources of finance.

## Introduction

Problems with finance happen very often in every business organization. So, a business manager needs to consider different forms of finance by ensuring the cash coming into the business covers the cash going out.

Effective business managers need to pay careful attention to the cash-flow situation of their businesses to deal with short-term, medium-term, and long-term needs for finance.

That is why in a simple way, different sources of business finance are categorized under three categories: short-term finance, medium-term finance, and long-term finance.

## 3.1 Short Term Source of Finance

Short term refers to the time period of less than 12 months – the current fiscal year.

Short-term finance deals with rather small amounts of money. The purpose is mainly for revenue expenditure. Most short-term finance is used to help a business maintain positive cash flow, and help manage cash-flow problems. It will be used to purchase raw materials, pay wages to production workers, pay trade credit, taxes, interest on a bank loan, etc.

**Trade Credit**

Trade credit is the credit extended by one trader to another for the purchase of goods and services. Trade credit facilitates the purchase of supplies without immediate payment. Trade credit is commonly used by business organizations as a source of short-term financing.

It is granted to those customers who have reasonable amount of financial standing and goodwill. An informal arrangement, granted on an open account basis, not formally acknowledge as a debt.

Trade credit may also take the form of bills payable. Credit Terms refers to the conditions of due date and cash discount.

**Benefits**

- Easy Availability.
- Flexibility.
- Informality.

**Accrued expenses and deferred income**

Accrued Expenses: Accrued expenses represent a liability that a firm has to pay for the services which it has already received.

- Accrued Wages and Salaries.
- Accrued taxes and Interest.

Deferred Income: Deferred income represents funds received by the firm for goods and services that it has agreed to supply in future.

- Advance Payments.

## Bank Borrowing

- Overdraft
- Purchase or Discounting of Bills
- Working Capital Loan

## Microfinance

Microfinance belongs to external sources of finance. When businesses need to use the money for a short period of time (less than one year), this creates the need for short-term finance.

Microfinance is providing financial services such as bank loans and overdrafts to low-income customers. Small amounts of money are loaned to entrepreneurs in countries where business finance is difficult to obtain.

## Factoring

Regular flow of working capital is needed for smooth functioning. Purchaser often delays their payment resulting blockage in working capital. So expediting the collection of account receivables could alleviate the difficulties.

The word factor is derived from Latin word factor which means to Make or to do or get things done. In simple words factor is an agent who does things for his client for consideration called Commission.

Therefore, Factoring is a financial service designed to arrange payment of receivable in a better manner.

## Process of Factoring

Main function of factoring is realization of credit sales.

- Once sale of transaction is completed between buyer & sellers.
- Seller/Enter agreement with factor where by factor will provide facility of debt collection.
- Invoice is sent to factor generally 80% of invoice value is given as advance by factor. Rest 20% is paid against the realization.
- Factor collects service charges and discount charge (comparable to Bank interest rate) from seller.
- Factor provides periodic statement.

**Functions:**

- Assumption of Credit risk.
- Maintenance of Sales Ledger
- Collection of Account Receivable
- Finance of Trade debts.
- Providing Advisory Services
- Credit Analysis of Customer

**Benefits:**

- Immediate cash flow
- Invoice Processing
- Less Cost
- Source of Finance
- Credit Screening

**Commercial Paper**

For many corporations, borrowing short-term money from banks is often a laborious and annoying task. The desire to avoid banks as much as possible has led to the widespread popularity of commercial paper.

Commercial paper is an unsecured, short-term loan issued by a corporation, typically for financing account receivable and inventories. Unsecured promissory notes with a fixed maturity of one to 270 days; usually sold at a discount from face value.

It is usually issued at a discount, reflecting current market interest rates.

Maturities on commercial paper are usually no longer than nine months, with maturities of between one and two months being the average.

For the most part, commercial paper is a very safe investment because the financial situation of a company can easily be predicted over a few months. Furthermore, typically only companies with high credit ratings, and credit worthiness issue commercial paper.

**Merits of Commercial Paper**

- It is an alternative source of raising short-term finance.
- It is a cheaper source of finance in comparison to the bank credit.
- From an investor's point of view, it provides an opportunity to make a safe, short-term investment of surplus funds.

## 3.2 Medium Term Source of Finance

Medium-term is a holding period or investment horizon that is intermediate in nature. The exact period of time that is considered medium-term depends on the investor's personal preferences, as well as on the asset class under consideration.

These are funds that last more than one year but less than five years. The source includes borrowings from a public deposit, commercial banks, commercial paper, loans from a financial institute, and lease financing, etc.

**Leasing**

In simple terms, leasing refers to a contract under which the owner of assets allows another person to use the asset in consideration of some return. As per International Accounting Committee has defined-

**"An agreement when by the lessor conveys to the lessee in return for rent, the right to use an asset for an agreed period of time. "**

A contract renting to another; a contract or instrument conveying property to another for a specified period or for a period determined at the will of either lessor or lessee in consideration of rent or other compensation.

- Property leased
- For a period
- To grant possession at a fixed rate

### Types of Lease

**Operating Lease**

Short-term, cancelable lease agreements are called operating lease. Tourists rent a car, and lease contracts for computers, office equipment, and hotel rooms.

The Lessor is generally responsible for maintenance and insurance. The risk of obsolescence remains with the lessor.

**Financial Lease:**

Long-term, non-cancelable lease contracts are known as financial lease. Examples are plant, machinery, land, building, ships and aircrafts.

Amortize the cost of the asset over the terms of the lease–Capital or Full pay-out leases.

**Venture Capital Funding**

Venture capital funding may also be a viable option for growth. Unlike with a bank loan, venture capital funding may not need to be repaid.

Instead, the venture capital firm is actively looking for businesses they can invest in with the hope of making a return through profits a business makes. They will normally look to cash out within 2-5 years.

**Features of Venture Capital**

- Equity Participation.
- Long-term Investments.
- Participation in Management.

Venture capitalism combines the qualities of bankers, stock market investors, and entrepreneurs in one.

### Public Deposits

The deposits that are raised by organizations directly from the public are known as public deposits. Rates of interest offered on public deposits are usually higher than that offered on bank deposits.

Any person who is interested in depositing money in an organization can do so by filling up a prescribed form. The organization in return issues a deposit receipt as an acknowledgment of the debt. The deposits are beneficial to both the depositor as well as to the organization.

While the depositors get higher interest rates than that offered by banks, the cost of deposits to the company is less than the cost of borrowing from banks. Companies generally invite public deposits for a period up to three years. The acceptance of public deposits is regulated by the Reserve Bank of India.

### Financial Institutions

The government has established a number of financial institutions all over the country to provide finance to business organizations. These institutions are established by the central as well as state governments. They provide both owned capital and loan capital for long and medium-term requirements and supplement traditional financial agencies like commercial banks.

As these institutions aim at promoting the industrial development of a country, these are also called 'development banks.

In addition to providing financial assistance, these institutions also conduct market surveys and provide technical assistance and managerial services to people who run the enterprises. This source of financing is considered suitable when large funds for a longer duration are required for the expansion, reorganization, and modernization of an enterprise.

## 3.3 Long Term Sources of Finance

This long-term fund is utilized for more than five years. The fund is arranged through preference and equity shares and debentures etc. and is accumulated from the capital market. It is usually done for big projects, financing, and company expansion. Such long-term financing is generally of a high amount.

**Equity Share**

Equity shares- The share capital of co. is divided into smaller units of equal value called shares. Equity share's basic features are no preferential rights in payments of divided & refund of capital.

**Features-**

- Risk capital.
- Unstable divided
- Variable market price.
- Claims on assets.
- Right to control
- Right to vote

### Disadvantage-

- Unsuitable for non-risky investment
- Uncertainty of income
- Loss in depression
- Loss in liquidation
- Right of control is myth

There are four ways in which a company may raise equity capital in the primary market-

**Preference share**: Preference shares have preference in the payment of capital and dividend. The basic feature is

- Claim on income,
- Claim on assets,
- No controlling power.

**Advantages:**

- Fixed income
- Safety of capital
- Increased purchasing power

**Disadvantage:**

- No voting rights
- No claim over surplus
- No capital gain

**Debenture**

Originated from the Latin word - Debere which means taking a loan. Debenture = Acknowledgement of debt issued under common seal setting forth terms under which they are issued & to be paid.

The Important Features are: Acknowledgment of Debt, Refund of Debt, Claim on Income, Claim on Assets.

**Advantages:**

- Fixed Income
- Safety of Investment
- Liquidity

**Disadvantages:**

- No extra Income
- No voting rights

**Retained Earnings**

These are the profits the company has kept aside over time to meet the company's future capital needs. These are the company's free reserves, which carry nil cost and are available free of charge without any interest repayment burden.

One can safely use it for business expansion and growth without taking additional debt burden and diluting further equity in the business to an outside investor. They form part of the net worth and directly impact the equity share valuation.

**Term Loans**

A term loan is a monetary loan that is usually repaid in regular payments over a set period of time. Term loans usually last between one and ten years, but may last as long as 30 years in some cases.

Features

- Maturity
- Direct Negotiations
- Security
- Repayment Schedule

## Summary

In order to run business need funds. These funds are for a different period of time like short term, medium term and long term. Short term funds are needed for short period of time like trade credit accrued expense and deferred income, bank borrowing and factoring.

Some of the long-term sources are equity share. preference share, debenture and term loans. Other sources are like leasing hire purchase and venture capital. Every source has its own advantages and disadvantages which organization has to analyze in order to create value for the organization. A firm can choose between equity or debt source of capital. However, there are certain benefits and limitations with both of these sources. If the company decides to raise capital with just equity financing, the owners would have to give up more ownership. On the other hand, if they decided to use only debt financing, their monthly expenses would be higher. Businesses must determine which option or combination is the best for them.

## Keywords

Trade credit: It is an acknowledgement of debt issued under common seal setting forth terms under which they are issued & to be paid.

Accrued expenses: Accrued expenses represent a liability that a firm has to pay for the services which it has already received.

Leasing: It is an agreement when by the lessor conveys to the lessee in return for rent, the right to use an asset for an agreed period of time.

Commercial paper: These papers are an unsecured, short-term loan issued by a corporation, typically for financing account receivable and inventories.

Factoring: It is a financial service designed to arrange payment of receivable in a better manner.

Deferred Income: It represents funds received by the firm for goods and services that it has agreed to supply in future.

## Self Assessment

1. Debenture means

A. Taking Loan
B. Taking Capital
C. Taking Venture capital
D. None of the above

2. Equity shareholders are the

A. Owners of the company
B. Nobody of the company
C. Guardian of the company
D. Executives of the company

3. Funds required for purchasing current assets is an example of

A. Fixed capital requirement
B. Ploughing back of profits
C. Working capital requirement
D. Lease financing

4. Under the factoring arrangement, the factor

A. Produces and distributes the goods or services
B. Makes the payment on behalf of the client
C. Collects the client's debt or account receivables
D. Transfer the goods from one place to another

5. Which is not true for Equity Shares capital?

A. Permanent Source of Finance
B. No obligatory dividend payments
C. Open Chances of Borrowing
D. Fixed interest payments

6. Debenture holders are the:

A. Owners of the company
B. Creditors of the company
C. Money lenders
D. None of the above

7. The following is (are) the external source(s) of cash

A. Long terms loans
B. Short term borrowings
C. Issue of new shares
D. All of the above

8. To whom dividend is given at a fixed rate in a company?

A. To equity shareholders
B. To preference shareholders
C. To debenture holders
D. To promoters

9 All the finance decisions are

A. Interrelated
B. Not Interrelated
C. Independent
D. None of the above

10. Factoring is a financial service designed for

A. Receivable Management
B. Creditor Management
C. Term Loan Management
D. Inventory Management

11. Right to control is Myth is related to

A. Equity share

B. Preference share

C. Debenture

D. Term loan

12. A term loan is a monetary loan that is usually repaid in regular payments over an indefinite period of time.

A. True

B. False

13. Retained Earnings are the profits the company has kept aside over time to meet the company's future capital needs.

A. True

B. False

14. Debenture carry variable rate of dividend.

A. True

B. False

15. Term loan carry repayment schedule.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | A | 3. | C | 4. | C | 5. | D |
| 6. | B | 7. | D | 8. | B | 9. | A | 10. | A |
| 11. | A | 12. | B | 13. | A | 14. | B | 15. | A |

## Review Questions

1. Elaborate various short-term sources of finance.
2. Differentiate between equity share capital and preference share capital with appropriate example.
3. Elaborate various long-term sources of finance.
4. What do you mean by Debenture?
5. Discuss leasing and venture capital as a source of finance.

## Further Readings

Essentials Of Financial Management By Pandey I. M, Vikas Publishing House

Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education

Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers

Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson

## Web Links

https://www.wallstreetmojo.com/long-term-financing/

https://www.wallstreetmojo.com/medium-term/

https://www.wallstreetmojo.com/short-term-financing/

# Unit 04: Time Value of Money

CONTENTS

Objectives

Introduction

4.1 Concept of Interest

4.2 Future Value

4.3 Present Value

4.4 Perpetuity & Annuity

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

After studying this unit, you should be able

- understand the concept of the time value of money.
- interpret the concept of future value.
- Interpret the concept of present value.
- Compare different aspects perpetuity versus annuity.

## Introduction

Would you like one lakh today or I lakh from ten years now? What option do you prefer?

Of course, we would all prefer the money now!

The time value of money is the value at which you are indifferent to receiving the money today or one year from today. The time value of money is a basic financial concept that holds that money in the present is worth more than the same sum of money to be received in the future.

Three reasons may be attributed to the individual's time preference for money:

Firstly, Human beings prefer to get pleasurable things as early as possible.

Second, we can invest the money that we receive today, and make it grow.

Third, then there is the uncertainty of not receiving the money at all after waiting for a year.

Timelines are used to identify when cash inflows and outflows will occur so that an accurate financial assessment can be made.

## 4.1 Concept of Interest

Human beings prefer to get pleasurable things as early as possible.

Second, we can invest the money that we receive today, and make it grow.

Third, then there is the uncertainty of not receiving the money at all after waiting for a year.

Timelines are used to identify when cash inflows and outflows will occur so that an accurate financial assessment can be made.

### Concept of Interest

Interest can be thought of as rent for the use of money. Fee for the use of the money. If the interest rate is 10 percent, then the rental rate for using Rs 100 for the year is Rs 10.

### Types of Interest

- **Simple Interest:** Interest paid (earned) on only the original amount, or principal, borrowed (lent).
- **Compound Interest:** Interest paid (earned) on any previous interest earned, as well as on the principal borrowed (lent).

### Compounding

It is the impact of the time value of money (e.g., interest rate) over multiple periods into the future, where the interest is added to the original amount. **For example**, if you have Rs 1,000 and invest it at 10 percent per year for 20 years, its value after 20 years is Rs 6,727.

If you leave the interest with the investment, the size of the investment will grow exponentially.

This is because you are earning interest on your interest. This process is called compounding.

**Compounding and Rate**

Effect of compounding increases with the increase in interest rates. Essentially, the larger the interest rate the greater the impact of compounding. Effect of compounding increases as the time lengthens

**Discounting**

Discounting is the opposite of compounding.

If we start with a future value of Rs 404.6 at the end of 10 years in the future, and discount it back to today at an interest rate of 15 percent, the present value is Rs 100.

**Uses of Time Value of Money**

Time Value of Money, or TVM, is a concept that is used in all aspects of finance including:

- Bond valuation
- Stock valuation
- Accept/reject decisions for project management
- Financial analysis of firms

And many others!

## 4.2 Future Value

The amount of money an investment will grow to over some period of time at some given interest rate. Suppose you invest Rs 100 in a savings account that pays 10 percent interest per year. How much will you have in one year?

You will have Rs 110. This Rs. 110 is equal to your original principal of Rs 100 plus Rs. 10 in interest that you earn.

### Future Value of a Single Amount

How much will be your investment of Rs 100 after two years, the interest rate is 10%?

If you leave the entire Rs 110 in the bank, you will earn Rs 110 x 10% = Rs 11 in interest during the second year, so you will have a total of Rs 110 + Rs. 11 = Rs. 121.

This Rs 121 is the future value of Rs 100 in two years at 10 percent.

This Rs. 121 has four parts.

- Rs. 100 original principals
- Rs. 10 in interest you earned in the first year,
- Rs. 11 you earn in the second year
- Re. 1 is interest earned in the second year on the interest paid in the first year

**Future Value of a Single Amount for More Than One Period**

Compounding: This process of leaving your money and any accumulated interest in an investment for more than one period, is called compounding.

Compounding the interest means earning interest on interest. We now take a closer look at how we calculated Rs 121 future value.

We multiplied Rs 110 by 1.1 to get Rs 121.

Rs 121 = Rs 110 x 1.1

= (Rs 100 x 1.1) x 1.1

= Rs 100 x 1.12

= Rs 100 x 1.21

How much would our Rs 100 grow to after 3 years?

Rs 133.10 = Rs 121 x 1.1

= (Rs 110 x 1.1) x 1.1

= (Rs 100 x 1.1) x 1.1 x 1.1

= Rs 100 x (1.1 x 1.1 x 1.1)

= Rs 100 x 1.13

= Rs 100 x 1.331

**General Future Value Formula**

The future value of Re. 1 invested for periods t at a rate of r per year is:

Future value = Re. 1 x (1 + r)t

The expression (1 + r)t is called the Future Value Interest Factor for Re. 1 invested at r percent for t periods.

**Example 1**

Julie Miller wants to know how large her deposit of $10,000 today will become at a compound annual interest rate of 10% for 5 years.

Calculation based on general formula:

FVn = P0 (1+i)n

FV5 = $10,000 (1+ 0.10)5

Calculation based on Table I:

FV5 = $10,000 (FVIF10%, 5)

= $10,000 (1.611)

= $16,110 [Due to Rounding]

 **Example 2**

XYZ Bank pays 12% which is compounded. If Rs.1000 is deposited initially. How much he will draw at the end of 5 years.

FVn = P0 (1+i)n

FV5 = $1,000 (1+ 0.12)5

FV5 = $1,000 (1.762)

FV5 = 1762

**Multiple Compounding Periods**

Time is multiplied by the no. of periods in a year

Rate is divided by the periods in a year

General Formula:

FVn = PV0(1 + [i/m])mn

n: Number of Years

m: Compounding Periods per Year

i: Annual Interest Rate

FVn,: FV at the end of Year n

PV0: PV of the Cash Flow today

 Calculate the compound value of 10000 at the end of 3 years at 12% if compounding is done on quarterly basis.

1) FVn = P0 (1+i)n =10000(1+.12)3 =10000(1.405) =14050

2)10000(1+.12/4)3*4=10000(1.03)12=14260

**Effective Rate of Interest in Multi Period Compounding**

The effective rate may be found for a given annual rate (r)and frequency of compounding (m) in a year. The actual rate of interest earned (paid) after adjusting the nominal rate for factors such as the number of compounding periods per year.

 A company offers 12% on a deposit. What is the effective interest if compounding is done at

A) half yearly b) quarterly c) monthly

Effective interest when Half yearly

=(1+i/2)2-1 =(1+.12/2)2-1=.1236=12.36%

Effective interest when quarterly

=(1+i/4)4-1 =(1+.12/4)4-1=.1255=12.55%

Effective interest when Monthly

(1+i/12)12-1 =(1+.12/12)12-1=.1268=12.68%

## 4.3 Present Value

Present value is just the opposite of future value. In future value we do compounding of money, In present value concept we discount back to the present. The process of reducing future income payments to their present value is called discounting. The value today of the sum received in the future is called its present value.

**Present Value of a Single Amount for one Period**

For example, you have seen that the future value of Re. 1 for one year at 10% is Rs. 1.10. How much you have to invest today at 10% to get Re. 1 in one year?

You know the future value here is Re. 1, but what is the present value of Re. 1? You need Re. 1 at the end of the year, the present value will be:

PV x 1.1 = Re. 1,

Present Value = Re.1/1.1

= Re. 0.909

Present value is thus just the reverse of future value.

Instead of compounding the money forward into the future, we discount it back to the present.

The present value of Re. 1 to be received in one period is generally given as:

PV = Re. 1 x [1/(1 + r)]

= Re. 1/ (1 + r)

If you want to know PV of Rs. 500 in one year at 8%, then:

PV = 500 × 1/1.08 = Rs. 462.5

**General Present Value Formula**

PV0 = FV1 / (1+i)1

PV0 = FV2 / (1+i)2

General Present Value Formula:

PV0 = FVn / (1+i)n

or PV0 = FVn (PVIFi, n) -- See Table I

PVIFi, n is found on the card insert. There are tables for present value factors just as there are tables for future value factors.

Present value interest factor (PVIFr, n)

**Present Values for Multiple Periods**

Suppose you need to have Rs. 1,000 in two years. If you can earn 7 percent, how much do you have to invest to make sure that you have the Rs. 1,000 when you need it?

 **Example:** Suppose you want to earn Rs. 1500 in three years at 7% rate of interest. How much should you invest to get Rs. 1,500 in three years?

PV = 1500 1/ 〖 (1.07) 〗 ^3

= 1500 x 0.8163

= Rs. 1224

Assume that you need $1,000 in 2 years. Let's examine the process to determine how much you need to deposit today at a discount rate of 7% compounded annually.

PV0 = FV2 / (1+i)2 = $1,000 / (1.07)2 = FV2 / (1+i)2 = $873.44

**Present value of a cash flow stream**

 **Example:** Joe made an investment that will pay $100 the first year, $300 the second year, $500 the third year and $1000 the fourth year. If the interest rate is ten percent, what is the present value of this cash flow stream?

Write out the formula using symbols:

OR

Substitute the appropriate numbers:

Solve for the present value:

PV = $90.91 + $247.93 + $375.66 + $683.01

PV = $1397.51

## 4.4 Perpetuity & Annuity

Annuity means when a series of the same amount of cash flow is received or paid over the life of the asset on a monthly, quarterly, semi-annually, or annually basis. Whereas Perpetuity means when a series of the same amount of cash flow received or paid forever on a specified time-frequency.

Hence, we can say that infinity is similar to Annuity, which will last till infinity.

These financial management concepts are used in our routine life, like purchasing a car on bank finance and repaying the loan in sequential EMIs' or paying regular lease amounts to our landlord.

### Key Differences

- An annuity is a finite stream of cash flows received or paid at specified intervals, whereas Perpetuity is a sort of ordinary Annuity that will last forever, into Perpetuity.
- An annuity can further be defined in two types, i.e., Ordinary Annuity and Annuity Due. An Ordinary Annuity means payments are required to be made at the end of each period, e.g., Plain Vanilla Bonds make their coupon payments at the end of each period until the life of the Bond. Whereas in Annuity Due, fees are required to be paid at the beginning of the period, e.g., Rent paid in advance for every month until the let out period. There are no further types of Perpetuity.
- As an annuity has a specified time, it uses the compound interest rate to calculate the future value of a stream of cash flow. It means, while deriving the value of an Annuity, it's required to compound cash flow and interest rate, which is earned every year, till the life of Annuity. Whereas Perpetuity has infinite time, it uses a simple interest rate or stated interest rate only. The Perpetuity owner will receive a constant amount of cash flow forever.
- In annuity payment is paid or received. In perpetuity payment is received. An annuity is very frequently used in Financial Markets. Perpetuity is not frequently used in Financial Markets

We can conclude that Perpetuity is a perpetual annuity. The only difference between them is their time. On the one hand, an annuity has a finite set of sequential cash flows. On the other hand, Perpetuity doesn't have any specified existence, and its payment frequency extends indefinitely.

While calculating the present value or future value of Annuity, you must have to consider cash flow, cash flow frequencies, interest rate, and the time at which the first payment is made, i.e., at the beginning of the period or the end of the period.

But the calculation of Perpetuity is quite simple, and while calculating the present value of the Perpetuity, you only need to consider the cash flow and the stated interest rate.

Payments or receipts occur at the end of each period.

Annuity Due: Payments or receipts occur at the beginning of each period.

**Examples of Annuities**

- Car Loan Payments
- Insurance Premiums
- Mortgage Payments
- Retirement Savings

**Future Value of Regular (ordinary) Annuity**

The compound value of an annuity is the total amount one would have at the end of the annuity period if the amount is invested at a certain rate of interest and is held until the end of the annuity period.

The future value of annuity (FVAr, n) depends upon:

- Amount of cash flow (i.e. annuity)
- Rate of interest per period
- A number of periods.

**Future Value of Regular (ordinary) Annuity**

**Example:**

If you deposit Rs. 5000 at the end of every year in a bank for 5 years and the bank is paying 10% interest, the future value of this annuity will be Rs. 30,525.5.

Rs. 5000(1.10)4 + Rs. 5000(1.10)3 + Rs,5000(1.10)2 + Rs. 5000(1.10) + Rs 5,000

The above procedure can be expressed as:

FVA =A[( 〖(1+$i$)〗 ^$n$−1)/$i$]

- A = Periodic cash flow
- I = Interest rate
- N= Number of years

**Example:**

Suppose you have decided to deposit 30000 per year in PPF FOR 30 YEARS. What will be the accumulated amount after 30 years at 11%?

Write out the formula using symbols:

FVAt = PMT * {[(1+r)t –1]/r}

Substitute the appropriate numbers:

FVA30 = 30000 * {[(1+.11)30 –1]/.11

Solve for the FV:

FVA30 = 3000* 199.02

FVA30= 5970600

You want to buy a house after 5 years when it is expected to 2 million. How you much annually save to earn a compound rate of 12%.

FVAt = PMT * {[(1+r)t –1]/r}

**Example:**

A person plans to contribute Rs. 2,000 every year to a retirement account which is paying 8% interest.

If the person retires in 30 years, what is the future value of this amount?

FVA =A[((1+i)^n-1)/i]

= 113.28

Future value of annuity is = 2,000 x 113.28

= Rs. 2,26,560

**Present Values of Annuity**

Suppose we were examining an asset that promised to pay Rs. 500 at the end of each of the next three years. The cash flows from this asset are in the form of a three-year, Rs. 500 annuity. If we wanted to earn 10 percent on our money, how much would we offer for this annuity?

It can be expressed as follows:

Rs. 500 x 0.9091 + Rs. 500 x 0.8264 + Rs. 500 x 0.7513

= Rs. 454.55 + Rs. 413.22 + Rs. 375.66

Rs. 1,243.43

We will often encounter situations in which the number of cash flows is quite large.

For example, Home mortgage calls for monthly payments over 30 years, for a total of 360 payments.

If we were trying to determine the present value of those payments, it would be useful to have a shortcut.

Annuity present value

=C ×((1−$Present\ Value$)/$r$)

=$C$×{(1−[ ⟦1/(1 + $r$)⟧ ^$t$ ])/$r$}

The term in parentheses on the first line is called the present value interest factor for annuities

Present value factor = 1/1.13 = 1/1.331 = .75131

Annuity present value factor = (1 - Present value factor)/r

= (1 - .75131)/.10

= .248685/.10 = 2.48685

Annuity present value = Rs. 500 x 2.48685

= Rs. 1,243.43

**Perpetuity**

A perpetuity is a security that pays for an infinite amount of time. In finance, perpetuity is a constant stream of identical cash flows with no end.

The payment is received at fixed intervals, which do not have any maturity or expiration. In the investment field, it is used to value bonds, stocks or assets where the issuers promise to give perpetual payments to the security holders. They are not very usual situations because most payments are for limited timeframe.

An annuity is a stream of cash flows. A perpetuity is a type of annuity that lasts forever, into perpetuity. The stream of cash flows continues for an infinite amount of time. In finance, a person uses the perpetuity calculation in valuation methodologies to find the present value of a company's cash flows when discounted back at a certain rate.

It is also called perpetual payment that is received at a fixed interval of time which may be monthly, quarterly or annually. Cash flows are expected to carry on in cases of bonds, stocks, or any other assets.

**Finite Present Value of Perpetuity**

Although the total value of a perpetuity is infinite, it comes with a limited present value. The present value of an infinite stream of cash flow is calculated by adding up the discounted values of each annuity and the decrease of the discounted annuity value in each period until it reaches close to zero.

**Present Value of a Perpetuity: Example**

Smith has invested in a bond that pays him coupon payments for an infinite period. This bond pays Smith $100 every year. Assuming that the discount rate is 8%, how much should Smith pay for this bond?

First of all, we know that the coupon payment every year is $100 for an infinite amount of time. And the discount rate is 8%. Using the formula, we get PV of Perpetuity

= D / r = $100 / 0.08 = $1250.

For a bond that pays $100 every year for an infinite period with a discount rate of 8%, the perpetuity would be $1250.

Company "Rich" pays $2 in dividends annually and estimates that they will pay the dividends indefinitely. How much are investors willing to pay for the dividend with a required rate of return of 5%?

PV = 2/5% = $40

An investor will consider investing in the company if the stock price is $40 or less.

Perpetuity Present Value Formula

In order to calculate the present value (PV) of a perpetuity with zero growth, the cash flow amount is divided by the discount rate.

Present Value of Zero-Growth Perpetuity (PV)

= Cash Flow ÷ Discount Rate

The discount rate is a function of the opportunity cost of capital – i.e. the rate of return that could be obtained from other investments with a similar risk profile.

For a growing perpetuity, on the other hand, the formula consists of dividing the cash flow amount expected to be received in the next year by the discount rate minus the constant growth rate.

Present Value of Growing Perpetuity (PV) = Year 1 Cash Flow ÷ (Discount Rate – Growth Rate)

In the case of preferred shareholders, they receive preferred dividends before equity shareholders are paid. And preferred dividends are fixed. That's why we can use this perpetuity value formula to find out the present value of these preferred dividends. ·

In finance, valuation methodologies are used to determine a business's valuation. One of these valuation methodologies is the dividend discount model. This formula is also used in the dividend discount model.

Perpetuities are investments that make payments indefinitely, with no maturity or expiration date. They are essentially never-ending annuities.

Perpetuities as financial products are quite rare today, but the abstract concept of a perpetuity and the calculation of its present value (by dividing the cash flow amount by the discount rate) remains a key concept in finance.

## Summary

Time value of money is important concept in financial management. Time value of money means that the value of a unit of money is different in different time periods. The value of a sum of money received today is more than its value received after some time. Compounding is the impact of the time value of money (e.g., interest rate) over multiple periods into the future, where the interest is added to the original amount.

Future value is the amount of money an investment will grow to over some period of time at some given interest rate. In other words, future value is the cash value of an investment at some time in future. Present value is just the opposite of future value. In future value we do compounding of money, in present value concept, we discount back to the present. The process of reducing future income payments to their present value is called discounting.

An annuity is a series of payments (or receipts) of fixed amount e.g., payment of premium in case of life policy and home loans etc.

## Keywords

Future value It is the amount of money an investment will grow to over some period of time at some given interest rates.

Discounting: The process of reducing future income payments to their present value is called discounting.

Annuity: An annuity is a series of payments (or receipts) of fixed amount e.g., payment of premium in case of life policy and home loans etc.

Perpetuity: A perpetuity is a security that pays for an infinite amount of time. In finance, perpetuity is a constant stream of identical cash flows with no end.

## Self Assessment

1. Effect of compounding will ----------with the increase in interest rates.

A. Increases
B. Decreases
C. Constant
D. No change

2. Effect of compounding will ----------with the increase in time period.

A. Increases
B. Decreases
C. Constant
D. No change

3. A company offers 12% on a deposit. What is the effective interest if compounding is done quarterly?

A. 12.55
B. 12.90
C. 12.85
D. 13.5

4 A company offers 12% on a deposit. What is the effective interest if compounding is done half yearly?

A. 12.36
B. 12.90
C. 12.85
D. 13.5

5. The process of finding a future value is called----------

A. Discounting
B. Compounding
C. Rounding
D. None of the above

6. The process of finding a present value is called ----------

A. Discounting
B. Compounding
C. Rounding
D. None of the above

7. ---------- is the current value of a future amount of money, or a series of payments, evaluated at a given interest rate.

A. Future Value
B. Present Value
C. Both of the above
D. None of the above

8. ---------- is the value at some future time of a present amount of money, or a series of payments, evaluated at a given interest rate

A. Future Value
B. Present Value
C. Both of the above
D. None of the above

9. Julie Miller wants to know how large her deposit of Rs.10,000 today will become at a compound annual interest rate of 10% for 5 years.

A. 16110
B. 17200
C. 12200
D. 11500

10. Calculate the present value of Rs.1000 to be received after 2 years from now assuming at7% interest rate.

A. 873
B. 973
C. 823
D. 754

11. To increase a given present value, the discount rate should be adjusted

A. Upward
B. Downward

C. Four

D. Not Applicable

12. Effect of compounding decreases with the increase in interest rates.

A. True

B. False

13. Annuity means when a series of the same amount of cash flow is received or paid over the life of the asset on a monthly, quarterly, semi-annually, or annually basis.

A. True

B. False

14. Discounting means decrease and compounding means increase.

A. True

B. False

15. . Effect of compounding Increases with the increase in interest rates.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | A | 3. | A | 4. | A | 5. | B |
| 6. | A | 7. | B | 8. | A | 9. | A | 10. | A |
| 11. | B | 12. | B | 13. | A | 14. | A | 15. | A |

## Review Questions

1. Time value of money is important in every aspects of business? Support your answer with suitable numerical illustrations.
2. Differentiate between discounting and compounding.
3. Elaborate annuity with its implications.
4. What do you mean by Perpetuity?
5. Differentiate between simple and compound interest with appropriate example.

## Further Readings

Essentials Of Financial Management By Pandey I. M, Vikas Publishing House

Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education

Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers

Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson

## Web Links

https://www.investopedia.com/articles/03/082703.asphttps://en.wikipedia.org/wiki/Exchange_rate

https://www.investopedia.com/terms/p/presentvalue.asp#:~:text=Present%20value%20(PV)%20is%20the,of%20the%20future%20cash%20flows.

https://www.calculator.net/future-value-calculator.html

https://www.investopedia.com/ask/answers/12/what-is-an-annuity.asp

https://www.investopedia.com/terms/p/perpetuity.asp

# Unit 05: Practical Applications of Time value of Money

CONTENTS

Objectives

Introduction

5.1 Present Value of Perpetuity

5.2 Annuity of Single Cash Flow

5.3 Compound Interest

5.4 Simple Interest

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

After studying this unit, you should be able

- understand the meaning & types of perpetuity.
- analyze & solve problems of future value of annuity.
- analyze & solve problems of present value of annuity.
- interpret the aspects of simple interest and compound interest.

## Introduction

Perpetuity is conventionally referred to in the business world as a security or bond that pays for an infinite amount of time in the future. In an attempt to understand perpetuity, one is first needed to understand annuity because perpetuity is a type of annuity that lasts forever into perpetuity. In finance, perpetuity refers to endless, constant cash flow.

Perpetuity is mostly applied in businesses, real estate, and certain types of bonds that pay bondholders an recurring fixed annual amount. In real estate, for example, perpetuity might come into play if you invested in a rental property. You would expect to have a continuous flow of income for an unknown time in the future. This concept is also applied in the stock exchange market. Shareholders of preferred stock believe that the company will continue to exist for an unknown time in the market and keep paying dividends.

Perpetuity can also be used if you purchase government bonds. You might earn an ongoing amount of cash flow at the end of each period. So the perpetuity formula is used to gauge the current value of the specific amount a bondholder would receive after every period. As a result of a change in the interest rate, the value of perpetuity might change along the way. However, the payment remains equal. Perpetuity allows for the payment of money with no end in sight. The amount bondholders receive diminishes gradually due to economic constraints or factors such as inflation. This can eat into the value of any fixed payouts.

As a result, certain types of perpetuity will grow instead of decline. This ongoing growth leads to a regular stream of payments that increase steadily.

## 5.1 Present Value of Perpetuity

There are two different annual perpetual valuations; perpetuity with flat or constant annuity and perpetuity with a growing annuity.

These two different types of perpetuity have different formulas, but the basic calculation is dividing annual cash flows by the various discount rates (the interest rate that is paid to the Central bank by the financial institutions to borrow cash). This gives a business the value of its cash flow, an essential slice of data as it aids in determining the firm's total cash flow in a single year.

**Flat Perpetuity**

This perpetuity formula is the simplest, and it is straightforward as it doesn't include terminal value. It is the basic formula for the price of perpetuity. Calculate the PV of flat perpetuity you only need to divide the cash flows/payments by the discount rate.

$$\text{PV of Perpetuity} = \frac{\text{Payment}}{\text{Interest Rate}}$$

**Growing Perpetuity**

The present value of growing perpetuity formula factors in long term growth. This version is used to calculate the terminal value in a stream of cash flows for valuation purposes is always more complicated.

$$\text{PV of Growing Perpetuity} = \frac{\text{Payment}}{\text{Interest Rate} - \text{Growth Rate}}$$

Using a perpetuity formula to compute the present value may look simple and straightforward, but one needs to understand the underlying assumptions for each case keenly. For instance, high growth rates or low discount rates result in too high values. Similarly, low growth rates or high discount rates lead to pessimistic present values.

**Example:** Assuming that Donald holds a perpetual bond that generates an annual payment of $500 each year. He believes that the borrower is creditworthy and that an 8% interest rate will be suitable for this bond. Compute the PV for this perpetuity.

Payment amount = $500

Interest rate or yield = 8% or 0.08

$$\text{PV of Perpetuity} = \frac{500}{0.08} = \$6{,}250$$

This tells us that someone could pay you $6250 for your bond and receive an 8% return on their money.

**Example:** Jacob, a businessman, invested in a company that will pay him a dividend of $8,000 per share annually. He expects a 6% growth rate in the annual payments. Given the possible risks, Jacob expects a valuation of a 16% discount rate of 16%. Calculate the value of a share under the above assumptions.

Payment amount = $8,000

Interest rate or yield = 16%

Growth Rate = 6%

$$\text{PV of Growing Perpetuity} = \frac{8{,}000}{0.16 - 0.06} = \$80{,}000$$

For this example, the perpetuity amount would be $80,000. With all the assumptions of a 6% growth rate in dividend and 16% discount rate of owning the company, then the shares should trade at $80,000 each.

**Perpetuity Conclusion**

Perpetuity is the sum of a regular series of fixed payments that will never end.

The present value of a perpetuity is today's value of all those payments in the future.

There two types of perpetuity: flat and growing perpetuity

Perpetuity requires two variables: cash flows and interest rates.

The periodic amount is consistent for a flat perpetual annuity and varies for growing perpetuity.

The value of perpetuity can change over time while the periodic payments remain the same.

## 5.2 Annuity of Single Cash Flow

Series of payments are classified into equal cashflows and unequal cashflows.

Annuities are used to determine the future value of equal cashflows. An annuity is a series of even cashflows.

There are two types of annuities: ordinary annuities and annuities due.

**Future Values of Equal Cashflows**

Ordinary Annuity

An ordinary annuity is an annuity where cash flows occur at the end of each period. Such payments are said to be made in arrears (beginning at time t = 1).

The future value of an ordinary annuity is derived as follows:

Consider an annuity amount of A paid at the end of each period for N periods with the interest rate per period denoted by r. In this instance, the future value of equal cashflows is given by:

The above procedure can be expressed as:

FVA =A[( 〖(1+$i$)〗 ^$n$−1)/$i$]

**Example:** Assume that you have decided to invest $2,000 per year in a stock index fund that earns 9% per year for the next ten years. What will be the closest value of the accumulated value of the investment after you make the last payment?

Solution

From the information given in the question: A = 2,000. N = 10. r = 9%.

FVA =A[( 〖(1+$i$)〗 ^$n$−1)/$i$]

30,385.8594

### Annuity Due

Annuity due is a type of annuity where payments start immediately at the beginning of time, at time t = 0. In other words, payments are made at the beginning of each period. The formula for the future value of an annuity due is derived by:

Due = P * [(1 + r)n – 1] * (1 + r) / r

Let us take another example of Nixon's plans to accumulate enough money for his MBA. He decides to deposit a monthly payment of $2,000 for the next four years (beginning of each month) so that he is able to gather the required amount of money.

**Example:** Let us take another example of Nixon's plans to accumulate enough money for his MBA. He decides to deposit a monthly payment of $2,000 for the next four years (beginning of each month) so that he is able to gather the required amount of money.

As per the education counselor, Nixon will require $100,000 for his MBA. Check if Nixon's deposits will fund his plans for an MBA, considering the ongoing rate of interest being charged by a bank is 5%.

= $2,000 * [(1 + 0.42%)48 – 1] * (1 + 0.42%) / 0.42%

FV of Annuity Due = $106,471.56 ~ $106,472

So, with planned deposits, Nixon is expected to have $106,472 which more than the amount ($100,000) required for his MBA.

**The Present Value of a Series of Equal Cashflows**

Annuities are used to determine the present value of a series of equal cash flows. We shall consider ordinary annuity due.

Annuity present value

=C ×((1−$Present\ Value$)/$r$)

=$C$×{(1−[ ⟦1/(1 + $r$)⟧ ^$t$ ])/$r$}

**Example:** A financial asset generates returns of $10,000 at the end of each year for ten years. The required rate of return is 7% per year. How much must one pay to buy this asset?

From the question:

A = 10,000.

R = 7% = 0.07.

N = 10.

So, the present value is given by:

Annuity present value

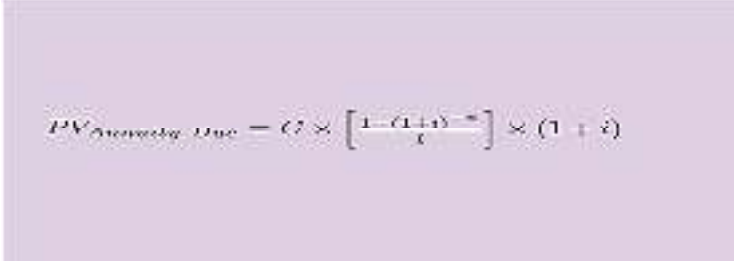
=C ×((1−$Present\ Value$)/$r$)

=$C$×{(1−[ ⟦1/(1 + $r$)⟧ ^$t$ ])/$r$}

=$70,235.81

**Annuity Due**

Remember that annuity due is a type of annuity where payments start immediately.



**Example:** Suppose you are a beneficiary designated to immediately receive $1000 each year for 10 years, earning an annual interest rate of 3%.

$$PV_{Annuity\ Due} = \$1000 \times \left[\frac{1-(1+.03)^{-10}}{.03}\right] \times (1+.03)$$

You want to know how much the stream of payments is worth to you today. Based on the present value formula, the present value is $8,786.11.

## 5.3 Compound Interest

Compound interest is the addition of interest to the principal sum of a loan or deposit, or in other words, interest on principal plus interest. It is the result of reinvesting interest, or adding it to the loaned capital rather than paying it out, or requiring payment from borrower, so that interest in the next period is then earned on the principal sum plus previously accumulated interest. Compound interest is standard in finance and economics.

Compound interest is contrasted with simple interest, where previously accumulated interest is not added to the principal amount of the current period, so there is no compounding. The simple annual interest rate is the interest amount per period, multiplied by the number of periods per year.

The compounding frequency is the number of times per year (or rarely, another unit of time) the accumulated interest is paid out, or capitalized (credited to the account), on a regular basis. The frequency could be yearly, half-yearly, quarterly, monthly, weekly, daily, or continuously (or not at all, until maturity).

For example, monthly capitalization with interest expressed as an annual rate means that the compounding frequency is 12, with time periods measured in months.

The effect of compounding depends on:

- The nominal interest rate which is applied and
- The frequency interest is compounded.

**DEFINITION**

Interest paid (earned) on any previous interest earned, as well as on the principal borrowed (lent).

**Compound Interest Formula**

To calculate simple interest, multiply the principal amount by the interest rate and the time.

The formula written out is

$$A = P(1 + \frac{r}{n})^{nt}$$

Alternatively, we can write the formula as given below:

CI = A – P

**Example: Compound Interest Example 1**

Julie Miller wants to know how large her deposit of $10,000 today will become at a compound annual interest rate of 10% for 5 years.

Calculation based on general formula:

FVn = P0 (1+i)n

FV5 = $10,000 (1+ 0.10)5

Calculation based on Table I:

FV5 = $10,000 (FVIF10%, 5)

= $10,000 (1.611)

= $16,110 [Due to Rounding]

**Example: Compound Interest Example 2**

XYZ Bank pays 12% which is compounded. If Rs.1000 is deposited initially. How much he will draw at the end of 5 years.

FVn = P0 (1+i)n

FV5 = $1,000 (1+ 0.12)5

FV5 = $1,000 (1.762)

FV5 = 1762

**Simple Interest vs. Compound Interest**

Future Value Single Deposit (Formula)

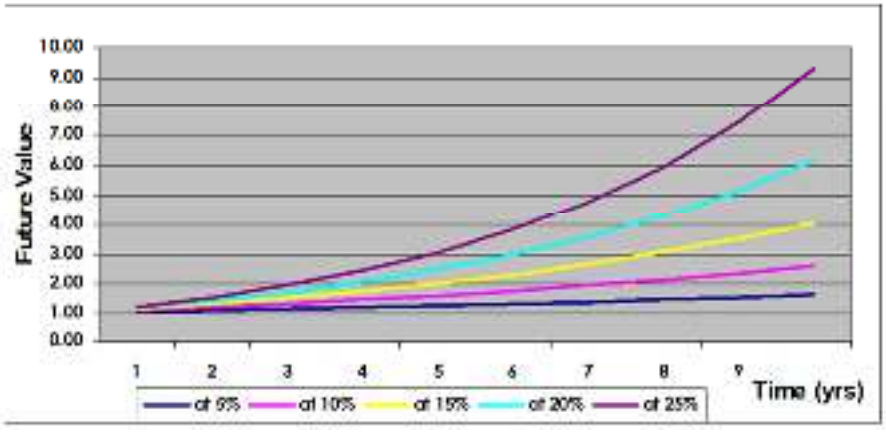
FV1 = P0 (1+i)1= 1,000 (1.07) = 1,070

FV2 = FV1 (1+i)1 (1+i) = 1,000(1.07)(1.07) = P0 (1+i)2= 1,000(1.07)2 = 1,144.90

You earned an EXTRA 4.90 in Year 2 with compound over simple interest

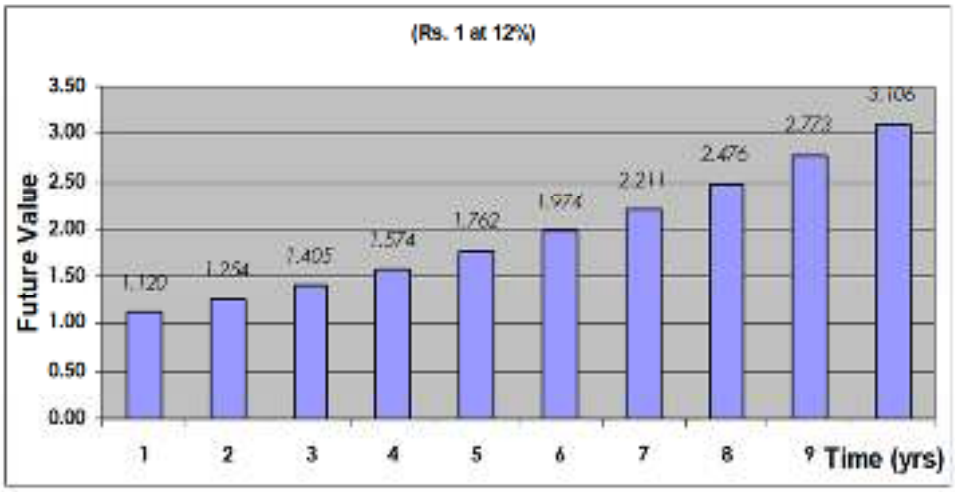
**Compounding and Rate**

Effect of compounding increases with the increase in interest rates.




**Compounding and Time**

Effect of compounding increases as the time lengthens




**Multiple Compounding Periods**

Time is multiply by the no. of periods in a year

Rate is divided by the periods in a year

General Formula:

FVn = PV0(1 + [i/m])mn

n:Number of Years

m: Compounding Periods per Year

i: Annual Interest Rate

FVn,: FV at the end of Year n

PV0: PV of the Cash Flow today

**Example:** Calculate the compound value of 10000 at the end of 3 years at 12% if compounding is done on quarterly basis.

1) FVn = P0 (1+i)n =10000(1+.12)3

=10000(1.405) =14050

2)10000(1+.12/4)3*4=10000(1.03)12=14260

**Effective Rate of Interest in Multi Period compounding**

The effective rate may be found for a given annual rate (r)and frequency of compounding (m) in a year. The actual rate of interest earned (paid) after adjusting the nominal rate for factors such as the number of compounding periods per year.

$$Effective\ Interest\ Rate = \left[\left(1+\frac{r}{m}\right)^{m}\right]-1$$

 **Example:** A company offers 12% on a deposit. What is the effective interest if compounding is done at?

A) half yearly b) quarterly c) monthly

Effective interest when Half yearly

=(1+i/2)2-1 =(1+.12/2)2-1=.1236=12.36%

Effective interest when quarterly

=(1+i/4)4-1 =(1+.12/4)4-1=.1255=12.55%

Effective interest when Monthly

(1+i/12)12-1 = (1+.12/12)12-1=.1268=12.68%

Compound interest is the interest calculated on the principal and the interest accumulated over the previous period. It is different from simple interest, where interest is not added to the principal while calculating the interest during the next period.

## 5.4 Simple Interest

Interest is the cost of borrowing money. The borrower pays interest, and the lender receives it. Interest is the price of debt. Anyone can find themselves on either side of this situation. When you take out a loan, you acquire debt and pay interest. When you let someone else (like a bank) use your money, you extend credit and get paid interest. The amount you pay or receive is typically quoted as an annual rate, but it doesn't have to be.

Interest costs require additional repayments on top of the original loan balance or deposit. Due to interest, you will ultimately repay more than you borrow from a lender. Conversely, interest payments make loans profitable for lenders. Understanding simple interest is one of the most fundamental concepts for mastering your finances. It involves some simple math, but calculators can do the work for you if you prefer.

With an understanding of how interest works, you become empowered to make better financial decisions that save you money. Interest can affect you in various aspects of your financial life:

**When borrowing money:** You must repay the amount you borrowed and include payments for interest, which represents the cost of borrowing.

**When depositing money:** Interest-bearing accounts, such as savings accounts, pay interest income because you are making your money available to the bank to lend to others.

**When lending money:** Lenders typically set a rate and earn interest income in exchange for making money available to other people.

**DEFINITION**

Simple interest is the cost of borrowing money without accounting for the effects of compounding. In other words, simple interest only applies to the principal amount.

Simple interest is an interest calculation that does not include compounding interest.

Simple Interest Formula

To calculate simple interest, multiply the principal amount by the interest rate and the time. The formula written out is

**"Simple Interest = Principal x Interest Rate x Time."**

**Simple Interest Example**

Assume that you deposit 1,000 in an account earning 7% simple interest for 2 years. What is the accumulated interest at the end of the 2nd year?

SI = P0(i)(n) = 1,000(.07)(2)

= 140

This is the same amount of interest you would earn under simple interest.

**Simple Interest vs. Compound Interest**

Interest can be either simple or compounded. Simple interest is based on the original principal amount of a loan or deposit.

Compound interest, on the other hand, is based on the principal amount and the interest that accumulates on it in every period. The more frequently interest is compounded—quarterly, monthly, or even daily—the greater the total amount of payments in the long run.Since simple interest is calculated only on the principal, it is easier to determine than compound interest. Compound interest is often a factor in business transactions, investments, and financial products intended to extend for multiple periods or years. Typically, simple interest is used for loans of a single period or less than a year.

**Benefits of a Simple Interest Loan**

Interest doesn't compound or get added to the principal amount for a larger borrowing cost result. You never pay interest on interest.

Borrowers can save money.

Debts can be easier to pay off.

The simple interest calculation is simple and straightforward.

**Limitations of Simple Interest**

The simple interest calculation provides a very basic way of looking at interest. It's an introduction to the concept of interest in general. In the real world, your interest—whether you're paying it or earning it—is usually calculated using more complex methods. There may also be other costs factored into a loan than just interest. These costs will affect the total amount that you spend on the loan throughout the year, but they may not be included in the interest rate given to you by the lender.

Simple interest is the interest charge on borrowing that's calculated using an original principal amount only and an interest rate that never changes. It does not involve compounding, where borrowers end up paying interest on principal and interest that grows over multiple payment periods.

Simple interest can be advantageous for borrowers because of its relatively lower cost of money. However, bear in mind that, because of its simple calculation, it gives only a basic idea of cost that may not account for other charges/fees that a loan may include.

## Summary

Perpetuity is conventionally referred to in the business world as a security or bond that pays for an infinite amount of time in the future. Perpetuity is mostly applied in businesses, real estate, and certain types of bonds that pay bondholders an recurring fixed annual amount.

Series of payments are classified into equal cashflows and unequal cashflows. Annuities are used to determine the future value of equal cashflows. An annuity is a series of even cashflows. There are two types of annuities: ordinary annuities and annuities due.

Compound interest is contrasted with simple interest, where previously accumulated interest is not added to the principal amount of the current period, so there is no compounding. The simple annual interest rate is the interest amount per period, multiplied by the number of periods per year.

## Keywords

Interest: It is the cost of borrowing money. The borrower pays interest, and the lender receives it.

Compound interest: It is a is the interest calculated on the principal and the interest accumulated over the previous period.

Perpetuity: It is conventionally referred to in the business world as a security or bond that pays for an infinite amount of time in the future.

Annuity due: It is a type of annuity where payments start immediately at the beginning of time, at time t = 0. In other words, payments are made at the beginning of each period

Ordinary annuity: It is an annuity where cash flows occur at the end of each period. Such payments are said to be made in arrears

## Self Assessment

1. More the period of time increase- more will be the impact on compounding.

A. True
B. False
C. All facts are not given
D. Not Applicable

2. When time for the period will increase the effect of compounding will ----------.

A. Increase
B. Decrease
C. All facts are not given
D. Not Applicable

3. ---------- Value of perpetuity is-Payment/Interest

A. Present
B. Future
C. (c)Both
D. (d)None

4. Assuming that Donald holds a perpetual bond that generates an annual payment of $500 each year. He believes that the borrower is creditworthy and that an 8% interest rate will be suitable for this bond. Compute the PV for this perpetuity.

A. $4250
B. $6250
C. $5250
D. $2250

5. Jacob, a businessman, invested in a company that will pay him a dividend of $8,000 per share annually. He expects a 6% growth rate in the annual payments. Given the possible risks, Jacob expects a valuation of a 16% discount rate of 16%. Calculate the value of a share under the above assumptions.

A. $60,000
B. $70,000
C. $80,000
D. $90,000

6. An ordinary annuity is an annuity where cash flows occur at the end of each period.

A. Ordinary annuity
B. Annuity due

C. Both of the above

D. None of the above

7. ---------- is a type of annuity where payments start immediately at the beginning of time, at time t = 0.

A. Ordinary annuity

B. Annuity due

C. Both of the above

D. Not Applicable

8. ----------is the interest calculated on the principal and the interest accumulated over the previous period.

A. Compound interest

B. Simple interest

C. Somewhat simple somewhat compound

D. Not Applicable

9. Is this formula correct? "Simple Interest = Principal x Interest Rate x Time."

A. Yes

B. No

C. Partially correct

D. Partially incorrect

10. Assume that you deposit 1,000 in an account earning 7% simple interest for 2 years. What is the accumulated interest at the end of the 2nd year?

A. 150

B. 160

C. 140

D. 130

11. A company offers 12% on a deposit. What is the effective interest if compounding is done at half yearly?

A. 12.36

B. 12.24

C. 12.48

D. Not Applicable

12. Simple interest is the cost of borrowing money without accounting for the effects of compounding. In other words, simple interest only applies to the principal amount.

A. True

B. False

13. Compound interest, on the other hand, is based on the principal amount and the interest that accumulates on it in every period.

A. True

B. False

14 There are two different annual perpetual valuations; perpetuity with flat or constant annuity and perpetuity with a growing annuity.

A. True

B. False

15. There is no difference between simple and compound interest.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | A | 3. | A | 4. | B | 5. | C |
| 6. | A | 7. | B | 8. | A | 9. | A | 10. | C |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | B |

## Review Questions

1. What do you mean by perpetuity? Explain using suitable example.
2. What do you mean by annuity? Explain using suitable example.
3. Compare and contrast the perpetuity and annuity.
4. Elaborate Currency the concept of compounding interest.
5. Differentiate between simple and compound interest.

## Further Readings

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# Unit 06: Cost of Capital

CONTENTS

Objectives

Introduction

6.1 Cost of Capital

6.2 Components of Cost of Capital

6.3 Cost of Debt

6.4 Cost of Preference Capital & Cost of Equity Capital

6.5 Weighted Average Cost of Capital

6.6 Capital Assets Pricing Model

Summary

Keywords

Self Assessment

Review Questions

Answers for Self Assessment

Further Readings

## Objectives

- understand the meaning and features of cost of capital.
- interpret the debt and equity as a source of funds.
- analyze and compute the cost of debt, preference and equity share.
- interpret the WACC calculation and its input

## Introduction

The cost of capital is a term used in the field of financial investment to refer to the cost of a company's funds (both debt and equity), or, from an investor's point of view "the shareholder's required return on a portfolio of all the company's existing securities". It is used to evaluate new projects of a company as it is the minimum return that investors expect for providing capital to the company, thus setting a benchmark that a new project has to meet. For an investment to be worthwhile, the expected return on capital must be greater than the cost of capital. The cost of capital is the rate of return that capital could be expected to earn in an alternative investment of equivalent risk. If a project is of similar risk to a company's average business activities it is reasonable to use the company's average cost of capital as a basis for the evaluation. A company's securities typically include both debt and equity; one must therefore calculate both the cost of debt and the cost of equity to determine a company's cost of capital. However, a rate of return larger than the cost of capital is usually required.

The WACC is the minimum return that a company must earn on an existing asset base to satisfy its creditors, owners, and other providers of capital, or they will invest elsewhere. The WACC is calculated taking into account the relative weights of each component of the capital structure. The more complex the company's capital structure, the more laborious it is to calculate the WACC.

## 6.1 Cost of Capital

Cost of capital is an extremely important input requirement for capital budgeting decisions. Without knowing the cost of capital no firm can evaluate the desirability of the implementation of new projects. Cost of capital serves as a benchmark for evaluation.

Cost of Capital is the minimum rate of return that must be earned on investments, in order to meet the rate of return required by the investors. It is the discount rate applied to evaluate the firm's capital projects.

According to Professor I.M.Pandy **"Cost of Capital is the discount rate used in evaluating the desirability of the investment project".** The cost of capital is the minimum rate of return required for an investment project.

**The cost of capital is the minimum required rate of earning or cut-off rate of capital expenditure. -**Solomon Ezra

**The cost of capital is the minimum rate of return that a firm requires as a condition for undertaking investment.**

-Milton H Spencer

As it is evident from the name, cost of capital refers to the weighted average cost of various capital components, i.e. sources of finance, employed by the firm such as equity, preference or debt.

In finer terms, it is the rate of return, that must be received by the firm on its investment projects, to attract investors for investing capital in the firm and to maintain its market value.

**Characteristics**

So we can say characteristics-

- Minimum rate of return of capital
- Reward of Business and Financial Risk
- The basic determinant of cost of capital is the expectations of the suppliers of capital.

Viewed from all investors' point of view, the firm's

cost of capital is the rate of return required by them for supplying capital for financing the firm's investment projects by purchasing various securities.

The factors which determine the cost of capital are:

- Source of finance
- Corresponding payment for using finance.

On raising funds from the market, from various sources, the firm has to pay some additional amount(Like Interest, dividend etc.) apart from the principal itself. The additional amount is nothing but the cost of using the capital, i.e. cost of capital which is either paid in lump sum or at periodic intervals.

**Explicit cost of capital:**

It is the cost of capital in which a firm's cash outflow is oriented towards utilization of capital which is evident, such as payment of interest to the loan givers (debenture holders), etc.

**The implicit cost of capital:**

It does not involve any cash outflow, but it denotes the opportunity foregone while opting for another alternative opportunity.Example: Dividend or Retention for Equity Shareholders.

**Historical Cost and Future Cost:** Historical costs are book costs relating to the past, while future costs are estimated costs that act as a guide for the estimation of future costs.

**Specific Costs and Composite Costs:** Specific cost is the cost of a specific source of capital, while composite cost is the combined cost of various sources of capital. Composite cost, also known as the weighted average cost of capital, should be considered in capital and capital budgeting decisions.

**Average Cost and Marginal Cost:** An average cost is the combined cost or weighted average cost of various sources of capital. Marginal cost refers to the average cost of new or additional funds

required by a firm. It is the marginal cost that should be taken into consideration in investment decisions.

**Importance of Cost of Capital**

- It helps in assessing the firm's new projects.
- Hence, it establishes a benchmark, which must be met by the project.
- Evaluating the investment options:
- By converting the future cash flows of the investment avenues into present value by discounting it various projects are evaluated.

**Designing the optimal capital structure**

- The cost of capital is vital to help a firm to maximize its value.
- The firm's value is maximum WHERE the cost of capital is minimum.
- It can also be used to appraise the performance of specific projects by comparing the performance against the cost of capital.
- It is useful in framing optimum credit policy, i.e. at the time of deciding credit period to be allowed to the customers or debtors, it should be compared with the cost of allowing credit period.

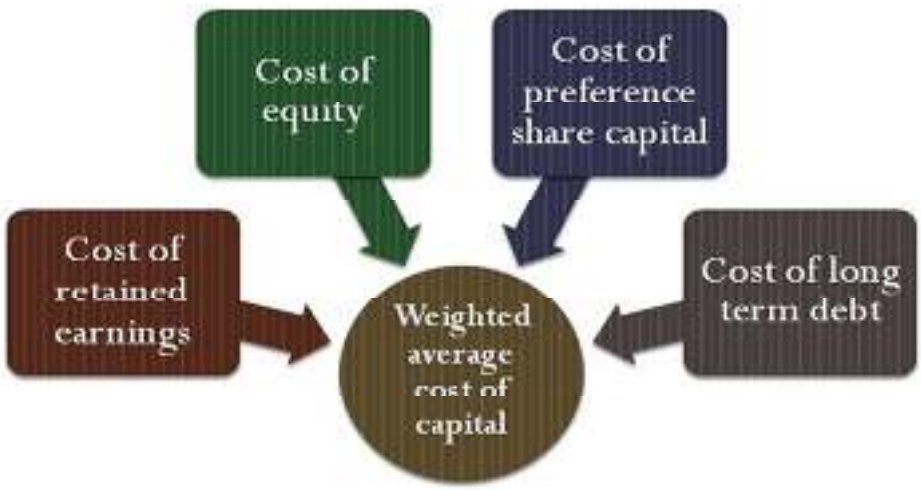
The Cost of Capital is the most important and controversial area in Financial Management. Capital Budgeting decisions have a major impact on the firm, and the Cost of Capital is used as a criterion to evaluate the capital Budgeting decisions i.e., whether to accept or reject a project.

## 6.2 Components of Cost of Capital

Cost of capital is the minimum rate of return or profit a company must earn before generating value. It's calculated by a business's accounting department to determine financial risk and whether an investment is justified.

Company leaders use cost of capital to gauge how much money new endeavors need to generate to offset upfront costs and achieve profit. They also use it to analyze the potential risk of future business decisions.

Cost of capital is extremely important to investors and analysts. These groups use it to determine stock prices and potential returns from acquired shares. For example, if a company's financial statements or cost of capital are volatile, the cost of shares may plummet; as a result, investors may not provide financial backing.



## 6.3 Cost of Debt

While debt can be detrimental to a business's success, it's essential to its capital structure. Cost of debt refers to the pre-tax interest rate a company pays on its debts, such as loans, credit cards, or invoice financing. When this kind of debt is kept at a manageable level, a company can retain more of its profits through additional tax savings.

The cost of debt is the effective interest rate that a company pays on its debts, such as bonds and loans. The cost of debt can refer to the before-tax cost of debt, which is the company's cost of debt before taking taxes into account, or the after-tax cost of debt.

The key difference in the cost of debt before and after taxes lies in the fact that interest expenses are tax-deductible. The computation of the cost of debt issued at par is comparatively an easy task. It is the explicit interest rate adjusted further for the tax liability of the company.

- **Debt Issued at Par**

It may be computed according to the following formula:

Kd = (l-T) R

Where,

Kd = Cost of debt;

T = Marginal tax rate;

R = Debenture interest rate.

**Debt Issued at a Premium or Discount**

Kd = (l-T)R/NP

- Cost of Redeemable Debt

To mobilize debt one has to incur floatation cost which increases the cost of debt.

Cost of Redeemable Debt-

$$\text{Cost of debt} = \frac{\text{Annual Interest} + (MV - NP/n) * 100}{MV + NP/2}$$

After-tax cost of debt = cost of debt before tax (1-T)

- NP when issued at Par=Par Value -Floatation cost
- NP when issued at Premium=Par Value +Premium-Floatation cost
- NP when issued at Discount=Par Value –Discount-Floatation cost

 **Example:**

A limited issued 10 lacks of debenture of 500 at 9% redeemable after 10 years.

The company will pay the following issue expense-

- Underwriting commission 1%
- Brokerage 0.5%
- Printing and other expenses 2.5 per debenture

Compute the cost of debt before and after tax if the debenture is issued at

- Par
- 10% discount
- 10% premium

Assume the tax rate at 35%

**Discount**

| | |
|---|---|
| 1) The Face value of debenture | 500 |
| Less: Discount | 50 |
| Less: Expense | |
| Underwriting Commission | 5 |
| Brokerage | 2.5 |
| Printing and other expenses | 2.5 |
| Net Proceeds per debenture | 440 |

Cost of debt capital=Annual Interest+(MV-NP/n) *100

MV+NP/2

45+(500-440/10) *100 =

500+440/2

51/470*100=10.851%

The after-tax cost of debt = cost of debt before tax (1-T)

= 10.851% (1-.35) =7.05%

**Premium**

| | |
|---|---|
| 1) The Face value of debenture | 500 |
| Add: Premium | 50 |
| Less: Expense | |
| Underwriting Commission | 5 |
| Brokerage | 2.5 |
| Printing and other expenses | 2.5 |
| Net Proceeds per debenture | 540 |

Cost of debt capital=Annual Interest+MV-NP/n *100

MV+NP/2

45+(500-540/10) *100 =

500+540/2

41/520*100=7.885%

After tax cost of debt = cost of debt before tax (1-T) 1-35%=65%=65/100

= 7.885% (1-.35)=5.125%

Cost of debt capital=Annual Interest+MV-NP/n *100

MV+NP/2

45+(500-540/10) *100 =

500+540/2

41/520*100=7.885%

After tax cost of debt = cost of debt before tax (1-T) 1-35%=65%=65/100

= 7.885%(1-.35)=5.125%

- **Cost of Perpetual/ Irredeemable Debt**

To mobilize debt one has to incur floatation cost which increases the cost of debt

Cost of Perpetual/ Irredeemable Debt

- Issued at Par
- Issued at discount or premium

After tax cost of debt = rd (1-T)

The cost of debt measure is helpful in understanding the overall rate being paid by a company to use these types of debt financing.

The measure can also give investors an idea of the company's risk level compared to others because riskier companies generally have a higher cost of debt.

## 6.4 Cost of Preference Capital & Cost of Equity Capital

The Cost of Preference Shares refers to the minimum rate of return which has to be achieved by investing the money that is received by the issuance of Preference Shares. This helps a company to decide if an investment or expenditure decision will generate a sufficient return on the raised capital.

- **Cost of Preference Capital**

Cost of preference share capital is that part of the cost of capital in which we calculate the amount which is payable to preference shareholders in the form of dividends with a fixed rate. Even, a dividend to a preference shareholder is on the desire of the board of directors of the company and the preference shareholder cannot pressurize for paying a dividend but it doesn't mean that calculation of the cost of pref. share capital is not necessary because if we don't pay the dividend to pref. shareholders, it will affect on the capability to receive funds from this source.

Preference capital is in between pure debt and equity that explicitly states a fixed dividend.

The dividend has a claim prior to that of equity holders.

But unlike interest on the debt the dividend on preference capital is not tax deductible.

Cost of preference capital, rp is determined by equating its cash flows to market price. No adjustment for tax is required.

Cost of pref. share capital's formula is given below.

**Cost of Pref. Share capital (Kp) = amount of preference dividend/ Preference share capital**

Kp = D/P

If we have obtained this preference share capital after some adjustments like premium or discount or pay some cost of floatation, at that time, it is our duty to deduct the discount and cost of floatation or add premium in the par value of the pref. share capital.

In the adjustment case cost of pref. share capital will change and we can calculate it in following way: -

Kp = D/ NP

D = Annual pref. dividend,

NP = Net proceeds = Par value of Pref. share capital – discount – the cost of floatation

Or NP = Par value of pref. Share capital + Premium

Cost of redeemable Pref. Shares

Dividend+(MV-NP)/n *100

MV+NP/2

A company Issues a 10% preference share of 100 each redeemable after 10 years. The cost of the issue is 2 per share. Cost if issued at a discount of 10%.

$$=\frac{10+100-88/10}{100+88/2}*100 = 11.91\%$$

## Types of Equity Capital

Equity capital is classified as

1) Internal: the profits that are not distributed but retained by the firm in funding the growth, is referred as internal equity, and

2) External: equity capital raised afresh to fund, is called external equity

And external equity may have cost differential on account of Floatation cost associated with raising fresh equity, Inability to deploy external equity instantaneously, Under-pricing of fresh issue.

- **Cost of Retained Earnings**

The cost of retained earnings is the cost to a corporation of funds that it has generated internally. If the funds were not retained internally, they would be paid out to investors in the form of dividends.

Therefore, the cost of retained earnings approximates the return that investors expect to earn on their equity investment in the company, which can be derived using the capital asset pricing model (CAPM). The CAPM combines the risk-free rate and a stock's beta to arrive at the cost of equity capital.

Required Rate of Return = Risk-free rate + Beta x (Market rate of return - Risk-free rate)

For example, if you have a risk-free rate of 2%, a beta of 1.5, and an expected rate of return on the market of 8%, your formula would be as follows:

Required Rate of Return = .02 + 1.5 x (.08 - .02) = .11, or 11%

As a result, the cost of retained earnings in this example is 11%.

Cost of equity capital is most difficult to determine because

It is not directly observable

There is no legal binding to pay any compensation, and

It is not explicitly mentioned.

Does this mean that cost of equity is zero?

The cost of new equity can be determined according to the following formula:

Ke =D/NP

Dividend Yield Method:

Ke=D/NP*100 or D/MP*100

Earning Yield Method:

Ke=EPS/NP*100 or EPS/MP*100

A company Issues 1000 equity share of Rs. 100 each, at 10% premium. The company has been paying 20% dividend. Also find cost if market price is Rs.160.

Ke=D/NP*100 =20/110*100=18.18%

Ke=D/MP*100 =20/160*100=12.5%%

Dividend Yield + growth in dividend Method

Ke=D/NP+ G

Ke=D/MP + G

 A company Issues 1000 equity share of Rs. 100 each, at PAR. The floatation cost is 5% of the share price. The company has been paying 10 per cent initially and the growth is expected to 5%. Find cost of new share.

Ke=D/NP+ G =10/95+5=15.53%

(B) If market price is 150 find cost of existing share cost.

Ke=D/MP + G=10/150+5=11.67%

## 6.5 Weighted Average Cost of Capital

Weighted average cost of capital (WACC) represents a firm's average after-tax cost of capital from all sources, including common stock, preferred stock, bonds, and other forms of debt. WACC is the average rate that a company expects to pay to finance its assets' is a common way to determine required rate of return (RRR) because it expresses, in a single number, the return that both bondholders and shareholders demand to provide the company with capital.

A firm's WACC is likely to be higher if its stock is relatively volatile or if its debt is seen as risky because investors will require greater returns.

As the majority of businesses run on borrowed funds, the cost of capital becomes an important parameter in assessing a firm's potential for net profitability. WACC measures a company's cost to borrow money. The WACC formula uses both the company's debt and equity in its calculation.

In most cases, a lower WACC indicates a healthy business that's able to attract investors at a lower cost. By contrast, a higher WACC usually coincides with businesses that are seen as riskier and need to compensate investors with higher returns.

How to Calculate WACC

Formula- WACC = TOTAL WEIGHTED COST X 100

TOTAL CAPITAL

Gallagher Corporation estimates the following costs for each component in its capital structure, tax rate is 40%

 **Example:** Assume that Gallagher's desired capital structure is 40% debt, 10% preferred and 50% common equity.

WACC = .40 x 10% (1-.4) + .10 x 11.9%

+ .50 x 15% = 11.09%

### Difficulties with Using WACC

Weighted average cost of capital is used widely throughout the finance industry, but that does not mean it's without its faults. One major issue with using WACC is that the information required to calculate it is not always readily available. Because of this, individual investors may use simpler methods to measure the risk and value of an investment, such as the price-to-earnings (P/E) ratio. Additionally, WACC is just an estimate, and not all aspects of the formula are consistent. Companies take on debt, pay off loans, sell shares, buy back shares, and tax rates change. These events all affect a company's weighted average cost of capital.

Lastly, while WACC can be straightforward in theory, it's ultimately very complex in practice. Large businesses often have many sources of debt, each with their own interest rates, and companies that operate in various states and countries will have a difficult tax rate to determine

In general, the higher the weighted average cost of capital, the riskier the company is to invest in. WACC is a percentage. The best way to think of that percentage is in terms of money. For example, if a company has a WACC of 5%, that means that for every dollar of financing (through debt or equity), the company needs to pay $0.05.

Determining a good weighted average cost of capital depends on the industry. Some industries, like oil companies, operate with more debt. More debt often means a higher WACC and a riskier investment. Younger companies and startups typically have high WACCs, too, since they are more likely to rely on debt as they grow toward profitability.

## 6.6 Capital Assets Pricing Model

No matter how much we diversify our investments, it's impossible to get rid of all the risk. As investors, we deserve a rate of return that compensates us for taking on risk. The (CAPM) helps us to calculate investment risk and what return on investment we should expect. Modern Portfolio Theory shows that specific risk can be removed through Diversification. The trouble is that diversification still doesn't solve the problem of systematic risk; even a portfolio of all the shares in the stock market can't eliminate that risk.

Therefore, when calculating a deserved return, systematic risk is what plagues investors most. CAPM, therefore, evolved as a way to measure this systematic risk. Markowitz, William Sharpe (1964),, John Lintner (1965 and Jan Mossin (1966) provided the basic structure for the CAPM model.

It is a model of linear general equilibrium return.

**Assumptions**

- An individual seller or buyer cannot affect the price of a stock.
- Investors make their decisions only on the basis of the expected returns, standard deviations and covariance of all pairs of securities.
- Investors are assumed to have homogenous expectations during the decision-making period.
- The investor can lend or borrow any amount of funds at the riskless rate of interest.
- Assets are infinitely divisible.
- There is no transaction cost.
- There is no personal income tax.
- Unlimited quantum of short sales, is allowed

The model takes into account the asset's sensitivity to non-diversifiable risk (also known as systematic risk), often represented by the quantity beta ($\beta$) in the financial industry, as well as the expected return of the market and the expected return of a theoretical risk free asset.

The required rate return of an asset is having a linear relationship with asset's beta value i.e., undiversifiable or systematic risk.

## Summary

Without knowing the cost of capital no firm can evaluate the desirability of the implementation of new projects. Cost of capital serves as a benchmark for evaluation. There are different source of capital and each source has its own advantages and disadvantages. Debt has and advantages of tax where as equity does not have the same. Different source of capital constitutes weight average cost of capital. Capital assets pricing model is also used for calculating cost of capital. It is the required rate of return which an investor should earn for taking risk in the investments.

## Keywords

Cost of capital: It is the minimum required rate of earning or cut-off rate of capital expenditure

Explicit cost of capital: It is the cost of capital in which a firm's cash outflow is oriented towards utilization of capital which is evident.

WACC: It is the average rate that a company expects to pay to finance its assets' is a common way to determine required rate of return.

Implicit cost of capital: It is the cost which does not involve any cash outflow, but it denotes the opportunity foregone while opting for another alternative opportunity.

## Self Assessment

1. Cost of Capital is the ----------rate of return that must be earned on investments, in order to meet the rate of return required by the investors.

A. Maximum
B. Minimum
C. Both of the above
D. Not Applicable

2. Required Rate of Return = Risk-free rate + Beta x (Market rate of return - Risk-free rate)

A. True
B. False
C. Can't Say
D. Not Applicable

3. What is the required rate of return if you have a risk-free rate of 2%, a beta of 1.5, and an expected rate of return on the market of 8%.

A. 09%
B. 10%
C. 08%
D. 11%

4. Preference capital is in between pure debt and equity that explicitly states a fixed dividend.

A. True
B. False
C. Both of the above
D. None of the above

5. In general, the ---------- weighted average cost of capital, the riskier the company is to invest in.

A. Higher
B. Lower
C. Both of the above
D. None of the above

6. ----------debt often means a higher WACC and a riskier investment.

A. Less
B. More
C. Both of the above

D. None of the above

7. The capital asset pricing model is by no means a perfect theory. But the spirit of CAPM is correct. It provides a usable measure of risk that helps investors determine what return they deserve for putting their money at risk.

A. True

B. False

C. Can't say

D. Not Applicable

8. NP when issued at Par=Par Value -Floatation cost.

A. True

B. False

C. Can't say

D. Not Applicable

9. ----------It is the cost of capital in which a firm's cash outflow is oriented towards utilization of capital which is evident, such as payment of interest to the loan givers (debenture holders), etc.

A. Explicit cost of capital

B. Implicit cost of capital

C. All facts are not given

D. Not Applicable

10. ----------It does not involve any cash outflow, but it denotes the opportunity foregone while opting for another alternative opportunity.

A. Explicit cost of capital

B. Implicit cost of capital

C. All facts are not given

D. Not Applicable

11. ----------is the cost of a specific source of capital, while composite cost is the combined cost of various sources of capital.

A. Specific cost

B. Delivery cost

C. All facts are not given

D. Not Applicable

12. Historical costs are book costs relating to the past, while future costs are estimated costs that act as a guide for the estimation of future costs.

A. True

B. False

13. An average cost is the combined cost or weighted average cost of various sources of capital.

A. True

B. False

14. Marginal cost refers to the average cost of new or additional funds required by a firm.

A. True

B. False

15. Short term investment decisions are called capital budgeting decisions.

A. True

B. False

## Review Questions

1. What do you mean by cost of capital? How are the components of cost of capital?
2. What are the advantages of taking debt in cost of capital?
3. How cost of capital is calculated by capital assets pricing model?
4. Elaborate the concept of capital assets pricing model.
5. Elaborate the concept of weight average cost of capital.

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | B | 2. | A | 3. | D | 4. | A | 5. | A |
| 6. | B | 7. | A | 8. | A | 9. | A | 10. | B |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | B |

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# Unit 07: Capital Structure

CONTENTS

Objectives

Introduction

7.1 Optimal Capital Structure

7.2 How Can Financial Leverage Affect the Value?

7.3 Theories on Capital Structure

7.4 Relevance Theories of Capital Structure

7.5 Irrelevance Theories of Capital Structure

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- understand the meaning of capital structure.
- analyze various aspects of capital structure.
- Interpret the relevant theories of capital structure.
- Interpret the types of irrelevant theories of capital structure.,

## Introduction

The most crucial component of starting a business is capital. It acts as the foundation of the company. Debt and Equity are the two primary types of capital sources for a business. Capital structure is defined as the combination of equity and debt that is put into use by a company in order to finance the overall operations of the company and for its growth.

The term 'Financial Structure' refers to the left-hand side of the balance sheet as represented by "total liabilities" consisting of current liabilities, long-term debt, preference share, and equity share capital. The financial structure, therefore, includes both short-term and long-term sources of funds. Capital structure is the proportion of debt, preference and equity shares on a firm's balance sheet.

## 7.1 Optimal Capital Structure

Optimum Capital Structure is the capital structure at which the weighted average cost of capital is minimum and thereby the maximum value of the firm.

The cost of debt is less expensive than equity because it is less risky. The required return needed to compensate debt investors is less than the required return needed to compensate equity investors, because interest payments have priority over dividends, and debt holders receive priority in the event of a liquidation. Debt is also cheaper than equity because companies get tax relief on interest, while dividend payments are paid out of after-tax income. However, there is a limit to the amount of debt a company should have because an excessive amount of debt increases interest payments,

the volatility of earnings, and the risk of bankruptcy. This increase in the financial risk to shareholders means that they will require a greater return to compensate them, which increases the WACC—and lowers the market value of a business. The optimal structure involves using enough equity to mitigate the risk of being unable to pay back the debt—taking into account the variability of the business's cash flow.

Companies with consistent cash flows can tolerate a much larger debt load and will have a much higher percentage of debt in their optimal capital structure. Conversely, a company with volatile cash flows will have little debt and a large amount of equity.

Unfortunately, there is no magic ratio of debt to equity to use as guidance to achieve real-world optimal capital structure. What defines a healthy blend of debt and equity varies according to the industries involved, line of business, and a firm's stage of development, and can also vary over time due to external changes in interest rates and regulatory environment. However, because investors are better off putting their money into companies with strong balance sheets, it makes sense that the optimal balance generally should reflect lower levels of debt and higher levels of equity.

**Features of an Appropriate Capital Structure**

**Profitability:** The most profitable capital structure is one that tends to minimize the cost of financing and maximize earnings per equity share.

**Flexibility:** The capital structure should be such that the company can raise funds whenever needed.

**Conservation:** The debt content in the capital structure should not exceed the limit, which the company can bear.

**Solvency:** The capital structure should be such that the firm does not run the risk of becoming insolvent.

**Control:** The capital structure should be so devised that it involves minimal risk of loss of control of the company.

## 7.2 How Can Financial Leverage Affect the Value?

. This is due to following reasons- Incorporating debt increases financial leverage.

Operating income levels cannot be changed by the financing approach adopted.

Financial leverage can, at the max, have an impact on the net income or the EPS (Earning per Share).

Changing the financing mix means changing the level of debts.

- This change in levels of debt can impact the tax advantage(shield) on the interest payable by that firm.
- It increases the net incomes available for the equity shareholders.
- It increases earnings per share (EPS).
- EPS=Net Income available for shareholders/Number of Equity Shares
- When EPS increases; market value of shares increases; It means value of firm increases.

Apparently, under this view, financial leverage is a useful tool to increase value but, at the same time, nothing comes without a cost.

Financial leverage increases the risk of bankruptcy. It is because the higher the level of debt, the higher would be the fixed obligation to honor the interest payments to the debt's providers

### Factors Affecting Capital Structure

- Tangible Fixed Assets ( If High – More debt)
- Control (Desire to control – More debt)
- Nature of Industry ( If sales fluctuate widely – less debt)

- Earning capacity of the firm ( If higher earning firm – More debt)
- Size of the firm ( Large – More debt)
- Nature of the firm
- Tax Planning
- Timing of issue (good state of economy and capital market– equity capital)
- Flexibility

**Importance of Capital Structure**

Capital structure is vital for a firm as it determines the overall stability of the firm. Here are some of the other factors that highlight the importance of capital structure. A firm having a sound capital structure has a higher chance of increasing the market price of the shares and securities that it possesses. It will lead to a higher valuation in the market.

A good capital structure ensures that the available funds are used effectively. It prevents over or under-capitalization. It helps the company in increasing its profits in the form of higher returns to stakeholders.

A proper capital structure helps in maximizing shareholder capital while minimizing the overall cost of the capital.

A good capital structure provides firms with the flexibility of increasing or decreasing the debt capital as per the situation.

## 7.3 Theories on Capital Structure

The existence of the optimum capital structure is not accepted by all financial experts. There are two extreme views on the existence of the optimum capital structure.

As per one school of thought the capital structure influences the value of the firm and the cost of capital and hence there exists an optimum capital structure. On the other hand, the other school of thought advocates that capital structure has no relevance and it does not influence the value of the firm and the cost of capital. Reflecting these views, different theories of capital structure have been developed in the theory of business finance. The main contributors to these theories are David Durand, Ezra Solomon, Modigliani, and Miller.

The following are the important theories on capital structure, which are discussed as under:

- Net Income Approach
- Net Operating Income Approach
- The Traditional view
- Modigliani and Miller hypothesis

## 7.4 Relevance Theories of Capital Structure

As per one school of thought the capital structure influences the value of the firm and the cost of capital and hence there exists an optimum capital structure.

On the other hand, the other school of thought advocates that capital structure has no relevance and it does not influence the value of the firm and the cost of capital. Reflecting these views, different theories of capital structure have been developed in the theory of business finance.

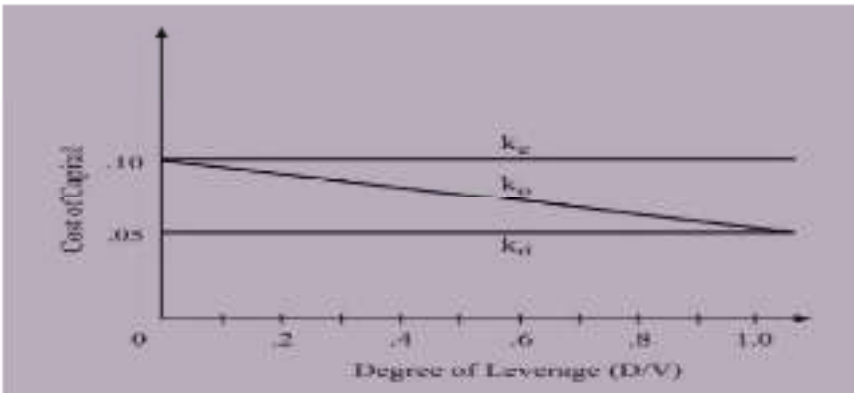
**Net Income Approach**

This approach was suggested by Durand and he was in favor of financial leverage decision. According to him, a change in financial leverage would lead to a change in the cost of capital.

Capital structure decision is relevant to the valuation of the firm. A change in the financial leverage will lead to a corresponding change in the WACC as well as total value of the firm. If degree of financial leverage increases, WACC will decline, while the value of the firm will increase.

**Assumptions of NI Approach**

- No taxes
- The cost of debt is less than the cost of equity
- Use of debt does not change the risk perception of investors.




$$\text{Cost of Debt: } r_d = \frac{\text{Interest}}{\text{Market value of debt}} = \frac{i}{D}$$

$$\text{Cost of Equity: } r_e = \frac{\text{Earnings for equity shareholders}}{\text{Market value of equity}} = \frac{\text{EBIT} - i}{E},$$

$$\text{WACC: } r = \frac{\text{Earnings to all capital suppliers}}{\text{Market value of the firm}} = \frac{\text{EBIT}}{D+E}$$

Total Value of firm = value of debt + Value of Equity

| | Scenario A | Scenario B | Scenario C |
|---|---|---|---|
| Project Cost | 1,000.00 | 1,000.00 | 1,000.00 |
| Sources of Finance | | | |
| Equity (Book Value) | 900.00 | 500.00 | 100.00 |
| Debt (Book Value) | 100.00 | 500.00 | 900.00 |
| Capitalisation Rate | | | |
| Equity, $r_e$ | 20% | 20% | 20% |
| Debt, $r_d$ | 10% | 10% | 10% |
| EBIT | 500.00 | 500.00 | 500.00 |
| Interest (I) | 10.00 | 50.00 | 90.00 |
| EBT | 490.00 | 450.00 | 410.00 |

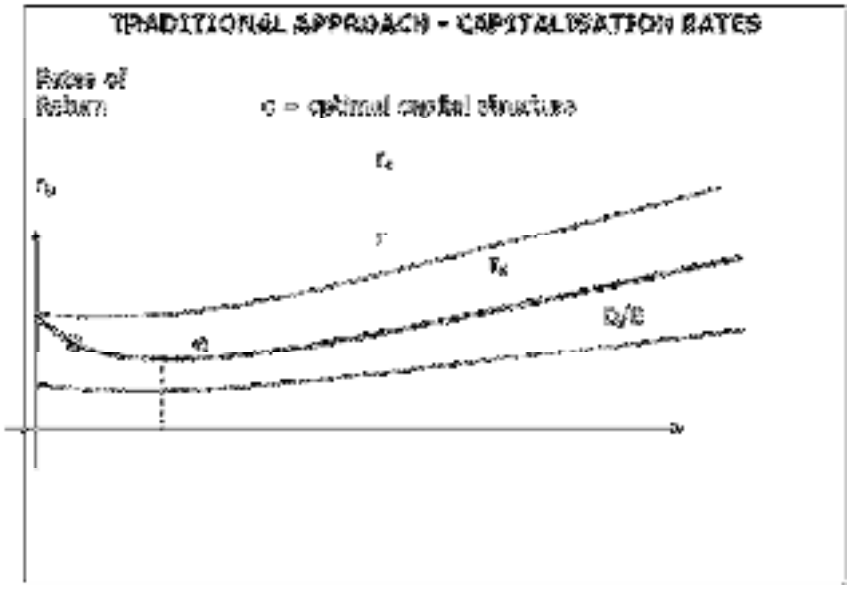
| EBT | 490.00 | 450.00 | 410.00 |
|---|---|---|---|
| Taxes | Assumed no taxes | | |
| Earnings available to shareholders | 490.00 | 450.00 | 410.00 |
| Market value of debt ($I/r_d$) | 100.00 | 500.00 | 900.00 |
| Market value of equity (EBIT – I $\times$ Taxes)/$r_e$ | 2,450.00 | 2,250.00 | 2,050.00 |
| Total value of the firm | 2,550.00 | 2,750.00 | 2,950.00 |
| Overall capitalisation rate ($r$) | 15.61% | 15.18% | 16.95% |

In short, if the ratio of debt in the capital structure increases, the WACC decreases and hence the value of the firm increases.

**Traditional Approach**

The traditional approach is midway between the NI approach and the NOI approach. Through judicious use of debt-equity proportions, a firm can reduce its overall cost of capital and thereby increase its total value.

Because debt is the cheaper source of funds. If the use of debt increases, WACC will decline, while the value of the firm will increase. If the use of debt is increased further, the cost of equity will increase and the advantage of using debt is more, therefor WACC will still decrease.




If the debt is used after this level, the cost of equity will increase more, and the advantage of using debt will be exactly offset by the increased cost of equity. Therefore, WACC will remain constant.

Beyond a certain level of debt, the cost of equity as well as the cost of debt will increase and therefore WACC will also start increasing, and the value of the firm will decrease

## 7.5 Irrelevance Theories of Capital Structure

The irrelevance proposition theorem states that financial leverage does not affect a company's value if it does not have to encounter income tax and distress costs. The theorem is often criticized because it does not consider factors present in reality, such as income tax and distress costs. The theorem also does not consider other variables, such as profits and assets, which influence a firm's valuation.

**Net Operating Income approach**

This approach is also provided by Durand. It is the opposite of the Net Income Approach if there are no taxes. This approach says that the weighted average cost of capital remains constant.

The capital structure of the firm is irrelevant. Any change in leverage will not lead to any change in the total value of the firm.

**Assumptions**

- WACC is constant
- Total value of equity = Total value of firm – Total value of debt
- Cost of equity increases with increased use of debt capital or financial leverage.
- No optimum capital structures.
- Total market value of firm = EBIT/WACC
- Total market value of equity = Total market value of firm – Total market value of debt

### Modigliani and Miller approach (MM Approach)

The irrelevance proposition theorem was developed by Merton Miller and Franco Modigliani, and was a premise for their Nobel Prize-winning work, "The Cost of Capital, Corporation Finance, and Theory of Investment."

In developing their theory, Miller and Modigliani first assumed that firms have two primary ways of obtaining funding: equity and debt. While each type of funding has its own benefits and drawbacks, the ultimate outcome is a firm dividing up its cash flows to investors, regardless of the funding source chosen. If all investors have access to the same financial markets, then investors can buy into or sell out of a firm's cash flows at any point.

This means that in the absence of taxes, bankruptcy costs, agency costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed.

- Proposition I ( In the absence of taxes)-NOI
- Proposition II (In the presence of taxes)-NI

**Proposition I (Absence of taxes)**

Change in leverage will not lead to any change in the total value of the firm. Proposition I is based on the concept of the arbitrage process.

The term arbitrage refers to an act of buying a security in one market at a lower price and selling it in another market at higher prices. If two firms are similar in all respects except leverage, the total value of both the firms cannot be different because of operation of arbitrage.

The investors of the firm whose value is higher will sell their shares and instead will buy the shares of the firm whose value is lower.The value of two identical firms would remain the same and the value would not affect by the choice of finance adopted to finance the assets.

The value of a firm is dependent on the expected future earnings. It is when there are no taxes.

**Example of the Irrelevance Proposition Theorem**

Suppose company ABC is valued at $200,000. All of this valuation is derived from the assets of an equivalent amount that it holds. According to the irrelevance proposition theorem, the valuation of the company will remain the same regardless of its capital structure i.e., the net amount of cash or debt or equity that it holds in its account books.

The role of interest rates and taxes, external factors that could significantly affect its operational expenses and valuation, in its account book, is completely eliminated.

As an example, consider that the company holds $100,000 in debt and $100,000 in cash. The interest rates associated with debt servicing or cash holdings are considered to be zero, according to the irrelevance proposition theorem.

Now suppose that the company makes an equity offering of $120,000 in shares and its remaining assets, worth $80,000, are held in debt. After some time, ABC decides to offer more shares, worth $30,000 in equity, and reduce its debt holdings to $50,000.

This move changes its capital structure and, in the real world, would become cause to reassess its valuation. But the irrelevance proposition theorem states that the overall valuation of ABC will still remain the same because we have eliminated the possibility of external factors affecting its capital structure.

**Proposition II (In the presence of taxes)-NI**

Based on the assumption of taxes, Capital structure affects the value of the firm

Value of levered firm = value of Unlevered firm + Present value of tax shield

VL = VU + T x D

It says that financial leverage boosts the value of a firm and reduces WACC. It is when tax information is available.

## Summary

The term financial structure includes both short-term and long-term sources of funds. Optimum capital structure is the structure where cost is minimum. Debt, equity and preference share are the major source of finance.

Each of the source have its own advantages and disadvantages. The following are the important theories on capital structure, which are Net Income Approach, Net Operating Income Approach, The Traditional view, and Modigliani and Miller hypothesis.

## Keywords

Capital structure: It refers to the combination of equity and debt that is put into use by a company in order to finance the overall operations of the company and for its growth.

Optimum Capital Structure: It is the capital structure at which the weighted average cost of capital is minimum and thereby the maximum value of the firm.

Net Income Approach Foreign bond: Capital structure decision is relevant to the valuation of the firm. A change in the financial leverage will lead to a corresponding change in the WACC as well as total value of the firm. If degree of financial leverage increases, WACC will decline, while the value of the firm will increase.

Traditional Approach: This approach is midway between the NI approach and the NOI approach. Through judicious use of debt-equity proportions, a firm can reduce its overall cost of capital and thereby increase its total value.

## Self Assessment

1. Optimum Capital Structure is the capital structure at which the weighted average cost of capital is ----------and thereby the maximum value of the firm

A. Minimum

B. Maximum

C. Depends

D. Not applicable

2. The term 'Financial Structure' refers to the left-hand side of the balance sheet as represented by "total liabilities" consisting of current liabilities, long-term debt, preference share, and equity share capital.

A. True

B. False

C. Depends

D. Not applicable.

3. Which of the following is true?

A. Under Traditional Approach, overall cost of capital remains same

B. Under NI Approach, overall cost of capital remains same

C. Under NOI Approach, overall cost of capital remains same

D. None of the above

4. The Traditional Approach to Value of the firm that:

A. There is no optimal capital structure

B. Value can be increased by judicious use of leverage

C. Risk of the firm is independent of capital structure

D. None of the above

5. In MM-Model, irrelevance of capital structure is based on:

A. Cost of Debt and Equity

B. Arbitrage Process

C. Decreasing k0

D. All of the above

6.. Which of the following is true for Net Income Approach?

A. Higher Equity is better

B. Higher Debt is better

C. Debt Ratio is irrelevant

D. None of the above

7. 'Judicious use of leverage' is suggested by:

A. Net Income Approach

B. Net Operating Income Approach

C. Traditional Approach

D. All of the above

8.'That there is no corporate tax' is assumed by:

A. Net Income Approach

B. Net Operating Income Approach

C. Traditional Approach

D. All of these.

9. As per one school of thought the capital structure influences the value of the firm and the cost of capital and hence there exists an optimum capital structure. On the other hand, the other school of thought advocates that capital structure has no relevance and it does not influence the value of the firm and the cost of capital.

A. True

B. False

C. Not impact at all

D. Not Applicable

10. 'That personal leverage can replace corporate leverage' is assumed by:

A. Traditional Approach

B. MM Model

C. Net Income Approach

D. Net Operating Income Approach

11. In case of Net Income Approach, when the debt proportion is increased, the cost of debt:

A. Increases

B. Decreases

C. Constant

D. None of the above

12.Financial leverage decreases the risk of bankruptcy. It is because the higher the level of debt, the higher would be the fixed obligation to honor the interest payments to the debt's providers

A. True

B. False

13. The traditional approach is midway between the NI approach and the NOI approach.

A. True

B. False

14. The term arbitrage refers to an act of buying a security in one market at a lower price and selling it in another market at higher prices.

A. True

B. False

15. Debt is also cheaper than equity because companies get tax relief on interest, while dividend payments are paid out of after-tax income.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | A | 3. | C | 4. | B | 5. | B |
| 6. | B | 7. | C | 8. | D | 9. | A | 10. | B |
| 11. | C | 12. | B | 13. | B | 14. | A | 15. | A |

## Review Questions

1. What do you mean by optimum capital structure?
2. Elaborate in brief about importance and capital structure.
3. Distinguish between American depository receipt and Global depository receipt.
4. Elaborate key features of International bond market.
5. Distinguish between a foreign bond, Eurobond, and multi-currency bond.

## Further Readings

Essentials Of Financial Management By Pandey I. M, Vikas Publishing House

Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education

Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers

Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson

**Web Links**

https://www.investopedia.com/terms/c/capitalstructure.asp

https://www.wallstreetmojo.com/optimum-capital-structure/

https://www.javatpoint.com/optimal-capital-structure

https://www.javatpoint.com/optimal-capital-structure

http://anucde.info/materialpdf/L-7.pdf

# Unit 08: Capital Budgeting

CONTENTS

Objectives

Introduction

8.1 Capital Budgeting

8.2 Types of Capital Budgeting Decisions

8.3 Techniques/Methods of Capital Budgeting

8.4 Discounted Techniques/Methods of Capital Budgeting

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- understand International capital structure.
- assess multinational corporation capital structure decision.
- Identifying options of parent firm for subsidiary capital structure.
- assess factors affecting choice of markets in International trade.

## Introduction

Capital Budgeting decision is considered the most important and most critical decision for a finance manager. It involves decisions related to long-term investments of a capital nature. The returns from such investments are scattered over a number of years. Since it requires a huge amount of funds, it is considered irreversible.

Capital budgeting is a useful tool that companies can use to decide whether to devote capital to a particular new project or investment. There are several capital budgeting methods that managers can use, ranging from the crude but quick to the more complex and sophisticated.

## 8.1 Capital Budgeting

Capital budgeting decisions related to the acquisition of assets generally have long-term strategic implications for the firm. The firm's investment decisions would generally include expansion, acquisition, modernization, and replacement of long-term assets. The process through which different projects are evaluated is known as capital budgeting.

Capital budgeting is defined "as the firm's formal process for the acquisition and investment of capital. It involves the firm's decisions to invest its current funds for addition, disposition, modification, and replacement of fixed assets".

"Capital budgeting is long-term planning for making and financing proposed capital outlays"- Charles T Horngreen.

"Capital budgeting consists in planning development of available capital for the purpose of maximizing the long-term profitability of the concern" – Lynch

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

## Features of Capital Budgeting Decision

Capital budgeting decisions are characterized by:

- Potentially large anticipated benefits
- The relatively long time period between the initial outlay and the anticipated return.
- A relatively high degree of risk
- Non-reversible

## Factors influencing capital budgeting

- Availability of funds
- Immediate need for the project
- Earnings
- Structure of Capital
- Taxation policy
- Government policy
- The economic value of the project
- Working capital
- Accounting practice
- Trend of earnings

### Capital Budgeting Process

- Identification of investment proposals
- Screening and evaluation of the proposals
- Fixing priorities
- Final approval and preparation of capital expenditure budget
- Implementing proposals
- Performance review

## Need and Importance of Capital Budgeting

The need, significance, or importance of capital budgeting arises mainly due to the following:

**Large Investments:**

Capital budgeting decisions, generally, involve a large investment of funds. But the funds available with the firm are always limited and the demand for funds far exceeds the resources. Hence, it is very important for a firm to plan and control its capital expenditure.

**Long-term Commitment of Funds:**

Capital expenditure involves not only large amounts of funds but also funds for the long-term or more or less on a permanent basis. The long-term commitment of funds increases the financial risk involved in the investment decision. The greater the risk involved, the greater is the need for careful planning of capital expenditure, i.e. Capital budgeting.

**Irreversible Nature:**

The capital expenditure decisions are of irreversible nature. Once the decision for acquiring a permanent asset is taken, it becomes very difficult to dispose of these assets without incurring heavy losses.

**Long-Term Effect on Profitability:**

Capital budgeting decisions have a long-term and significant effect on the profitability of a concern. Not only the present earnings of the firm are affected by the investments in capital assets but also the future growth and profitability of the firm depend upon the investment decision taken today. An unwise decision may prove disastrous and fatal to the very existence of the concern. Capital budgeting is of utmost importance to avoid over-investment or under-investment in fixed assets.

**Difficulties of Investment Decisions:**

The long-term investment decisions are difficult to be taken because:

- Decision extends to a series of years beyond the current accounting period,
- Uncertainties of the future and
- Higher degree of risk.
- National Importance:

Investment decision though taken by individual concern is of national importance because it determines employment, economic activities, and economic growth. Thus, we may say that without using capital budgeting techniques a firm may involve itself in a losing project. Proper timing of purchase, replacement, expansion, and alternation of assets is essential.

### Limitations of Capital Budgeting

Capital budgeting techniques suffer from the following limitations:

All the techniques of capital budgeting presume that various investment proposals under consideration are mutually exclusive which may not practically be true in some particular circumstances.

The techniques of capital budgeting require the estimation of future cash inflows and outflows. The future is always uncertain and the data collected for the future may not be exact. Obliviously the results based on wrong data may not be good.

There are certain factors like the morale of the employees, goodwill of the firm, etc., which cannot be correctly quantified but which otherwise substantially influence the capital decision.

Urgency is another limitation in the evaluation of capital investment decisions.

Uncertainty and risk pose the biggest limitation to the techniques of capital budgeting.

## 8.2 Types of Capital Budgeting Decisions

Capital budgeting refers to the total process of generating, evaluating, selecting and following up on capital expenditure alternatives. The firm allocates or budgets financial resources to new Investment proposals. Basically, the firm may be confronted with three types of capital budgeting decisions:

- Accept-Reject Decision.
- Mutually Exclusive Project Decision.
- Capital Rationing Decision

**Accept-Reject Decision**

This is a fundamental decision in capital budgeting. If the project is accepted, the firm would invest in it; if the proposal is rejected, the firm does not invest in it. In general, all those proposals which yield a rate of return greater than a certain required rate of return or cost of capital are accepted and the rest are rejected. In the case of mutually exclusive projects the project which has lower PBP,

higher ARR, higher or positive NPV, higher PJ and higher IRR criterion rules are applicable while accepting the project for investment or for other decisions mentioned above.

By applying this criterion, all independent projects are accepted. Independent projects are the projects that do not compete with one another in such a way that the acceptance of one precludes the possibility of acceptance of another. Under the accept-reject decision, all independent projects that satisfy the minimum investment criterion should be implemented.

**Mutually Exclusive Project Decision**

Mutually Exclusive Projects are those which compete with other projects in such a way that the acceptance of one will exclude the acceptance of the other projects. The alternatives are mutually exclusive and only one may be chosen.

Suppose a company is intending to buy a new folding machine. There are three competing brands, each with a different initial investment and operating costs. The three machines represent mutually exclusive alternatives, as only one of these can be selected. Moreover, the mutually exclusive project decisions are not independent of the accept-reject decisions. The project should also be acceptable under the latter decision. Thus, mutually exclusive projects acquire significance when more than one proposal is acceptable under the accept-reject decision.

**Capital Rationing Decision**

In a situation where the firm has unlimited funds, all independent investment proposals yielding returns greater than some pre-determined level are accepted. However, this situation does not prevail in most of the business forms in actual practice. They have a fixed capital budget.

A large number of investment proposals compete for these limited funds. The firm must, therefore, ration them. The firm allocates funds to projects in a manner that it maximizes long-run returns. Thus, capital rationing refers to a situation in which a firm has more acceptable investments than it can finance.

It is concerned with the selection of a group of Investment proposals out of many investment proposals acceptable under the accept-reject decision. Capital rationing employs ranking of acceptable Investment projects. These projects can be ranked on the basis of a pre-determined criterion such as the rate of return. The projects are ranked in descending order of the rate of return.

### Decisions (With Examples from Indian Market)

Following are few different types of capital budgeting decisions with practical recent examples from Indian market:

- Expansion of existing business (Bharti Airtel acquiring African Assets of Zain telecom to expand its business in South Africa)
- Expansion of new business (Reliance entering into retail segment)
- Replacement and Modernization (Amul replacing its delivery vans)
- Research and development decisions (GlaxoSmithKline spending on research for HIV medicines)
- Make or Buy Decisions (Maruti contemplating whether to buy the spare parts from outside or manufacture it in house).

Thus, it is the total process of generating, evaluating, selecting, and following up on capital expenditure alternatives. A key challenge for all organizations is to identify projects which fit these strategies and promise to be profitable in the broadest sense i.e., to create wealth for the organization

## 8.3 Techniques/Methods of Capital Budgeting

There are different methods adopted for capital budgeting. The traditional methods or no discount methods include- Payback period and Accounting rate of return method. The discounted cash flow method includes the NPV method, profitability index method, and IRR.

A non-discount method of capital budgeting is one that does not consider the time value of money. In other words, all dollars earned in the future are assumed to have the same value as today's dollars

### Payback Period Method

As the name suggests, this method refers to the period in which the proposal will generate cash to recover the initial investment made.

It purely emphasizes the cash inflows, the economic life of the project, and the investment made in the project, with no consideration of the time value of money.

Through this method, the selection of a proposal is based on the earning capacity of the project. With simple calculations, selection or rejection of the project can be done, with results that will help gauge Payback is the number of years required to recover the original cash outlay invested in a project.

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

$$\text{Payback} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}} = \frac{C_0}{C}$$

Assume that a project requires an outlay of Rs 50,000 and yields annual cash inflow of Rs 12,500 for 7 years. The payback period for the project is:

$$PB = \frac{\text{Rs } 50{,}000}{\text{Rs } 12{,}500} = 4 \text{ years}$$

Unequal cash flows In case of unequal cash inflows, the payback period can be found out by adding up the cash inflows until the total is equal to the initial cash outlay.

Suppose that a project requires a cash outlay of Rs 20,000, and generates cash inflows of Rs 8,000; Rs 7,000; Rs 4,000; and Rs 3,000 during the next 4 years. What is the project's payback?

3 years + 12 × (1,000/3,000) months

3 years + 4 months

The project would be accepted if its payback period is less than the maximum or standard payback period set by management.

As a ranking method, it gives highest ranking to the project, which has the shortest payback period and lowest ranking to the project with highest payback period.

**Evaluation of Payback**

- Certain virtues:
- Simplicity
- Cost-effective
- Handy
- Liquidity

**Serious limitations:**

- Cash flows after the payback
- Cash flow patterns

- Delicate and rigid
- Overemphasis on liquidity

**Accounting Rate of Return**

This method helps to overcome the disadvantages of the payback period method. The rate of return is expressed as a percentage of the earnings of the investment in a particular project.

This method takes into account the entire economic life of a project providing a better means of comparison. It also ensures compensation for the expected profitability of projects through the concept of net earnings. The Accounting Rate of Return is defined as average profit as % of average investment over the life of the project.

Average Investment=Initial Investment+ scrap value/2

The accounting rate of return is the ratio of the average after-tax profit divided by the average investment. The average investment would be equal to half of the original investment if it were depreciated constantly.

It is merely a number, which reflects the worthiness of the project in absolute terms.

 **Example of ARR**

Meeta Limited is considering an investment in a project having a capital outlay of 400000 and 50% tax. The forecast of annual income after depreciation but before tax is as follows:

| Year | income after depreciation but before tax |
|---|---|
| 1st | 200000 |
| 2nd | 200000 |
| 3rd | 160000 |
| 4th | 160000 |
| 5th | 80000 |

Total Income is 800000

The tax rate is 50% 400000

Total Income after tax 400000

The average Annual Income is 400000/5=80000

The average Investment is the Original cost+ Scrap Value

$$= \frac{400000+0}{2}$$

$$=200000$$

Accounting rate of return

$$= \frac{\text{Average Annual income after tax and dep}}{\text{Average Investment}} * 100$$

$$\frac{80000}{200000} * 100 = 40\%$$

 **Example of ARR**

The working result of two machines is given below:

| | Machine 1 | Machine 2 |
|---|---|---|

| | | |
|---|---|---|
| Cost of machine | 45000 | 45000 |
| Sales per year | 100000 | 80000 |
| Total cost per year | | |
| (excluding depreciation | 36000 | 30000 |
| Expected life | 2-year | 3 year |

Solution

| | Machine 1 | Machine 2 |
|---|---|---|
| Sales per year | 100000 | 80000 |
| Cost of the machine | 36000 | 30000 |
| Dep | 22500 | 15000 |
| Net income per year | 41500 | 35000 |
| Average investment | 22500 | 22500 |

Accounting rate of return 1

=Average Annual income after tax and dep *100

Average Investment

41500 *100 =184%

22500

Accounting rate of return2

Average Annual income after tax and dep *100

Average Investment

35000 *100 =156%

22500

Machine 1 ARR IS HIGHER SO IT SHOULD BE PREFERRED.

This method will accept all those projects whose ARR is higher than the minimum rate established by the management and reject those projects which have ARR less than the minimum rate.

This method would rank a project as number one if it has the highest ARR and the lowest rank would be assigned to the project with the lowest ARR.

The advantage of the method is its simplicity of calculation with whole life. It can readily be calculated by using the accounting data.

**Limitations**

- Subjective Approach
- Ignore the Time Value of Money
- It does not consider the length of life of the projects.

## 8.4 Discounted Techniques/Methods of Capital Budgeting

Time adjusted technique is an improvement over pay back method and ARR.

The presence of time as a factor in investment is fundamental for the purpose of evaluating investment. Time is a crucial factor, because, the real value of money fluctuates over a period of time. A rupee received today has more value than a rupee received tomorrow. Discounted cash flow technique takes into account both the interest factor and the return after the payback 'period.

Discounted cash flow technique involves the following steps:

- Calculation of cash inflow and out flows over the entire life of the asset.
- Discounting the cash flows by a discount factor
- Aggregating the discounted cash inflows and comparing the total so obtained with the discounted-out flows.

**Net Present Value Method**

It recognizes the impact of the time value of money. It is considered the best method of evaluating the capital investment proposal. It is widely used in practice. The cash inflow to be received at different periods of time will be discounted at a particular discount rate.

Using the company's cost of capital, the net present value (NPV) is the sum of the discounted cash flows minus the original investment.

The difference between the two will be used for accept or reject criteria. If the different yields (+) positive value, the proposal is selected for investment. If the difference shows (-) negative values, it will be rejected

 **Example:** An investment of 10000(having a scrap value of 500) yields the following return:

| Year | Cash flow |
|---|---|
| 1st | 4000 |
| 2nd | 4000 |
| 3rd | 3000 |
| 4th | 3000 |
| 5th | 2000 |

Is the investment desirable? Discuss according to NPV assuming PV factor for first-five year-.909,.826,.751,.683,.621 respectively.

| Year | Cash flow | PV FACTOR | Present value |
|---|---|---|---|
| 1st | 4000 | 909 | 3636 |
| 2nd | 4000 | .826 | 3304 |
| 3rd | 3000 | .751 | 2253 |
| 4th | 3000 | .683 | 2049 |
| 5th | 2000 | .621 | 1242 |
| Scrap | 500 | .621 | 310.5 |
| | | Total Present Value | 12794.5 |

Net Present value=Present value-Initial cost

=12794.5-10000=2794.5 Investment desirable.

**Pros:**

- It recognizes the time value of money.
- It considers the cash inflow of the entire project.
- It estimates the present value of their cash inflows by using a discount rate equal to the cost of capital.
- It is consistent with the objective of maximizing the welfare of owners.

**Cons:**

- It is very difficult to find and understand the concept of the cost of capital
- It may not give reliable answers when dealing with alternative projects under the conditions of unequal lives of the project.

**Profitability index**

Profitability index= present value of inflows/ present value of outflows

Net profitability index =

Accept if P.I is greater than1

Reject if P.I is less than 1

Advantages

In which different costs are there we cannot rank as NPV method so profitability index can be used for the same.

 **Example of PV**

The initial outlay of the project is 100000 and it generates 50000,30000, 50000,20000 from the end of the first year to the fourth year.

Assume the discount rate is 10%. Calculate profitability index. The PV FACTOR IS FOR ONE TO FOUR YEARS IS

.909

.826

.751

.683

| Year | Cash flow | PV FACTOR | Present value |
|---|---|---|---|
| 1st | 50000 | .909 | 36360 |
| 2nd | 30000 | .826 | 24780 |
| 3rd | 50000 | .751 | 37550 |
| 4th | 20000 | .683 | 13660 |
| | | Total Present Value | 112350 |

Profitability index= present value of inflows/ present value of outflows

112350/100000=1.1235

Net profitability index = accept if P.I is greater than 1: Reject if P. I is less than 1

### Internal Rate of Return

It is that rate at which the sum of discounted cash inflows equals the sum of discounted cash outflows. It is the rate at which the net present value of the investment is zero. It is the rate of discount which reduces the NPV of an investment to zero. It is called the internal rate because it depends mainly on the outlay and proceeds associated with the project and not on any rate determined outside the investment

**Decision Rule:**

The IRR of the project is 10%. It is compared with the cost of capital to make a judgment about its desirability.

| | | |
|---|---|---|
| ACCEPT IF | IRR | > COST OF CAPITAL |
| REJECT IF | | < COST OF CAPITAL |

In case of independent projects:

If IRR > required rate of return(K o ), accept.

If IRR < the required rate of return ( K o ) , reject.

In case of mutually exclusive projects:

Accept the project with highest IRR, provided it is greater than required rate of return(K o ).

**Calculating IRR**

- When cash inflows are equal
- When cash inflows are not equal

When cash inflows are equal:

PVF = Initial outlay / Annual cash inflow

Then consult the PV table with the number of years equal to the life of the assets & find out the rate at which calculated PVF =PV given in the table

b) When cash inflows are not equal over the life of the asset:

Process

Then Hit & trial method is used to see if the total value of cash outflow is equal to the cost of the initial investment. The rate at which of cash outflow is equal to the cost of initial investment is called the internal rate of return.

If NPV is positive, apply a higher rate of discount

If NPV is negative, the IRR must be between two rates

IRR= LDR+P1-O *(HDR-LDR)

P1-P2

 **Example of IRR**

A project cost Rs 32000 and it's expected to generate an inflow of 8000 each for 5 years. Calculate the internal rate of return.

At 7% 8% and 9% per annum the present value of Rs one received annually for 5 years is 4.1002, 3.9926,3.8896.

The cash inflow is uniform for 5 years.

First-Calculation of PV factor

PVF = Initial outlay / Annual cash inflow

=32000/8000=4

Second-Then consult the PV table with the number of years equal to the life of the assets & find out the rate at which calculated PVF =PV given in the table

At 7% 8% and 9% per annum the present value of Rs one received annually for 5 years is 4.1002,3.9926,3.8896.

Referring to Table at 4 FACTOR lies between 4.1002 and 3.9926 which is 7% and 8%. Therefore IRR lies between 7% and 8%

Third

Now Calculating the Present value of cash inflow at 7%=8000*4.1002=32801.6

Now Calculating the Present value of cash inflow at 8%= 8000*3.9926=31940.8

Now Interpolation of IRR

IRR= LDR+P1-O *(HDR-LDR)

P1-P2

=7+32801.6-32000 *(8-7)

32801.6-31940.8

=7+801.6 *1

860.8

=7+.931

=7.931%

### Merits of IRR method

It considers the time value of money

IRR attempts to find the maximum rate of interest at which funds invested in the project could be repaid out of the cash inflows arising from the project.

It is not in conflict with the concept of maximizing the welfare of the equity shareholders.

It considers cash inflows throughout the life of the project.

Computation of IRR is tedious and difficult to understand

Both NPV and IRR assume that the cash inflows can be reinvested at the discounting rate in the new projects. However, reinvestment of funds at the cut-off rate is more appropriate than at the IRR.

 **Examples of NPV, PV AND IRR**

The estimated cash flow from the project with an initial investment of 70000 will be 10000,20000,30000, and 45000,60000 in the first to fifth year respectively.

Compute

A.Net present value of project@25% discount rate.

B. Profitability Index.

C. Internal rate of return of the project.

Discount factor at

| Year | 25% | 30% |
|---|---|---|
| 1st | .800 | .769 |
| 2nd | .640 | .592 |
| 3rd | .512 | .455 |
| 4th | .410 | .350 |
| 5th | .328 | .269 |

NPV=Total present value-Initial Investment

NPV =74290-70000=4290

B. Profitability index= present value of inflows/ present value of outflows

=74290/70000 =1.06

C. IRR

AT 25% PV FACOTR Present value is 74290 which is more than the initial investment. Hence next trial rate of return is 30%

| Year | Cash flow | PV FACTOR | Present value |
|---|---|---|---|
| 1st | 10000 | .769 | 7690 |
| 2nd | 20000 | .592 | 11840 |
| 3rd | 30000 | .455 | 13650 |
| 4th | 45000 | .350 | 15750 |
| 5th | 60000 | .261 | 15140 |
| | | Total Present Value | 65070 |

Now Interpolation of IRR

IRR= LDR+P1-O *(HDR-LDR)

P1-P2

=25+74290-70000 *(30-25)

74290-65070

=25+4290 *5

9220

=25+.2.36

=27.326%

## Summary

Capital Budgeting decision is considered the most important and most critical decision for a finance manager. It involves decisions related to long-term investments of a capital nature. The returns from such investments are scattered over a number of years. Since it requires a huge amount of funds, it is considered irreversible.

Capital budgeting is a useful tool that companies can use to decide whether to devote capital to a particular new project or investment. There are several capital budgeting methods that managers can use, ranging from the crude but quick to the more complex and sophisticated.

## Keywords

Capital budgeting: It is the decisions related to the acquisition of assets generally have long-term strategic implications for the firm.

Payback: It is number of years required to recover the original cash outlay invested in a project.

Accounting rate of return: It is the ratio of the average after-tax profit divided by the average investment.

Net Present Value Method: It is the discounted method where sum of discounted cash minus outflow is seen. If this is positive the project should be accepted.

IRR: It is that rate at which the sum of discounted cash inflows equals the sum of discounted cash outflows.

## Self Assessment

1. Capital Budgeting is a part of:

A. Investment Decision

B. Working Capital Management

C. Marketing Management

**D.** Capital Structure.

2. Capital Budgeting deals with

A. Long-term Decisions,

B. Short-term Decisions,

C. Both (a) and (b), (d)

D. Neither (a) nor (b).

3. Capital Budgeting Decisions are:

A. Reversible
B. Irreversible
C. Unimportant
D. All of the above

4. A proposal is not a Capital Budgeting proposal if it:

A. is related to Fixed Assets,
B. brings long-term benefits,
C. brings short-term benefits only
D. has very large investment.

5. ----------Method takes into account whole life of project

A. Pay Back Method
B. ARR Method
C. Both of the above
D. None of the above

6. Average Investment=Initial Investment+ scrap value/2

A. True
B. False
C. Not Applicable
D. Depends

7. Pay Back Method gives overemphasis on liquidity.

A. True
B. False
C. Not Applicable
D. Depends

8. ARR method would rank a project as number one if it has highest ARR and lowest rank would be assigned to the project with lowest ARR.

A. True
B. False
C. Not Applicable
D. Depends

9 ---------- is the sum of the discounted cash inflows minus the original investment.

A. NPV

B. Profitability index

C. Both of the above

D. None of the above

10. ----------= present value of inflows/ present value of outflows

A. NPV

B. Profitability index

C. Both of the above

D. None of the above

11. If NPV > 0 the organization should accept the project.

A. True

B. False

C. Not Applicable

D. Depends

12. The presence of time as a factor in investment is fundamental for the purpose of evaluating investment.

A. True

B. False

13. Capital budgeting is a useful tool that companies can use to decide whether to devote capital to a particular new project or investment.

A. True

B. False

14. IRR is the rate of discount which reduces the NPV of an investment to zero.

A. True

B. False

15. Profitability index= present value of inflows/ present value of outflows.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | A | 3. | B | 4. | C | 5. | B |
| 6. | A | 7. | A | 8. | A | 9. | A | 10. | B |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | A |

## Review Questions

1. What do you mean by capital structure?
2. Elaborate in brief about features of capital budgeting.
3. What do you mean by payback period?
4. Elaborate various discounted and non-discounted methods of capital budgeting.

## Further Readings

Essentials Of Financial Management By Pandey I. M, Vikas Publishing House

Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education

Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers

Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson

### Web Links

https://www.investopedia.com/articles/financial-theory/11/corporate-project-valuation-methods.asp

https://www.investopedia.com/terms/d/dcf.asp

https://www.accountingcoach.com/blog/payback-nondiscounted-capital-budgeting#:~:text=Examples%20of%20Non%2Ddiscount%20Methods,equal%20to%20the%20amount%20invested.

https://corporatefinanceinstitute.com/resources/valuation/internal-rate-return-irr/

https://www.careerride.com/fa-capital-budgeting-limitations.aspx

https://smallbusiness.chron.com/capital-structure-multinational-corporation-81741.html

# Unit 09: Leverage

CONTENTS

Objectives

Introduction

9.1 Meaning and Definitions of Leverage

9.2 Types of Leverage

9.3 Financial Leverage

9.4 Operating Leverage

9.5 Combined Leverage

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- understand the significance of capital budgeting decisions.
- interpret domestic versus international capital budgeting.
- understand the concept of cost of capital and its calculations.
- interpret the concept of capital asset pricing model.

## Introduction

In financial management, leverage is used to describe the firm's ability to use fixed assets costs funds to satisfy to magnify to return of its owners. Use borrowed capital for (an investment), expecting the profits made to be greater than the interest payable.

The employment of an asset or source of funds for which the firm has to pay a fixed cost or fixed return may be termed leverage. Leverage is a strategy that companies use to increase assets, cash flows, and returns, though it can also magnify losses.

## 9.1 Meaning and Definitions of Leverage

Every Organization uses Fixed assets and Fixed cost fund in order to increase earning of the organization. From the sources some are fixed some depends on profit of the organization.

- Equity shares- Share capital of co. is divided into smaller units of equal value called shares.
- Preference share- Preference share have preference in payment of capital and dividend.
- Debenture -Originated from Latin word - Debere which means taking loan. Acknowledgement of debt issued under common seal setting forth term under which they are issued & to be paid.

- Term Loan-A loan from a bank for a specific amount that has a specified repayment schedule and a floating interest rate.

From these sources Equity divided are dependent on profit whereas Debenture and term loan interest is fixed.

The dictionary meaning of the firm leverages refers to **"an increase means of accomplishing purpose".**

or

The exertion of force by means of a lever.

In machines, leverage means the instrument that helps us in lifting heavy objects, which may not be otherwise possible.

This concept of leverage is valid in business too.

Leverage is a two-edged sword. On one hand, it magnifies the profit of the firm while on the other hand, can also increase the potential for loss. The type of industry and the state of the economy are two very important factors to be considered.

## 9.2 Types of Leverage

There are two main types of leverage:

Based on Cost Structure: Operating Leverage

Based on Capital Structure: Financial Leverage


**Operating leverage:**

Relationship between the firm's sales revenues and its EBIT. Effect of operating leverage. More operating leverage leads to more business risk, for then a small sales decline causes a big profit decline.

**Financial leverage:**

Relationship between the firm's earnings available for ordinary shareholders and its EBIT. Financial Risk Indicates the relationship between the capital structure of a company and its operating income.

A low ratio is indicative of the low percentage of debt in the capital structure. On the other hand, a high ratio indicates a higher percentage of debt in capital structure and these companies are vulnerable. With the increase in financial charges, the firm is also required to raise the level of EBIT necessary to meet financial charges.

Total firm risk = business risk + financial risk

Total Firm Risk – The variability in earnings per share (EPS). It is the sum of business plus financial risk.

Thus, operating leverage may be defined firm's ability to use its fixed operating cost to magnify the effect of change in sales on its earnings before interest and tax.

Thus, financial leverage may be defined firm's ability to use its fixed financial charge to magnify the effect of change in EBIT on its EARNING PER SHARE

**Combined leverage:**

Operating leverage affects a firm's operating profit (EBIT), while financial leverage affects profit after tax or earnings per share.

The degrees of operating and financial leverage is combined to see the effect of total leverage on EPS associated with a given change in sales.

## 9.3 Financial Leverage

The sources from which funds can be raised by a firm can be categorized into:

- Those which carry a fixed financial charge.
- Those which do not involve any fixed charge.

Financial leverage arises when a firm decides to finance a majority of its assets by taking on debt. When a firm takes on debt, it becomes a liability on which it must pay interest.

A company will only take on significant amounts of debt when it believes that the return on assets (ROA) will be higher than the interest on the loan.

The use of long-term interest-bearing debt and preference share capital along with equity capital is called financial leverage or trading on equity. Financial leverage signifies the presence of fixed financial charges in the firm's income stream.

It is defined as the ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the earnings per share.

Thus, financial leverage may be defined firm's ability to use its fixed financial charge to magnify the effect of change in EBIT on its EARNING PER SHARE

A firm is known to have favorable leverage if its earnings are more than what debt would cost. On the contrary, if it does not earn as much as the debt costs then it will be known as an unfavorable leverage.

More debt, more financial leverage, more financial risk.

It sees the Relationship between EFFECT OF EBIT ON EPS

**Example**

A company borrows Rs. 100 at 8% interest and invests it to earn 12% return, the balance of 4% after payment of interest will constitute the profit from financial leverage.

If the company could earn only a return of 6 % on Rs 100, the loss to the shareholders would be Rs 2 per annum.

Measures of Financial leverage

**Debt ratio:**

- The ratio of Debt to Total Capital

**Debt–equity ratio:**

- Debt–Equity ratio = D/E

**Interest coverage:**

- Coverage = EBIT/Interest

**Advantage:**

Used as a means of increasing the return to common shareholders.

**Disadvantage:**

An excessive amount of financial leverage increases the risk of failure since it becomes more difficult to repay debt.

**Example**

EBIT in the current year: Rs 10,000.

The firm has 5% debentures of Rs 40,000 and 10% preference shares of Rs 20,000.

Tax rate: 35%

Outstanding Ordinary shares: 1,000.

How would the EPS be affected if EBIT is:

(i) Rs 6,000, and (ii) Rs 14,000

| | Case 2 (-40%) | Base | Case 1 (+40) |
|---|---|---|---|
| EBIT | 6,000 | 10,000 | 14,000 |
| Less: Interest on bonds | 2,000 | 2,000 | 2,000 |
| Earning before taxes (EBT) | 4,000 | 8,000 | 12000 |
| Less: Taxes (35%) | 1,400 | 2,800 | 4,200 |
| Earning after taxes (EAT) | 2,600 | 5,200 | 7,800 |
| Less: Preference dividend | 2,000 | 2,000 | 2,000 |
| Earnings available for ordinary shareholders | 600 | 3,200 | 5,800 |
| Earnings per share (EPS) | 0.6 | 3.2 | 5.8 |
| | -81.25 | | +81.25% |

Example

A company has Rs 1,00,000, 10% debentures, and 5,000 equity shares outstanding.

Tax rate 35%.

Calculate the change in EPS at three levels of EBIT

Rs 50,000,

(ii) Rs 30,000, and (iii) Rs 70,000.

| | Case 2 (-40%) | Base | Case 1 (+40) |
|---|---|---|---|
| EBIT | 30,000 | 50,000 | 70,000 |
| Less: Interest | 10,000 | 10,000 | 10,000 |
| Earnings before taxes (EBT) | 20,000 | 40,000 | 60,000 |
| Less: Taxes | 7,000 | 14,000 | 21,000 |
| Earnings after taxes (EAT) | 13,000 | 26,000 | 39,000 |
| Earnings per share (EPS) | 2.6 | 5.2 | 7.8 |
| | -50% | | +50% |

**Financial Leverage**

Presence of fixed-interest sources funds results in a more than proportionate change in EPS as a result of change in EBIT level.

The greater the number of fixed-interest sources of funds the higher is the financial leverage.

**Degree of Financial Leverage**

The degree of financial leverage (DFL) is defined as the percentage change in EPS due to a given percentage change in EBIT:

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

$$DFL = \frac{\Delta\ EPS/EPS}{\Delta\ EBIT/EBIT}$$

| | Year 1 | Year 2 |
|---|---|---|
| Operating Income (EBIT) | 44,35,849 | 45,10,445 |
| EPS | 4.87 | 6.58 |

% change in EPS (Year 2)

= (6.58 – 4.87)/4.87 =35.2%

% change in EBIT (Year 2)

= (4,810,445 – 4,435,869)/4,435,869 =8.4%

Degree of Financial Leverage (Year 2)

= 35.2% / 8.4% = 4.12x

### Importance of DFL

Indicates the relationship between the capital structure of a company and its operating income.

A low ratio is indicative of the low percentage of debt in the capital structure. On the other hand, a high ratio indicates a higher percentage of debt in capital structure and these companies are vulnerable.

Refers to the risk of the firm not being able to cover its fixed financial costs. With the increase in financial charges, the firm is also required to raise the level of EBIT necessary to meet financial charges.

### EBIT-EPS Analysis

Method to study the effect of leverage.

Involves the comparison of alternative methods of financing under various assumptions of EBIT.

Analysis of the effect of financing alternatives on earnings per share.

A firm has the choice to raise funds from different sources in different proportions.

The choice of the mix of the various sources would be one which would result in the largest EPS.BIT-EPS Analysis

 **Example**

A firm has a capital structure exclusively comprising ordinary shares of Rs 10,00,000.

The firm now wishes to raise an additional Rs 10,00,000 for expansion.

Entire amount through equity.

50% equity capital and 50% as 5% debentures.

Entire amount as 6% debentures.

50% as equity and 50% as 5% preference capital.

Assume that:

Existing EBIT: Rs 1,20,000,

Tax rate is 35%,

Outstanding ordinary shares are 10,000.

Market price per share is Rs 100.

Which financing plan should the firm select?

| | A | B | C | D |
|---|---|---|---|---|
| EBIT | 120,000 | 120,000 | 120,000 | 120,000 |
| Less: Interest | - | 25,000 | 60,000 | - |
| Earning before taxes (EBT) | 120,000 | 95,000 | 60,000 | 120,000 |
| Less: Taxes (35%) | 42,000 | 33,250 | 21,000 | 42,000 |
| Earning after taxes (EAT) | 78,000 | 61,750 | 39,000 | 78,000 |
| Less: Preference dividend | - | - | - | 25,000 |
| Earnings available for ordinary shareholders | 78,000 | 61,750 | 39,000 | 53,000 |
| No. of Shares | 20,000 | 15,000 | 10,000 | 15,000 |
| Earnings per share (EPS) | 3.9 | 4.1 | 3.9 | 3.5 |

Financing alternative B is the most favorable.

Although the proportion of ordinary shares in the total capital under the plan D is equal to plan B, EPS is lowest in plan D.

Interest on debt is tax-deductible while the dividend on preference shares is not.

## 9.4 Operating Leverage

This leverage is associated with the employment of fixed cost assets. It is calculated to know income of the company on different levels of sales. It is measure of effect on operating profit of the concern on change in sales.

According to Solomon Ezra : According to Solomon Ezra "operating leverage is the tendency of the operating profit to vary disproportionately with sales. "

**EFFECT OF SALES ON EBIT**

If sales are increased by 25% effect on EBIT is 100% which means it is high operating leverage.

High Fixed Cost = High Operating Leverage

HIGH OPERATING LEVERAGE COMPANY

AIRLINES

Fixed Costs:

Aircraft, Hangars, Insurance

Variable Costs:

Jet Fuel, Runway Charges

LOW OPERATING LEVERAGE COMPANY

CONSULTING

Fixed Costs:

Rent, Utilities

Variable Costs:

Salaries

Effect of Operating Leverage

Change in the volume of sales results in a more than proportional change in operating profit.

A company with higher leverage generates bigger profits when sales go up because fixed costs remain the same as revenues increase.

A company with higher operating leverage will experience bigger losses when sales drop.

Operating Leverage affects the Firm's business risk.

**Example:** Firm ABC sells products for Rs 100 per unit

It has variable operating costs of Rs 50 per unit and fixed operating costs of Rs 50,000 per year.

Calculate EBIT from the sale of:

1,000 units

2,000 units

3,000 units.

| | Case 2 (-50%) | Base | Case 1 (+50%) |
|---|---|---|---|
| Sales (Units) | 1,000 | 2,000 | 3,000 |
| Sales Revenue | 1,00,000 | 200,000 | 3,00,000 |
| Less: Variable Operating Cost | 50,000 | 1,00,000 | 150,000 |
| Contribution | 50,000 | 1,00,000 | 150,000 |
| Less: Fixed operating cost | 50,000 | 50,000 | 50,000 |
| EBIT | 0 | 50,000 | 1,00,000 |
| | -100% | | +100% |

**Degree of Operating Leverage**

The percentage change in a firm's operating profit (EBIT) resulting from a 1 percent change in output (sales).

DOL="Percentage change in EBIT " /"The percentage change in Sales "

Also,

DOL="Contribution " /"EBIT "

Contribution = EBIT + Fixed Cost

**Example**

Firm X's

Sales = 200

Variable cost = 40

Fixed Cost = 80

Calculate the Degree of Operating Leverage if sales:

Increases by 20% in year 2.

Decreases by 20% in year 2.

Increases by 20% in year 2

| | Year 1 | Year 2 | Change % |
|---|---|---|---|
| Sales | 200 | 240 | 20% |
| Variable Cost | 40 | 48 | 20% |
| Contribution | 160 | 192 | 20% |
| Fixed Cost | 80 | 80 | 0% |
| EBIT | 80 | 112 | 40% |

DOL=40%720% =2

Decreases by 20% in year 2

| | Year 1 | Year 2 | Change % |
|---|---|---|---|
| Sales | 200 | 160 | -20% |
| Variable Cost | 40 | 32 | -20% |
| Contribution | 160 | 128 | -20% |
| Fixed Cost | 80 | 80 | 0% |
| EBIT | 80 | 48 | -40% |

DOL=--40/-20%=-2

**Significance of Operating Leverage**

Helps evaluate how sensitive its operating income is with respect to changes in Sales.

Analyst should fully understand a company's cost structure, fixed costs, variable costs and its operating leverage.

## 9.5 Combined Leverage

- Operating leverage affects a firm's operating profit (EBIT), while financial leverage affects profit after tax or the earnings per share.
- The degrees of operating and financial leverages is combined to see the effect of total leverage on EPS associated with a given change in sales.
- The degree of combined leverage (DCL) is given by the following equation:
- Degree of Total Leverage (DTL) is the study of impact of changing level of sales on the EPS. It is the product of DOL and DFL. It is measure of combined risk.

$$= \frac{\%\text{Change in EBIT}}{\%\text{Change in Sales}} \times \frac{\%\text{Change in EPS}}{\%\text{Change in EBIT}} = \frac{\%\text{Change in EPS}}{\%\text{Change in Sales}}$$

$$DTL = \frac{\%\text{ change in EPS}}{\%\text{ change in Sales}}$$

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

$$= DFL \times DOL$$

$$DTL = \frac{\text{Sales} - \text{Variable cost}}{EBIT} \times \frac{EBIT}{EBIT - \text{Interest}}$$

$$= \frac{\text{Contribution}}{EBIT - \text{Interest}}$$

**Example: Question on Leverage**

A company has sales of 1000000 and variable cost is Rs.700000 where as fixed cost is 200000 and debenture of Rs 500000 at 10% interest.

Calculate operating financial and combined leverage.

Profitability statement

| | |
|---|---|
| Sales REVENUE | 1000000 |
| less variable cost | 700000 |
| Contribution | 300000 |
| Less FIXED cost | 200000 |
| EBIT | 100000 |
| Less Interest | 50000 |
| EBT | 50000 |

Operating leverage is= Contribution/ operating profit OR EBIT

=300000/100000=3

Financial leverage is= EBIT/ EBT

=100000/50000=2

Combined leverage= DOL*DFL=6

**Example:** Question on Leverage

The Indage products limited capital structure consisit of 12000 equity share of 10 each and 160000 debenture of 10% with sales of 1200000.

Its fixed cost is 200000 and variable cost ratio to sales is 40%.The income tax rate is 50%.

**Calculate all three leverage.**

Profitability statement

| | |
|---|---|
| Sales REVENUE | 1200000 |
| Less variable cost | 480000 |
| Contribution | 720000 |
| Less FIXED cost | 200000 |
| EBIT | 520000 |
| Less interest | 16000 |
| EBT | 504000 |
| Tax | |
| PAT | 252000 |

Operating leverage is= Contribution/ operating profit OR EBIT

=720000/520000=1.385

Financial leverage is= EBIT/ EBT

=520000/504000=1.032

Combined leverage= DOL*DFL=1.385*1.032=1.429

## Risk & Leverage

Total firm risk = business risk + financial risk

Total Firm Risk – The variability in earnings per share (EPS). It is the sum of business plus financial risk.

Thus, operating leverage may be defined firm's ability to use its fixed operating cost to magnify the effect of change in sales on its earnings before interest and tax.

Thus, financial leverage may be defined firms ability to use its fixed financial charge to magnify the effect of change in EBIT on its EARNING PER SHARE

**Combined Leverage**

Operating leverage affects a firm's operating profit (EBIT), while financial leverage affects profit after tax or earnings per share.

The degrees of operating and financial leverage is combined to see the effect of total leverage on EPS associated with a given change in sales.

The DCL formula summarizes the effects that the combined degree of operating leverage and degree of financial leverage have on a company's earnings per share, based on a given change in shares.

The ratio helps a company discern its best possible levels of operational and financial leverage.

The formula helps companies understand how the combined leverage affects the company's total earnings.

## Summary

Capital budgeting plays an important role in survival and growth of the organization. It enables to take decisions which have long term strategic implications. There are several techniques which are non-discounted like payback and accounting rate of return and other which are discounted approach like net present value, profitability index and internal rate of return. The project is evaluated and decisions are taken whether to accept the project and reject the project. Cost of capital also plays an important criterion for the project. Debt and equity both have its own cost and benefits.

Capital asset pricing model describes the relationship between risk and expected return and that is used in the pricing of risky securities. The model can be extended to International level with some difference from domestic level.

## Keywords

Leverage: It is used to describe the firm's ability to use fixed assets costs funds to satisfy to magnify to return of its owners.

Financial leverage: It arises when a firm decides to finance a majority of its assets by taking on debt.

Operating lease: It is associated with the employment of fixed cost assets.

Combined leverage: The degrees of operating and financial leverage is combined to see the effect of total leverage on EPS associated with a given change in sales.

Degree of Financial leverage: It is defined as the percentage change in EPS due to a given percentage change in EBIT:

## Self Assessment

1. Operating leverage helps in analysis of:

A. Business Risk
B. Financing Risk
C. Production Risk
D. Credit Risk

2. Which of the following is studied with the help of financial leverage?

A. Marketing Risk
B. Interest Rate Risk
C. Foreign Risk
D. Financing risk

3. High degree of financial leverage means:

A. High debt proportion
B. Lower debt proportion
C. Equal debt and equity
D. No debt

4. Low degree of financial leverage means:

A. High debt proportion
B. Lower debt proportion
C. Equal debt and equity
D. No debt

5. Operating leverage arises because of:

A. Fixed Cost of Production
B. Fixed Interest Cost,
C. Variable Cost
D. None of the above

6. Operating Leverage is calculated as:

A. Contribution ÷ EBIT
B. EBIT÷PBT
C. EBIT ÷Interest
D. EBIT ÷Tax

7. Financial leverage arises when a firm decides to finance a majority of its assets by taking on debt.

A. Yes
B. No
C. Can't say
D. None of the above

8. ---------- debt, more financial leverage, more financial risk.

A. More
B. Less
C. Dependent on market
D. None of the above

9. ----------cost do not vary with sales volume

A. Variable
B. Fixed
C. Unequal
D. Not Applicable

10. ----------cost vary directly with the sales volume.

A. Variable
B. Fixed
C. All facts are not given
D. Not Applicable

11. High Fixed Cost = High Operating Leverage

A. Yes
B. No
C. Can't say
D. Not Applicable

12. Leverage is a strategy that companies use to increase assets, cash flows, and returns, though it can also magnify losses.

A. True

B. False

13. The employment of an asset or source of funds for which the firm has to pay a fixed cost or fixed return may be termed leverage of capital will be determined by the securities' world systematic risk, regardless of nationality.

A. True

B. False

14. A company will only take on significant amounts of debt when it believes that the return on assets (ROA) will be higher than the interest on the loan..

A. True

B. False

15. Operating Leverage affects the Firm's financial risk.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | D | 3. | A | 4. | B | 5. | A |
| 6. | A | 7. | A | 8. | A | 9. | B | 10. | A |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | B |

## Review Questions

1. What do you mean by leverage?
2. Differentiate between financial operating and combined leverage.
3. What are the implications of different leverage in financial management.
4. Discuss in brief about how to calculate operating leverage.
5. Discuss in brief about how to calculate financial leverage.

## Further Readings

Essentials Of Financial Management By Pandey I. M, Vikas Publishing House

Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education

Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers

Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson

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# Unit 10: Dividend Theory

CONTENTS

Objectives

Introduction

10.1 Introduction & Objectives of Dividend Policy

10.2 Types of Dividend Policy

10.3 Forms of Dividend

10.4 Dividend Relevance

10.5 Dividend Irrelevance

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- understanding the concept of working capital management.
- Interpreting components of International working capital management.
- interpret the advantages of centralization versus decentralisation of cash management.
- interpret the Bilateral netting and Multilateral netting.

## Introduction

Dividend payout ratios and dividend yields provide insight into how much an investor will receive in the form of dividends per share they own.

With this knowledge, investors can make informed decisions when choosing stocks and maximizing investment returns.

## 10.1 Introduction & Objectives of Dividend Policy

**Meaning**

A firm earns for its shareholders. The income generated after meeting all obligations by the firm belongs to the shareholders. The part of earnings that is distributed is called a dividend.

"A dividend is a distribution to shareholders out of profit or reserve available for this purpose".- Institute of Chartered Accountants of India

If a company's board of directors decides to issue an annual 5% dividend per share, and the company's shares are worth $100, the dividend is $5. If the dividends are issued every quarter, each distribution is $1.25.

**How a Dividend Works**

A dividend's value is determined on a per-share basis and is to be paid equally to all shareholders of the same class (common, preferred, etc.). The payment must be approved by the Board of Directors.

When a dividend is declared, it will then be paid on a certain date, known as the payable date.

**Steps of how it works**

- The company generates profits and retained earnings
- The management team decides some excess profits should be paid out to shareholders (instead of being reinvested)
- The board approves the planned dividend
- The company announces the dividend (the value per share, the date when it will be paid, the record date, etc.)
- The dividend is paid to shareholders

**Important Dividend Dates**

**Announcement date**: Dividends are announced by company management on the announcement date (or declaration date) and must be approved by the shareholders before they can be paid.

**Ex-dividend date**: The date on which the dividend eligibility expires is called the ex-dividend date or simply the ex-date. For instance, if a stock has an ex-date of Monday, May 5, then shareholders who buy the stock on or after that day will NOT qualify to receive the dividend. Shareholders who own the stock one business day prior to the ex-date, on Friday, May 2, or earlier, qualify for the distribution.

**Record date**: The record date is the cutoff date, established by the company to determine which shareholders are eligible to receive a dividend or distribution.

**Payment date**: The company issues the payment of the dividend on the payment date, which is when the money gets credited to investors' accounts.

**Dividend Policy**

"Dividend policy determines the division of earnings between payments to shareholders and retained earnings".- Weston and Bringham

The optimum dividend policy would be one that maximizes the value of the firm. The question of in what ratio to retain or distribute the earned income is referred to as a dividend decision or policy.

**Does Dividend Policy Matter?**

Dividends matter – the value of the stock is based on the present value of expected future dividends

Dividend policy may not matter -Dividend policy is the decision to pay dividends versus retaining funds to reinvest in the firm

In theory, if the firm reinvests capital now, it will grow and can pay higher dividends in the future.

## 10.2 Types of Dividend Policy

1. Regular Dividend Policy: Here the company wishes to pay dividends regularly.

2. Stable Dividend Policy: Here the company wishes to pay a stable dividend. It may be fixed as a percentage of face value or a fixed amount per share.

- Constant dividend per share
- Constant payout ratio

Stable rupee dividend + extra dividend

3. Irregular Dividend Policy: Here company thinks to pay dividends; if the situation warrants and not; if the situation does not warrant.

4. No Dividend Policy: Here company contemplates no divide

## Factors Determining Dividend Policy

- Company Policy
- Stability in Earnings
- Liquidity of the Co.
- Past Dividend Rates
- Projects under Consideration
- Market Expectation
- Taxation
- Legal restriction
- Independent Opportunities
- Restrictions of FIs
- Nature of Business
- Cost of Capital
- The phase of the Trade Cycle
- Accumulated Reserves
- Co's Growth Needs
- Bonus Issue.

## Objectives of Dividend Policy

The dividend policy of a company has some definite objectives: -

**To increase the wealth of shareholders**:

Dividend payments are thought to have a relationship with the objective of WEALTH MAXIMISATION

**Stable rates of dividend:**

Fluctuation in the rate of return adversely affects the market price of shares. In order to have a stable rate of dividend, a firm should retain a high proportion of earnings so that the firm can keep sufficient funds for payment of dividends when it faces loss.

**Degree of Control:**

The dividend payments by a company affect the retained earnings of a business.

It is therefore, important that; maybe it is happening; that a company declared and paid dividends; and later for fulfilling the need for money; it has to issue new equity shares in the market in this way there may be dilution in the ownership and control may be going out of hands, due to the fact that more NEW shareholders as new OWNERS has come into the picture!

**Future Prospects:**

A good dividend policy should be made keeping in view the prospects of a business.

Simply, if business need money then the dividend policy should support this idea and greater amounts should NOT be distributed and vice versa for a business which do not need money then dividend policy should support dividend payments…as discussed in previous slide.

## 10.3 Forms of Dividend

Dividends are a form of payment made by companies to their shareholders, representing a portion of the company's profits. Dividends are important to shareholders because they represent a return on their investment in the company. By distributing profits to shareholders in the form of dividends, companies can attract and retain investors and provide a source of income for shareholders. Additionally, companies that pay regular dividends are often seen as financially stable and reliable, which can help to attract new investors and maintain investor confidence.

These payments can be made in the form of cash, stocks, other assets, and more; they are also typically based on the company's profits but could come from debt instruments. Depending upon a given firm's dividend policy, these payouts may happen quarterly or annually - all while being subject to taxes. Investing in stock with the potential for dividend returns is an attractive way to build wealth over time!

The types of dividends a company pays out depend on the types of securities they offer. Common types include ordinary (cash) dividends, stock/share, property, and liquidating/special dividends.

Each type of dividend are having its own advantages and disadvantages,

**Cash Dividends**

These are the most common type of dividends, paid out in cash. A company pays out a certain portion of its profits as dividends to shareholders. For example, An IT firm, XYZ, has made Rs 500 crores in profit for the year 2020. They decided to pay their shareholders 20% of that amount as a dividend, which would be Rs 100 Crore INR (500 Cr x 0.20).

This would mean each shareholder would receive a certain dividend amount, depending on how much stock they own

The advantages and disadvantages of cash dividends depend on the company's financial situation. On the one hand, shareholders can benefit from receiving a dividend payment in the form of cash; on the other hand, companies have less money to reinvest in their businesses, which can limit growth potential.

Cash dividends provide an immediate return but also mean less money for companies to reinvest and grow.

**Stock Dividends**

As the name suggests, stock dividends are paid out as additional shares instead of cash.

For example, XYZ IT firm decided to pay its shareholders 20% of its profits as a stock dividend. This would mean each shareholder will receive an additional share for every five shares they own.

The advantage of stock dividends is that they can increase a shareholder's potential returns without them having to invest more money. Additionally, companies won't have to part with their profits as they do with cash dividends.

On the downside, they also don't provide immediate benefits and tend to carry more risk than cash dividends. The market value of the new shares could be lower or higher than when the original investment was made.

**Property Dividends**

These various forms of dividends are paid out as assets instead of cash or shares. This could be anything from real estate to antiques and can even include intangible assets such as patents or copyrights. For example, XYZ IT firm pays its shareholders 10% of its profits as property dividends. This would mean each shareholder will receive an additional asset worth Rs 50 Lakhs INR (500 Cr x 0.10).

The advantage of property dividends is that they can diversify an investment portfolio and may provide more tax benefits than other types of dividends. On the downside, there is always a risk that the value of these types of assets may decline over time, limiting potential returns.

**Scrip Dividends**

Scrip dividends are similar to stock dividends, but instead of receiving additional shares directly from the company, shareholders receive a scrip or voucher that can be exchanged for shares on the market.

For example, XYZ IT firm decides to pay its shareholders 10% of its profits as a scrip dividend. This would mean each shareholder will receive a scrip worth Rs 50 Lakhs INR (500 Cr x 0.10) that can be exchanged for market shares later.

The advantage of scrip dividends is that they can provide more flexibility to investors as it allows them to decide when and how much of their dividend money should be used for reinvestment. On the downside, there is always a risk that the value of these types of assets may decline over time, limiting potential returns.

**Liquidating dividends**

Liquidating dividends are paid out to shareholders when a company is winding down its operations, and there isn't enough money left to pay out other different types of dividends. For example, XYZ IT firm decides to pay its shareholders 50% of its remaining assets as a liquidating dividend. This would mean each shareholder will receive an amount equivalent to Rs 250 Lakhs INR (500 Cr x 0.50) from the sale of the company's assets.

The advantage of liquidating dividends is that they can provide a return for shareholders even if the business has failed. On the downside, it typically means that all remaining assets will be sold off to pay the dividend, and the company will cease to exist.

## Impact of Dividend on Share Prices

The impact of dividends on share prices depends on the types of dividends being paid out.

Cash dividends tend to have a positive effect on share prices as investors are immediately rewarded for their investment. Stock dividends can also increase the value of shares, but it depends on how well the company performs in the future and whether or not the new shares will be worth more than originally purchased

Property and scrip dividends may also have an impact depending on their market value at the time of payout. Liquidating dividends usually lead to a decline in share prices as all remaining assets are sold off, leaving shareholders with no prospect of further returns.

As a shareholder, knowing about different types of dividends payouts before investing in any portfolio is recommended to know what to expect from your investments.

## Dividend Payout Ratio vs. Dividend

The dividend payout ratio refers to the portion of a company's earnings that are distributed as dividends. In contrast, dividend yields refer to the annual return rate on investment based on the current market price of shares.

Dividend payout ratios can be calculated by dividing total dividends paid for a given period by net income earned during the same period. On the other hand, the dividend yield is calculated by dividing total dividends per share (DPS) by the market price per share.

This is how dividends affect a company's financial statements:

| Financial Statement | Impact from Dividend Payment |
|---|---|
| Income Statement | Decrease in profit after taxes as a result of dividend payment |
| Balance Sheet | Increase in liabilities due to the dividend payable amount. |
| | Decrease in retained earnings and cash for payment of |

| | |
|---|---|
| | dividends. |
| Cash Flow Statement | Dividend payments show up as an outflow under the "financing activities" section |

.

## 10.4 Dividend Relevance

Dividend is that portion of net profits which is distributed among the shareholders. The dividend decision of the firm is of crucial importance for the finance manager since it determines the amount to be distributed among shareholders and the amount of profit to be retained in the business. Retained earnings are very important for the growth of the firm. Shareholders may also expect the company to pay more dividends.

So both the growth of the company and higher dividend distribution are in conflict. So the dividend decision has to be taken in the light of the wealth maximization objective. This requires a very good balance between dividends and retention of earnings.

A financial manager may treat the dividend decision in the following two ways:

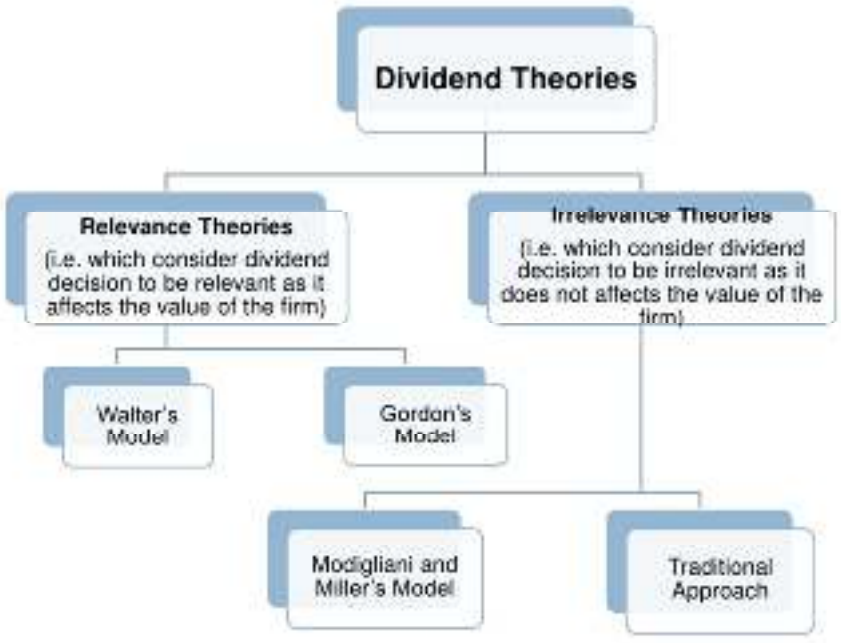
1) As a long-term financing decision: - When a dividend is treated as a source of finance, the firm will pay dividends only when it does not have profitable investment opportunities. But the firm can also pay dividends and raise an equal amount by the issue of shares. But this does not make any sense.

2) As a wealth maximization decision: - Payment of current dividend has a positive impact on the share price. So to maximize the price per share, the firm must pay more and more dividends.

There are conflicting opinions as far as the impact of dividend decisions on the value of the firm. According to one school of thought, dividends are relevant to the valuation of the firm. Others opine that dividends do not affect the value of the firm and the market price per share of the company.

Relevant Theory

If the choice of the dividend policy affects the value of a firm, it is considered as relevant. In that case, a change in the dividend payout ratio will be followed by a change in the market value of the firm. If the dividend is relevant, there must be an optimum payout ratio. The optimum payout ratio is that ratio which gives the highest market value per share.




The relevance concept of dividend or the theory of relevance

Walter's Approach

Gordon's Approach

**Walter's Approach**

As per this approach, dividend decisions are relevant and effect the value of the firm. The relationship between the internal rate of return earned by the firm and its cost of capital is very significant.

The relationship is based on the relationship between the firm's

- Internal rate of return/ return on investment/ reinvestment rate (r)
- Cost of capital / required rate of return/shareholders expectations (K)

If two firms are similar in all respects except leverage, the total value of both the firms can not be different because of operation of arbitrage.

The investors of the firm whose value is higher will sell their shares and instead will buy the shares of the firm whose value is lower.

**Walter's Approach- Assumptions**

- The investment of the firm is financed through retained earnings.
- Constant return and cost of capital
- Infinite time
- No Taxes

## Formula of Walter's Model

$$P = \frac{D + r\,(E-D)/k}{k}$$

Where,

P = Current Market Price of equity share
E = Earning per share
D = Dividend per share
(E-D) = Retained earning per share
r = Rate of Return on firm's investment or Internal Rate of Return
k = Cost of Equity Capital

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 the optimum pay-out ratio would be zero in their case.

Where r< k, the shareholders would stand to gain if the firm distributes its earnings. Decline firms, the optimum payout ratio would be 100%.

If r=k, the dividend policy does not affect the value of the firm.

## Effect of Dividend Policy on Value of Share

| Case | If Dividend Payout ratio Increases | If Dividend Payout Ration decreases |
|---|---|---|
| 1. In case of Growing firm i.e. where r > k | Market Value of Share decreases | Market Value of a share increases |
| 2. In case of Declining firm i.e. where r < k | Market Value of Share increases | Market Value of share decreases |
| 3. In case of normal firm i.e. where r = k | No change in value of Share | No change in value of Share |

Example of Walter Model

## Illustration

- Growth Firm ($r > k$):

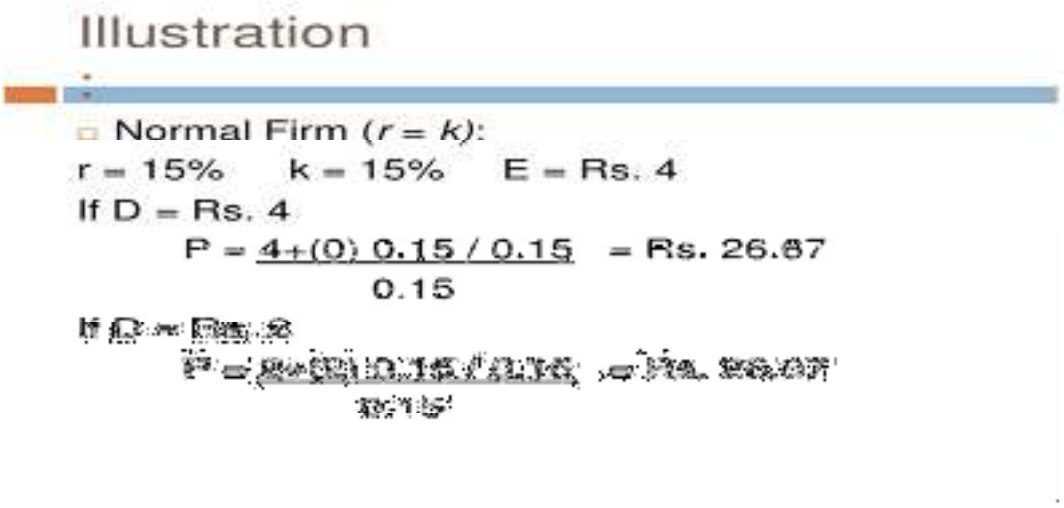
r = 20%  k = 15%  E = Rs. 4

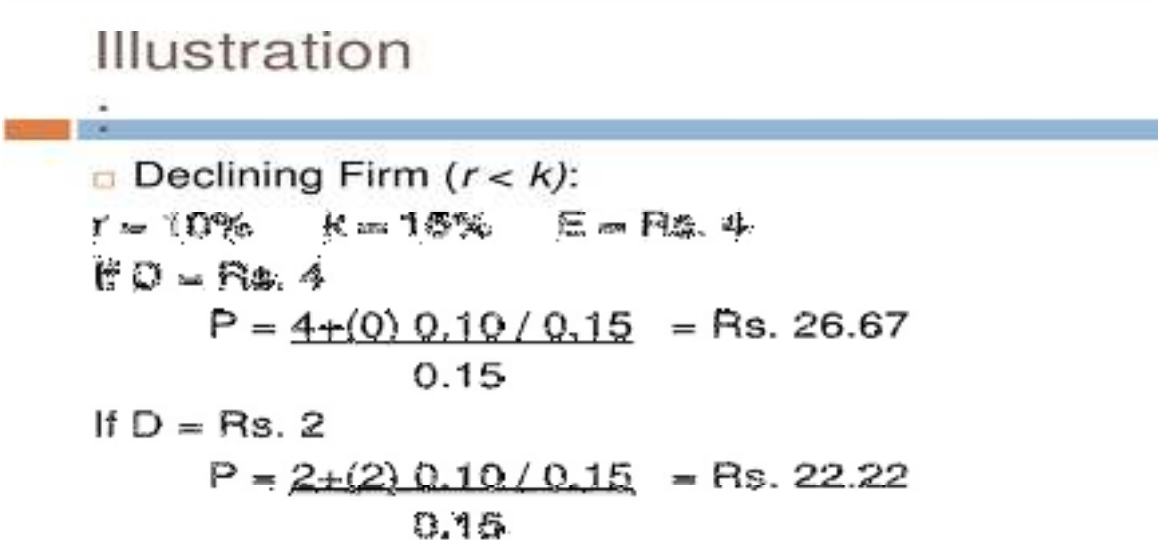
If D = Rs. 4

$$P = \frac{4 + \frac{0.20}{0.15}(4 - 4)}{0.15} = \text{Rs. } 26.67$$

If D = Rs. 2

$$P = \frac{2 + \frac{0.20}{0.15}(4 - 2)}{0.15} = \text{Rs. } 31.11$$




**Gordon's Model**

Another model that supports the view that dividend policy is relevant is Gordon's Model. According to Prof. Gordon, Dividend Policy almost always affects the value of the firm. He showed how dividend policy can be used to maximize the wealth of the shareholders.

The model holds that the share's market price is equal to the sum of the share's discounted future dividend payment.

**Assumptions of Gordon Model**

- No external Financing
- Constant Returns
- Constant Cost of Capital
- Perpetual Earnings
- No taxes
- Constant Retention

Its assumptions and conclusions are similar to Walter's model.

## Formula of Gordon's Model

$$P = \frac{E(1-b)}{K - br}$$

- Where,
  P = Price
  E = Earning per share
  b = Retention Ratio
  K = Cost of Capital
  br = g = Growth Rate

- The market value of the share, $P_0$, increases with the retention ratio, $b$, for firms with growth opportunities, i.e., when $r > k$.
- The market value of the share, $P_0$, increases with the payout ratio, $(1 - b)$, for declining firms with $r < k$.
- The market value of the share is not affected by dividend policy when $r = k$.

| Growth Firm, $r > k$<br>$r = 0.15$<br>$k = 0.10$<br>$EPS_1$ = Rs 10 | Basic Data<br>Normal Firm, $r = k$<br>$r = 0.10$<br>$k = 0.10$<br>$EPS_1$ = Rs 10 | Declining Firm, $r < k$<br>$r = 0.08$<br>$k = 0.10$<br>$EPS_1$ = Rs 10 |
|---|---|---|
| **Payout Ratio 40%** | | |
| $g = br = 0.6 \times 0.15 = 0.09$<br>$P = \frac{10(1-0.6)}{0.10-0.09}$<br>$= \frac{4}{0.01}$ = Rs 400 | $g = br = 0.6 \times 0.10 = 0.06$<br>$P = \frac{10(1-0.6)}{0.10-0.06}$<br>$= \frac{4}{0.04}$ = Rs 100 | $g = br = 0.6 \times 0.08 = 0.048$<br>$P = \frac{10(1-0.6)}{0.10-0.048}$<br>$= \frac{4}{0.052}$ = Rs 77 |
| **Payout Ratio 60%** | | |
| $g = br = 0.4 \times 0.15 = 0.06$<br>$P = \frac{10(1-0.4)}{0.10-0.06}$<br>$= \frac{6}{0.04}$ = Rs 150 | $g = br = 0.4 \times 0.10 = 0.04$<br>$P = \frac{10(1-0.4)}{0.10-0.04}$<br>$= \frac{6}{0.06}$ = Rs 100 | $g = br = 0.4 \times 0.08 = 0.032$<br>$P = \frac{10(1-0.4)}{0.10-0.032}$<br>$= \frac{6}{0.068}$ = Rs 88 |
| **Payout Ratio 90%** | | |
| $g = br = 0.10 \times 0.15 = 0.015$<br>$P = \frac{10(1-0.1)}{0.10-0.015}$<br>$= \frac{9}{0.085}$ = Rs 106 | $g = br = 0.10 \times 0.10 = 0.01$<br>$P = \frac{10(1-0.1)}{0.10-0.01}$<br>$= \frac{9}{0.09}$ = Rs 100 | $g = br = 0.10 \times 0.08 = 0.008$<br>$P = \frac{10(1-0.1)}{0.10-0.008}$<br>$= \frac{9}{0.092}$ = Rs 98 |

Question on Walter Model

The earnings per share of the company are and the rate of capitalization applicable to the company is 10%.

The company has before it an option of adopting a payout ratio of 25% or 50% or 75%.

Using Walter's formula of dividend payout, compute the market value of the company's share if the productivity of retained earnings is (i) 15% (ii) 10%, and (iii) 5%.

Using Walter's formula of dividend payout, compute the market value of the company's share if the productivity of retained earnings is (i) 15% (ii) 10%, and (iii) 5%.

**Computation of Market Value of Company's Shares**

| (i) r=15% | (ii) r= 10% | (iii) r=5% |
|---|---|---|
| **(a) When dividend payout ratio is 25%** | | |
| $P = \frac{2}{.10} + \frac{.15(8-2)/.10}{.10}$ | $P = \frac{2}{.10} + \frac{.10(8-2)/.10}{.10}$ | $P = \frac{2}{.10} + \frac{.05(8-2)/.10}{.10}$ |
| $= \frac{2}{.10} + \frac{\frac{.15}{.10}(6)}{.10}$ | $= \frac{2}{.10} + \frac{\frac{.10}{.10}(6)}{.10}$ | $= \frac{2}{.10} + \frac{\frac{.05}{.10}(6)}{.10}$ |
| $= \frac{2}{.10} + \frac{9}{.10}$ | $= \frac{2}{.10} + \frac{6}{.10}$ | $= \frac{2}{.10} + \frac{3}{.10}$ |
| $= \frac{11}{.10}$ = Rs. 110 | $= \frac{8}{.10}$ = Rs. 80 | $= \frac{5}{.10}$ = Rs. 50 |
| **(b) When dividend payout ratio is 50%.** | | |
| $P = \frac{4}{.10} + \frac{.15(8-4)/.10}{.10}$ | $P = \frac{4}{.10} + \frac{.10(8-4)/.10}{.10}$ | $P = \frac{4}{.10} + \frac{.05(8-4)/.10}{.10}$ |
| $= \frac{4}{.10} + \frac{\frac{.15}{.10}(4)}{.10}$ | $= \frac{4}{.10} + \frac{\frac{.10}{.10}(4)}{.10}$ | $= \frac{4}{.10} + \frac{\frac{.05}{.10}(4)}{.10}$ |
| $= \frac{4}{.10} + \frac{6}{.10}$ | $= \frac{4}{.10} + \frac{4}{.10}$ | $= \frac{4}{.10} + \frac{2}{.10}$ |
| $= \frac{10}{.10}$ = Rs. 100 | $= \frac{8}{.10}$ = Rs. 80 | $= \frac{6}{.10}$ = Rs. 60 |
| **(c) When dividend payout ratio is 75%** | | |
| $P = \frac{6}{.10} + \frac{.15(8-6)/.10}{.10}$ | $P = \frac{6}{.10} + \frac{.10(8-6)/.10}{.10}$ | $P = \frac{6}{.10} + \frac{.05(8-6)/.10}{.10}$ |
| $= \frac{6}{.10} + \frac{\frac{.15}{.10}(2)}{.10}$ | $= \frac{6}{.10} + \frac{\frac{.10}{.10}(2)}{.10}$ | $= \frac{6}{.10} + \frac{\frac{.05}{.10}(2)}{.10}$ |
| $= \frac{6}{.10} + \frac{3}{.10}$ | $= \frac{6}{.10} + \frac{2}{.10}$ | $= \frac{6}{.10} + \frac{1}{.10}$ |
| $= \frac{9}{.10}$ = Rs. 90 | $= \frac{8}{.10}$ = Rs. 80 | $= \frac{7}{.10}$ = Rs. 70 |

## 10.5 Dividend Irrelevance

**Dividend Irrelevance**

Dividend irrelevance theory suggests that a company's dividend payments don't add value to a company's stock price. Dividend irrelevance theory also argues that dividends hurt a company since the money would be better reinvested in the company.

Dividend irrelevance theory suggests that a company's payment of dividends should have little to no impact on the stock price. If this theory holds true, it would mean that dividends do not add value to a company's stock price.

The premise of the theory is that a company's ability to earn a profit and grow its business, not dividend payments, determines a company's market value and drives the stock price. Those who believe in dividend irrelevance theory argue that dividends don't offer any added benefit to investors and, in some cases, argue that dividend payments can hurt the company's financial health.

There are conflicting opinions as far as the impact of dividend decisions on the value of the firm.

According to one school of thought, dividends are relevant to the valuation of the firm. Others opine that dividends do not affect the value of the firm and the market price per share of the company.

**Irrelevance Theory**

The irrelevance concept of dividends or the theory of irrelevance

- Modigliani and Miller's Approach
- Traditional Approach

**Modigliani and Miller Approach**

Modigliani – Miller theory was proposed by Franco Modigliani and Merton Miller in 1961.

They were the pioneers in suggesting that DIVIDENDS and CAPITAL GAINS are equivalent when an investor considers returns on investment.

The investment decision is, thus, dependent on the investment policy of the company and not on the dividend policy.


It is based on the following assumptions: -

- Perfect capital markets
- No taxes
- Rigid Investment policy
- No risk
- Investors are rational

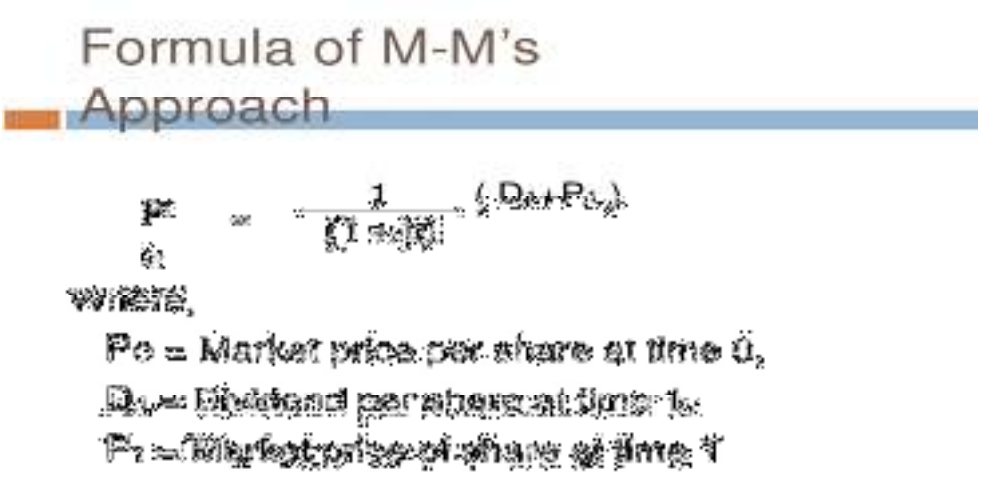
According to M-M, under a perfect market situation, the dividend policy of a firm is irrelevant as it does not affect the value of the firm. They argue that the value of the firm depends on firm earnings which results from its investment policy. Thus, when the investment decision of the firm is given, the dividend decision is of no significance.

The argument is that whatever increase in the value of the firm results from the payment of dividends, will be exactly offset by a decline in the market price because of external financing and there will be no change in the total wealth of the shareholders.

Thus, whatever a shareholder gains on account of dividend payment is neutralized completely by the fall in the Market price of shares due to a decline in expected future EPS.

If a company with investment opportunities distributes its earnings to shareholders, it will need to raise capital externally. This will increase the number of shares, leading to a decline in share price.

Therefore, whatever a shareholder receives due to the higher dividend payment will be counterbalanced and neutralized by the falling share price and declining expected earnings per share.




**Criticism of M M Approach**

The main criticisms of the MM hypothesis focus on its assumptions.

Tax differential: The assumption that taxes do not exist is far from reality.

Floatation cost: A firm has to pay financing costs in the form of underwriting commission, brokerage, and so on. As a result, external financing is costlier than internal.

Transaction costs: In reality, shareholders need to pay brokerage fees and other fees when they sell shares. This is one reason why shareholders may prefer to have dividends.

Discount rate: The use of a single discount rate to discount cash inflow over different periods is incorrect. Uncertainty increases over time, which means that many investors prefer small dividends now over large dividends later.

**Traditional Approach**

The traditional theory was expounded by B. Graham and D.L. Dodd. According to them,

"…..the stock market is overwhelmingly in favor of liberal dividends as against niggardly dividends". As per this model, the importance attached to liberal current dividends by the shareholder is more. Shareholders give less importance to capital gains that may arise in the future. Therefore, companies that pay more current dividends will have a higher market value than companies that pay less dividends.

The following valuation model worked out by them clearly confirms the above view

P = M (d + e / 3)

Where,

P = market price per share,

D = dividend per share,

E = earnings per share,

M = a multiplier

According to this, in the valuation of shares, the weight attached to dividends is equal to four times the weight attached to retained earnings. This is made clear in the following modified model – in this E is replaced by D+R

P = M [d + (d +r/ 3)]

R = retained earnings

The weights provided by Graham and Dodd are based on their estimation and this is not derived objectively through empirical analysis. Notwithstanding this observation, the major thrust of the traditional theory is that liberal payout policy has a favorable impact on stock price

## Summary

There are various dividend policies in practice such as: regular dividend policy under the regular dividend policy, the company pays out dividends to its shareholders every year. The other one is stable dividend policy under the stable dividend policy, the percentage of profits paid out as dividends is fixed. The next include irregular dividend policy under this policy, the company is under no obligation to pay its shareholders. If they a make an abnormal profit in a certain year, they can decide to distribute it to the shareholders or not pay out any dividends at all. The last one is no dividend policy under the no dividend policy, the company doesn't distribute dividends to shareholders. It is because any profits earned is retained and reinvested into the business for future growth.

## Keywords

Dividend: It is the part of profit that is distributed to shareholders.

Dividend policy: It determines the division of earnings between payments to shareholders and retained earnings

Irregular dividend policy: In this policy company thinks to pay dividends if the situation warrants and not if the situation does not warrant.

Dividend payout ratio: It refers to the portion of a company's earnings that are distributed as dividends.

Dividend yield: It. is calculated by dividing total dividends per share (DPS) by the market price per share

## Self Assessment

1. Walter's Model suggests for 100% DP Ratio when

A. ke = r,
B. ke< r,
C. ke> r,
D. ke = 0

2. Walter's Model suggests for 0% DP Ratio when

A. ke = r,
B. ke< r,
C. r > ke,
D. ke = 0

3. Relevant theory of dividend is one of these

A. Walter's Model

B. Traditional Approach
C. MM-Model
D. None of these

4.. Irrelevant theory of dividend is one of these

A. Walter's Model
B. Gordon Model
C. MM-Model
D. None of these

5. ---------- As per this approach, dividend decisions are relevant and effect the value of the firm.

A. Transaction Motive
B. Precautionary Motive
C. Both of the above
D. None of the above

6 If r>k i.e., if the firm earns a higher rate of return on its investment than the required rate of return then as per Walter model the firm should ---------- earnings.

A. Retain
B. Distribute
C. Do Nothing
D. None of the above

7. The dividend payout ratio refers to the portion of a company's earnings that are distributed as dividends.

A. Yes
B. No
C. Can't say
D. Not Applicable

8. The dividend yield is calculated by dividing total dividends per share (DPS) by the market price per share.

A. Correct
B. Wrong
C. Both of the above
D. Not Applicable

9. Bonus issue must be authorized

A. By the board of directors
B. Article of association of the company
C. Shareholders by ordinary resolution

D. All of the above

10. Bonus Issue is related to

A. Preference shareholders
B. Debenture holders
C. Existing shareholders
D. Not Applicable

11. The Earning per Share (EPS) and market price per share falls in the same proportion to the bonus issue.

A. Yes
B. No
C. Does not effect
D. Not Applicable

12. The date on which the dividend eligibility expires is called the ex-dividend date or simply the ex-date.

A. True
B. False

13. The record date is the cutoff date, established by the company to determine which shareholders are eligible to receive a dividend or distribution.

A. True
B. False

14. The advantage of stock dividends is that they can increase a shareholder's potential returns without them having to invest more money.

A. True
B. False

15. Scrip dividends are similar to stock dividends, but instead of receiving additional shares directly from the company, shareholders receive a scrip or voucher that can be exchanged for shares on the market.

A. True
B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | C | 2. | B | 3. | A | 4. | C | 5. | A |
| 6. | A | 7. | B | 8. | A | 9. | D | 10. | C |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | B |

## Review Questions

1. Explain briefly the different types of dividend policy in practice.
2. Elaborate different types of relevant and irrelevant theories of dividend.
3. Explain the implication of Walter and Gordon Model?
4. Explain the concept of dividend and dividend policy.
5. What are the various irrelevant theories of dividend?

## Further Readings

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- https://www.educba.com/types-of-dividends/

# Unit 11: Working Capital Management

CONTENTS

Objectives

Introduction

11.1 Definition& Features of Working Capital

11.2 Working Capital & its Management

11.3 Operating Cycle

11.4 Liquidity Vs Profitability

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- understand the meaning and concept of working capital
- Interpret the objectives of working capital management
- analyze how to calculate the operating cycle
- Interpret how to trade-off between liquidity and profitability.

## Introduction

Traditionally, working capital has been defined as the firm's investment in current assets. Current assets are required to be maintained for day-to-day operations of the firm. The assets keep changing from one form to another from stocks, receivables and cash.

Working capital decisions are of tremendous importance for any firm because:

- Such decisions affect the business's liquidity position.
- They provide a learning experience and require management interventions at regular intervals.

Working capital, alternatively referred to as current or circulating capital, is the investment made by firms in their current assets.

## 11.1 Definition& Features of Working Capital

Working Capital refers to that part of the firm's capital, which is required for financing short-term or current assets such as cash marketable securities, debtors, and inventories. Funds thus, invested in current assets keep revolving fast and are constantly converted into cash and this cash flows out again in exchange for other current assets. Working Capital is also known as revolving or circulating capital or short-term capital.

Current assets comprise all assets that the firm expects to convert into cash within the year. This includes

- Cash and bank balance (already in cash form),
- marketable securities,
- accounts receivable, and
- inventories. Option enables to

### Features of Working Capital Decisions

Working capital decisions are typically-

- Short-term financial decisions, i.e., working capital decisions typically affect the cash flows of the firm for a shorter time frame, extending up to a maximum of one year, normally.
- The concepts of risk and time value of money are less pertinent to working capital decision-making.
- They are modified from time to time unlike capital budgeting decisions, which are one-time.

The concept of working capital is dynamic as market conditions with respect to credit, stocking, etc. change more frequently.

### Concept of Working Capital

There are two possible interpretations of the working capital concept:

- Balance sheet concept
- Operating cycle concept

### Balance sheet concept

There are two interpretations of working capital under the balance sheet concept.

a. Excess of current assets over current liabilities or Net Working Capital

b. Gross Working Capital-total current assets.

#### Gross and Net Working Capital

Gross working capital (GWC) is defined as investment in current assets.

- Net working capital (NWC) is defined as the excess of current assets over current liabilities.
- Net Working Capital (NWC)
- Net Working capital (NWC) refers to the difference between current assets and current liabilities (CA – CL).
- This differential denotes that part of current assets is financed by long-term sources of financing.
- It is referred to as the accountant's definition of working capital.
- An increasing NWC indicates an improving liquidity position of the firm.

#### Gross and Net Working Capital

Both concepts (GWC and NWC) are equally important in the management of working capital, as both are related.

One is a measure of the level of current assets while the other measures the extent to which long-term sources of financing have been used to finance current assets.

Increasing GWC affects profitability adversely as more funds get tied up in current assets that have low/zero yield.

## 11.2 Working Capital & its Management

Working capital, or networking capital, is the difference between a company's current assets like cash and unpaid bills of customers and its current accountabilities, like cash and debts. Working capital assesses a company's liquidity, short term financial health and operational efficiency. If an account receivable does not surpass its current accountabilities, the company may struggle to grow or repay creditors and even declare bankruptcy.

Working capital is condemnatory to the health of any business, but effectively managing it is a balancing act. Companies must have good cash to cover both anticipated and unknown expenses while also using the financing available. This is accomplished through efficient accounts payable, receipts, inventory, and cash management

### Objectives of Working Capital Management

Working capital is an essential business tool because it symbolizes the availability of capital to make a payment, cover unforeseen expenses, and keep business running as usual. However, working capital management is not that simple, and a working capital management program may have multiple objectives, such as:

- Taking Care of Your Accounts Receivables
- Meeting Obligations
- Funding Flexibility
- Forecasting Cash Flow
- Dynamic Discounting

### Determinants of Working Capital

A lot of factors influence the total investment in the working capital of an enterprise. The determinants of working capital are given below:

### Nature of Business:

The requirement of working capital depends on the nature of the business-like manufacturing concerns require larger amounts of working capital in comparison to trading concerns.

### The volume of business:

Generally, the size of the company has a direct relation with the working capital needs. Big concerns have to keep higher working capital for investment in current assets and for paying current liabilities.

### Position of Business Cycle:

Working capital requirement will be higher during times of boom com-pared to the lean periods. It can be said that the volume of working capital is directly related to the volume of production.

### Production Policy:

If the production takes a longer period, there is a greater need for working capital compared to a shorter period of production.

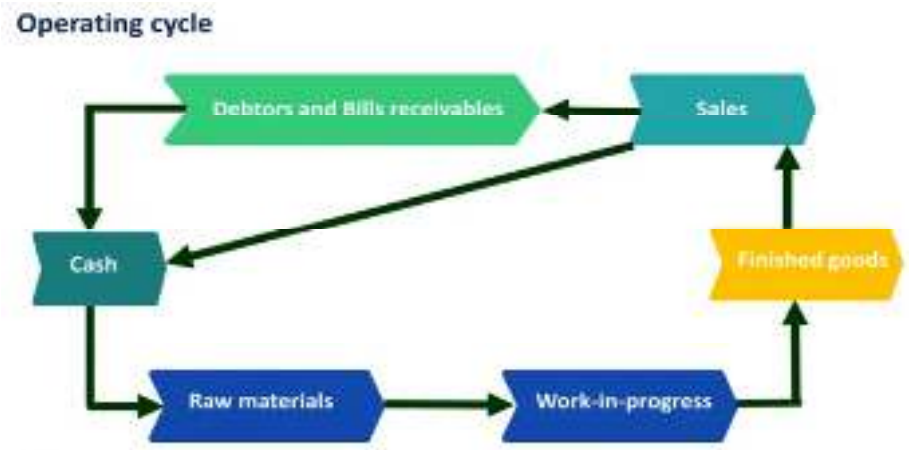
### Market Conditions:

If there is a high degree of competition in the market, a large inventory is essential to sell goods. Thus, it requires a high amount of working capital.

## 11.3 Operating Cycle

The operating cycle refers to the time elapsed between the procurement of raw materials and to the realization of cash from the finished goods. An operating cycle refers to the time it takes a company to buy goods, sell them, and receive cash from the sale of said goods. In other words, it's how long it takes a company to turn its inventories into cash.

The operating cycle refers to the time elapsed between the procurement of raw materials and to the realization of cash from the finished goods. An operating cycle refers to the time it takes a company to buy goods, sell them, and receive cash from the sale of said goods. In other words, it's how long it takes a company to turn its inventories into cash.




Example1

Let's imagine Amy is a retailer of apparel. Once she starts paying for the supplies to produce the various clothes, her firm's operational cycle will start. In this scenario, the operational cycle will not be complete till they make all pieces of clothing, sell them, and receive complete payment from the client.

Example 2

Let's imagine that Robert is a pastry shop owner who is attempting to gauge how efficiently things are going in his business. He will have to determine the operational cycle of his business to accomplish this. This indicates that the cycle would begin as soon as he starts paying for the items, supplies, and components necessary to manufacture different cakes and delicacies. The operational cycle of his pastry shop will not be complete unless all of his baked items have been purchased by consumers and he receives the complete payment.

The length of an operating cycle is dependent upon the industry. Understanding a company's operating cycle can help determine its financial health by giving it an idea of whether or not it'll be able to pay off any liabilities.

For example, if a business has a short operating cycle, this means it'll be receiving payment at a steady rate. The faster the company generates cash, the more it'll be able to pay off any outstanding debts or expand its business accordingly.

**Why is the Operating Cycle Important?**

The operating cycle is important because it can tell a business owner how quickly the company is able to sell inventory. Simply put, it determines the company's efficiency. There are a few key reasons why the operating cycle is so important.

**First,** the length of the operating cycle can impact a company's cash flow. The longer the cycle, the more time a company has to pay its bills and the less time it has to generate revenue. This can put a strain on a company's finances and make it difficult to invest in new initiatives or expand its business.

**Second,** the operating cycle can have a big impact on a company's profitability. The longer the cycle, the more time a company has to sell its products at a lower price in order to make back the money they've already spent. This decreases the profits and affects a company's ability to invest in new growth initiatives.

**Finally,** the operating cycle can also impact a company's relationships with its creditors. The longer the cycle, the higher the chance that a company will default on its debt payments. This can lead to higher interest rates and fees, and could ultimately damage a company's credit rating.

### Length of Operating Cycle

Operating cycle and its management assume significance in the context of working capital management. Larger the operating cycle, larger is the requirement of working capital.

Working capital is a function of

Length of operating/cash cycle: Longer the operating/cash cycle larger is working capital required

Level of operation: Higher the level of operation larger the working capital required.

The flow of a cash operating cycle is as follows:

- Obtaining the raw material
- Producing goods
- Having finished goods
- Having receivables from making a sale
- Obtaining cash (receiving payment from customers)

Formula for calculation of OPERATING CYCLE

RMCP= Average Raw Material Stock X 365 or 12

Total Raw Material Consumption

WPCP= Average Stock of WIP X 365 or 12

Total Cost of Production

FGCP= Average Stock of FG X365 or 12

Total Cost of Goods Sold

DCP= Average Debtors X365 or 12

Total Credit Sales

DP= Average Creditors X365 or 12

Total Credit Purchases

- OC = RMCP+WPCP+FGCP+DCP
- NOC= RMCP+WPCP+FGCP+DCP – DP
- Cash Cycle

= Operating Cycle – Credit period availed

**Ways to Improve Your Company's Operating Cycle**

Here are several tips to consider when attempting to shorten a company's operating cycle:

- Implement a stricter credit policy: Customers are more apt to pay for their purchases on time if companies have a stricter credit policy.
- Reduce the time period on payment terms: The quicker a company is able to collect accounts receivables, the shorter its operating cycle is likely to be.
- Quickly sell a company's inventory: The quicker a company sells its inventory, the shorter its operating cycle should be.

Capitalizing on your operational efficiency can have positive effects that are felt throughout the rest of your business.

What this means is that investing in operational process improvement can help reduce costs, increase speed, and improve quality, which will likely lead to increased profits at the end of the day.

Operational efficiency is also important because it reduces costs associated with things like inventory, accounts receivable, non-selling expenses (i.e., general administrative), payroll overhead, etc. What this means is that more money is left for shareholder value or reinvestment into the business.

## 11.4 Liquidity Vs Profitability

**Liquidity** - Having enough money in the form of cash, to meet your financial obligations. Alternatively, the ease with assets can be converted into cash.

**Profitability** – A measure of the amount by which a company`s revenue exceeds its relevant expenses.

**Liquidity Vs Profitability**-Liquidity and profitability are the two corners of a straight line. If you are on the line and move towards one, you automatically move away from the other. In other words, there is a trade – off between liquidity and profitability.

Management of liquidity and profitability has become a crucial issue in today's cut throat competition.

If the firm decreases its liquidity the profitability would be high. The results show that there is a negative relationship between profitability and liquidity. so it is essential for every firm to maintain an equilibrium between profitability and liquidity. All decisions of the financial manager are assumed to be geared to maximization of shareholders' wealth, and working capital decisions are no exception. Accordingly, the risk-return trade-off characterizes each of the working capital decisions. There are two types of risks inherent in working capital management, namely, liquidity risk and opportunity loss risk.

Liquidity risk is the non-availability of cash to pay a liability that falls due. It may happen only on certain days. Even so, it can cause not only a loss of reputation but also make the work condition unfavorable for getting the best terms on transactions with the trade creditors.

The other risk involved in working capital management is the risk of opportunity loss i.e. risk of having too little inventory to maintain production and sales, or the risk of not granting adequate credit for realizing the achievable level of sales.

In other words, it is the risk of not being able to produce more or sell more or both, and, therefore, not being able to earn the potential profit, because there were not enough funds to support higher inventory and book debts.

Thus, it would not be out of place to mention that it is only theoretical that the current assets could all take zero values. Indeed, it is neither practicable nor advisable.

In practice, all current assets take positive values because firms seek to reduce working capital risks. However, if more funds are deployed in current assets, the higher would be the cost of funds employed, and therefore, the lesser the profit. If liquidity goes up, profitability goes down. The risk-return trade-off involved in managing the firm's liquidity via investing in marketable securities is illustrated in the following example.

 Example: Firms A and B are identical in every respect but Firm B has invested Rs. 5,000 in marketable securities, which has been financed with equity. That is, the firm sold equity shares and raised Rs.5,000. Note that Firm A has a current ratio of 2.5 (reflecting net working capital of Rs. 15.000) and earns a 10 percent return on its total assets.

Firms A and B are identical in every respect but Firm B has invested Rs. 5,000 in marketable securities, which has been financed with equity. That is, the firm sold equity shares and raised Rs.5,000. Note that Firm A has a current ratio of 2.5 (reflecting net working capital of Rs. 15.000) and earns a 10 percent return on its total assets.

Firm B, with its larger investment in marketable securities, has a current ratio of 3 and has net working capital of Rs. 20,000. Since the marketable securities earn a return of only 9 percent before taxes (4.5 percent after taxes with a 50 percent tax rate), Firm B earns only 9.7 percent on its total investment.

Thus, investing in current assets, and in particular, in marketable securities, does have a favorable effect on firms' liquidity but it also has an unfavorable effect on the firm's rate of return earned on invested funds. The risk-return trade-off involved in holding more cash and marketable securities, therefore, is one of added liquidity versus reduced profitability. In the use of current versus long-term debt for financing working capital needs also the firm faces a risk-return trade-off.

The liquidity and profitability goals are contradictory to each other in most decisions that the finance manager takes. For example, the firm by following a lenient credit policy may be in a position to increase its sales, but its liquidity may tend to be worse.

In addition to this, referring to the risk-return theory there is a direct relationship between risk and return.

Thus, firms with high liquidity may have low risk and then low profitability. Conversely, a firm that has low liquidity may face high risk resulting in higher returns. Consequently, a firm is required to maintain a balance between liquidity and profitability in its day-to-day operations

## Summary

Working capital is one of the important factors for success of the organizations. The main classification of working capital is gross and net working capital with operating cycle concepts. Working capital is condemnatory to the health of any business, but effectively managing it is a balancing act. Companies must have good cash to cover both anticipated and unknown expenses while also using the financing available. This is accomplished through efficient accounts payable, receipts, inventory, and cash management

Multinational working capital management involves management of working capital across various branches of all locations.

## Keywords

Gross working capital: It is defined as investment in current assets.

Net working capital: It is defined as excess of current assets over current liabilities.

Operating cycle: It refers to the time elapsed between procurement of raw material to realization of cash from the finished goods.

Current assets: It comprise all assets that the firm expects to convert into cash within the year.

Profitability – It is a measure of the amount by which a company`s revenue exceeds its relevant expenses.

## Self Assessment

1. Working capital decisions are typically

A. Short-term financial decisions
B. Modified from time to time
C. Both of the above
D. None of the above

2. Seasonal industries may require a much ---------- level of working capital in peak seasons and a much ---------- requirement during slack seasons

A. Higher and Lower
B. Lower and Higher
C. Both of the above
D. None of the above

3. Excess of current assets over current liabilities is known as

A. Gross Working capital
B. Net Working capital
C. Get Working capital
D. Exotic option

4. Higher the level of operation ----------is the working capital required.

A. Larger
B. Smaller
C. Medium
D. None of the above

5. Net Working capital =CA – CL

A. Yes
B. No
C. Can't say
D. Not Applicable

6. Gross working capital (GWC) is defined as investment in current assets.

A. Yes
B. No

C. Can't say

D. Not Applicable

7. Working capital is a concept.

A. Dynamic

B. Static

C. Both of the above

D. Not Applicable

8. The concept of risk and return is not pertinent working capital.

A. True

B. False

C. Can't say

D. All facts are not given

9. Increasing GWC affects profitability ----------as more funds get tied up in current assets that have low/zero yield.

A. Positively

B. Adversely

C. No impact

D. None of the above

10. A measure of the amount by which a company`s revenue exceeds its relevant expenses.

A. Liquidity

B. Profitability

C. Both of the above

D. None of the above

11. - Having enough money in the form of cash, to meet your financial obligations

A. Liquidity

B. Profitability

C. Both of the above

D. None of the above

12. Current assets refer to those assets which in the ordinary course of business can be, or will be, converted into cash within one year without undergoing a diminution in value and without disrupting the operations of the firm.

A. True

B. False

13. Operating cycle refers to the time elapsed between procurement of raw material to realization of cash from the finished goods.

A. True

B. False

14. When there is short working capital there are chances that favorable market condition cannot be exploited by the organization.

A. True

B. False

15. The longer the length of operating cycle, the higher the requirement for working capital and vice versa.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | C | 2. | A | 3. | B | 4. | A | 5. | A |
| 6. | A | 7. | A | 8. | A | 9. | B | 10. | B |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | A |

## Review Questions

1. What do you mean by working capital?
2. Illustrate the concept of operating cycle and its significance in working capital.
3. Distinguish between gross and net working capital.
4. Differentiate between liquidity and profitability.

## Further Readings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# Unit 12: Inventory Management

CONTENTS

Objectives

Introduction

12.1 Inventory

12.2 Inventory Management Methods

12.3 Objectives of Inventory Management

12.4 Need for Inventory Management

12.5 Inventory Management Techniques

12.6 ABC Analysis

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- interpret the meaning of Inventory management.
- analyze various objectives of Inventory management.
- interpret the various inventory management techniques.
- analyze usefulness and limitations of Abc analysis.

## Introduction

The investment put in inventory is very high, especially for those businesses that deal in manufacturing, wholesale, and retail trade. The amount of investment might be sometimes more than the amount spent on other assets of the company.

Almost 90% of the working capital of a business is invested in inventories. The management should do proper planning on how to purchase, handle, store, and account with inventory management software.

## 12.1 Inventory

Inventory represents value locked up at both ends of the production system. Inventory refers to those goods which are held for eventual sale by the business enterprise. In other words, inventories are stocks of the product a firm is manufacturing for sale and components that make up the product. Thus, inventories form a link between the production and sale of the product. The definition of inventory is specific to the nature of business.

For a typical manufacturing firm inventory comprises of

Raw material- These are those goods which have been purchased and stored for future productions. These are the goods which have not yet been committed to production at all. Raw materials are unprocessed materials used to produce a good.

Examples of raw materials include:

- Aluminum and steel for the manufacture of cars
- Flour for bakeries that produce bread
- Crude oil held by refineries

Work-in-process-These are the goods which have been committed to production but the finished goods have not yet been produced. In other words, work-in-progress inventories refer to 'semi-manufactured products.' A half-assembled airliner or a partially completed yacht is often considered to be work-in-process inventory.

Finished goods-These are the goods after production process is complete. Say, these are final products of the production process ready for sale. In case of a wholesaler or retailer, inventories are generally referred to as 'merchandise inventory'. Common examples of merchandise include electronics, clothes, and cars held by retailers.

For a trading business it refers to the finished goods stock held for sale.

 **Example:** Consider a fashion retailer such as Zara, which operates on a seasonal schedule. Because of the fast fashion nature of turnover, Zara, like other fashion retailers is under pressure to sell inventory rapidly. Zara's merchandise is an example of inventory in the finished product stage. On the other hand, the fabric and other production materials are considered a raw material form of inventory.

### What is Inventory Management?

Inventory management refers to the process of ordering, storing, using, and selling a company's inventory. Inventory management is the entire process of managing inventories from raw materials to finished products. Inventory management tries to efficiently streamline inventories to avoid both gluts and shortages.

This includes the management of raw materials, components, and finished products, as well as warehousing and processing of such items. There are different types of inventory management, each with its pros and cons, depending on a company's needs.

Inventory management is about determining and maintaining an optimal level of inventory i.e. a level that is neither inadequate nor excessive.

The management of inventory assumes significance in the light of the magnitude of funds blocked in them.

### Motive for holding inventory

•**Transactionary Motive**:

According to this motive, an enterprise maintains inventories to avoid bottlenecks in its production and sales. By maintaining inventories; the business ensures that production is not interrupted for want of raw material, on the one hand, and sales also are not affected on account of non-availability of finished goods, on the other.

•**Precautionary Motive:**

Inventories are also held with a motive to have a cushion against unpredicted business. There may be a sudden and unexpected spurt in demand for finished goods at times. Similarly, there may be unforeseen slump in the supply of raw materials at some time. In both the cases, a prudent business would surely like to have some cushion to guard against the risk of such unpredictable changes.

•**Speculative Motive**

An enterprise may also hold inventories to take the advantages of price fluctuations. Suppose, if the prices of raw materials are to increase rather steeply, the enterprise would like to hold more inventories than required at lower prices.

**Deciding Optimal Level of Inventory**

Optimal level of inventory involves a trade-off between

- carrying costs and
- ordering costs.

At this trade-off point the total cost is minimum.

Carrying Costs are the cost of maintaining inventory in a company's warehouse. It is alternatively referred to as holding cost. They include both, costs associated with physically carrying inventories, such as

- warehouse rent,
- insurance of inventory and
- financial cost of funds tied up in the inventory i.e. the opportunity cost of alternative investments. Such costs have a positive correlation with the level of inventory, and hence are assumed to be a variable cost in inventory management. Ordering cost refer to the costs that are incurred at the time an order is placed. The examples include
- cost of processing orders,
- cost of follow up with the vendors,
- cost of receiving new shipment,
- cost incurred on handling the accounts payable invoice.

These costs do not vary with the size of the order but with the number of orders.

Total order costs decrease as the number of units ordered each time increases. With more units being ordered each time, the number of orders placed decreases.

Stock-out Costs

The stock-out costs involve implicit costs of lost sales due to shortage in the finished goods inventory. They are alternately called backorder cost. They include discrete costs such as lost profit due to loss of present sales,

- cost of replacing a specific piece of inventory, and
- certain intangible costs such as loss of goodwill.

Such costs vary inversely with the inventory. The relationship between stock-out costs and carrying costs of inventory determines whether a company should over - or under-produce.

## 12.2 Inventory Management Methods

Depending on the type of business or product being analyzed, a company will use various inventory management methods. Some of these management methods include just-in-time (JIT) manufacturing, materials requirement planning (MRP), economic order quantity (EOQ), and days sales of inventory (DSI). There are others, but these are the four most common methods used to analyze inventory.

**Just-in-Time Management (JIT)**

This manufacturing model originated in Japan in the 1960s and 1970s. Toyota Motor (TM) contributed the most to its development. The method allows companies to save significant amounts of money and reduce waste by keeping only the inventory they need to produce and sell products. This approach reduces storage and insurance costs, as well as the cost of liquidating or discarding excess inventory.

JIT inventory management can be risky. If demand unexpectedly spikes, the manufacturer may not be able to source the inventory it needs to meet that demand, damaging its reputation with

customers and driving business toward competitors. Even the smallest delays can be problematic; if a key input does not arrive "just in time," a bottleneck can result.

**Materials Requirement Planning (MRP)**

This inventory management method is sales-forecast dependent, meaning that manufacturers must have accurate sales records to enable accurate planning of inventory needs and to communicate those needs with materials suppliers in a timely manner.

**Example:** For example, a ski manufacturer using an MRP inventory system might ensure that materials such as plastic, fiberglass, wood, and aluminum are in stock based on forecasted orders. Inability to accurately forecast sales and plan inventory acquisitions results in a manufacturer's inability to fulfill orders.

## Economic Order Quantity (EOQ)

This model is used in inventory management by calculating the number of units a company should add to its inventory with each batch order to reduce the total costs of its inventory while assuming constant consumer demand. The costs of inventory in the model include holding and setup costs. The EOQ model seeks to ensure that the right amount of inventory is ordered per batch so a company does not have to make orders too frequently and there is not an excess of inventory sitting on hand. It assumes that there is a trade-off between inventory holding costs and inventory setup costs, and total inventory costs are minimized when both setup costs and holding costs are minimized. The two questions that the inventory theory tries to address are:

- How much should be ordered?
- When should it be ordered?

The EOQ model of inventory management provides answer to the first question.

Economic Order Quantity (EOQ) refers to the lot size of inventory that is most economical to procure and hold.

**Example:** A unit manufacturing plastic container consumes 1350 units of molded plastic uniformly through the month. The current cost of acquisition is Rs. 20 per unit and the carrying cost for the firm, 30% on average based on recent data available, is not likely to change in the coming months. The firm has to bear a cost of Rs. 2400 every time it places an order. Compute the optimal inventory level for the year ahead using the EOQ model.

$$EOQ\ (Q) = \sqrt{\frac{2DO}{C}}$$

$$(Q) = \sqrt{\frac{2 \times 16200 \times 2400}{6}}$$

1350 per month × 12= 16200, i.e., annual demand)

Thus, the firm will be able to minimize its total cost if it places orders for 3600 units (the EOQ).

4. Days Sales of Inventory (DSI)

This financial ratio indicates the average time in days that a company takes to turn its inventory, including goods that are a work in progress, into sales. DSI is also known as the average age of inventory, days inventory outstanding (DIO), days in inventory (DII), days sales in inventory or days inventory and is interpreted in multiple ways.

Indicating the liquidity of the inventory, the figure represents how many days a company's current stock of inventory will last. Generally, a lower DSI is preferred as it indicates a shorter duration to clear off the inventory, though the average DSI varies from one industry to another. Inventory management is a crucial part of business operations. Proper inventory management depends on the type of business and what type of product it sells. There may not be one perfect type of inventory management, because there are pros and cons to each. But taking advantage of the most fitting type of inventory management style can go a long way.

Inventory management is a very important function that determines the health of the supply chain as well as the impacts the financial health of the balance sheet. Every organization constantly strives to maintain optimum inventory to be able to meet its requirements and avoid over or under inventory that can impact the financial figures.

## 12.3 Objectives of Inventory Management

The main aim of an inventory management system is to keep the stock in such a way that it is neither overstock nor understock. The overstock condition will reduce the other production processes and understock will lead to stoppage of work. The objectives of inventory management are operational and financial. In operational, materials and stock should be available in sufficient amount whereas, in functional, the minimum working capital should be locked in.

The objectives of inventory management are as follows:

1. **Material Availability**

The primary goal of inventory management is to ensure that all kinds of materials are accessible whenever the production department needs them, ensuring that production is not stopped or slowed down due to a lack of resources.

It is thus prudent to maintain a buffer stock of all critical goods in order to keep production on track.

**2. Better Level of Customer Service**

It is impossible to fulfil a received order if you do not have an accurate count of the items in your possession. In order to meet requests, you must have accessible the appropriate goods at the right time. Otherwise, you may end yourself in a state of confusion.

To fulfill the needs for quality products, the concern must maintain an adequate supply of completed items to guarantee that customers' orders are fulfilled. It will increase the company's brand image.

3. **Keeping Wastage and Losses to a Minimum**

Inventory management is very successful in mitigating losses. When there is no monitoring system in place, it is very normal for an item to be squandered or misplaced.

Keeping track of the goods reduces the likelihood of loss, if not completely eliminates it.

Normal or uncontrolled waste should not be allowed to exceed a permissible level, whereas abnormal and unmanageable wastage should be carefully regulated.

**4. Maintaining Sufficient Stock**

Supplies should be easily available for all stages of production, from raw materials to completed goods. You need to make sure you have enough of the necessary material on hand to meet client demand without having to cut corners.

The manufacturing department no longer has to be concerned about running out of raw materials or products because of the steady supply.

**5. Cost-Effective Storage**

It eliminates the possibility of keeping extra stock, since the needs are predetermined, thus eliminating needless storage expenses.

**6. Cost Value of Inventories Can Be Reduced**

When purchasing products or stock on a regular basis, an organization may negotiate discounts and other incentives to lower the overall cost.

**7. Optimizing Product Sales**

Additionally, inventory management may be used to determine the volume of product sales. Sales is one of the most essential and crucial phases of the whole process.

Understanding the present condition as well as making future assumptions from the analysis are two key elements in making a successful prediction. You can identify things that move at a slower rate, and remove them.

There are two main objectives of inventory management:

- **Making Adequate Availability of Inventories:**

The main objective of inventory management is to ensure the availability of inventories as per requirements all the times. This is because both shortage and surplus of inventories prove costly to the organization. In case of shortage of availability in inventories, the manufacturing wheel comes to a grinding halt. The consequence is either less production or no production.

The either case results in less sale to less revenue to less profit or more loss. On the other hand, surplus in inventories means lying inventories idle for some time implying cash blocked in inventories.

Speaking alternatively, this also means that had the organization invested money blocked in inventories invested elsewhere in the business, it would have earned a certain return to the organization.

- **Minimizing Costs and Investments in Inventories:**

Closely related to the above objective is to minimize both costs as well as volume of investment in inventories in the organization. This is achieved mainly by ensuring required volume of inventories in the organization all the times.

This benefits organization mainly in two ways. One, cash is not blocked in idle inventories which can be invested elsewhere to earn some return. Second, it will reduce the carrying costs which, in turn, will increase profits. In lump sum, inventory management, if done properly, can bring down costs and increase the revenue of a firm.

A key step in monitoring the supply of goods is inventory management. It's good for businesses since it helps them be more lucrative because the premise is to keep operating expenses low. You will learn about the mission of inventory management in detail in this post. A high place in the structure of working capital is held by inventory management. The aggregate of all operations related to acquiring, storing, disposing, or using inventory may be referred to as inventory management. Inventory is a current asset.

## 12.4 Need for Inventory Management

Inventory refers to either saleable products or the raw materials available in hand for manufacturing products for sale. Inventory management is essential for earning profits and keeping the customers happy and satisfied.

It can help you keep track of all your supplies and determine the exact prices. It can also help you manage sudden changes in demand without sacrificing customer experience or product quality. This is especially important for brands looking to become a more customer-centric organization

The key to proper inventory management is knowing the right quantity and ordering time of stock. Inventory management is a three-step process-

- Buying or manufacturing products
- Storing the products/inventory

- Selling the finished products for earning profit.

Nearly 81% of consumers experienced an "out-of-stock" situation in the past 12 months, resulting in lost sales for retailers and lots of disappointment for in-store shoppers. Globally, retailers recorded losses of a whopping $1.75 trillion due to mismanaged inventory.

This optimum level depends on the following costs:

**Ordering/Acquisition/Set-up Costs:** These are the variable costs of placing an order for the goods. Orders are placed by the firm with suppliers to replenish inventory of raw materials. Ordering costs include the cost of: requesting, purchasing, ordering, transporting, receiving, inspecting and storing. The ordering costs vary in proportion to the number of orders placed. They also include clerical costs and stationery costs

**Carrying Costs:** The cost of holding inventory may be divided into: Cost of Storing the Inventory, and Opportunity Cost of Funds. The level of inventory and the carrying costs are positively related and move in the same direction, i.e., if inventory level decreases, the carrying costs also decrease, and vice versa.

**6 KPIs for inventory management**

KPIs, or key performance indicators, are essential to track for managing inventory well.:

**Inventory turnover rate**

This refers to stock rotation, the measurement of the number of times that inventory is sold and replaced within a period of time.

**Lead time**

The amount of time between when a reorder point triggers a purchase order and when your supplier delivers the products to you.

**Carrying costs of inventory**

This includes all overhead costs incurred from holding inventory, such as capital expenses and storage costs, as well as expenses associated with inventory service and risk.

**Average order value**

This is the average amount of revenue that is generated from each purchase order.

**Days to sell**

This measures how long it takes, on average, to sell one unit of inventory once it is received. This is important to consider because it can help manage expectations for future demand for a product.

**Stockouts**

This measures how often a product isn't available for purchase because it is out of stock. This is important to consider because it can impact customer satisfaction. If a product is frequently out of stock, customers may start to look for a similar product from a different brand. Each of these KPIs will give you insights into different aspects of your inventory management and help you to identify areas that need improvement. You can also use these KPIs to compare your performance with other businesses in your industry.

These KPIs provide both invaluable insight into a business' current operations and help guide inventory managers' decisions around future investments or changes in production processes as necessary. Inventory management facilitates the smooth functioning of your business and enhances sales, promotes cost-effectiveness, and improves customer experience.

Listed below are some of the reasons why businesses need inventory management:

**Managing Finances**

Inventory management helps businesses understand which products are more valuable in sales and earning profits. This allows businesses to eliminate unnecessary capital blockage by strategically planning their future inventory orders.

**Tracking Inventory**

Inventory management provides a complete detailing of the inventory and its location. It is especially useful in assigning distribution channels to the inventory. Inventory management eases the process of managing more than one shop/store or warehouse.

**Improve your delivery**

Late delivery due to stock-outs is bound to give you a bad reputation. For tracking, it is important for you to know when the vendor is shipping inventory and when it will arrive. This helps you manage customer expectations by delivery as, when and where they want.

**Managing Time and Effort**

Proper inventory management leads to a well-arranged warehouse or store. This makes tracking products in hand and products on order easy and less time-consuming. It helps in increasing productivity and efficiency.

**Predicting Future Sales**

Inventory management helps in predicting future sales based on past transaction data. This helps businesses to prepare well for the future and meet customer expectations.

**Advantage of price gain**

Prices fluctuate due to changes in supply and demand factors when prices rise, the firms holding

inventories will enjoy sudden profits.

**Scarcity**

At times raw materials may become scarce due to sudden changes in supply or power failures. In these situations, inventories holding would enable the firms.

**Enhancing Customer Loyalty**

Effective inventory management warns businesses about deteriorating inventory from beforehand. This ensures that customers are only provided with top-notch quality products. Enhanced customer experience leads to repeat customers.

**The Future of Inventory Management**

Globalization, technology and empowered consumers are changing the way businesses manage inventory. Supply chain operators will use technologies that provide significant insights into how supply chain performance can be improved.

They'll anticipate anomalies in logistics costs and performance before they occur and have insights into where automation can deliver significant scale advantages.

In the future, these technologies will continue to transform inventory management:

**Artificial intelligence**

Intelligent, self-correcting AI will make inventory monitoring more accurate and reduce material waste.

**Internet of Things**

Data from IoT sensors will provide insight into inventory location and status.

**Quantum computing**

Unprecedented computational power will solve previously unsolvable problems.

**Intelligent Order Management**

Supply chains will master inventory visibility with improved demand forecasting and automation.

**Blockchain**

Disparate parties will be connected through a unified and immutable record of all transactions.

Today, Stock management has become vital for the survival of an organization. If you don't have good control over your inventory, the day is not far when you will lose control of your profits.

It is crucial for an organization today to understand its inventory to achieve both efficient and fast operations, that too, at an affordable cost.

Effective management of inventory helps in reducing costs which further keeps accounts and finances in check.

From a customer's point of view, it helps you to provide better customer services through fast delivery and low shipping charges, hence, meeting customer expectations.

## 12.5 Inventory Management Techniques

If you are establishing a new inventory management process or looking to improve your existing one, here are seven inventory management techniques that you may find helpful.

### 1. FIFO vs. LIFO

First in, first out (FIFO) and last in, first out (LIFO) are accounting methods (also known as "costing") based on how products move through your warehouse. FIFO is a useful system for businesses that sell the oldest inventory first. If it was first into the warehouse, it should also be first out the door when someone orders that product. This keeps inventory as fresh as possible, which is essential for perishable or expiring goods.

LIFO is the opposite of FIFO, ensuring that the most recently received inventory is the first out the door. FIFO is the default costing method, but LIFO makes sense for businesses that don't ship perishable goods, because the way this accounting method reports income has potential tax advantages. By its very nature, the "First-In, First-Out" method is easier to understand and implement. Most businesses offload oldest products first anyway – since older inventory might become obsolete and lose value. As such, FIFO is just following that natural flow of inventory, meaning less chance of mistakes when it comes to bookkeeping.

LIFO allows a business to use the most recent inventory costs first. These costs are typically higher than what it cost previously to produce or acquire older inventory. As such, profits are lower. Although this may mean less tax for a company to pay under LIFO, it also means stated profits with FIFO are much more accurate because older inventory reflects the actual costs of that inventory. If profits are naturally high under FIFO, then the company becomes that much more attractive to investors.

### 2. Demand Forecasting

Demand forecasting (or sales projections) helps you understand how much of each product you need to have on hand at all times to meet customer demand.

For established businesses, demand forecasting should be based on historical sales data. Newer businesses might need to rely on assumptions and industry data until they have a sales history of their own. There are two types of forecasting:

- **Based on Economy**

The types of forecasting based on the economy:

Macro-level forecasting: It deals with the general economic environment relating to the economy as measured by the Index of Industrial Production (IIP), national income and general level of employment, etc. Industry level forecasting: Industry level forecasting deals with the demand for the industry's products as a whole. For example, demand for cement in India, demand for clothes in India, etc.

Firm-level forecasting: It means forecasting the demand for a particular firm's product. For example, demand for Birla cement, demand for Raymond clothes, etc.

- **Based on the Time Period**

Forecasting based on time may be short-term forecasting and long-term forecasting

Short-term forecasting: It covers a short period of time, depending upon the nature of the industry. It is done generally for six months or less than one year. Short-term forecasting is generally useful in tactical decisions.

Long-term forecasting casting: Long-term forecasts are for a longer period of time say, two to five years or more. It gives information for major strategic decisions of the firm. For example, epansion of plant capacity, opening a new unit of business, etc.

### 3. Minimum Order Quantity vs. Economic Order Quantity

Minimum order quantity (MOQ) and economic order quantity (EOQ) are two methods a business can use to determine when to reorder products. MOQ focuses on maintaining the minimum possible amount of each product type a seller is willing to fulfill. High-ticket items tend to have a lower MOQ, while low-cost items often have a higher MOQ. It is important to take this into account when reordering products from suppliers; consider a supplier's MOQ for a particular product against your own sales projections.

The EOQ method is more common for manufacturers, which have to account for variable costs like raw materials, production and fluctuating demand. It is designed for companies to keep costs down by purchasing the greatest amount possible of multiple product units to minimize the need to reorder items individually. The goal of the EOQ formula is to identify the optimal number of product units to order. If achieved, a company can minimize its costs for buying, delivering, and storing units. The EOQ formula can be modified to determine different production levels or order intervals, and corporations with large supply chains and high variable costs use an algorithm in their computer software to determine EOQ.

The EOQ formula assumes that consumer demand is constant.

The calculation also assumes that both ordering and holding costs remain constant. This fact makes it difficult or impossible for the formula to account for business events such as changing consumer demand, seasonal changes in inventory costs, lost sales revenue due to inventory shortages, or purchase discounts a company might realize for buying inventory in larger quantities.

### 4. ABC Analysis

An ABC analysis helps you understand which products are most profitable and which are most costly. As the name suggests, it breaks products down into three categories:

- These products are the most valuable and cost the least to store long term. These products co tribute greatly to a business's profitability.
- These are midrange products that are important sales to make, but not as big tickets as products in the A category.
- These tend to be small-ticket items with high turnover. Individual sales of these products are not as important to a business as items in the A or B categories, but high volumes of C product sales are critical to profitability.

### 5. Safety Stock Inventory

Safety stock inventory is tied to your sales projections and influences your reorder quantities. It is especially important for your bestselling or essential products. Safety stock is the extra inventory you order beyond your expected demand. While over-ordering is never advisable, it is useful to have a few more units than you expect you'll need, especially if you anticipate that item will continue to be a hot seller.

### 6. Dropshipping

Drop shipping is the process of receiving an order from a customer and having your supplier ship the products directly to the customer. This cuts out the need for a storage facility or for keeping any inventory on hand. It is best reserved for rare orders or items you cannot accommodate in your warehouse, because it means your customer's satisfaction is in the hands of your supplier rather than your own business.

### 7. Cross-docking

Cross-docking is a method that prioritizes efficiency. A delivery truck will unload at your facility, directly into trucks shipping your sales out to customers. This eliminates the need to bring new items into your storage facility and bypasses your inventory management process. Instead, the items go right out as you receive them. This method is best for items planned for "just in time" shipping.

### 8. Bulk Shipment

Bulk shipments are a cost-efficient way of shipping in which businesses palletize inventory to ship in sizeable volumes. Large quantities of goods are transported in a single shipment, typically using specialized equipment such as tankers, hopper cars, or containers. This inventory management type is used to reduce transportation costs, minimize handling, and improve efficiency in the supply chain. Bulk shipping is typically used when the inventory types are similar and require no additional packaging or processing before delivery. It is commonly used in agriculture, mining, chemical manufacturing, and petroleum refining, where large quantities of raw materials or finished products must be transported over long distances.

Bulk shipment is most commonly used by major companies that require large quantities of raw materials or produce large volumes of finished goods. The disadvantages of bulk shipment inventory management include higher upfront costs, limited flexibility, and a higher risk of product damage.

### 9. Perpetual Inventory System

Perpetual inventory management continuously tracks inventory levels in real-time, making it ideal for companies with high volume or fast-moving goods. This inventory control system automatically updates inventory counts using a point-of-sale (POS) system. In addition, perpetual inventory systems are ideal for retail businesses selling goods with short shelf life, such as food, fashion, or electronics.

The advantages of perpetual inventory management are that it provides accurate inventory counts, and allows for real-time tracking of stock levels. The disadvantages are that it requires significant setup and ongoing costs to maintain and may not be suitable for small businesses with low sales volumes or limited resources. Large retail companies like Walmart or Amazon use the perpetual inventory management method of inventory control.

### 10. Periodic Inventory System

A periodic inventory system requires physical counts of inventory at regular intervals. This system is more suitable for smaller businesses with lower sales volumes or companies with limited products. This method typically involves taking a physical inventory count at the end of each accounting period and then adjusting the inventory balance in the accounting system. Periodic inventory systems' advantages are that it's simple and inexpensive. However, the disadvantages are that it's slow, labor intensive, and can lead to more inaccuracies.

In contrast to the perpetual inventory system, the periodic inventory system is a good fit for small businesses.

### 11. Vendor Managed Inventory (VMI)

VMI refers to an arrangement between the buyer and the supplier of a product. As per the arrangement, the responsibility to monitor and replenish the inventory is that of the vendor and not of the buyer in the VMI. The buyer passes on selected information regarding the level of inventory in the buyer's stock. The supplier takes full responsibility for maintaining an agreed inventory.

 Example of VMI

While talking about the companies and businesses using vendor managed inventory systems, a popular name that always pops up is Walmart. The brand has a VMI system, so its suppliers or vendors are held responsible and accountable for taking care of their inventory at Walmart's designated warehouses.

### 12. Just-in-time (JIT)

It is a Japanese concept of an inventory management. The underlying philosophy of JIT is to reduce the level of inventory to zero so that the firm is able to cut down its carrying cost. The focus of JIT is on shedding the excess inventory: the safety stock that does not contribute to the production process. JIT inventory system is all about having 'the right material, at the right time, at the right place, and in the exact amount'.

#### Importance of just-in-time

- Reduces inventory waste
- Decreases warehouse holding cost
- Gives the manufacturer more control
- Local sourcing
- Smaller investments

Therefore, just in time saves you a lot of costs which would otherwise be tied up as inventory holding cost. At the same time just in time should be executed carefully so that your business does not face loss in times of unpredictable events. Inventory management is not the most glamorous aspect of business, but it is critical to a business's profitability and scalability. Without an efficient inventory management process, businesses could find themselves wasting money on products they can't sell, running out of stock and causing fulfillment delays that upset customers.

As a result, these businesses could lose valuable items, which immediately eats into profit margins. An effective inventory management process can prevent these issues and offer the following benefits.

## 12.6 ABC Analysis

ABC analysis is an inventory management technique that determines the value of inventory items based on their importance to the business. ABC ranks items on demand, cost and risk data, and inventory mangers group items into classes based on those criteria. This helps business leaders understand which products or services are most critical to the financial success of their organization.

The most important stock keeping units (SKUs), based on either sales volume or profitability, are "Class A" items, the next-most important are Class B and the least important are Class C.

- **Category A**: Items in this category are essential and, sometimes, business-critical for a company. Typically, these items either have a high value or a large market. Hence, this category requires frequent value analysis

- **Category B**: Items in this category are important, but not as important as those in category A. Typically, these items constitute mid-range in inventory value and have relatively lesser market demand.
- **Category C**: Items in this category are marginally important and constitute a tiny portion of the overall inventory value.

### How ABC Analysis Relates to the Pareto Principle

The Pareto Principle says that most results come from only 20% of efforts or causes in any system. Based on Pareto's 80/20 rule, ABC analysis identifies the 20% of goods that deliver about 80% of the value. Therefore, most businesses have a small number of "A" items, a slightly larger group of B products and a big group of C goods, a category that that defines the majority of items.

Use this formula for ABC inventory analysis:

Inventory Value = Item Cost * Consumption Volume

Item % of Total Inventory Value = Item's Inventory Value / Total Inventory Values

 Example

Let's say you run an e-commerce women's accessories boutique. You just had a good quarter, and you finally have the time to analyze inventory. As depicted below, earrings are your most popular items, shoes are almost as popular, but neither are pricey, so they don't generate much revenue. However, your designer purses make up 70% of your revenue, even though you only sold 13 of them.

It's clear purses should be in category A, shoes in category B, and earrings in category C.

### How to Perform ABC Analysis

A thorough ABC analysis begins with identifying the objective you're trying to reach. Once you have that, collect the necessary information to categorize the items. Once the classes are in place, closely track and make decisions based on the resulting data.

To perform an ABC analysis step-by-step:

- Identify the Objective: An ABC analysis can help you meet one of two targets: lower procurement costs or raise cash flow by optimizing inventory levels of the right items based on customer sales or production.
- Collect Data: The most common data to collect is the annual spend on each item. This data is in raw purchase dollars. If it's easy to calculate, you can gather the weighted cost, including gross profit margin, ordering and carrying cost data.
- Sort by Decreasing Order of Impact: Use the ABC analysis formula to rank each inventory item's order by cost — from highest to lowest impact.
- Calculate the Sales Impact: For each inventory item, calculate its impact on sales as a percentage by dividing the annual item cost by the aggregated total of all items spent. This number is the percent, or fraction, that you will use to compare items in the list.

### How ABC Analysis Simplifies Work for Inventory Managers?

Inventory managers are always looking for ways to improve pricing and quality or to achieve greater efficiencies. In light of that goal, they may use the ABC technique, sometimes called the "always better control" method. They can use the analysis to focus their time and effort primarily on Class A inventory and less on B and C class products.

For example, inventory managers will use ABC analysis to check the purchase orders of the highest value (Class A items) products first, since these generate the most revenue.

### Why Use ABC Analysis?

Increased Inventory Optimization: The analysis identifies the products that are in demand. A company can then use its precious warehouse space to adequately stock those goods and maintain lower stock levels for Class B or C items.

- **Improved Inventory Forecasting:** Monitoring and collecting data about products that have high customer demand can increase the accuracy of sales forecasting. Managers can use this information to set inventory levels and prices to increase overall revenue for the company.
- **Better Pricing:** A surge in sales for a specific item implies demand is increasing and a price increase may be reasonable, which improves profitability.
- **Informed Supplier Negotiations:** Since companies earn 70% to 80% of their revenue on Class A items, it makes sense to negotiate better terms with suppliers for those items. If the supplier will not agree to lower costs, try negotiating post-purchase services, down payment reductions, free shipping or other cost savings.
- **Strategic Resource Allocation:** ABC analysis is a way to continuously evaluate resource allocation to ensure that Class A items align with customer demand. When demand lowers, reclassify the item to make better use of personnel, time and space for the new Class A products.
- **Better Customer Service:** Service levels depend on many factors, like quantity sold, item cost and profit margins. Once you determine the most profitable items, offer higher service levels for those items.
- **Better Product Life Cycle** Management: Insights into where a product is in its life cycle (launch, growth, maturity or decline) are critical for forecasting demand and stocking inventory levels appropriately.
- **Control Over High-Cost Items:** Class A inventory is closely tied to a company's success. Prioritize monitoring demand and maintaining healthy stock levels, so there's always enough of the key products on hand.
- **Sensible Stock Turnover Rate:** Maintain the stock turnover rate at appropriate levels through methodical inventory control and data capture.
- **Reduced Storage Expenses:** By carrying the correct proportion of stock based on A, B or C classes, you can reduce the inventory carrying costs that come with holding excess inventory

### ABC Analysis Limitations

ABC analysis, despite all its benefits for inventory maintenance and management, is not a one-size-fits-all inventory management solution. Every organization has specific customer demand patterns, classifications, systems and other issues that affect the usefulness of an ABC analysis.

- **Parameter Instability:** ABC analysis often results in managers assigning up to 50% of items to a new category every quarter or year. Often, companies are not aware of the changes until there is a problem with demand, and the need to reassess may take up valuable time and jeopardize customer satisfaction. Limited Pattern Consideration: The standard ABC method will not account for factors like new product introductions or product seasonality. For example, a new product may have low sales volume because it has no buying history. ABC analysis has a somewhat static perspective on demand and will generate inventory inefficiencies whenever demand is shifting or unclear.

- **Low Information Extraction:** ABC class information may not provide all the statistical data or detail needed to make informed, strategic management decisions.
- **High Resource Consumption:** Giving disproportionate weight to trivial issues is known as bike shedding, which can be an unfortunate consequence of ABC analysis. Since ABC analysis is easy to grasp, staff may inject their opinions or request their own variants making ABC analysis a resource-consuming process rather than a time-saving tool.
- **Value Blindness:** ABC analysis ascribes product importance based on revenue or frequency of use, but some items may not hold to this paradigm. For example, a retail display item may rarely sell but may attract a lot of customers (who will buy other products) based on its novelty. In aerospace, a specific part for a plane may not be used often and have little market value, but it may be a fundamental safety function.
- **System Incompatibility:** ABC inventory analysis conflicts with traditional costing systems and is out of compliance with generally accepted accounting principles (GAAP) requirements. If you must run multiple costing systems, labor costs will rise alongside inefficiency.
- **Undersupply or Oversupply Issues:** One ABC analysis disadvantage is it looks at dollar-based values, rather than the volume that cycles through inventory, so there is a risk of running out of Class B or C items. The opposite can occur, too. You may have excess low-class items that accumulate in inventory if you reorder them without regular reviews.
- **Loss Risk:** Just because B and C items do not have as high a value as Class A products does not mean they no value. One of the limitations of ABC analysis is that excess stocks are always in jeopardy of obsolescence or damage. Therefore, the inventory that habitually goes uncounted or unmonitored may be subject to theft.
- **Mandatory Standardization:** The ABC method is only successful if every item is subject to the standardization of materials, which includes how they are named, stored, and consistently rated and monitored.
- **Arbitrary Categorization:** Without preset boundaries or agreed-upon standards for each category, classifying goods depends on the manager's professional judgment. So this can be a relatively subjective process.
- **Business Limitations:** ABC analysis is not useful for companies that have an equable annual consumption value of inventory items by type. For instance, a company that sells the same version of an item like candy, nails or socks, may not be able to sort stock based on the Pareto Principle.
- **High Resource Consumption:** Companies with a significant number of inventory items will have to hire additional staff or buy special equipment to control inventory using ABC categorization.

The ABC analysis finds wide application in supply chain management and inventory management, where it used as a cycle counting system. It helps companies in managing their working capital requirement as well as holding costs Further, it helps work out appropriate inventory rules for each item category, such as different safety stock levels and re-ordering points.

## Summary

Inventory represents value locked up at both ends of the production system. Inventory refers to those goods which are held for eventual sale by the business enterprise. Inventory should not be excessive nor deficient for the profitability of the organization. The motive for holding inventory is transaction, precautionary and speculative motive. There are several techniques for effective management of inventory. ABC analysis is an inventory management technique that determines the value of inventory items based on their importance to the business. It helps business to

understand which products or services are most critical to the financial success of their organization.

## Keywords

Inventory management: It refers to the process of ordering, storing, using, and selling a company's inventory. It is the entire process of managing inventories from raw materials to finished products.

Carrying Costs: It is the cost of maintaining inventory in a company's warehouse. It is alternatively referred to as holding cost.

EOQ: EOQ ensure that the right amount of inventory to minimize inventory and ordering cost.

Stock-out Costs: It is a cost of lost sales due to shortage in the finished goods inventory.

ABC analysis: It is an inventory management technique that determines the value of inventory items based on their importance to the business.

LIFO: It is the opposite of FIFO, ensuring that the most recently received inventory is the first out the door.

## Self Assessment

1. ABC Analysis is used in

A. Inventory Management
B. Safety Management
C. Receivable Management
D. People Management

2. If A = Annual Requirement, O = Order Cost and C = Carrying Cost per unit per annum, then EOQ

A. (2AO/C) 2
B. Square root of [2AO] /C
C. 2A÷OC
D. Not Applicable

3. ----------refers to the process of ordering, storing, using, and selling a company's inventory. Inventory management is the entire process of managing inventories from raw materials to finished products

A. Inventory management
B. Factory management
C. Both (a) and (b)
D. Neither (a) nor (b)

4. Which of the following is motive to hold inventory for unforeseen events?

A. Transaction Motive
B. Precautionary Motive
C. Capital expenditure Motive
D. All of the above

5. Which of the following is motive to hold inventory for doing transaction?

A. Transaction Motive
B. Precautionary Motive
C. Capital expenditure Motive
D. All of the above

6. ---------- is motive to hold inventory for investment in profit making opportunities as and when arise.

A. Transaction Motive
B. Precautionary Motive
C. Speculative Motive
D. All of the above

7. ----------are the cost of maintaining inventory in a company's warehouse.

A. Carrying Costs
B. Ordering Costs
C. Both a and b
D. None of the above

8. ----------are the cost required for ordering the stock for the organization.

A. Carrying Costs
B. Ordering Costs
C. Both a and b
D. None of the above

9.---------- refers to the lot size of inventory that is most economical to procure and hold.

A. Economic Order Quantity (EOQ)
B. Social Order Quantity (SOQ)
C. All facts are not given
D. Not Applicable

10. FIFO is a useful system for businesses that sell the ----------inventory first.

A. Oldest
B. Newest
C. All facts are not given
D. Not Applicable

11. LIFO is a useful system for businesses that sell the ----------inventory first. .

A. Oldest
B. Newest
C. All facts are not given
D. Not Applicable

12. The stock-out costs involve implicit costs of lost sales due to shortage in the finished goods inventory.

A. True

B. False

13. JIT approach reduces storage and insurance costs, as well as the cost of liquidating or discarding excess inventory.

A. True

B. False

14. The EOQ model seeks to ensure that the right amount of inventory is ordered per batch so a company does not have to make orders too frequently and there is not an excess of inventory sitting on hand.

A. True

B. False

15. The management of inventory assumes significance in the light of the magnitude of funds blocked in them.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | A | 2. | B | 3. | A | 4. | B | 5. | A |
| 6. | C | 7. | A | 8. | B | 9. | A | 10. | A |
| 11. | B | 12. | A | 13. | A | 14. | A | 15. | A |

## Review Questions

1. Discuss in brief concept of Inventory Management.
2. Explain in brief motives for holding inventory in the organization.
3. Distinguish between ordering and holding cost.
4. Explain in brief about various inventory management techniques.
5. What do you mean by ABC analysis?

## Further Readings

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## Web Links

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# Unit 13 : Cash Management

CONTENTS

Objectives

Introduction

13.1 Meaning of Cash

13.2 Cash Management

13.3 Importance &Objectives of Cash Management

13.4 Need of Cash Management

13.5 Cash Collection Techniques

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- Understand the concept of cash& cash management.
- Analyze various motives of cash Management.
- Interpret the objectives of Cash Management.
- Interpret the aspects of cash collection techniques in cash management.

## Introduction

Cash is lifeblood of any firm needed to acquire supply resources, equipment and other assets used in generating the products and services. Although cash is only 1-3% of total current assets but its management is very important. Bear in mind that more businesses fail for lack of cash than for want of profit.

Cash management is the process of successfully taking care of cash inflows and outflows. It's a process that's important to individuals and also for businesses. Being able to do manage cash efficiently means that the entity can keep money in its reserves, pay off its financial obligations, and invest for future development.

## 13.1 Meaning of Cash

Cash is legal tender—currency or coins—that can be used to exchange goods, debt, or services. Sometimes it also includes the value of assets that can be easily converted into cash immediately, as reported by a company. Cash is also known as money, in physical form. Cash, in a corporate setting, usually includes bank accounts and marketable securities, such as government bonds and banker's acceptances.

Although cash typically refers to money in hand, the term can also be used to indicate money in banking accounts, checks, or any other form of currency that is easily accessible and can be quickly turned into physical cash.

### Historical Forms of Cash

Cash has been used as long as goods and services have been traded, and its form depends on the culture in which it operates. Many civilizations over the last 4,000 years used coins struck from precious metals including copper, bronze (an alloy of copper and tin), silver, and gold, though other early civilizations used seashells or commodities of weight, including salt and sugar.

In modern times cash has consisted of coins, whose metallic value is negligible, or paper. This modern form of cash is fiat currency.

Paper money is a more recent form of cash, dating back to around the 18th century, and its value is set by its users' faith in the government backing the currency.

Checks, debit cards, credit cards, online banking, and smartphone payment technology have decreased the need for people to carry cash in any form.

### Motives for Holding Cash

The firm's needs for cash may be attributed to the following needs: Transactions motive, Precautionary motive and Speculative motive. Some people are of the view that a business requires cash only for the first two motives while others feel that speculative motive also remains.

### Transaction Motive:

A firm needs cash for making transactions in the day to day operations. The cash is needed to make purchases, pay expenses, taxes, dividend, etc. The cash needs arise due to the fact that there is no complete synchronization between cash receipts and payments. Sometimes cash receipts exceed cash payments or vice-versa. The transaction needs of cash can be anticipated because the expected payments in near future can be estimated. The receipts in future may also be anticipated but the things do not happen as desired. If more cash is needed for payments than receipts, it may be raised through bank overdraft.

On the other hand, if there are more cash receipts than payments, it may be spent on marketable securities. The maturity of securities may be adjusted to the payments in future such as interest payment, dividend payment, etc.

### Precautionary Motive:

A firm is required to keep cash for meeting various contingencies. Though cash inflows and cash outflows are anticipated but there may be variations in these estimates. For example, a debtor who was to pay after 7 days may inform of his inability to pay; on the other hand, a supplier who used to give credit for 15 days may not have the stock to supply or he may not be in a position to give credit at present.

In these situations, cash receipts will be less than expected and cash payments will be more as purchases may have to be made for cash instead of credit. Such contingencies often arise in a business. A firm should keep some cash for such contingencies or it should be in a position to raise finances at a short period. The cash maintained for contingency needs is not productive or it remains ideal. However, such cash may be invested in short-period or low-risk marketable securities which may provide cash as and when necessary.

### Speculative Motive:

The speculative motive relates to holding of cash for investing in profitable opportunities as and when they arise. Such opportunities do not come in a regular manner. These opportunities cannot be scientifically predicted but only conjectures can be made about their occurrence. For example, the prices of shares and securities may be low at a time with an expectation that these will go up shortly. The prices of raw materials may fall temporarily and a firm may like to make purchases at these prices.

Such opportunities can be availed of if a firm has cash balance with it. These transactions are speculative because prices may not move in a direction in which we suppose them to move. The

primary motive of a firm is not to indulge in speculative transactions but such investments may be made at times.

## 13.2 Cash Management

Cash management refers to a broad area of finance involving the collection, handling, and usage of cash. It involves assessing market liquidity, cash flow, and investments. Cash management is the process of managing cash inflows and outflows. This process is important for individuals and businesses because cash is the primary asset used to invest and pay any liabilities.

There are many cash management options available. Cash management not only provides entities with a window into their financial situations but it can also be used to improve their profitability by fixing their liquidity problems.

### How Cash Management Works?

The process of managing a company's cash flows to ensure that there is enough liquidity to meet its financial obligations is referred to as cash management. This includes tracking cash inflows and outflows, forecasting future cash requirements, and deciding how to invest surplus cash to generate returns.

### Cash management includes several steps:

- Develop a cash budget in order to forecast cash inflows and outflows.
- Implementing cash-flow management strategies, such as offering discounts for early payment.
- Creating a cash-flow management strategy, such as negotiating payment terms with suppliers.
- Invest excess cash in low-risk, short-term instruments such as money market funds or short-term government securities.
- Monitoring cash balances and making necessary changes to the cash management plan.

### Functions of Cash Management

#### 1. Inventory Control

Inventory management is aided by effective cash management—lower liquidity results from trapped sales, which are indicated by higher inventory. As a result, a company should constantly concentrate on speeding up its cost of being out of stock to enable cash flow.

#### 2. Receivables Administration

To increase sales, a business concentrates on improving its invoices. However, the credit limit and period concerning cash receipts may be anywhere from 30 to 90 days. This indicates that even though the company has every sales record, the funds from such dealings are still pending.

Here, cash management's job is to ensure that all receivables are paid as soon as possible to avoid a potential cash shortage. It also has a way to keep track of things, providing quick retrieval, and letting the business know what might happen in the future.

#### 3. Management of Payables

This is another essential part of the system of managing cash where discounts and cash credit terms can help businesses.

### Cash Management Strategies

- Cash Planning
- Cash Forecasts and Budgeting
- Receipts and Disbursements Method

Cash flow planning entails forecasting and tabulating all significant cash inflows relating to sales, new loans, interest received etc., and then analyzing in detail the timing of expected payments relating to suppliers, wages, other expenses, capital expenditure, loan repayments, dividends, tax, interest payments etc.

### Concept of Float in Cash Management

In general a float represents a delay on the collection or on the disbursement of cash flow processes. Obviously, a cash manager's target is to reduce delays in collections. Furthermore it is common practice that cash manager try also to maximize the float on disbursements within the credit terms agreed while exceeding these terms is, from an ethical point of view,In relation to either collections or disbursements these delays can be divided into four types or omponents. While a payment is made by check and sent by mail we know there is a time delay until the payment, placed in the mail, is received. That is the so called mail float.

Once the payment is received it has to be processed and deposited in the firm's account. In fact, when the mail arrives, the check has to be separated from the remittance advice and prepared for deposit. Only then it will be actually deposited at the payee's bank. Hence, the time delay it takes, from receiving the check and actually depositing it goes under the name of processing float.

The remaining two components of float refer either to the perspective of the receiving party, such as the availability float, or to that of the paying party, like the clearing float. In fact the availability float is the time gap between the deposit of a check and the availability of the funds on the firm's account. The remaining two components of float refer either to the perspective of the receiving party, such as the availability float, or to that of the paying party, like the clearing float.

## 13.3 Importance &Objectives of Cash Management

After estimating cash flows, efforts should be made to adhere to the estimates of receipts and payments of cash. Cash Management will be successful only if cash collections are accelerated and cash payments (disbursements), as far as possible, are delayed.

**Methods of ACCELERATING CASH INFLOWS**

- Prompt payment from customers (Debtors)
- Quick conversion of payment into cash
- Decentralized collections
- Lock Box System (collecting centers at different locations)

**Methods of DECELERATING CASH OUTFLOWS**

- Paying on the last date
- Payment through Cheques and Drafts
- Adjusting Payroll Funds (Reducing frequency of payments)
- Centralization of Payments
- Inter-bank transfers
- Making use of Float

### Basic Principles of Cash Management

Cash management entails managing cash flows and optimising the use of cash resources to ensure that a company has enough liquidity to meet its obligations and achieve its goals. Below are the two basic cash management principles:

1. **Accelerating the Cash Receivables Process**

Companies must encourage their clients and customers to pay their bills on time by providing them with attractive discounts and other incentives.

**2. Keeping Inventory Levels Low**

Keeping a larger inventory level can frequently result in a situation where cash is unnecessarily trapped. Even warehouse space is unnecessarily occupied. Companies must devise appropriate techniques and strategies in order to successfully maintain lower levels of inventory.

## Cash Management Strategies

**1. Cash Forecasting and Budgeting**

Businesses can better manage their cash flow and anticipate potential shortfalls by accurately forecasting cash inflows and outflows and creating a budget.

**2. Negotiating Payment Terms**

Negotiate with customers and suppliers to help businesses manage cash flows more effectively. They could, for example, offer early payment discounts to customers or request extended payment terms from suppliers.

**3. Efficient Billing and Collection Process**

This can help businesses receive payment from customers more quickly and reduce the time it takes to convert accounts receivable into cash

**4. Minimise Expenses**

Reducing unnecessary expenses can help businesses conserve cash and improve their cash flow. For example, they could negotiate better prices from suppliers or implement cost-cutting measures.

**5. Maintain Adequate Cash Reserve**

Businesses should keep enough cash on hand to cover unexpected expenses, and emergencies, and to capitalise on unanticipated opportunities.

## Objectives Of Cash Management

Management is an integral part of a business. It is part of an organisation that oversees how cash is collected and spent. Here are some of the main objectives of cash management

**1. Controls Cash Flow**

The most vital objective of a cash management system is limiting your cash outflow as well as accelerating cash inflow. A business owner might always want to increase the amount of cash flowing into the business. However, minimising the cash outflow will result in reduced operational expenses.

An efficient cash management system that is integrated with cash management software will increase your real-time cash visibility which will give you greater control of your cash flow.

**2. Optimizes Cash Levels for the Business**

Controlling your cash flow is essential to optimizing cash levels. Your cash management system allows you to optimize your cash levels, creating better liquidity. A number of mathematical model have been to develop to determined the optimal cash balance.

Two of such model are as follow-

- William J. Baumol's inventory model
- M. H. Miller and Daniel Orr's Stochastic model.

## Baumol's Model of Cash Management

Trades off between opportunity cost or carrying cost or holding cost & the transaction cost. As such firm attempts to minimize the sum of the holding cash & the cost of converting marketable securities in to cash. Helps in determining a firm's optimum cash balance under certainty.

Algebraic Representation of William J. Baumol's Inventory Model

$C = \sqrt{2A*F/O}$

C = Optimum Balance

A = Annual Cash Distribution

F = Fixed Cost Per Transaction

O = Opportunity Cost Of Holding

The Baumol's model enables companies to find out their desirable level of cash balance under certainty. The Baumol's model of cash management theory relies on the tradeoff between the liquidity provided by holding money (the ability to carry out transactions) and the interest foregone by holding one's assets in the form of non-interest bearing money.

### The Miller and Orr Model of Cash Management

The Miller and Orr model of cash management is one of the various cash management models in operation. It is an important cash management model as well. It helps the present day companies to manage their cash while taking into consideration the fluctuations in daily cash flow.As per the Miller and Orr model of cash management the companies let their cash balance move within two limits a) Upper Control limit b) Lower Control Limit.

Along with a return point when the cash balance touches the upper Control limit (h), the marketable security is purchased to the extent till it reaches normal cash balance (Z).

In the same manner, when the cash balance touches the lower limit (o), the firm will sell the marketable security to the extent till it reaches normal cash balance (Z).

Spread (Z)=

$$3\left(\frac{3}{4} * \text{Transaction cost} * \text{Variance of Cash Flow}\right)^{1/3}$$

$$\text{Interest rate}$$

Return Point = Lower limit + Spread (Z)/3

Variance of Cash Flow = (Standard deviation)2 or (s)2

This Stochastic model can be employed even in extreme uncertainty.

When the cash flow fluctuate violently in short period it will give optimal result.

Finance Manager can apply this model in highly unpredictable situation.

**3. Efficient Cash Planning**

The right cash management system will help you to optimise cash and plan effectively. It helps in planning capital expenditure and determining the ratio of equity and debt to acquire finances. With the right planning, you will have the right amount of liquid cash so that you do not fall short of it.

**4. Enables More Effective Cash Management**

Cash flow is a factor in more than 80 percent of business failures, so it's easy to see why business owners put so much emphasis on managing cash flow correctly. Having the right cash

management system in place is key here. A good management system allows you to see cash as it flows through your business, giving you a bird's eye view of where cash is leaving the business and where it's entering.You will also make better decisions about how to flow it through the business, such as when to deposit it or how much to hold back. Finally, you will work to increase inflows. All of your decisions will be backed by data to both streamline and improve cash management and flow.

**5. Meet Unforeseen Expenses**

The company might have to face certain unexpected circumstances like a breakdown of machinery. Having surplus cash will help in coping with this situation in the best manner.

**6. Ease of Investment**

Cash management helps in the optimum utilisation of available funds by creating an adequate balance between cash in hand and investments. It will help you to invest the idle funds in the right proportion at the right opportunity as it is one of the aims of cash management.

**7. voiding Insolvency**

If companies do not have proper planning for cash management, a situation might arise when the business will be unable to pay its bills. This situation may occur due to a lack of liquid cash or not being able to make a profit from the money available.

Cash management entails managing cash flows and optimising the use of cash resources to ensure that a company has enough liquidity to meet its obligations and achieve its goals.

## 13.4 Need of Cash Management

When it comes to creating and sustaining a company's financial stability, cash management is a key component. Since "cash" is the primary asset used to pay obligations (whether you're an individual or company), it must be managed accordingly to maximize earnings. This impacts future growth for the company. Maintaining cash balances while earning a return on idle cash are also top concerns.

Cash is always needed to run a business enterprise. A reasonable cash balance is always preferred. It should not be less than the demand nor more than the reasonable demand. The lower the quantity of cash, then legitimate needs will disturb daily business routines. Similarly, holding excess cash is unwise because it can undermine the profitability of the organization.

The cash balance is the most unproductive asset of an organization. However, it is important because it is used to pay liabilities. Thus, it is recommended that a reasonable cash balance be maintained to optimize liquidity and profitability.

### Need of Cash Management

Management is an integral part of a business. It is part of an organization that oversees how cash is collected and spent. Here are some of the main objectives of cash management

**1. Controls Cash Flow**

The most vital objective of a cash management system is limiting your cash outflow as well as accelerating cash inflow. A business owner might always want to increase the amount of cash flowing into the business. However, minimizing the cash outflow will result in reduced operational expenses.

An efficient cash management system that is integrated with cash management software will increase your real-time cash visibility which will give you greater control of your cash flow.

**2. Efficient Cash Planning**

A right cash management system will help you to optimize cash and plan effectively. It helps in planning capital expenditure and determining the ratio of equity and debt to acquire finances. With the right planning, you will have the right amount of liquid cash so that you do not fall short of it.

**3.** The company might have to face certain unexpected circumstances like a breakdown of machinery. Having surplus cash will help in coping with this situation in the best manner.

**4. Ease of Investment**

Cash management helps in the optimum utilization of available funds by creating an adequate balance between cash in hand and investments. It will help you to invest the idle funds in the right proportion at the right opportunity as it is one of the aims of cash management.

**5. Avoiding Insolvency**

If companies do not have proper planning for cash management, a situation might arise when the business will be unable to pay its bills. This situation may occur due to a lack of liquid cash or not being able to make a profit from the money available.

## The Need for Efficient Cash Management

The four basic strategies that are required for a corporate to efficiently manage cash are:

**Forecasting cash position:** Forecasting the short-term and long-term cash position is key for corporates. Having a plan for idle cash at an early stage and the need for safety buffers compensating for forecast errors is crucial. Additionally, this helps a company to make reliable projections on future funding requirements.

**Maintaining less idle cash:** Visibility in terms of cash balances becomes a key driver to reduce idle cash. Leaving cash in a local account reduces return and does not make the cash actively available to the group, curtailing optimal utilization of available liquidity, thereby increasing the utilization of credit lines.

**Concentration of collected funds:** Consolidation of cash helps a company to have better cash control and cash position visibility. The effect is that surplus liquidity is bundled and required capital is internally financed to the maximum extent possible. This, therefore, reduces the corporates' external interest expense.

**Efficient collection of cash inflows and outflows:** Effective payment terms and collection procedures, lower inventories, lower replenishment, and longer credit from suppliers are prerequisites for corporates wanting better cash inflow/outflow management.

The three aspects of WCM are:

- Achieve operational reduction through efficient collection of cash inflows and outflows.
- Manage cash effectively through better liquidity management.
- Introduce electronic invoicing (e-invoicing).

Improving the financial aspect of WCM

**1. Operational Reduction in WCM**

The three key areas that are a starting point or key performance indicators (KPIs) for any corporate to achieve an operational reduction in working capital requirements are:

- Days sales outstanding (DSO).
- Days payable outstanding (DPO).

**Days inventory outstanding (DIO).**

While DIO has traditionally been the primary focus of optimization efforts and is fairly achieved through business relationships, DSO and DPO remain the critical missing link today.

With the changing receivables landscape, cash gets trapped at many places, thus affecting the overall financial performance of the corporate. Iit is therefore very important for corporates to identify the weakness on the DSO and to take proactive approach for the management of receivables. Few other operational challenges faced today are the Decentralised process with no single point of trapped cash, disjointed systems and disintegration of the information management infrastructure.

Efficient DPO management for any corporate is to self-fund its operating or production cycle, invest surplus balances or use funds to pay down debt. These issues can be addressed through mature automation tools such as purchase order (PO) management, e-invoicing, integrated supplier financing with automated workflow and matching process. Thus, standardizing and automating the payments and collections workflow through electronic straight-through processing (STP) will be a lever through which corporates can reduce their working capital.

**2. Better Liquidity Management**

Visibility on cash balances across the enterprise is crucial for better liquidity management. The near real visibility of the cash flow across an enterprise helps the cash group head from optimizing the return on available liquidity and decreases the unnecessary utilization of credit lines.

Also, detailed knowledge of local bank accounts to the cash head helps central division to advise local management on their decisions about cash, paying local vendors, leaving it on the account or depositing cash with treasury.

A reliable understanding of future cash balances reduces idle cash. Furthermore, accurate cash forecasting also improves the standing of the company and can have a positive impact on the company valuation. Understanding the enterprise cash flow gives the following benefits:

- Increased visibility over cash and payments leading to better liquidity management.
- Better foreign exchange (FX) management.
- Structural efficiency to process all intercompany transactions.
- Payment process improvements.

**3. Streamlining Payment Processing**

One of the critical dimensions that results in the improvement of working capital is introduction of e-invoicing. A recent study estimates that in Europe e-invoicing can save up to 65% in operational costs in terms of handling paper and reducing mail float on receivables up to three days. Active WCM brings a reduction in the operating costs of managing inventories and receivables resulting in improved liquidity. This strengthens the balance sheet and reduces borrowing costs, and leads to an effective increase in enterprise value.

Cash management entails managing cash flows and optimizing the use of cash resources to ensure that a company has enough liquidity to meet its obligations and achieve its goals. Learning to adopt proper cash management techniques is essential for every business. They help even the most problematic financial issues to be resolved quickly. Cash management can be performed as per the need and nature of a business. It differs from manager to manager regarding their objectives for the business's future.

## 13.5 Cash Collection Techniques

Collecting money from customers can be a challenge for many small businesses. But sometimes business owners themselves are the culprits. Many have poor invoicing and collection procedures that create easily avoidable problems.

Here are some ways to keep the cash flowing in your business.

- Accelerating Cash Inflows Method
- Prompt Payment by Customers:

In order to accelerate cash inflows, the collections from customers should be prompt. This will be possible by prompt billing. The customers should be promptly informed about the amount payable and the time by which it should be paid.

• Use a cloud-based billing or invoicing service:

Online invoicing and billing services designed for small businesses, self-employed professionals and freelancers are a great solution.

• Offer early payment and pre-payment discounts:

When you rent a car or reserve lodging, many car rental companies and hotels offer two prices: A discounted price if you pay in full now; and a higher "pay later" price. Why not try something similar? Consider offering a discount of, say, 2%-5% for paying in advance. This rewards customers, gets you the cash quicker, and saves you the time and effort of trying to collect later.

- Set a penalty for late payment:

First, you'll need to establish a clear and consistent policy explaining that late payments can trigger a fee. Even if you don't actually charge the fee or end up waiving it for loyal customers who are late for good reasons, just mentioning it on your invoices will spur prompter payments.

- Require deposits, down payments, and/or progress payments:

While this is a standard operating procedure in some industries and professions, many types of small businesses can employ the same tactic. Don't be afraid to ask for a portion of your payment upfront and additional payments along the way as results are delivered.

- Take a personal approach to overdue payments:

When payment is slow in coming, follow up personally and courteously. Asking a clerk, bookkeeper, or someone else to make these contacts is more apt to fail.

- Set reminders and safeguards:

Effective billing and collections include a step-by-step schedule for initial invoicing and follow-ups. This should include a rule on sending invoices immediately and following up with letters, emails, or phone calls if payment is not received in the specified time frame.

### Adopt accounts receivable process automation:

One of the easiest ways to increase A/R efficiency is to leverage accounts receivable collection software that offers automation of key processes. By investing in A/R automation, you can automatically generate invoices, monitor payment histories, send reminders for overdue payments, and more, all from a single application or platform.

A/R automation has come a long way over the past few years to offer improvements to nearly every part of your A/R processes. These tools eliminate the need to spend hours on rigorous, manual collection tasks and can even reduce the risk of data errors by taking the human element out of the equation. Overall, it's a system that results in higher efficiency and better cash flow, no matter what your industry.

### Quick Conversion of Payment into Cash:

Cash inflows can be accelerated by improving the cash collecting process. Once the customer writes a cheque in favour of the concern the collection can be quickened by its early collection.

There is a time gap between the cheque sent by the customer and the amount collected against it.

This is due to many factors,

i. Mailing time, i.e. time taken by post office for transferring cheque from customer to the firm, referred to as postal float;

ii. Time taken in processing the cheque within the organisation and sending it to bank for collection, it is called lethargy and,

iii. Collection time within the bank, i.e. time taken by the bank in collecting the payment from the customer's bank, called bank float. The postal float, lethargy and bank float are collectively referred to as deposit float.

The term deposit float refers to the cheques written by the customers but the amount not yet usable by the firm. An efficient cash management will be possible only if the time taken in deposit float is reduced and make the money available for use. This can be done by decentralising collections.

Decentralised Collections:

A big firm operating over wide geographical area can accelerate collections by using the system of decentralised collections. A number of collecting centres are opened in different areas instead of collecting receipts at one place.

The idea of opening different collecting centres is to reduce the mailing time from customer's despatch of cheque and its receipt in the firm and then reducing the time in collecting these cheques.

On the receipt of the cheque it is immediately sent for collection. Since the party may have issued the cheque on a local bank, it will not take much time in collecting it. The amount so collected will be sent in the central office at the earliest. Decentralised collection system saves mailing and processing time and, thus, reduces the financial requirements.

**Lock Box System:**

Lock box system is another technique of reducing mailing, processing and collecting time. Under this system the firm selects some collecting centres at different places. The places are selected on the basis of number of consumers and the remittances to be received from a particular place. The firm hires a Post Box in a post office and the parties are asked to send the cheques on that post box number.

A local bank is authorised to operate the post box. The bank will collect the post a number of times in a day and start the collection process of cheques. The amount so collected is credited to the firm's account. The bank will prepare a detailed account of cheques received which will be used by the firm for processing purpose.

This system of collecting cheques 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 costs, improve internal control and reduce the possibility of fraud.

Lock box system is an improvement over the concentration system. In lock-box system the bankers clear the remittances from post-boxes instead of remittances being sent to branch offices and branch offices sending the cheques and bills to the bankers for collection.

Thus one more interim step is skipped to speedup the collection.

Implement ideas to improve cash flow:

Now that you know your cash needs, consider ideas to help improve your cash position. For example:

- Reduce the lag time between shipping and invoicing.
- Re-examine credit and collection policies.
- Consider offering discounts for early payment.
- Charge interest on delinquent balances.
- Convert excess and unsold inventory back into cash.

Cash management attempts, among other things, to decrease the length and impact of these "float" periods. A collection receipt point closer to the customer—perhaps with an outside third-party vendor to receive, process, and deposit the payment (check)—is one way to speed up the collection.

The effectiveness of this method depends on the location of the customer; the size and schedule of their payments; the firm's method of collecting payment; the costs of processing payments; the time delays involved for mail, processing, and banking; and the prevailing interest rate that can be earned on excess funds. The most important element in ensuring good cash flow from customers, however, is establishing strong billing and collection practices.

Once the money has been collected, most firms then proceed to concentrate the cash into one center. The rationale for such a move is to have complete control of the cash and to provide greater investment opportunities with larger sums of money available as surplus.

There are numerous mechanisms that can be employed to concentrate the cash, such as wire transfers, automated clearinghouse (ACH) transfers, and checks. The tradeoff is between cost and time.

## Summary

Cash management is the process of successfully taking care of cash inflows and outflows. It's a process that's important to individuals and also for businesses.

Cash is legal tender—currency or coins—that can be used to exchange goods, debt, or services. The firm's needs for cash may be attributed to the following needs: Transactions motive, Precautionary

motive and Speculative motive. A float represents a delay on the collection or on the disbursement of cash flow processes.

Cash Management will be successful only if cash collections are accelerated and cash payments (disbursements), as far as possible, are delayed.

## Keywords

Float: It represents a delay on the collection or on the disbursement of cash flow processes.

Cash management: It is the process of managing cash inflows and outflows.

Baumol's Model of Cash Management: Trades off between opportunity cost or carrying cost or holding cost & the transaction cost. It attempts to minimize the sum of the holding cash & the cost of converting marketable securities in to cash.

Mail float: It result from the time that elapse from mailing of cheques until it received

Processing float: It result from the time that elapse from processing time before cheques is deposited in bank.

Speculative Motive: for investment in profit making opportunities as and when arise.

## Self Assessment

1. Which of the following is motive to hold cash for unforeseen events?

A. Transaction Motive
B. Precautionary Motive
C. Capital Investment
D. Both a and b

2. Which of the following is not a motive to hold cash?

A. Transaction Motive
B. Precautionary Motive
C. Capital Investment
D. Both a and b

3. ---------- require a firm to conduct its business in the ordinary course

A. Transaction Motive
B. Precautionary Motive
C. Capital Investment
D. Both a and c

4. ----------for investment in profit making opportunities as and when arise.

A. Transaction Motive
B. Precautionary Motive
C. Speculative Motive
D. Both a and c

5. Floods, Strike and failure of important customer are the part of which motive of holding cash?

A. Transaction Motive
B. Precautionary Motive
C. Capital Investment
D. None of the above.

6. Centralization of Payments can be one of the methods of

A. Accelerating cash flow
B. Decelerating cash flow
C. Both of the above
D. None of the above.

7. Decentralized collections can be one of the methods of

A. Accelerating cash flow
B. Decelerating cash flow
C. Both of the above
D. None of the above.

8. Making use of Float can be one of the methods

A. Accelerating cash flow
B. Decelerating cash flow
C. Both of the above
D. None of the above.

9. Adjusting Payroll Funds (Reducing frequency of payments)

A. Accelerating cash flow
B. Decelerating cash flow
C. Both of the above
D. None of the above.

10. It result from the time that elapse from mailing of cheques until it received

A. Mail float
B. Processing float
C. Both of the above
D. None of the above.

11. It result from the time that elapse from processing time before cheques is deposited in bank.

A. Mail float
B. Processing float
C. Both of the above
D. None of the above.

12. Cash is lifeblood of any firm needed to acquire supply resources, equipment and other assets used in generating the products and services. Marketable securities also come under near cash, serve as back pool which provides quick cash when needed.

A. True

B. False

13. In general a float represents a delay on the collection or on the disbursement of cash flow processes.

A. True

B. False

14. The Baumol's model enables companies to find out their desirable level of cash balance under certainty.

A. True

B. False

15. Lock box system is another technique of reducing mailing, processing and collecting time. Under this system the firm selects some collecting centers at different places.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | B | 2. | C | 3. | A | 4. | C | 5. | B |
| 6. | B | 7. | A | 8. | A | 9. | B | 10. | A |
| 11. | B | 12. | A | 13. | A | 14. | A | 15. | A |

## Review Questions

1. Enumerate meaning of cash and motives to hold cash.
2. Differentiate between speculative and precautionary motives.
3. What do you mean by cash management? What are the functions of cash management?
4. What do you mean by cash collection techniques?
5. Explain various models to optimize cash balance in the organization.

## Further Readings


- Essentials Of Financial Management By Pandey I. M, Vikas Publishing House
- Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education
- Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers
- Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson

## Web Links

https://www.investopedia.com/terms/c/cash-management.asp

https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/cash-management/

https://www.fieldandmain.com/blog/what-is-cash-management-and-how-can-it-benefit-my-business/

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# Unit 14: Receivables Management

CONTENTS

Objectives

Introduction

14.1 Meaning of Receivables Management

14.2 Determinants of Investment in Receivables

14.3 Scope of Receivables Management

14.4 Credit Policy

Summary

Keywords

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

## Objectives

- interpret various aspects of receivables management.
- analyze various impact of receivables management.
- Interpret various types of credit policy.
- analyze nature of credit policy.

## Introduction

Receivables also termed as trade credit or debtors are components of current assets. When a firm sells its product in credit, account receivables are created. It represents money owed to a business by its clients (customers). It is shown on its balance sheet as an asset.

The term for 'keeping track of what customers buy on credit from a company' is called receivables management. It is one of a series of accounts dealing with the billing of a customer for goods and services that the customer has ordered.

## 14.1 Meaning of Receivables Management

Account receivable is the money receivable in some future date for the credit sale of goods and services at present. The amount that the company is owed is recorded in its general ledger account entitled Accounts Receivable. These days, most business transactions are in credit. The unpaid balance in this account is reported as part of the current assets listed on the company's balance sheet.

Most companies, when they face competition, use credit sales as an important tool for sales promotion. Good accounting requires that an estimate should be made for any amount in Accounts Receivable that is unlikely to be collected. As a sales promotion tool, credit sale enhances the firm's sales revenue and ultimately pushes up profitability.

But after the credit sale has been made, the actual collection of cash may be delayed for months. As these late payments stretch out over time, they may cause a substantial drop in a company's profit margin. Since the extension of credit involves both cost and benefits, the firm's manager must be able to measure them to determine the ultimate effect of credits sales.

It forms a major part of the organization's asset, it leads to the generation of cash in-flow in the books of the organization. In this perspective, we define the receivable management as the aspect of a firm's current assets management, which is concerned with determining optimum credit policy associated to a firm, such that the benefit from an extension of credit is greater than the cost of maintaining investment in accounts receivables.

 Example-

On 10th June 2021, Raj Enterprises sold goods worth Rs 50,000 to Sunil Traders on credit for 15 days. From the 10th of June till the time of day the bill is paid by Sunil Traders, Rs 50,000 is an account receivable in the books of Raj Enterprises against the account of Sunil Traders.

Now assume that on the 20th of June, Sunil Traders pays Rs 30,000 to Raj Enterprises. This amount of Rs 30,000 is reduced from Sunil Trader's account.

Post the adjustment entry, the overall accounts receivable of Sunil Traders will be Rs 20,000.

**What is receivable management?**

The receivable management definition can be said to be the management of accounts not just for the receivables but also of the entire process of defining the policy on credit and deciding payment terms. It also consists of ensuring the timely collection of payments and dues, sending follow up letters and reminders for timely payments, which are essential areas of managing the account receivables.

The accounts receivable management process typically follows some steps listed below:

- Customer invoicing mentioning credit policy and date due.
- Recording transactions with their due dates.
- Monitoring the due through a collection and follow-up schedule.
- Generating bills that are overdue and bills due chronologically.
- Sending letters of reminder with bill details and due date.
- When payment is received, a receipt, adjustment entry and sales account are to be recorded accordingly.
- If cash discounts are allowed for early payment, a suitable adjustment entry is reflected in the accounts under the receivable account.

 For example, if you have an arrangement with the supplier to pay later or avail of its credit facilities, the firm will show this transaction as money owed to your account. It will show in its accounts payable or sundry creditors section on the right side of its balance sheet. Similarly, when you supply goods or services on credit, the firm that has to pay you is a sundry debtor. Their account is shown in the accounts receivable, which when totalled forms the sundry debtors reflected on the left, asset, or debit side of the balance sheet.

Receivable management deals with accounts receivable and is hence an asset and dynamic account. It remains till the payment is made by the client or received by the creditor. Moreover, since money is still owed, the accounts receivable are an asset to the company. Thus, outstanding money and invoices that are yet to be paid by the customers are called Account Receivables. This account is also called the bills receivable account.

## 14.2 Determinants of Investment in Receivables

The size of investment in receivables is influenced by number of factors. Among them two factors, the volume of credit sales, and the average length if time between sales and collection are important.

**Costs of Maintaining Receivables and Their Calculation**

Maintaining receivables bears cost. It includes cost of investment in receivables, bad debt losses, collection expenses and cash discount. Costs related with receivables and their calculation are as follows:

**1. Cost of Investment in Receivables**

This is the opportunity cost of funds being tied up in receivables, which would otherwise have not been incurred if all sales were in cash. The cost of investment in receivable is calculated as:

Cost of receivables = Investment in receivables X Opportunity costs

Here, investment in receivables = (FC+ VC)/Days in year) X DSO

Where, FC = Fixed Cost, VC = Variable Cost and DSO = Days sales outstanding.

2. **Bad Debt Losses**

This is the loss due to default customers. Extension of credit to low quality-rate customers results into increase in bad debt losses. Bad debt losses are calculated as a percentage on sales as shown in equation below:

Bad debt losses = Annual credit sales X Percentage default customer

**3. Collection Expenses**

This is the cost incurred for operating and managing the collection and credit department of a firm. This includes the administrative cost of credit department, salary and commission paid to collection staff, cost paid for telephone and communication and so on.

**4. Cash Discount**

It is the cost incurred to induce the customer for early payments of their accounts. A firm can offer cash discount to its customers to reduce the average collection period, bad debt losses, and the cost of investment in receivables. The discount cost is calculated as cash discount percentage multiplied by sales to discount customers as given below:

Discount Cost = Annual credit sales X Percentage discount customer X Percentage cash discount.

**What are the objectives of account receivable management?**

The management of your accounts receivable is called receivables management and includes:

- Collections Management
- Payment Collections
- Accounts Receivables

To run a business successfully, cash inflows are crucial and should be kept at an optimum level. Even though receivable management appears to be a simple job, it is dependent on the nature of your business and can get very tedious. As the business grows, the management of receivables becomes a complex task.

It helps improve the cash flow: One of the main objectives of a good receivable management system is to ensure that the business owners are helped in keeping their cash inflow steady. The sound management process provides an exact picture of how much and when your cash is due and where it is stuck. It also maintains the sales transactions in a systematic and chronological record in the accounts receivable account. Proper management of this account means the cash inflow will be

sufficient to fund everyday transactions and make payments to your suppliers. Always ensure your credit limit with your suppliers is greater than the credit period you offer your clients.

It keeps the bad debts to a minimum: Cash blocked in credit or overdue is a loss to a business. Lack of funds and blocked cash quickly escalates into a shortage of funds for everyday business activities and in making prompt payments to your suppliers. Companies should avoid international receivables management at the early stages as these are hard to recover.

If the receivables are poorly managed, it can lead to bad debts, default payments to the firm's suppliers, and e eventually monetary losses and a loss in reputation and credibility. Thus, receivables management helps track and record the receivables and payments schedules, so you can take corrective action and follow an optimum credit policy wit h efficient measures of collections from your debtors.

It improves customer relationships and satisfaction: Improving your receivables management through efficient tracking of your clients lets you know those whose payment performance records are good and who are loyal to their commitments and your products. Rewarding such customers with additional price discounts, transparent transactions, added or staggered credit periods etc., can help build loyal customers and improve client retention and satisfaction. It can boost sales volume: Efficient receivable management, as discussed above, can bring in more customers and improve your sales and thus your profitability. By offering credit facilities that are transparent and well-documented, your customer base can be improved to a sizeable extent.

## 14.3 Scope of Receivables Management

When you offer a sale of services or goods on credit, you need to efficiently record and track the due amounts owed to you. All such amounts due from your clients are reflected as outstanding or bills receivable. Receivable management is critical to the health of your business and maintaining a healthy inflow of cash. Thus, the scope of the management of the receivables account in an accounting system is:

To track and record the amounts and clients whose payments are due.

- Use the credit period thriftily.
- Try to provide closure to the long-pending bills.
- Monitor and improve customer relationships by tracking their payment performance.

As of now, you have discovered, the meaning of receivables is the due amount that you have to yet receive from your customer within a specific period. Hence, money coming into the account is treated as a current asset.

When the financial statement is drawn up, the total amounts due are reflected on the left side, debit side, or asset side of the financial statement as sundry debtors, accounts receivables, or trade receivables.

### Impact of receivable management

The importance of receivables management is linked to your flow of cash which is the bloodline of any enterprise. Efficient functioning of receivables management deals with controlling and planning of recovering the dues in the accounts receivable and ensuring a transparent, accurate record of all financial transactions in the bill's receivables account.

For instance, a sale is successful only when the customer buys your product and pays for it, so also it is with credit sales. However, until the payment is received, the amount due gets reflected in the bills receivable account. Another reason why receivable management is crucial is that the accounts

receivable, when reflected in a financial statement, denotes what percentage of your sales are on credit. When the figure is large, it implies inefficient handling of cash flow.

It is worth noting that until the payment is received, you are paying to carry costs of the goods sold and interest on your working capital, which is offered free of interest to your clients, albeit for short periods. Hence, the health of your business is affected, and your working capital gets tied up for longer periods.

Receivables management tracking is possible from the records of the bill's receivables account, which tells you how much is due, when it is due and from whom it is due.

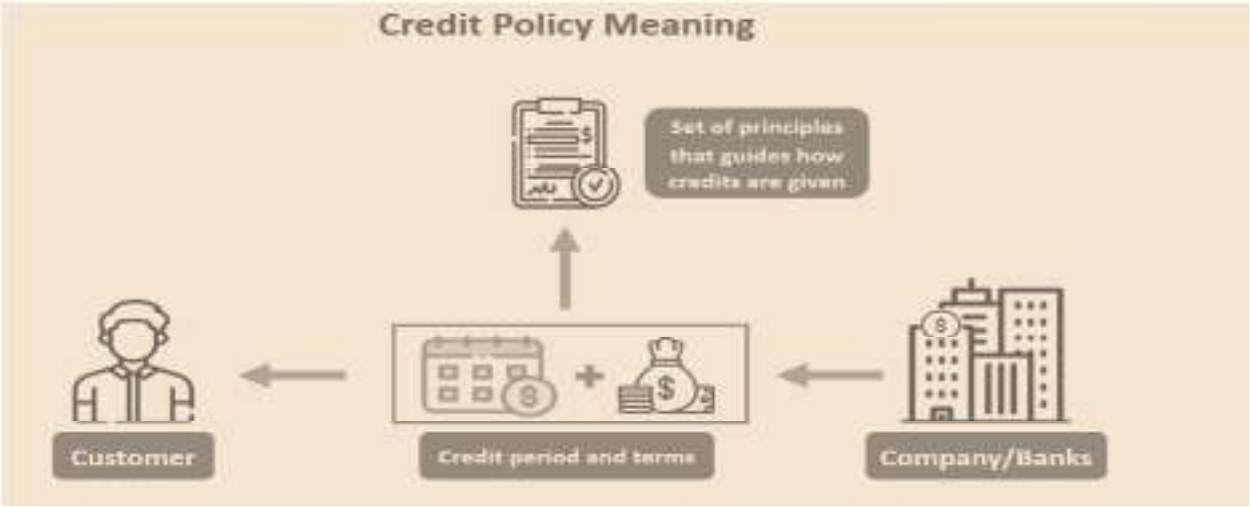
It is important to ensure timely collections of the receivables because otherwise, your cash flow is impacted. To ensure efficient management, you need to place an efficient credit management system or CMS in place.

Efficient management of accounts receivables benefits businesses in many ways. It improves the cash inflow through quicker sales realizations into cash. It is also used to build wider customer bases through credit sales and boost loyal customers' client relationships by rewarding them.

## 14.4 Credit Policy

**What is Credit Policy?**

A credit policy is a set of rules and standards that directs how companies can grant credit to customers and the collection method. It also describes who in the company is in charge of allotting credit. The main objective of this policy is to set certain guidelines that help handle credit risk.




Example

The use of clauses such as "3/10 net 30" is a part of credit policy. The clause states that if the customer pays the money within 10 days then he/she/it is eligible to 3% discount on the total amount else the entire amount is to be paid within 30 days.

**Credit Policy Explained**

Before you provide credit, make sure you have a policy in place that makes it easy for clients to pay you. Ask yourself these three essential questions to get started with a credit policy:

- Which credit options do you want to provide?
- Who do you wish to give credit to?
- How much credit are you willing to extend?

For example: The company will extend credit to customers if they meet its threshold criteria for the granting of credit. The basic form of credit is a maximum credit of $10,000, with no security interest.

The maximum credit can be expanded with the approval of the credit manager. In situations where a customer's ability to repay is in question, a personal, corporate, or bank guarantee may be required. All terms are net 30 days, with no exceptions if a longer payment term is requested.

The credit department will review the credit applications of all new customers to determine their worthiness to receive credit, and the amount of that credit. The credit level may be reduced if a customer has a low credit score on the credit report, if it has been formed within the past two years, or if its current ratio is less than 1:1.

Credit policy is a document containing guidelines and regulations issued by the company for the credit granted to the customers. It gives a clear overview of the outstanding credit accounts and amounts. The issuer of this policy can be companies, governments, and banks.

This policy is a vital element of business strategies and financial management. Therefore, there is a separate credit department allotted to administer the policy. They are responsible for curating the right policy variables to manage uncertain risks. Once developed, the senior management can approve it.

The main objectives of this policy are to reduce bad debts and manage risk control factors. Besides, they also consider other factors like business size, cash flow, industry type, customer base, and others. Thus, if a company issues a good credit policy, it leads to a fast recovery of bad debts. Otherwise, it can lead to huge losses. It is vital to have such a policy based on current terms rather than historical data. Therefore, firms must review the policy consistently to have good results. However, it can differ from one firm to another.

**Benefits of credit policy**

When small businesses offer credit in a controlled and risk-aware manner, it can lead to a number of benefits.

**Can save you time**

Provided you've carried out your risk-aversion checks, you will be extending credit to reliable customers who are more likely to pay on time. Having a solid credit control protocol in place from the get-go can therefore save you time chasing up late payments from undependable customers.

**Can help you plan your cash flow**

With precise payment terms and due dates, credit policy can help you forecast your company cash flow. This is because you will know precisely when payment instalments will be arriving in the following weeks or months.

**Builds trust with clients**

Having a good working relationship with customers is crucial when it comes to both retaining and growing your client base. Offering credit to customers can help create an environment of trust, which can lead to a more positive experience overall for customer and company alike.

**Creates consistency**

With a strong and detailed credit policy, there will be no room for subjective decision-making vis-a-vis who is eligible for credit. This can keep risks to a minimum by helping ensure invoices and payments are made on time. Plus, it can save you time — both at the decision-making stage and later as you won't need to waste time chasing payments.

**Types**

Credit policy is an important part of the overall strategy of a firm to market its products. It refers to those decision variables that influence the amount of trade credit i.e. investment in receivables. Credit policy can be lenient or stringent.

There are two types of credit policy prevailing in credit management. :

**#1 – Liberal or Lenient Credit Policy**

According to this, businesses and companies try to be liberal or put very few restrictions on credit terms. As a result, there is an increase in sales, and it attracts new customers. However, a lenient credit policy can lead to bad debts and liquidity issues.

Your credit policy is a tool you can use to increase sales, but a liberal credit policy has to have a clear framework. Whether the advantages of such a policy outweigh the disadvantages depends on

whether you can develop the appropriate terms and conditions and apply them to your customer base in a positive way.

The nature of your business influences whether a liberal credit policy can help your company perform better.

**#2 – Restrictive or Tight Policy**

Here, the terms are very strict for any client or customer. As a result, firms are very selective in extending credit terms and duration. However, it can lead to a loss of customers and consistent cash flow for the firm.

A restrictive policy is a low-risk strategy, limiting credit only to customers with a strong credit history, a moderate policy is a middle-of-the-road risk strategy that takes on more risk, while a liberal credit control policy is a high-risk strategy where the company extends credit to most customers.

Therefore, the objectives of credit management should be the achievement of a balance that maximizes the overall return of the firm. The firms normally follow a credit policy which is in between lenient and stringent credit policies.

Companies that have a monopoly in their industry may be include to adopt a liberal control policy so that they can hold onto their monopoly. However, if the monopoly is unthreatened by other competitors, the company may adopt a restrictive policy

**#3 – Flexible credit**

Represents a willingness to extend credit depending on circumstances. It's generally a neutral strategy that does not aggressively grow or restrict access to credit for clients.

Examples include granting credit to a broader range of average credit profiles with a process for exceptional approval to policy for clients that may fall outside a diverse risk range.

**#4 – No credit**

This is an unwillingness to extend credit, as a company is highly risk-averse or has no business case to support the cost/benefit of extending credit. Examples include "cash only" small-dollar consumable goods or businesses with slim margins and insufficient capital to extend trade credit.

Credit control can help a business boost its bottom line by potentially driving sales, but a business must be aware of the risk of borrowers with poor credit histories. Each business must determine which type of credit control will be.

- understand the variables of credit policy,
- interpret types variables credit policy,
- analyze advantages and disadvantages of different credit policy variables.

**Formulation of Credit Policy**

The credit policy of a company can be regarded as a kind-of-tradeoff between increased credit sales leading to increase in profit and the cost of having larger amounts of cash locked up in the form of receivables and the loss due to incidence of bad debts. The important credit policy variables are as follows:

**a) Credit Standards:**

The term credit Standards represents the basic criteria for the extension of credit to any customer. This is done with the help of factors such as credit ratings, credit references and various financial ratios. The level of sales and the amount of account receivables should be higher when credit standards are fairly liberal as compared to sales under the restrictive or tight credit standards.

The credit standards of any customer / firm are usually determined by five "C" s, namely:

- Capacity
- Character
- Collateral
- Capital

- Conditions.

Liberal credit standards push up sales by attracting more customers. But, this increases the incidence of bad debts loss, investment in receivables and cost of collection.

Stiff credit standards tend to depress sales but at the same time, also reduce the incidence of bad debt loss, investment in receivables and collection costs.

## Summary

The term for 'keeping track of what customers buy on credit from a company' is called receivables management. Maintaining receivables bears cost. It includes cost of investment in receivables, bad debt losses, collection expenses and cash discount.

The firm has to formulate credit policy. Credit policy is an important part of the overall strategy of a firm to market its products. It refers to those decision variables that influence the amount of trade credit i.e. investment in receivables. There can be liberal credit policy, strict credit policy, flexible credit policy. Each has its own advantages and disadvantages.

## Keywords

Account receivable: It is the money receivable in some future date for the credit sale of goods and services at present.

Credit policy: It is a set of rules and standards that directs how companies can grant credit to customers and the collection method.

Cash Discount: It is the cost incurred to induce the customer for early payments of their accounts.

Collection Expenses: This is the cost incurred for operating and managing the collection and credit department of a firm

Credit Standards: It represents the basic criteria for the extension of credit to any customer.

## Self Assessment

1. Which of the following is not an element of credit policy?

A. Credit Terms
B. Collection Policy
C. Cash Discount Terms
D. Sales Price.

2. Receivables Management deals with

A. Receipts of raw materials
B. Debtors collection
C. Creditors Management
D. Inventory Management

3. If cash discount is offered to customers, then which of the following would increase?

A. Sales
B. Debtors
C. Debt collection period
D. All of the above

4. Which of the following is related to Receivables Management?

A. Cash Budget
B. Economic Order Quantity
C. Ageing schedule
D. All of the above

5. Accounts receivables are the same as

A. Sundry Debtors
B. Bills Payable
C. Both of the above
D. None of the above

6. Net 30 implies full payment in 30 days from the invoice date.

A. True
B. False
C. Depends on situation
D. Not Applicable

7. On ----------depends types of customers to whom goods could be sold on credit

A. Credit Standard
B. Credit terms
C. Collection effort
D. All of the above

8. ----------Specify duration of credit and terms of payment by customers

A. Credit Standard
B. Credit terms
C. Collection effort
D. All of the above

9. Out of the following, what is not true in respect of factoring?

A. Continuous Arrangement between Factor and Seller
B. Sale of Payables to the factor,
C. Factor also provides finance to seller,
D. None of the above.

10. A firm can offer cash discount to its customers to ----------the average collection period, bad debt losses,

A. Reduce
B. Increase
C. Neither more or less

D. Not Applicable

11. The main objectives of credit policy are to reduce bad debts and manage risk control factors.

A. Yes

B. No

C. All facts are not clear

D. Not Applicable

12. The term credit standards represents the basic criteria for the extension of credit to any customer.

A. True

B. False

13. Liberal credit standards push up sales by attracting more customers. But, this increases the incidence of bad debts loss, investment in receivables and cost of collection.

A. True

B. False

14. Stiff credit standards tend to depress sales but at the same time, also reduce the incidence of bad debt loss, investment in receivables and collection costs.

A. True

B. False

15. Flexible credit policy represents a willingness to extend credit depending on circumstances. It's generally a neutral strategy that does not aggressively grow or restrict access to credit for clients.

A. True

B. False

## Answers for Self Assessment

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | D | 2. | B | 3. | A | 4. | B | 5. | A |
| 6. | A | 7. | A | 8. | B | 9. | C | 10. | A |
| 11. | A | 12. | A | 13. | A | 14. | A | 15. | A |

## Review Questions

1. What do you mean by receivables management?
2. Enumerate the objectives and importance of receivable management.
3. Elaborate in detail various variables of credit policy.
4. What are different types of credit policy?

## Further Readings


- Essentials Of Financial Management By Pandey I. M, Vikas Publishing House
- Basic Financial Management By Khan M Y, Jain P K, Mcgraw Hill Education
- Financial Management Theory And Practice By Gupta Shashi, K., Sharma R.K, Kalyani Publishers
- Fundamentals Of Financial Management By Sharan Vyuptkesh, Pearson


## Web Links

https://tallysolutions.com/accounting/receivable-management/#gref

https://www.meruaccounting.com/blog/receivable-management-meaning-objectives-importance/

https://www.highradius.com/resources/Blog/accounts-receivable-management/

https://www.wallstreetmojo.com/credit-policy/#:~:text=A%20credit%20policy%20is%20a,that%20help%20handle%20credit%20risk.

https://www.tutorialspoint.com/what-are-the-types-of-credit-policy-variables

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