

Chapter 1

Basics of Financial Management

CHAPTER OVERVIEW

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1. Basics

1.1.1 Meaning of Financial Management

Financial Management is the management (i.e. planning, organizing, directing, co-ordinating and controlling) of all activities relating to acquisition and application of the financial resources of an Entity, to achieve specified financial objectives.

Financial Management is a managerial activity that deals with planning and controlling of a Firm's financial resources.

Financial Management means management of all matters related to an Entity's finances.

1.1.2 Aspects of Financial Management

Financial Management deals with **procurement of funds** and **effective utilization of funds** in business. The two basic aspects / functions of Financial Management are explained below –

Aspect	1. Procurement of Funds	2. Effective Utilisation of Funds
Also called	Capital Structure or Financing Decisions	Investing or Investment Decisions
Types	Funds can be obtained from various sources – (a) Long Term Sources (Equity, Preference Capital, Debentures, Term Loans, etc.) (b) Short Term Sources (Trade Credit, Short-term Advances, Bank Finance for Working Capital, etc.)	Funds may be invested / utilized in – (a) Fixed Assets, Capital Projects and other Long Term Investments, (b) Current Assets, viz. Stock, Debtors, and other Short Term Investments.
Description	Funds procured from various sources have different characteristics in terms of risk, cost and control.	Funds invested in different types of assets, yield different rates of return.
Objective	While procuring funds from different sources, the objective is to minimize the cost of funds obtained.	While investing / utilizing the Funds, the objective is to maximize return on investment.
Activities	Procurement of funds involves the following – (a) Identification of Sources of Finance. (b) Determination of Finance Mix. (c) Raising of Funds. (d) Division of Profits between dividends and retention of profits, i.e. internal fund generation, and (e) Proper balancing of risk, cost and control factors.	Investing / Utilisation of Funds involves – (a) Identification of different investment and business opportunities and their returns, (b) Evaluation of various projects based on different criteria / factors, (c) Balancing between Fixed Assets and need for adequate Working Capital, etc.

1.1.3 Major Considerations / Aspects in Procurement of Funds

The major considerations in procurement of funds are – (1) Risk (2) Cost and (3) Control. They differ with the type of fund. A comparative analysis of Debt and Equity Funds is given below –

Fund Type	Risk	Cost	Control
Own Funds (Equity)	Low Risk – no question of repayment of Capital except when the Company is under liquidation. Hence best from viewpoint of risk.	Most expensive – dividend expectations of Shareholders are higher than interest rates. Also, dividends are not tax-deductible.	Dilution of control – Since the capital base might be expanded and new Shareholders / public are involved.
Loan Funds (Debt)	High Risk – Capital should be repaid as per agreement, Interest should be paid irrespective of profits earned during a period.	Comparatively cheaper – prevailing interest rates are considered only to the extent of after tax impact.	No dilution of control – generally there is no voting power, except in special situations, e.g. default, etc.

1.1.4 Scope and Significance of Financial Management

- Necessity:** Financial Management is essential wherever funds are involved – in a centrally planned economy and also in a capitalist set-up. It attempts to use funds in the most productive manner, i.e. optimizing the output from the given input of funds. It focuses on effective utilization of the most important resource in any activity, i.e. **money**.
- Pervasiveness:** Financial Management is necessary in all types of organizations, whether profit-oriented or not. It is a must for private as well as public enterprises, and all type of business forms.
- Primacy:** The strength of the finance function determines the strength of other functions since production, marketing, etc. are possible only with sound financial management. Hence Financial Management guarantees the survival of a business and constitutes a primary place in managerial attention.

1.1.5 Evolution of Financial Management

The three broad stages in the evolution of Financial Management are –

- Traditional Phase:** In this phase, Financial Management was considered necessary only for special, significant and occasional events, e.g. mergers and acquisitions, liquidation, etc. The focus of decision-making was primarily oriented towards Shareholders and Lenders (Loan Creditors).
- Transitional Phase:** In this phase, Financial Management was considered to meet the day-to-day decision-making requirements of Top Level Managers. The focus of decision-making was towards funds analysis, financial planning and control.
- Modern Phase:** Here, Financial Management is viewed as a supportive and facilitative function, not only for Top Management, but for all levels of Managers. Financial Management decisions range from corporate strategies – mergers & takeovers, option pricing, capital budgeting, etc. to regular and procedural aspects of financial discipline and control.

1.1.6 Changing Scenario of Financial Management in India

- Change in Role:** The information age has given a fresh perspective to the role of Finance Management and Finance Managers. With the shift in the paradigm, it is imperative that the role of Chief Financial Officer (CFO) changes from a Controller to a Facilitator.
- Organiser / Facilitator:** In his new emergent role, the CFO acts as a catalyst to facilitate changes in an environment where the Company succeeds through self-managed teams in each function e.g. production, marketing, purchase scheduling, etc. The CFO must now transform himself to a **front-end organizer or a leader**, whose role will be in networking the functions of various sub-units or teams.
- Strategic Level Role:** The CFO must analyse the external environment and take strategic decisions in order to manage and optimize the Firm's cash flows. Thus the role of the CFO shifts from an operational level to a strategic level. However, the operational level duties (back-end duties) will still have to be carried out.

4. **Knowledge Manager:** The CFO's knowledge requirements will extend from routine things like capital productivity, cost of capital etc. to specialized aspects like human resources initiatives, competitive environment analysis, etc. So, the CFO must develop / sharpen his skills in order to meet the needs of the emergent situation.

1.1.7 Changing Role of CFO

In view of the developments in business environment, the role of a CFO is not confined to mere accounting, financial reporting, and basic statutory compliance. His involvement is required in the following areas –

1. Budgeting, Strategic Planning and Forecasting,
2. Profitability Analysis and Pricing Analysis,
3. Outsourcing vs In-House Production Decisions,
4. Evaluating the effectiveness of IT and HR Functions,
5. Risk Management,
6. Managing Mergers and Acquisitions,
7. Statutory Compliance, etc.

1.1.8 Factors causing change in CFO's Work Profile

The following issues / matters have led to change in the work profile of the CFO –

1. **Reporting:** Financial Reporting requirements have become more wide and broadened, requiring more quality and expertise in handling the same.
2. **Regulations:** Statutory / Regulatory Requirements have increased in terms of Taxation Law, Corporate and Business Law, RBI Regulations, etc. CFO's have personal responsibility in ensuring compliance thereof.
3. **Talent and Capability:** More focus will be on functional area talent, managing and organizing capability (team management, cross-functional group handling, etc), for the person who dons the top role in Finance.
4. **Globalisation:** CFOs are required to do their basic finance functions (procuring and using funds) in the global market. They have to manage these functions on the global stage and maximize return on investment.
5. **Risk Management:** The nature of risks faced by Business Entities requires more effective Risk Management Methodologies. CFOs have to play a lead role in Entity risk management.
6. **Technology:** CFOs have better tools and techniques, using technology, for all their functions. CFOs have to be adept in using technology and using it to their advantage.
7. **Stakeholder Management:** CFO may be viewed as the face of the Corporate Brand, leading to a higher need for managing Stakeholder Relationships.
8. **Strategy:** In view of the dynamic environment in which the Entity operates, the CFO is viewed as the "Auditor" for Strategy Validation and Execution.
9. **Service Function:** Finance is now viewed as a "Service Function", leading to business expectations of providing the best possible service at the least cost.

1.2 Objectives

1.2.1 Objectives of Financial Management

1. Primary Objectives	2. Other Objectives
(a) Profit Maximisation.	(a) Customer Satisfaction, i.e. value for money, quality goods, etc.
(b) Value or Wealth Maximisation.	(b) Employee Welfare, i.e. good standard of living, giving fair wages, etc.
	(c) Maintaining and improving Market Share.
	(d) Market Leadership in terms of products, services, technology, management techniques, etc.
	(e) Good Corporate Citizenship in terms of tax remittance, maintaining ecological balance, etc.

1.2.2 Profit Maximisation Objective

1. **Profit Maximisation:** The basic business motive is Profitability. So, the Finance Manager has to take his decisions in order to maximize the profits of the business. Profit Maximisation is a basic and long-term objective, but has a short-term measurement focus (say a financial year.)

2. **Advantages / Disadvantages:** Profit Maximisation, as an objective has the following advantages and limitations –

Advantages	Disadvantages / Limitations
(a) Must for survival of business, else, Capital is lost.	(a) The term "Profit" is vague.
(b) Essential for growth and development of business.	(b) Higher the profits, higher the risks involved.
(c) Impact on society through factor payments.	(c) It ignores time pattern of returns.
(d) Profit-making firms only can pursue social obligations.	(d) It ignores social & moral obligations of the business.
(e) Easy for measurement and evaluation.	(e) Emphasises only on short-term gains.

Hence, Profit Maximisation is viewed as a limited objective, i.e. essential but not sufficient.

1.2.3 Wealth Maximisation Objective

1. **Wealth Maximisation:** The second objective of Financial Management is to maximize the Value of Wealth of the Firm. Wealth or Value of a Firm is represented by the Market Price of its Capital (i.e. Shares and Debentures). This value depends upon – (a) likely rate of earnings of the Company (EBIT), and (b) Capitalisation Rate.

- (a) **Earnings:** It takes into account, the present and prospective earnings, the timings and risk of these earnings, the dividend policies of the Firm and other factors governing revenues.
- (b) **Capitalisation Rate:** It is the cumulative result of the assessment of the various stock-holders (Equity and Debt) regarding the risk and other qualitative factors of a Company. This rate reflects the liking of the investors for a Company.
- (c) **Value of a Firm = Earnings ÷ Overall Capitalisation Rate.** Hence, Wealth Maximization is a better objective for a business since it represents both return and risk. Wealth Maximisation Objective recognizes the viewpoints of the Firm as well as its Investors (both Equity and Debt).

2. **Superiority of Wealth Maximisation Objective:**

- (a) **All Factors:** Wealth Maximisation objective takes into account, all future cash flows, dividends, EPS, etc. whereas Profit Maximisation objective does not recognize the effect of future cash flows, dividend decisions, EPS, etc.
- (b) **Dividend:** A Firm with Profit Maximisation objective may refrain from payment of dividend to its Shareholders. However, a Firm with Wealth Maximisation objective may pay regular dividends to its Shareholders.
- (c) **Long Run:** Shareholders prefer an increase in the Firm's wealth as against mere increase in flow of profits.
- (d) **Rate of Earning vs Dividend:** Shareholders prefer a Firm to use its funds effectively, e.g. a Firm which is able to generate a higher rate of return on its own retained funds, may be able to increase its Wealth / Value. If the Firm had distributed its profits by way of dividends, the rate of earning may not be high.
- (e) **Overall well-being:** Wealth Maximisation recognises all aspects of well-being, viz. – (i) Shareholders' Wealth, (ii) Firm's Wealth, and (iii) Societal Wealth.

3. **Limitations of Wealth or Value Maximisation Objective:**

- (a) **Timing:** The timing or duration of expected returns is not specified. So, one cannot be sure whether an investment fetching ₹ 10 Lakhs return after 5 years is more or less valuable than an investment fetching ₹ 1.50 Lakhs per year for the next five years.
- (b) **Risk:** The risk factor of projects to be undertaken is not considered properly. A Firm with a higher Debt Capital may have the same EPS as a Firm having a lesser Debt Capital in the capital structure. However, the Market Price per Share of the two Companies shall be different.
- (c) **Dividends:** The effect of dividend policy on Market Price per Share is not fully considered. To maximize EPS, Companies may not pay any dividend. In such cases the EPS may increase but the Market Price per Share may go down due to adverse reactions from the Shareholders.
- (d) **Vague:** Share Prices are affected by external factors and not only by financial decisions of a Firm. Hence, sole dependence on Financial Decisions for maximizing Wealth can lead to management anxiety and frustration.

However, for routine decision-making purposes, the Finance Manager views Profit Maximisation as a short-term objective and Value Maximisation as a Medium / Long-Term objective.

1.2.4 Profit Maximisation vs Wealth Maximisation

	Profit Maximisation	Wealth Maximisation
1.	Does not consider the effect of future cash flows, dividend decisions, EPS, etc.	Recognises the effect of all future cash flows, dividends, EPS, etc.
2.	A Firm with Profit Maximisation objective may refrain from payment of dividend to its Shareholders.	A Firm with Wealth Maximisation objective may pay regular dividends to its Shareholders.

	Profit Maximisation	Wealth Maximisation
3.	Ignores time pattern of returns.	Recognises the time pattern of returns.
4.	Focus on Short-Term.	Focus on Medium / Long-Term.
5.	Does not consider the effect of uncertainty / risk.	Recognises the risk-return relationships.
6.	Comparatively easy to determine the relationship between financial decisions and profits.	Offers no clear or specific relationship between financial decisions and share market prices.
7.	Leads to too naïve decisions, e.g. (a) avoiding investments which result in immediate cash losses, but substantial revenues in the long-run, (b) postponing replacement expenditure to ensure short-term profits, etc.	Leads to systematic decisions using the tools and techniques of Capital Budgeting, Risk-Return Trade-off, Leverage Effect, etc.
8.	Focus on Entity's short term gains and profits.	Focus on long-term wealth of Entity, Shareholders and Society as a whole.

Note: For measuring and maximizing Shareholders' Wealth, the Finance Manager should – (a) follow Cash Flow approach rather than mere Accounting Profits, (b) consider Time Value of Money in long-term evaluation, (c) perform Cost Benefit Analysis in every type Financing, Investing and Dividend decisions.

1.2.5 Wealth Maximisation Concept as per Ezra Solomon's Theory

- Scope of FM:** According to Ezra Solomon, study of Financial Management includes –
 - Determining the size of the Entity, and its Growth Rate,
 - Determining the composition of Assets of the Entity,
 - Determining the capital structure of the Entity, i.e. financing mix of Debt, Equity, etc.
 - Managing (i.e. analyzing, planning and controlling) the Financial Affairs of the Entity based on the above.
- Wealth Maximisation:** The Operational Objective of Financial Management is the maximization of Wealth (W) computed as under –

Step	Description
1	Compute Earnings (E) =Flow of Future Benefits available to the Providers of Capital (i.e. Investors), as under – $E = G - (M+T+I)$, where G = Average Future Flow of Gross Annual Earnings expected from the present / proposed business / investment, before Maintenance Charges, Taxes, Interest & Other Prior Charges like Preference Dividend. M = Maintenance Charges, i.e. Average Annual Re-investment required to maintain "G" at the projected level. T = Expected Annual Outflow on account of Taxes I = Expected Flow of Annual Payments by way of Interest, Preference Dividend, and Other Prior Charges.
2	Compute Gross Present Worth (V), by discounting Earnings (E) as per Step 1, at an appropriate rate (K). So, $V = \frac{E}{K}$, where E = Flow of Earnings (E) as per Step 1, and K = Capitalisation Rate (i.e. Discount Rate) reflecting the quality and timing of benefits attached to "E".
3	Compute Net Wealth (W) = Gross Wealth (V) as per Step 2 Less: Investment / Equity Capital required to purchase the asset / business / course of action.

Note: For discounting and related concepts, refer Appendix on Time Value of Money.

1.3 Functions

1.3.1 Responsibilities / Functions of Finance Manager / CFO

All decisions involving management of funds come under the purview of the Finance Manager. This includes –

- Fund Requirement Estimation:**
 - The Finance Manager has to carefully estimate the Firm's requirements of Funds.
 - The **purpose** of funds (investment in Fixed Assets or Working Capital) and **timing** of funds (i.e. when it is required) should be determined, using techniques like budgetary control and long range planning.
 - This calls for forecasting all physical activities of the Firm and translating them into monetary terms.

2. Capital Structure / Financing Decisions:

- (a) The Finance Manager has to determine the **proper mix** / combination of procuring funds. Funds can be procured from various sources for short term and long-term purposes.
- (b) Decisions regarding Capital Structure (called Financing Decisions) should be taken to provide proper balance between – (i) Long-Term and Short-Term funds, and also (ii) Loan Funds and Own Funds.
- (c) Long-Term funds are required to (a) finance Fixed Assets and long-term Investments, and (b) provide for permanent needs of working capital. Short Term Funds are required for Working Capital purposes.

3. Cash Management Decisions:

- (a) The Finance Manager has to ensure that all sections / branches / factories / departments and units of the Firm have adequate funds (cash), to facilitate smooth flow of business operations.
- (b) He should also ensure that there is no excessive cash (idle funds) in any division at any point of time.
- (c) For this purpose, cash management and cash disbursement / transfer policies should be laid down.

4. Capital Budgeting / Investment Decisions:

- (a) Funds procured should be invested / utilized effectively. The Finance Manager should prescribe the asset management policies, for Fixed Assets and Current Assets.
- (b) Long Term Funds should be invested – (i) in Fixed Assets / Projects after proper Capital Budgeting evaluation, and (ii) in Permanent Working Capital after estimating the requirements carefully.

5. Financial Analysis / Performance Evaluation:

- (a) Financial Analysis helps in assessing how effectively the funds have been utilized and in identifying methods of improvement. So, the Finance Manager has to evaluate financial performance of various units of the Firm.
- (b) There are various tools of Financial Analysis like Budgetary Control, Ratio Analysis, Cash Flow and Fund Flow Analysis, Common Size Statement analysis, Intra-Firm Comparison, etc.

6. Dividend Decisions:

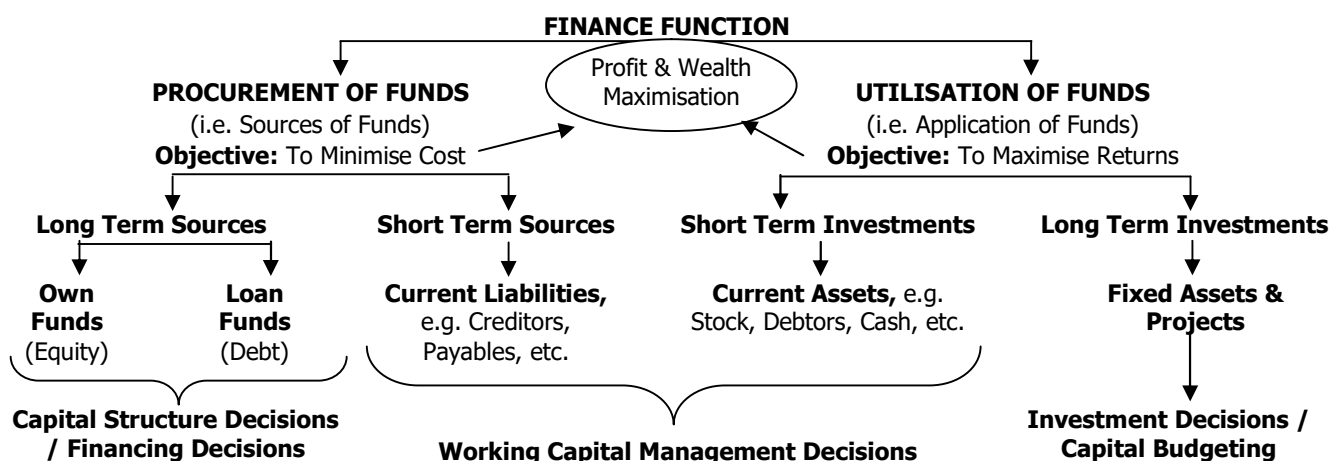
- (a) The Finance Manager should assist the top management in deciding the dividend-payout and retention ratio, i.e. – (i) what amount of dividend should be paid to Shareholders, and (ii) what amount should be retained in the business itself.
- (b) Dividend Decisions depend upon various factors like – (i) trend of earnings, (ii) requirement of funds for future growth, (iii) cash flow situation, (iv) trend of share prices, and (v) tax liability of Firm / Shareholders.

7. Financial Negotiations / Liaison with Lenders: The Finance Manager is required to interact and carry out negotiations with Financial Institutions, Banks, and Public Depositors. Negotiations especially with outside financiers require negotiation skills.

8. Market Impact Analysis:

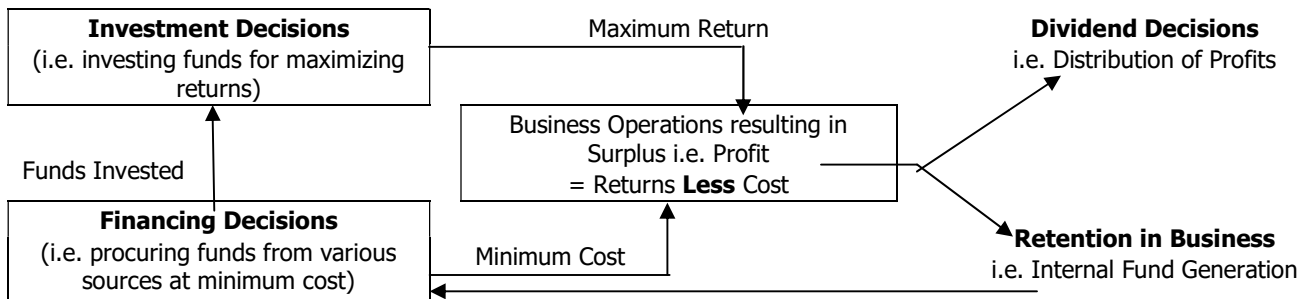
- (a) The Finance Manager has to monitor the Stock Exchange quotations and movement of share prices. This involves analysis of major trends in the stock market and judging their impact on the share price of the Firm.
- (b) Value Maximisation Objective is achieved through this analysis and action.

OVERVIEW OF FINANCIAL MANAGEMENT – ASPECTS, OBJECTIVES AND FUNCTIONS



1.3.2 Relationship bet'n Investment, Financing & Dividend Decisions

- Objective:** The underlying objective of all the three decisions viz. – Investment, Financing and Dividend decisions, is "maximization of Shareholders' wealth". The Finance Manager has to consider the joint impact of these three decisions on the market price of the Company's Shares.
- Linkage:**
 - A new project (investment) needs finance. Also, a Company may have to expand / develop its operations, which require funds. Hence Investment Decisions is based on the Financing Decision.
 - The Financing decision is influenced by, and influences the Dividend decision, since Retained Earnings used in internal financing means reduction in dividends paid to Shareholders.
 - So, the inter-relationship between the three types of decisions should be analysed jointly, in order to maximize the Shareholders' wealth.
- Decision-Making:** The three decisions can be linked to maximize Shareholders' Wealth, in the following manner –
 - Investment Decisions:** Investment in Long Term Projects should be made after Capital Budgeting and uncertainty analysis. Projects which give reasonable returns (higher than cost) in order to add to the surplus of the Shareholders', should be selected. The returns should be high enough as to distribute reasonable dividends and also retain adequate resources for the Company's growth prospects.
 - Financing Decisions:** Proper balancing between long-term and short-term funds, as well as own funds and loan funds, will help the Firm to minimize its overall cost of capital and increase its wealth / value. Low cost of funds will mean higher profit margins, which can be used for dividend distribution as well as internal financing of new projects / growth plans.
 - Dividend Decisions:** The optimum dividend pay-out ratio ensures that shareholders' wealth is optimized. Where the funds at the disposal of the Company earn a higher return than if distributed to shareholders, wealth maximization can be achieved by retaining the funds, rather than declaration of dividend.



1.4 Miscellaneous

1.4.1 Impact of Taxation on Financial Management

The Finance Manager, as an advisor to management, is required to take various decisions on procurement and utilization of funds. Tax considerations have an effect on these areas and hence the Finance Manager needs to have a reasonable understanding of direct and indirect tax provisions.

- Financing Decisions – Cost of Capital:** Debt is cheaper than Equity since interest payable on loan is a charge on profit and will reduce the tax payable by the Company. The use of cheaper cost debt funds has a leverage effect and increases the EPS of the Company.
- Investment Decisions – Capital Budgeting:** For project evaluation, the Cash Flows after Taxes (CFAT) are relevant for discounting purposes. Cash outflows may also be reduced due to various deductions and allowances. The incidence of tax on income and on capital gains affect cash flows and investment decisions.
- Dividend Decisions – Retention v Payment:** Tax is one of the major considerations in taking decisions on the amount and rate of dividend. Whether the Company should retain all its earnings or distribute all earnings as dividend, also depends on tax incidence on the Company and its Shareholders.

1.4.2 Financial Management under Resource Constraints

Resource Constraint means a situation where the required resources i.e. money, materials, men, methods and machinery are not fully available in order to meet the requirements. In Marginal Costing and decision-making, such a situation is called as **Key Factor** or **Critical Factor** situation.

Under Resource Constraint situations, the Finance Manager adopts the following strategy –

1. **Creation of database and sound MIS:** This will ensure that retrieval of data is both fast and accurate.
2. **Identification of key areas of decision-making:** This will highlight segments or business functions where the managers have to concentrate and take the correct decisions at the right time.
3. **Capital Structure Decisions:** The Finance Manager has to ensure that resources are made available without creating additional burden of debt. Leverage factor may work in reverse when sales are in a downward trend.
4. **Working Capital Management:** Working Capital Management assumes greater significance in a firm facing Resource Constraints. The Finance Manager has to balance liquidity and profitability aspects in this regard. Working Capital financing tools like Bills Discounting, Factoring, Commercial Paper should be judiciously used.
5. **Capital Budgeting Decisions:** Since funds may not be freely available, the Finance Manager has to invest in projects that maximize the Returns and minimise the risk. Capital Rationing technique is applied when many projects are analysed. Hire Purchase or Leasing may be considered as an alternative mode of financing capital projects.

1.4.3 Handling Financial Distress

1. **Meaning:** Financial Distress refers to a situation where the Cash Inflows of a Firm are inadequate to meet all its current obligations.
2. **Reasons:** Financial Distress may arise due to –
 - (a) fall in demand / market for a Firm's Products / Services,
 - (b) increase in Cost of Inputs, i.e. Raw Material, Labour, Services, etc. without corresponding in Prices,
 - (c) higher levels of Debt which require regular servicing of interest,
 - (d) diversion of Working Capital Funds for long term (Asset Generation / Term Loan Repayment) purposes, etc.
3. **Impact:** If not managed properly by the Firm's Finance Professionals, such Financial Distress may gradually lead to insolvency and dissolution of the Firm. Hence, proper and professional Financial Management is necessary to handle Financial Distress in an effective manner.

1.4.4 Agency Problem

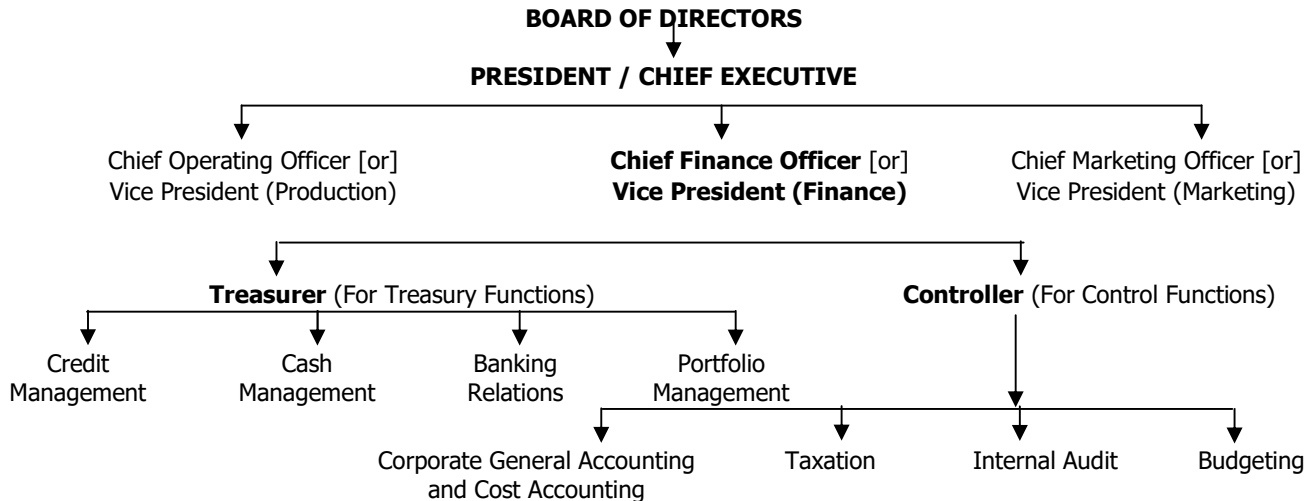
1. **Meaning:** The Agency Problem . The Agency Problem is more relevant in Corporate Entities (rather than Proprietor / Partnership Firms), due to a conflict of interest between a Company's Management and the Company's Shareholders.
2. **Concept:**
 - (a) In a Company, the Directors / Managers act as Agents for the Shareholders (i.e. Principals). Agency Problem is the chance that Managers may place personal goals ahead of the goals of Shareholders.
 - (b) Agency Problem arises if managers' interests are **not** aligned to the interests of the Debt Lender and Equity Investors.
 - (c) Managers are supposed to make decisions that will maximize Shareholder Wealth even though it is in the Managers' best interest to maximize their own wealth.
3. **Reason:** The Agency Problem arises due to an issue with Incentives. An Agent may be motivated to act in a manner that is not favorable for the Principal, if the Agent is presented with an Incentive to act in this way.
4. **Agency Cost:**
 - (a) Agency Cost is the additional cost borne by the Shareholders to monitor the Manager and control their actions, so as to maximize Shareholders' Wealth.
 - (b) It is not always possible to eliminate the Agency Problem completely. However, the Manager can be motivated to act in the Shareholders' best interests, by incurring appropriate Agency Costs.

(c) Agency Costs may be classified as under –

- **Monitoring** – direct influence by Shareholders, Shareholders' Approval for certain acts, Borrowings, etc.
- **Bonding** – performance-based incentives, Managerial Compensation linked to Company's Profits, ESOPs, etc.
- **Opportunity** – the threat of firing, and bringing in a new set of Managers to run the Company,
- **Structuring** – the threat of takeovers.

1.4.5 Organisation Chart of Finance Function

Broadly, the finance function can be specially classified into – (1) **Treasury** functions, and (2) **Control** functions. The Organisation Chart of finance function in a large organization may be as under –



1.4.6 Accounting vs Finance – Centralisation

Accounting is related to book-keeping and recording information on the transactions of the business. Although it requires specific technical skills, much of accounting is routine in nature. Hence, in a Firm having different branches / divisions scattered over different places, accounting function can be centralized. All Branches can send their statement of accounts to the Head Office, for consolidation of Financial Statements.

However, Finance is a more comprehensive function requiring frequent interaction with Top Management. The arguments in favour of centralisation on the Finance function are –

1. **Outside Relationship Orientation:** Finance function involves liaison with external agencies like Bankers, Financial Institutions etc. on a more frequent basis. Accounting data is primarily used for the internal consumption of the firm. Hence, finance should be centralized whereas accounting can be decentralized.
2. **Unity of Direction:** Accounting is concerned with recording and presentation of information periodically. However finance deals with procurement and utilization of funds for supply to all sections of the firm. It should hence be centralized to ensure unity of direction.
3. **Delegation of Authority:** If there is systematic delegation of authority to all levels of management and division managers enjoy decision-making freedom, accounts as well as finance functions can be decentralized. However if significant decision-making power is centralized, it is better if finance function is also centralized.
4. **Unity of Effort:** In the accounting process, each division is responsible for maintaining sufficient records of its own transactions. However, in the finance function, the nature of decisions, activities and functions are common for all divisions of the firm. Hence, to avoid duplication of effort and overlapping of responsibilities, finance function should be centralized.
5. **Information Flow:** Even in situations where the Firm has an efficient MIS and is able to process information quickly, finance function should preferably be centralized.

Thus, it is advantageous to decentralise Accounting Function while Finance Function should be centralised.

1.4.7 Financial Accounting vs Financial Management

	Financial Accounting	Financial Management
1.	Financial Accounting generates information relating to operations of the Entity.	Financial Management seeks to use the information generated by the accounting function, for decision-making .
2.	Financial Accounting is past-oriented, in the sense that transactions/ events which happen, are recorded.	Financial Management is future-oriented, i.e. to guide the Entity in future course of action.
3.	Measurement, Recognition and Disclosure are the dominant aspects considered in accounting.	Procurement of Funds and their Effective Utilisation are the dominant aspects of Financial Management.
4.	Measurement of Funds (i.e. Revenue, Expenses, etc.) is largely based on the accrual concept.	Decision-making requires the analysis of funds in terms of Cash Inflows and Cash Outflows.
5.	Accounting is guided by principles, standards, legal requirements, etc.	Financial Management is guided by tools and techniques for decision-making.

1.4.8 Relationship between Finance and other Functions

Finance is the lifeblood of an Entity. It is the common thread that binds all organisational functions. Each function in an Entity has financial implications. The relationship between finance and other functions can be described as follows –

Function	Investment Aspect	Decision-Making Aspect
Finance and Production	This includes decisions on investment in Production inventories, stock levels, purchase policies etc.	Decisions such as Make or Buy Components, Retain or Replace Machinery etc. are taken after analysing financial implications thereof.
Finance and Marketing	This includes decisions on investment in Marketing Finished Goods inventories.	Marketing decisions and strategies such as Credit Granting, Change in Sale Prices to sell additional quantities, acceptance of additional order etc. are taken after analysing their financial impact.
Finance and Personnel	This includes decisions on capital costs associated with personnel policies and substantial training expenditure, if any.	Investments in HRD are bound to increase in future. Re-structuring of pay package, drafting of voluntary retirement schemes, issue of sweat equity, etc. are some major decisions in Human Resource Management.

Note: In addition to the above, Financial Management has a working inter-relationship with the fields of –1.Economics, and 2.Quantitative Methods.

1.4.9 Tools of Financial Management

Some widely-known methods / tools of Financial Management are –

Type of Decision	Tool / Method adopted
Financing Decision–To maximise Shareholders' wealth.	Financial Leverage / Trading on Equity.
Investment Decision – To maximise Return on Investment in Capital Projects.	Capital Budgeting – Payback, Average Rate of Return, Net Present Value, Internal Rate of Return, Profitability Index, etc.
Performance Evaluation Decision.	Budgetary Control, Ratios, Cash Flow and Fund Flow Analysis, etc.

1.4.10 Importance of Good Financial Management

Financial Management deals with planning investment, funding the investment, monitoring expenses against budget and managing gains from the investments. Good Financial Management is the key to successful business operations. The importance of effective Financial Management can be understood from the following aspects –

1. Helping the Entity to reach its full potential for growth and success,
2. Proper Administration of Finance, the lifeblood of any Entity,
3. Ensuring proper investments in Fixed Assets and Long Term Projects,
4. Ensuring adequacy of short-term Working Capital, to ensure liquidity,
5. Setting Sales Revenue targets that will deliver growth,
6. Increasing Gross Profit by managing costs and setting the correct prices for products or services,
7. Managing Costs by identifying efficient and effective ways of running the day-to-day business operations,
8. Balancing Cash-Outflows with Cash-Inflows, and
9. Tax Management and Planning that will minimize the Taxes an Entity has to pay.

Important Theory Questions

Question	Refer
1. What do you mean by Financial Management? Explain its basic aspects. N 02	1.1.1
2. Explain the two basic functions of Financial Management. RTP, N 09, S 25 What are the two main aspects of the Finance Function? M 18 (New)	1.1.2
3. What are the major considerations / aspects involved in procurement of funds? RTP, M 03	1.1.3
4. Bring out the scope and significance of Financial Management.	1.1.4
5. Explain in brief the phases of the evolution of Financial Management. N 21	1.1.5
6. Discuss the changing scenario of Financial Management in India. M 06, M 09, M 10	1.1.6
7. "The information age has given a fresh perspective to the role of Finance Management and Finance Managers. With the shift in the paradigm, it is imperative that the role of Chief Financial Officer (CFO) changes from a Controller to a Facilitator". Can you describe the emergent role which is described by the Speaker / Author here? List out the role of Chief Financial Officer in today's world. N 20 (New)	1.1.7
8. What are the emerging issues, which have led to change in dimension of the CFO's work profile? N 16	1.1.8
9. Write two main objectives of Financial Management. N 18 (New)	1.2.1
10. It has been traditionally argued that the objective of a Company is to earn profit. Hence the objective of Financial Management is also Profit Maximisation. Comment. Write any two limitations of Profit Maximization Objective of Financial Management. N 07, N 18, S 25 What are disadvantages of Profit Maximization Objective? N 23	1.2.2
11. Explain the Wealth Maximisation Objective of a Firm. Explain how Wealth Maximisation is superior to the Profit Maximisation objective. M 03 State advantages of "Wealth Maximization" goals in Financial Management. M 22 Maximising Market Price Per Share (MPS) as the financial objective which maximises the wealth of Shareholders. State whether True or False, with brief reasons. M 24 Discuss the objectives and advantages of Wealth Maximization Goal of Financial Management. J 25 Wealth Maximisation as an objective has its limitations. Comment. RTP "The Profit Maximisation is not an operationally feasible criterion". Comment on it. M 12	1.2.3
12. Explain "Profit Maximisation" & "Value Maximisation" objectives of Finance Function. N 03 Distinguish between 'Profit Maximization' and 'Wealth Maximization' Objective of a Firm. M 17 Discuss the conflicts in Profits Maximisation versus Wealth Maximisation Principle of the Firm. N 06, N 07, M 09, N 10, N 12, M 15 In recent years, a number of environmental, consumer-protection oriented, and other regulations have been imposed on Business Entities. In view of these developments, is Maximisation of Shareholder Wealth, still a realistic objective for a Business Entity? Explain.	1.2.4
13. List out the steps to be followed by the Finance Manager to measure and maximize Shareholders' Wealth. M 21	1.2.4
14. Write short notes on Wealth Maximisation Concept as per Ezra Solomon's Theory.	1.2.5
15. "Financial Management is more than mere procurement of funds". What do you think are the responsibilities of a Finance Manager? RTP Explain 'Finance Function'. N 17 Discuss the functions of a Finance Manager / Chief Financial Officer. M 04, M 07, N 11	1.3.1
16. Explain the inter-relationship between Investment, Financing and Dividend Decisions. RTP Briefly explain the three finance function decisions. N 19 (New)	1.3.2
17. An understanding of Taxation Policy and Provisions is as important to the Financial Manager as it is for the Tax Planner. Comment on this statement indicating atleast three areas of Financial Management where Taxation can have a significant effect.	1.4.1
18. Write a note on Financial Management under Resource Constraint. RTP	1.4.2
19. Write short notes on "Financial Distress". Explain how Financial Management can avoid Insolvency. Financial Distress is a position when Accounting Profits of a Firm are sufficient to meet its long-term obligations. State whether True or False, with brief reasons. M 24	1.4.3
20. Write short notes on the "Agency Problem". Explain the costs incurred to reduce this problem. What is Agency Cost and what are its types? How can a Company minimise Agency Cost and align the interest of Manager and Shareholder? M 25	1.4.4

Question	Refer
21. Bring out the position of the Finance Function in the Organisation Structure. / Draw a typical organisation chart depicting the Finance Function. M 08	1.4.5
22. It is advantageous to decentralise Accounting Function while Finance Function should be centralised. Comment.	1.4.6
23. Differentiate between Financial Accounting and Financial Management. N 09	1.4.7
24. Discuss the pervasive nature of Finance Function (or) Explain the relationship between Finance Function & other functions.	1.4.8
25. List some tools of Financial Management.	1.4.9
26. State 4 tasks involved to demonstrate the importance of good Financial Management. Jan 21	1.4.10

Multiple Choice Questions

1. "Shareholder wealth" in a firm is represented by____
 - (a) The number of people employed in the firm.
 - (b) The book value of the firm's assets less the book value of its liabilities.
 - (c) The amount of salary paid to its employees.
 - (d) The market price per share of the firm's common stock.
2. Financial Management is study –
 - I. Of the process of procuring and judicious use of financial resource
 - II. Undertaken to maximize the value of the firm /owners.
 - (a) (I) only
 - (b) (II) only
 - (c) Both (I) and (II)
 - (d) Neither (I) nor (II)
3. To increase a given present value, the discount rate should be adjusted –
 - (a) Upward
 - (b) Downward
 - (c) Keep as it is
 - (d) None of the above
4. Long run objective of financial management is to____
 - (a) Maximize earnings per share.
 - (b) Maximize the value of the firm's common stock.
 - (c) Maximize return on investment.
 - (d) Maximize market share.
5. Financial Management is concerned with____
 - (a) Investment Decisions
 - (b) Finance Decisions
 - (c) Dividend Decisions
 - (d) All of the above
6. Procurement of funds inter alia includes____
 - (a) Identification of sources of finance
 - (b) Determination of finance mix
 - (c) Raising of funds
 - (d) Division of profits between dividends and retention of profits of internal funds generation
 - (a) (a) & (b)
 - (b) (a), (c) & (d)
 - (c) (b) & (c)
 - (d) (c), (a), (d) & (b)
7. Market Price of a Share is determined by:
 - (a) The board of directors of the firm.
 - (b) The stock exchange on which the stock is listed.
 - (c) The president of the company.
 - (d) Individuals buying and selling the stock.
8. Which of the following is/are the basic aspects of financial management?
 - (1) Procurement of funds.
 - (2) Appointment of capable financial personnel.
 - (3) Effective use of funds to achieve business objectives.
 - (4) Increase the national resources.
 - (a) (1) & (3)
 - (b) (2) & (4)
 - (c) (1) & (4)
 - (d) (2) & (3)
9. The focal point of Financial Management in a firm is_
 - (a) The number and types of products or services provided by the firm.
 - (b) The minimization of the amount of taxes paid by the firm.
 - (c) The creation of value for shareholders.
 - (d) The profits earned by the firm.
10. A business organization can obtain funds from –
 - (a) Issue of preference or equity share capital
 - (b) Issue of debentures
 - (c) Loan from banks and financial institution
 - (d) All of the above
11. The decision function of financial management can be broken down into decisions.
 - (a) Financing and investment
 - (b) Investment, financing & asset management
 - (c) Financing and dividend
 - (d) Capital budgeting, cash management & credit management
12. The funds raised by the issue of____are the best from the risk point of view for the company.
 - (a) Equity Shares
 - (b) Debentures
 - (c) Both (A) & (B)
 - (d) None of the above
13. A 30 year bond issued by Reliance Ltd in 2007 would now trade in the –
 - (a) Primary money market
 - (b) Secondary money market
 - (c) Primary capital market
 - (d) Secondary capital market
14. Which of the following is not a function of a finance manager?
 - (a) Investor relations
 - (b) Credit & collections
 - (c) Investments
 - (d) Appointment of Financial Personnel
15. Money Market Mutual Funds
 - (a) Are also known as Finance Companies
 - (b) Enable individuals and small businesses to invest indirectly in money–market instruments.
 - (c) Are available only to high net–worth individuals.

(d) Are involved in acquiring and placing mortgages

16. Match the following:

Risk Management	1.	Amounts to be retained by the company
Dividend Decisions	2.	Financial planning, controlling & decision making
Financial manager's primary responsibility	3.	Determining the proper amount of funds to be employed
Financial Analysis & Planning	4.	Collect data and present the data
	5.	Protecting assets

- (a) 5,1,2,3
- (b) 5,1,4,3
- (c) 5,1,3,2
- (d) 3,2,1,4

17. The purpose of financial markets is to:

- (a) Increase the price of common stocks
- (b) Lower the yield on bonds
- (c) Allocate savings efficiently
- (d) Control inflation

18. Investment decisions are concerned with –

- (a) Efficient allocation of funds to specific assets
- (b) Determining the proper amount of funds to be employed in the firm.
- (c) Determining the composition of liabilities
- (d) Short-run projects

19. _____ ensures that the firm utilizes its available resources most efficiently under conditions of competitive markets.

- (a) Wealth Maximization
- (b) Profit Maximization
- (c) Value Maximization
- (d) Relation Maximization

20. For which of the following reason(s) profit maximization concept is criticized –

1. It is vague conceptually.
2. It ignores the timing of returns.
3. It ignores the risk factor
4. Its emphasis is generally on short-run projects.

Select the correct answer from options given below.

- (a) 1
- (b) 1 & 2
- (c) 1, 2 & 3
- (d) 1,2, 3 & 4

21. _____ consistent with the object of maximizing the owner's economic welfare.

- (a) Profit Maximization
- (b) Wealth Maximization
- (c) Relation Maximization
- (d) All of the above

22. Financial Management is concerned with –

- (a) Profit Maximization
- (b) Both (A) & (C)

(c) Wealth Maximization

(d) Both (A) & (C) plus Relation Maximization

23. Assertion (A):

Profit maximization as an objective does not take into account the time pattern of returns.

Reason (R):

The finance managers will accept highly risky proposals if they give high profits by applying the profit maximization concept.

Select the correct answer from options given below.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not a correct explanation of A.
- (c) A is true but R is false
- (d) A is false but R is true

24. Profit maximization –

- (a) Cannot be the sole objective of a company
- (b) Is at best a limited objective.
- (c) Has to be attempted with a realization of risks involved
- (d) All of the above

25. Under inflationary conditions, the value of money expressed in terms of its purchasing power over goods and services

- (a) Incline
- (b) Declines
- (c) Increases
- (d) Remains constant

26. _____ is a condition where a company cannot meet or has difficulty paying off, its financial obligations to its creditors, typically due to high fixed costs, illiquid assets, or revenues sensitive to economic downturns.

- (a) Financial risk
- (b) Financial uncertainty
- (c) Financial certainty
- (d) Financial distress

27. _____ means the organization can no longer meet its financial obligations with its lender or lenders as debts become due.

- (a) Financial certainty
- (b) Financial insolvency
- (c) Financial risk
- (d) Identified risk

28. A permanent _____ may lead an organization to the chaotic state _____

- (a) Financial insolvency; financial certainty
- (b) Financial distress; Identified risk
- (c) Identified risk; financial insolvency
- (d) Financial distress; financial insolvency

29. Using _____ in the capital structure of a company is called financial gearing

- (a) Borrowed funds or fixed cost funds
- (b) Owners funds or fixed cost funds
- (c) Owners funds

- (d) Reserve or balance of profit & loss account
30. High financial gearing will____
- (a) Decrease the EPS of the company if earnings before interest and taxes are rising
 - (b) Increase the EPS of the company if earnings before interest and taxes are declining
 - (c) Decrease the EPS of the company if earnings before interest and taxes are declining
 - (d) Increase the EPS of the company if earnings before interest and taxes are rising
31. Higher the level of financial gearing____
- (a) Greater will be the risk.
 - (b) Lower will be the risk.
 - (c) Risk will be constant.
 - (d) None of the above
32. Financial management is broadly concerned with____
- (a) Raising of funds
 - (b) Creating value to the assets of the business enterprise
 - (c) Efficient allocation of funds
 - (d) All of the above
33. Financial Management can be judged by the study of the nature of____
- (a) Corporate, social & benefit decisions.
 - (b) Accounting, financing & dividend decisions.
 - (c) Personnel, human cost & economic decisions
 - (d) Investment, financing & dividend decisions.
34. Which of the following is/are a major aspect of the investment decision-making process?
- (a) Capital budgeting
 - (b) Formulation of Functional Strategy
 - (c) Strategic implementation
 - (d) All of the above

35. Investment decisions encompass____
- (a) Cost of capital
 - (b) Capital budgeting
 - (c) Management of liquidity and current assets
 - (d) All of the above
36. Optimal investment decisions need to be made taking into consideration such factors as____
- (a) Estimation of capital outlays & future earnings of the proposed project focusing on the task of value engineering and market forecasting;
 - (b) Availability of capital and considerations of cost of capital focusing attention on financial analysis
 - (c) A set of standards by which to select a project for implementation and maximizing returns therefrom focusing attention on logic and arithmetic.
 - (d) All of the above
37. If the 'Profit Maximization' concept is applied then which of the following Product will be selected?

YEAR	A	B	C	D
1	14,000	6,000	35,000	22,000
2	14,000	8,000	10,000	5,000
3	14,000	10,000	8,000	18,000
4	14,000	18,000	4,000	6,000
5	14,000	34,000	2,000	10,000

Note: Above table shows projected earnings of the various products for the next 5 years.

- (a) Product A
- (b) Product B
- (c) Product C
- (d) Product D

Solutions

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
d	c	b	b	d	d	d	a	c	d	b	a	d	d	b	a	c

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
a	b	d	b	b	b	d	b	d	b	d	a	d	a	d	d	a

35	36	37
d	d	b

Appendix: Concept Revision Material

Time Value of Money

OVERVIEW		
(A)	(B)	(C)
Time Value of Money	Compounding	Discounting
1. Meaning & Reasons 2. Relevance in decision-making 3. Concepts of Interest – Simple, Compound and Effective Rate of Interest	1. Meaning 2. Computation of Future Value (FV) 3. Annuity – Concept & Computation of Maturity Value (FV) of Annuity	1. Meaning 2. Computation of Present Value (PV) for – (a) Single Cash Flow, (b) Annuity 3. Perpetuity – Meaning & Computation of Present Value of Perpetuity

A. Time Value of Money

A.1 Time Value of Money

1. **Meaning:** Time Value of Money (**TVM**) is defined as “the value derived from the use of money over time as a result of investment and re-investment. **Time Value of Money** means that, “worth of a rupee received today is different from the worth of a rupee to be received in future”. The preference for money now, as compared to future money, is known as **Time Preference of Money**.
2. **Reasons for Time Preference of Money:**
 - (a) **Risk:** There are financial and non-financial risks involved over time. Further, there is uncertainty about the receipt of money in future. The longer the time period of returns, the greater is the risk. Hence present money is preferred.
 - (b) **Preference for present consumption:** Most persons / Companies prefer present consumption than future consumption, e.g. due to urgency of need (say, consumer durable) or otherwise.
 - (c) **Inflation:** Inflation erodes the value of money. In an inflationary situation, a rupee today represents a greater purchasing power than a rupee one year later. For example, if the present price of petrol is ₹ 50 per litre, 20 litres of petrol can be purchased with ₹ 1,000 in hand now. If the price of petrol increases to ₹ 65 per litre in a year’s time, only 15.38 litres of petrol can be purchased with ₹ 1,000 in hand at that time.
 - (d) **Investment Opportunities:** Present Money is preferred due to availability of investment opportunities for earning additional cash flows. e.g. ₹ 1,00,000 available in hand now earns interest at the bank rate, rather than ₹ 1,00,000 received after 3 years time.
3. **Methods of analysis:** The concept of Time Value of Money helps in arriving at the comparable value of the different rupee amount arising at different points of time into equivalent values of a particular point of time (Present or Future). This can be done by either –
 - (a) **Compounding** the Present Money to a future date, i.e. finding out **Future Value of Present Money**, or
 - (b) **Discounting** Future Money to the present date, i.e. finding out **Present Value of Future Money**.



A.2 Relevance of Time Value of Money in Financial Decisions

1. While evaluating long-term investment (Capital Budgeting) proposals, Outflows / Investments which take place at the commencement of the project (i.e. time = t_0), have to be compared with Inflows / Returns which arise at future points of time, i.e. t_1, t_2, t_3 , etc.
2. On account of the difference in value of money over time, Cash Inflows / Returns expected to arise in future are to be converted into a unique time-frame, say, with reference to t_0 . So, Present Value of Future Cash Flows are to be considered, for meaningful evaluation of the investment proposal.

- The trade-off between **present** cash flows and **future** cash flows depends on the rate of interest that can be earned by investing (i.e. Opportunity Cost). It impacts Business Finance, Consumer Finance and Government Finance. Thus, Time Value of Money results from the concept of interest.
- Hence, TVM is one of the basic concepts of finance, and is relevant in the context of long-term decisions.

A.3 Simple Interest

Simple Interest is the interest calculated as a simple percentage of the original principal amount. The formula relating to Simple Interest are given below –

<p>Simple Interest = P × N × R, where P = Principal Amount. N = Number of years. R = Interest Rate per annum.</p>	<p>Amount = Principal + Interest Hence, $A = P + (P \times N \times R)$, $A = P [1 + (N \times R)]$</p>
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1. Simple Interest – Computation

An investment of ₹ 1,00,000 for 3 years in a Bank yields simple interest at 9%. What will be the total interest and amount at the end of three years?

- Here, P = Principal = ₹ 1,00,000, N = Number of years = 3, R = Interest Rate p.a. = 9% = 0.09
- Simple Interest = $P \times N \times R$ = 1,00,000 × 3 × 0.09 = ₹ 27,000
- Amount = Principal + Interest = ₹ 1,00,000 + ₹ 27,000 = ₹ 1,27,000.
[or] Amount = $A = P [1 + (N \times R)]$ = 1,00,000 [1 + (3 × 0.09)] = 1,00,000 × 1.27 = ₹ 1,27,000.

2. Simple Interest – Rate Calculation

An investment of ₹ 3,00,000 for 9 months in a Bank yields an amount of ₹ 3,16,875. Find the Interest Rate.

Here, P = Principal = ₹ 3,00,000, N = Number of years = $\frac{9}{12}$, R = Interest Rate p.a. = ?

$$\text{Amount} = A = P [1 + (N \times R)] = 3,00,000 [1 + (\frac{9}{12} \times R)] = 3,16,875. \quad \text{So, } (1 + 0.75R) = \frac{3,16,875}{3,00,000} = 1.05625$$

$$0.75R = 1.05625 - 1 = 0.05625. \quad \text{So, } R = \frac{0.05625}{0.75} = 7.5\%$$

3. Simple Interest – Period Calculation

An investment of ₹ 5,00,000 in a Bank yields an amount of ₹ 7,70,000. If the interest rate is 9%, what is the period for which the Principal was deposited?

Here, P = Principal = ₹ 5,00,000, N = Number of years = N, R = Interest Rate p.a. = 9%
Amount = $A = P [1 + (N \times R)] = 5,00,000 [1 + (N \times 9\%)] = 7,70,000.$ So, $(1 + 0.09N) = \frac{7,70,000}{5,00,000} = 1.54$

$$0.09N = 1.54 - 1 = 0.54. \quad \text{So, } N = \frac{0.54}{0.09} = 6 \text{ years.}$$

A.4 Compound Interest

- Compounding means that interest is paid both on previous earned interest and as well as on the Principal.
- Interest due at the end of every payment period is added to the Principal, and Interest on the next payment period is computed on the new Principal.
- The Time Interval between successive additions of interests is known as Conversion (or Payment) Period. Some Conversion Periods are –

Conversion Period	1 day	1 month	3 months	6 months	12 months
i.e. Compounded	Daily	Monthly	Quarterly	Half-yearly	Annually

4. The amount (Principal + Interest) at the end of every payment period is indicated below –

Payment Period	First	Second	Third	n th
Amount Due =A=	$A_1 = P + PR$ $= P(1 + R)$	$A_2 = A_1 + A_1 \times R$ $= A_1(1 + R)$ $= P(1 + R)^2$	$A_3 = A_2 + A_2 \times R$ $= A_2(1 + R)$ $= P(1 + R)^3$	$A_n = A_{n-1} + A_{n-1} \times R$ $= A_{n-1}(1 + R)$ $= P(1 + R)^n$

Note: Amount under Compound Interest = $P(1 + R)^{NK}$

Where P = Principal Amount.

N = Number of years.

K = Number of times compounding is done per year, e.g. Monthly (12), Quarterly (4), etc.

R = Interest Rate per payment period = $\frac{\text{Interest Rate p.a.}}{\text{Number of payment periods p.a.}} = \frac{I}{K}$

Additional Points:

- (a) **Compound Interest Tables:** Compound Interest Tables as well as Future Value (FV) Tables for $(1 + R)^{NK}$ at various rates per annum with – (a) annual, (b) monthly, and (c) daily compounding, are available for easy calculation.
- (b) **Rule of 72:** In case of Compound Interest, the number 72 provides an interesting approximation. If we divide 72 by the Interest Rate, we can estimate the number of years it takes for the money to double (for or against) us. For example, if interest rate is 12%, it takes $(72 \div 12 =)$ 6 years approximately for the money to become **double**.
- (c) **Simple vs Compound Interest:** The longer the funds are invested, the greater the advantage with Compound Interest than with Simple Interest. The rate of growth is higher in terms of Compound Interest.

4. Compound Interest – Interest Calculation

M 10

Ascertain Compound Value and Compound Interest, of an amount of ₹ 75,000 at 8% compounded semi-annually for 5 years.

Here, P = Principal = ₹ 75,000,

N = Number of years = 5,

K = No. of times compounding = 2 p.a. R = Interest Rate per period = $\frac{8\%}{4} = 0.04$

Amt under Compound Interest Scheme = $P(1 + R)^{NK} = 75,000 (1 + 0.04)^{10} = 75,000 \times 1.48024 = ₹ 1,11,018$.

Hence, Compound Interest for the 5 year period = A – P = ₹ 1,11,018 – ₹ 75,000 = ₹ 36,018.

5. Compound Interest – Amount Calculation

M 12

Calculate the Amount if ₹ 1,00,000 is invested for 1 year at 6% compounded – (a) Annually, (b) Semi-annually, (c) Quarterly, (d) Monthly, and (e) Daily?

	P = Principal	N = No. of yrs	K	R	Amount = $P(1 + R)^{NK} =$
(a)	₹ 1,00,000	1 year	1 p.a.	0.06	$1,00,000 (1 + 0.06)^1 = 1,06,000$
(b)	₹ 1,00,000	1 year	2 p.a.	0.03	$1,00,000 (1 + 0.03)^2 = 1,06,090$
(c)	₹ 1,00,000	1 year	4 p.a.	0.015	$1,00,000 (1 + 0.015)^4 = 1,06,136$
(d)	₹ 1,00,000	1 year	12 p.a.	0.005	$1,00,000 (1 + 0.005)^{12} = 1,06,168$
(e)	₹ 1,00,000	1 year	365 p.a.	0.00016	$1,00,000 (1 + 0.00016)^{365} = 1,06,013$

6. Compound Interest – Rate Calculation

If an investment doubles itself in 6 years when compounded annually, what is the rate of interest? Given $2^{1/6} = 1.1173$.

Here, P = Principal =?,

N = No. of years = 6,

K = No. of times compounding = 1 p.a.

R = Interest Rate per period = $R\% \div 1 = R\%$

Let Principal be ₹ P. Since the investment doubles in 6.5 years, the Amount = 2P.

Amount = $P(1 + R)^{NK} = 2P$. This means that, $P(1 + R)^6 = 2P$

Cancelling P on both sides, we have, $(1 + R)^6 = 2$. Hence, $(1 + R) = 2^{1/6} = 1.1173$.

So, R = 0.1173. Hence, Rate of Interest = **11.73%**

7. Compound Interest – Rate Calculation and Revised Maturity Value**N 08**

A Company offers a Fixed Deposit Scheme whereby ₹ 10,000 matures into ₹ 12,625 after 2 years, on a half-yearly compounding basis. If the Company wishes to amend the scheme by compounding interest every quarter, what will be the revised maturity value?

Solution:

$P(1+R)^{NK} = A$ $10,000(1+R)^{2 \times 2} = 12,625$ $\text{So, } (1+R)^4 = 1.2625$ <p>On extracting square root twice, $1+R = 1.06$ So, $R = 0.06$, i.e. 6% per period.</p>	<p>where –</p> <p>P = Principal = ₹ 10,000. R = Rate of Interest per period (to be calculated) N = Number of years = 2. K = Number of times compounding = 2 p.a. A = Maturity Value = ₹ 12,625</p>
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If number of compounding is 4 p.a, revised Maturity Value = $10,000(1+0.06)^{2 \times 4} = \text{₹ } 15,938$.

8. Compound Interest – Relevant Computations

A Person opened an Account on April 2017 with a deposit of ₹ 80,000. The Account paid 6% Interest compounded quarterly. On October 1, 2017, he closed the account and added enough additional money to invest in a 6 month Time Deposit for ₹ 1,00,000 earning 6% compounded monthly.

- How much additional amount did the person invest on October 1?
- What was the Maturity Value of his Time Deposit on April 1, 2018?
- How much Total Interest was earned?

Given that $(1+R)^{NK}$ is 1.03022500 for $R = 1\frac{1}{2}\%$, $NK = 2$ and is 1.03037751 for $R = \frac{1}{2}\%$ and $NK = 6$.

- The Initial Investment earned interest for April – June and July – September quarter, i.e. for 2 quarters. In this case,
 $R = \frac{6}{4} = 1\frac{1}{2}\%$, $NK = 2$ and Compounded Amount = $80,000(1 + 1\frac{1}{2}\%)^2 = 80,000 \times 1.03022500 = \text{₹ } 82,418$.

So, the additional amount invested on 1st Oct = ₹ 1,00,000 – ₹ 82,418 = **₹ 17,582**

- The Time Deposit has earned interest compounded monthly for 2 quarters.

Here, $R = \frac{6}{12} = \frac{1}{2}\%$, $NK = 6$, $P = 1,00,000$.

Required Maturity Value = $P(1+R)^{NK} = 1,00,000 \times (1 + \frac{1}{2}\%)^6 = 1,00,000 \times 1.03037751 = \text{₹ } 1,03,038$.

- Total Interest Earned = 1st Deposit (82,418 – 80,000) + 2nd Deposit (1,03,038 – 1,00,000) = (2,418 + 3,038) = **₹ 5,456**

A.5 Effective Rate of Interest

- Effective Rate of Interest is the actual **Equivalent Annual Rate** of Interest at which an investment grows in value when interest is credited more often than once a year.
- If interest is paid "k" times in a year, & "i" is the rate of interest per annum, **Effective Rate of Interest (E)** is given by $E = \left(1 + \frac{i}{k}\right)^k - 1$
- For example, if interest at 10% is payable quarterly on an investment, Effective Rate of Interest (by substituting in the above formula) = **10.38%**

9. Effective Rate of Interest

The Bank of Delhi pays 8% interest, compounded quarterly, on its Money Market Account. The Managers of Bank of Gurgaon want its Money Market Account to equal Bank of Delhi's Effective Annual Rate, but interest is to be compounded on monthly basis. What Nominal, or quoted, or ARR Rate must the Bank of Gurgaon set? Take $(1.0824)^{1/12} = 1.00662$

Solution: Bank of Delhi's Effective Annual Rate (quarterly compounding) = $E = \left(1 + \frac{0.08}{4}\right)^4 - 1$
 $= (1.02)^4 - 1 = 1.0824 - 1 = 0.0824 = \text{8.24}\%$

To have the same Effective Annual Rate (under monthly compounding), the computation will be as under –

$$\left(1 + \frac{i}{12}\right)^{12} - 1 = 0.0824$$

$$\left(1 + \frac{i}{12}\right)^{12} = 1.0824$$

$$1 + \frac{i}{12} = (1.0824)^{1/12} = \mathbf{1.00662}$$

$$\text{So, } \frac{i}{12} = 0.00662 = i = 0.07944 = 7.94\%$$

Note: Effective Annual Rate of both Banks is 8.24%, but quoted rates are different (8% and 7.94%) due to the difference in compounding frequency.

B. Compounding

B.1 Compounding

Compounding the present money to a future date involves finding out **future value of present money**. The following formulae are applicable in this regard –

(a) Future Value of a Single Cash Flow = Amount $(1 + R)^n$ [Amount relates to Time 0]

(b) Future Value of an Annuity = Amount $\times \frac{[(1 + R)^n - 1]}{R}$ [Amount relates to n years]

Where n = number of years for which the money is invested, R = rate of return on the investment.

Note: The Future Value (FV) Tables and Future Value of Annuity (FVA) Tables can also be used for calculation.

10. Compounding – Basics – Single Cash Flow and Annual Cash Flow (Annuity)

(a) Ramaraj makes an initial deposit of ₹ 50,000 with Free-Flow Funds Bank Ltd. Interest is compounded at 10% per annum for six years. Compute the amount on maturity.

(b) Ajay enters into an agreement to deposit ₹ 25,000 per annum for four years, to a financier who will allow 8% interest per annum and repay the amount at the end of four years. What amount will Ajay receive at maturity?

(a) For Ramaraj, Future Value of a Single Cash Flow = Amount $(1 + R)^n = ₹ 50,000 (1 + 10\%)^6$
 $= ₹ 50,000 \times 1.7716 = ₹ \mathbf{88,580}$.

Note: $(1 + R)^6 = 1.7716$ may be obtained from the Future Value (**FV**) Tables (or) by direct calculation.

(b) For Ajay, Future Value of an Annuity = Amount $\times \frac{[(1 + R)^n - 1]}{R} = ₹ 25,000 \times 4.5061 = ₹ \mathbf{1,12,653}$.

Where Amount = ₹ 25,000, n = number of years = 4 years, R = Rate of Interest = 8% p.a.

Note: Value of 4.5061 may be obtained from the Future Value of Annuity (**FVA**) Tables (or) by direct calculation.

B.2 Annuity

1. An **Annuity** is a stream of regular periodic Cash Flows (either payments made or received) for a specified period of time. Some examples of Annuity Payment are – (a) Recurring Deposit Instalments paid to a Bank, (b) Life Insurance Premium per annum.

2. Maturity Value of an Annuity = Annuity Amount $\times \frac{[(1 + R)^n - 1]}{R}$ [Amount relates to n years]

Where n = number of years for which the money is invested, R = rate of return on the investment.

3. **Sinking Fund** (i.e. Fund created for a specified purpose by way of sequence of periodic payments over a time period at a specified interest rate) calculations are based on Annuity Concept. Size of the Sinking Fund Deposit is derived from the formula given above, by calculating the Annuity Amount as the balancing figure.

11. Maturity Value of Annuity**M 07**

A person is required to pay four annual payment of ₹ 4,000 each in his Deposit Account that pays 10% interest per year. Find out the Future Value of Annuity at the end of 4 years.

$$\text{Maturity Value of an Annuity} = \text{Annuity Amount} \times \frac{[(1 + R)^n - 1]}{R}$$

Here,	Annuity Amount = ₹ 4,000,
	n = Number of years = 4.
	R = Rate of Interest = 10%

$$\text{Thus, Maturity Value} = ₹ 4,000 \times \frac{[(1 + 0.10)^4 - 1]}{0.10} = 4,000 \times 4.641 = ₹ 18,564$$

12. Maturity Value of an Annuity**RTP**

Shankar, an executive in an MNC, is 35 years old. He has decided it is time to plan seriously for his retirement. At the end of each year until he is 65, he will save ₹ 10,000 in a Retirement Account. If the account earns 10% per year, how much will Shankar have saved at the age of 65?

$$\text{Maturity Value of an Annuity} = \text{Annuity Amount} \times \frac{[(1 + R)^n - 1]}{R}$$

Here,	Annuity Amount = ₹ 10,000,
	n = Number of years = 30.
	R = Rate of Interest = 10%

$$\text{Thus, Maturity Value} = ₹ 10,000 \times \frac{[(1 + 0.10)^{30} - 1]}{0.10} = 10,000 \times 164.49 = ₹ 16,44,900$$

13. Maturity Value of an Annuity

Hari pays a monthly instalment of ₹ 5,000 towards a Recurring Deposit with a Financier. The rate of interest is 6% p.a. compounded monthly. What is the maturity value of this recurring deposit after the 10th month?

$$\text{Maturity Value of an Annuity} = \text{Annuity Amount} \times \frac{[(1 + R)^n - 1]}{R}$$

Here,	Annuity Amount = ₹ 5,000,
	n = Number of months = 10.
	R = Interest = $\frac{0.06}{12} = 0.005$.

$$\text{Thus, Maturity Value} = ₹ 5,000 \times \frac{[(1 + 0.005)^{10} - 1]}{0.005} = 5,000 \times 10.2280 = ₹ 51,140.$$

14. Sinking Fund Instalment – Future Value of Annuity – Compounding**RTP**

- (a) ABC Ltd has issued Debentures of ₹ 50 Lakhs to be repaid after 7 years. How much should the Company invest in a Sinking Fund earning 12% in order to be able to repay debentures?
- (b) XYZ Ltd is creating a Sinking Fund to redeem its Preference Capital of ₹ 10 Lakhs issued on 1st April 2017 and maturing on 31st March 2028. The first annual payment to the Fund will be made on 1st April 2017. The Company will make equal annual payments and expects that the Fund will earn 12% per year. How much will be the amount of Sinking Fund payment?
- (a) This situation is an Annual Cash Outflow, earning return at 12%, in order to earn a lumpsum amount of ₹ 50 Lakhs, after 7 years. Future Value of this Annuity Payment to Sinking Fund should be ₹ 50 Lakhs.

$$\text{So, Sinking Fund Instalment} \times \frac{[(1+R)^n - 1]}{R} = ₹ 50,00,000.$$

Substituting, we have –

$$\text{Sinking Fund Instalment} \times \frac{[(1+0.12)^7 - 1]}{0.12} = ₹ 50,00,000.$$

So, Sinking Fund Instalment $\times 10.0890 = ₹ 50,00,000$. Hence, **Instalment = ₹ 4,95,589** (approx).