

## **Unit 1**

### **Overview of Financial System**

#### **Syllabus**

- a. Lending, Payments and Risk Trading**
- b. Interest rates and Exchange rates**
- c. Capital Market and Money Market, Primary Market & Secondary Market**
- d. Stock Exchange**
- e. SEBI**

#### **Objectives of this unit:**

This unit will enable you to develop an understanding of the following:

- Meaning of a financial system
- Components and functions of a financial system
- Key elements of a well-functioning financial system
- Lending, payments and risk-taking procedure
- Meaning, functions and types of money market
- Meaning, functions of Capital market, types of capital market
- Primary market- issue mechanism (IPO and FPO)
- Secondary market- Trading and Settlement
- Stock Exchanges- Functions, segments
- SEBI- Role and Functions

## **Introduction**

The financial system plays the key role in the economy by stimulating economic growth, influencing economic performance of the actors, affecting economic welfare. This is achieved by financial infrastructure, in which entities with funds allocate those funds to those who have potentially more productive ways to invest those funds. A financial system makes it possible a more efficient transfer of funds. As one party of the transaction may possess superior information than the other party, it can lead to the information asymmetry problem and inefficient allocation of financial resources. By overcoming asymmetry problem, the financial system facilitates balance between those with funds to invest and those needing funds.

### **1.1 Meaning of Financial System**

Financial system is a set of complex and closely-connected or intermixed institutions, agents, practices, markets, claims, and so on in an economy. It can also be defined as a set of institutions, instruments and markets which promotes savings and channels them to their most efficient use. It consists of individuals (savers), intermediaries, markets and users of savings (investors). Financial system is divided into formal as well as informal. The informal financial system is a sector of the economy that consists of financial activities that take place outside of regulatory authorities.

### **1.2 Functions of a Financial System**

Important functions of financial system are as follows:

- (i) **Mobilise and allocate savings:** Financial system links the savers and investors and help in mobilizing and allocating the savings efficiently and effectively.
- (ii) **Monitor corporate performance:** Financial markets and institutions help to monitor corporate performance and exert corporate control through the threat of hostile takeovers for underperforming firms.
- (iii) **Provide payment and settlement systems:** It provides a payment mechanism for the exchange of goods and services and transfer of economic resources through time and across geographic regions and industries. The clearing and settlement mechanism of the stock markets is done through depositories and clearing operations.
- (iv) **Optimum allocation of risk-bearing and reduction:** It reduces risk by laying down the rules governing the operation of the system. This is also achieved through holding of diversified portfolios.
- (v) **Disseminate price-related information:** It acts as an important tool for taking economic and financial decisions and take an informed opinion about investment, disinvestment, reinvestment or holding of any particular asset.
- (vi) **Lower the cost of transactions:** It helps in the creation of a financial structure that lowers the cost of transactions.
- (vii) **Promote the process of financial deepening and broadening:** It promotes financial deepening and broadening through a well-functional financial system. Financial deepening refers to an increase of financial assets as a percentage of GDP. Financial depth is an important measure of financial system

development as it measures the size of the financial intermediary sector. Financial broadening refers to building an increasing number of varieties of participants and instruments.

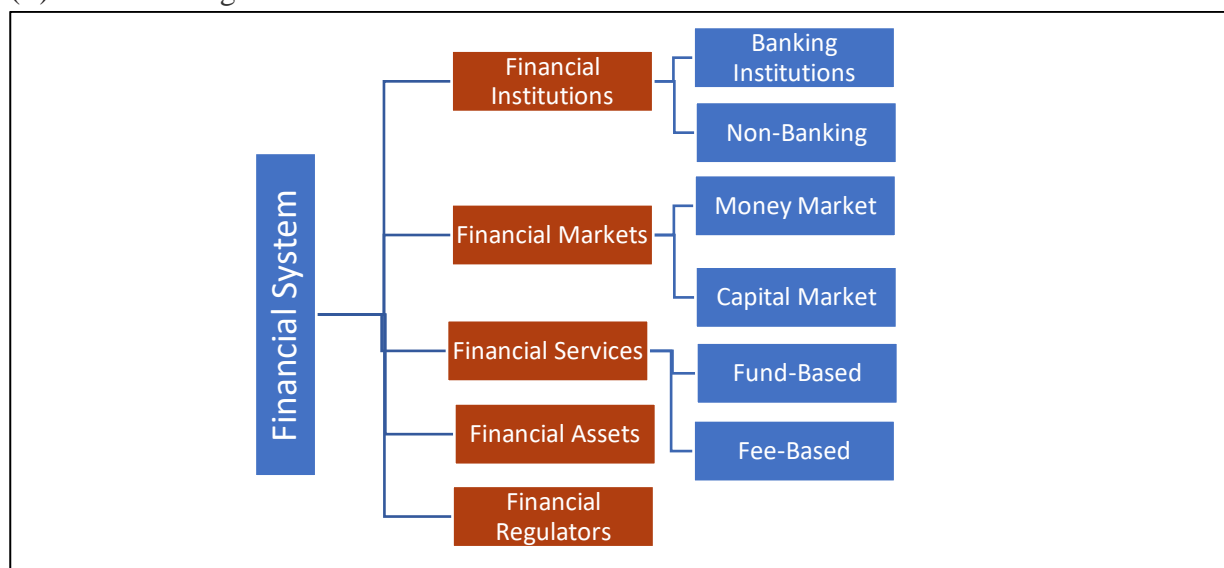
#### **Pre-requisites of a well-functioning Financial System**

- ❖ A strong legal and regulatory environment
- ❖ Stable money
- ❖ Sound public finances and public debt management
- ❖ A central bank
- ❖ A sound banking system,
- ❖ An information system, and
- ❖ A well-functioning securities market

### **1.3 Components of Financial System**

There are five main components of the Indian Financial System. This includes:

- (A) Financial Institutions
- (B) Financial Assets
- (C) Financial Services
- (D) Financial Markets
- (E) Financial Regulators



#### **(A) Financial Institutions**

Financial Institutions are the business organizations that act as mobilisers of savings, and as purveyors of credit or finance. Their main activities are:

- (a) They provide various financial services to the community.
- (b) They are business organizations dealing in financial resources.
- (c) They collect resources by accepting deposits from individuals and institutions and lend them to trade, industry and others.
- (d) This means financial institutions mobilize the savings of savers and give credit or finance to the investors.

Financial institutions may be classified into two broad categories:

- (i) Banking Financial Institutions and
- (ii) Non-banking Financial Institutions

Financial institutions can also be classified as term-finance institutions such as the Industrial Development Bank of India (IDBI), the Industrial Credit and Investment Corporation of India (ICICI), the Industrial Financial of India (IFCI), the Small Industries Development Bank of India (SIDBI), and the Industrial Investment Bank of India (IIBI).

Financial institutions can be specialized finance institutions like the Export Import Bank of India (EXIM), the Tourism Finance Corporation of India (TFCI), ICICI Venture, the Infrastructure Development Finance Company (IDFC), and sectoral financial institutions such as the National Bank for Agricultural and Rural Development (NABARD) and the National Housing Bank (NHB).

There are state-level financial institutions such as the State Financial Corporations (SFCs) and State Industrial Development Corporations (SIDCs) which are owned and managed by the State governments.

### **Banking Institutions**

- (a) Banking institutions mobilize the savings of the people.
- (b) They provide a mechanism for the smooth exchange of goods and services.
- (c) They extend credit while lending money.
- (d) They not only supply credit but also create credit.
- (e) Mobilize financial resources directly or indirectly from the people.

### **Non-banking Financial Institutions**

Non-banking financial institutions can be categorized as investment companies, housing companies, leasing companies, hire purchase companies, specialized financial institutions.

### **(B) Financial Markets**

Financial markets are an important component of the financial system. They are a mechanism for the exchange trading of financial products under a policy framework. The participants in the financial markets are the borrowers (issuers of securities), lenders (buyers of securities), and financial intermediaries.

Financial markets are the centres or arrangements that provide facilities for buying and selling of financial claims and services. They create financial assets.

- (i) Financial markets exist wherever financial transactions take place.
- (ii) Financial transactions include issue of equity shares by a company, purchase of bonds in the secondary market, deposit of money in a bank account, transfer of funds from a current account to a savings account etc.

The marketplace where buyers and sellers interact with each other and participate in the trading of money, bonds, shares and other assets is called a financial market.

The financial market can be further divided into four types:

- (i) **Money Market:** Mostly dominated by Government, Banks and other Large Institutions, the type of market is authorised for small-term investments only. It is a wholesale debt market which works on low-risk and highly liquid instruments. The money market can further be divided into two types:
  - (a) Organised Money Market
  - (b) Unorganised Money Market



(ii) **Capital Market:** Designed to finance the long-term investment, the Capital market deals with transactions which are taking place in the market for over a year. The capital market can further be divided into three types:

- (a) Corporate Securities Market
- (b) Government Securities Market
- (c) Long-Term Loan Market

(iii) **Foreign exchange Market:** One of the most developed markets across the world, the foreign exchange market, deals with the requirements related to multi-currency. The transfer of funds in this market takes place based on the foreign currency rate.

(iv) **Credit Market:** A market where short-term and long-term loans are granted to individuals or Organisations by various banks and Financial and Non-Financial Institutions is called Credit Market.

### **(C) Financial Instruments**

A financial instrument is a claim against a person or an institution for payment, at a future date, of a sum of money and/or a periodic payment in the form of interest or dividend. Financial instruments represent paper wealth shares, debentures, like bonds and notes. Many financial instruments are marketable as they are denominated in small amounts and traded in organized markets. This distinct feature of financial instruments has enabled people to hold a portfolio of different financial assets which, in turn, helps in reducing risk.

Different types of financial instruments can be designed to suit the risk and return preferences of different classes of investors. Savings and investments are linked through a wide variety of complex financial instruments known as 'securities'.

- (i) They represent claims on a stream of income and/or assets of another economic unit and are held as a store of value and for the return that is expected.
- (ii) The maturity and sophistication of the financial system, indeed, depends on the prevalence of a variety of securities/ financial assets to suit the investment requirements of heterogeneous investors.
- (iii) Ordinary/equity shares, preference shares, debentures/bonds including innovative debt instruments.
- (iv) Treasury bills, gilt-edge securities, state government and public sector instruments, commercial paper, certificate of deposit, commercial bills etc.

### **(D) Financial Services**

Financial services are those that help with borrowing and funding, lending and investing, buying and selling securities, making and enabling payments and settlements, and managing risk exposures in financial markets. The term 'financial services' in a broad, sense means "mobilizing and allocating savings". Thus, it includes all activities involved in the transformation of savings into investment. Financial services can also be called 'financial intermediation'. Financial intermediation is a process by which funds are mobilizing from a large number of savers and make them available to all those who are in need of it and particularly to corporate customers.

Financial Services may be classified into two broad categories:

- (i) **Fee based services:** Leasing, hire purchase, factoring, credit financing and house financing

- (ii) **Fund based services:** Issue management, portfolio management, corporate counselling, merchant banking and credit rating.

## **(E) Financial Regulators**

Financial Regulators in India

- (i) **SEBI:** The market regulator in the Indian capital market is the Securities and Exchange Board of India (SEBI).
- (ii) **IRDAI:** The Insurance Regulatory and Development Authority (IRDA) does the same for the insurance sector.
- (iii) **RBI:** Reserve Bank of India (RBI) conducts the country's monetary policy.
- (iv) **PFRDA:** Pension Funds Regulatory and Development Authority (PFRDA) regulates pensions.
- (v) **MCA:** Ministry of Corporate Affairs (MCA) regulates the corporate sector.

## **2. Lending, Payments and Risk Trading**

In this section, we shall learn lending types, payment mechanisms and risk-taking institutions.

### **2.1 Lending**

In finance, "lending" refers to the act of providing money or property to another party with the expectation of repayment, often with interest. Lending plays a crucial role in the economy by enabling businesses to grow and invest, and allowing consumers to purchase goods and services they might otherwise be unable to afford.

Lending involves a financial institution or individual (the lender) providing funds to a borrower, who agrees to repay the principal amount plus interest.

#### **Lending Institutions**

In India, lending institutions are financial entities that provide loans and credit, encompassing banks, credit unions, and other financial organizations, playing a vital role in the economy by facilitating investment and economic growth.

- (i) **Banks:** These are the most common type, offering a wide range of loan products, including personal loans, mortgages, business loans, and working capital financing.
- (ii) **Credit Unions:** These are cooperative financial institutions owned and operated by their members, providing loans and financial services to their members.
- (iii) **Non-Banking Financial Companies (NBFCs):** These are financial institutions that are not banks but are regulated by the Reserve Bank of India (RBI), offering various lending products.
- (iv) **Microfinance Institutions (MFIs):** These focus on providing small loans to low-income individuals and small businesses.

#### **Terms used in Lending**

- (i) **Lenders:** Lenders can be banks, credit unions, peer-to-peer lending platforms, or even individuals.
- (ii) **Borrowers:** Borrowers can be individuals, businesses, or governments seeking funds for various purposes like home purchases, car loans, student loans, or business investments.
- (iii) **Types of Lending:** Lending can be categorized into various types, including secured loans (backed by collateral), unsecured loans, commercial loans, personal loans, and more.

- (iv) **Lending Industry:** The lending industry, also known as the credit industry, encompasses a wide range of financial institutions, products, and services, contributing to the overall functioning and growth of the economy.

### **Corporate Lending**

Corporate lending involves financial institutions, typically banks, providing loans to companies to fund their business operations, which are generally larger than retail loans and often handled by specialized lending institutions.

- (i) **Purpose:** Corporate lending aims to provide businesses with the necessary funds to manage their operations, including procuring capital, acquiring assets, paying wages, and managing short-term liabilities.
- (ii) **Target:** Unlike retail lending which focuses on individuals, corporate lending targets companies, ranging from small enterprises to large corporations.
- (iii) **Scale:** Loans in corporate lending are typically much larger than those offered to individuals, reflecting the substantial financial needs of businesses.
- (iv) **Lenders:** Larger banks with specialized lending divisions are often the providers of corporate loans.

### **Types of Corporate Loans:**

Corporate loans are various types. These are discussed below:

- (i) **Term Loans:** These are loans where the borrower draws the entire facility upfront, incurs interest, and repays the full balance at the end of the term.
- (ii) **Revolving Credit Facilities (RCFs):** These are credit lines that allow businesses to borrow and repay funds repeatedly within a certain limit.
- (iii) **Overdrafts:** These are short-term loans that allow businesses to draw funds beyond their account balance, up to a pre-agreed limit.
- (iv) **Letters of Credit (LOCs):** These are financial instruments that guarantee payment to a seller if a buyer fails to pay, ensuring transactions are secured.
- (v) **Working Capital Loans:** These loans are used to fund day-to-day operations and short-term business needs.
- (vi) **Equipment Finance:** These loans are specifically used to finance the purchase of equipment or machinery.
- (vii) **Bridge Loans:** These are short-term loans used to bridge the gap between the need for funds and the availability of long-term financing.
- (viii) **Export Financing:** This pre-shipping credit is given to export businesses. The loan amount may be applied to purchasing raw materials, packaging, shipping, and storing items intended for export.
- (ix) **Real Estate Loans:** A commercial real estate loan might benefit companies requiring capital to purchase commercial real estate. Similar to loans for equipment, the asset being purchased acts as collateral to guarantee the loan.
- (x) **Short-term Loans:** Businesses can opt for loans spanning shorter durations and lower amounts while they wait for bigger financing.

## Features of Corporate Loan

The key features of corporate loans are:

- (i) **Reasonably priced interest rates**- Many reputable financial institutions have interest rates lower than the industry standard.
- (ii) **Fast Approvals** - Delays can adversely affect business earnings, particularly those resulting from inadequate capital. Almost all lenders provide rapid approvals for their corporate loans.
- (iii) **Collateral-free** – Most corporate loans do not require collateral.
- (iv) **Online Transaction** – Corporate loans can be availed through a simple online application.
- (v) **Prolonged Loan Period** – A flexible repayment plan with a business loan based on the company's cash flow can be selected.
- (vi) **Streamlined Procedure for Documentation** – Most banks and lenders require essential documentation for application.
- (vii) **Greater Amounts Disbursed for Loans** - The company need enough funding to cover its expenses and working capital requirements. Through corporate loans, amounts as high as 20 crores can be availed.

## Corporate Loan Interest Rate

There is no fixed interest rate for corporate loans. It depends on the lender, the amount, and the loan repayment tenure.

## 2.2 Payments

In finance, "payments" refer to the transfer of monetary value from one party to another, whether in cash or non-cash forms, to settle debts, purchase goods/services, or fulfill legal obligations.

Payments are the transfer of money or its equivalent from a payer (the person or entity making the payment) to a payee (the person or entity receiving the payment).

The process of transferring funds between the payer and the payee, involving various stakeholders like issuing banks, acquiring banks, payment processors, and payment networks.

### Forms of Payment:

- **Cash:** Physical currency (notes and coins).
- **Non-cash:**
  - **Bank Transfers:** Direct transfer of funds between bank accounts.
  - **Credit/Debit Cards:** Using plastic cards for purchases.
  - **Digital Wallets:** Mobile apps or online platforms for storing payment information and making payments (e.g., Apple Pay, Google Pay, PayPal).
  - **Checks:** Negotiable instruments for making payments.
  - **Wire Transfers:** Electronic transfers of funds.
  - **Cryptocurrencies:** Digital or virtual currencies.
  - **Prepaid Cards:** Cards with a pre-loaded amount of money.
  - **Contactless Payments:** Using NFC technology or mobile devices to make payments.
  - **Online Banking:** Making payments through online banking platforms.
  - **E-commerce:** Making payments through online stores.

## Corporate Payments

Corporate payments are the financial transactions between companies to meet various business-related expenses—these can include salaries, supplier payments, taxes, insurance, and more.

### Trends in corporate payments

- (i) **ERP integrated with payments channel:** Corporates need ERP solutions that can meet their complete needs and address both front and back-end requirements. Various banks/financial institutions (FIs) offer an end-to-end integration of banking channels with ERP systems. This can be done through host to-host connectivity or by integrating ERP with SWIFT applications at the corporate's end. A few companies offer solutions that interact with the ERP systems of B2B companies and post transactions on their ERP platform.
  - (a) **Automated invoicing:** The provision of digital invoicing along with integrated payment methods can help corporates to improve their collections. They can integrate and submit their digital invoices to customers through automated clearing houses supporting direct debits. These auto debits can be useful for the timely collection of recurring payments such as utility and subscription-based payments. Further, in the B2C segment, corporates can utilise the 'request-to-pay' mechanism to improve collections and reduce costs associated with customer disputes.
  - (b) **Integrated expense management:** FinTechs and ERP solution providers today offer integrated solutions which include corporate credit card/ corporate prepaid cards along with petty cash management and expense management solutions.
- (ii) **Virtual account management (VAM):** VAM is a cash collection solution provided by banks. It enables an actual corporate account to be tagged with multiple virtual accounts for better reconciliation and reporting. The virtual account number can be uniquely generated by the corporate for each of its child entities.
- (iii) **Payments tracking capability:** When a corporate initiates a cross-border payment or is expecting an international remittance, it may not be able to track the payment status and fees charged by the intermediaries. There may be a lack of end-to-end visibility at times because each intermediary may possess information only about the leg of the transaction in which it was involved. This limitation is addressed by SWIFT's Global Payments Innovation (GPI) initiative. Under SWIFT GPI and universal confirmation, a tracker is provided to track payments right from initiation to credit confirmation. Corporates using this facility can check the status of the payment and get to know about the charges and FX rates levied by the intermediary banks.
- (iv) **Blockchain/smart contracts:** Several IT companies have developed blockchain-based solutions for corporates in collaboration with banks. Corporates can access the blockchain platform via their banks. Blockchain technology serves as a shared and immutable ledger that facilitates the process of recording transactions and tracking assets. Further, smart contracts have gained popularity due to the ease of their execution/decision making without any manual intervention.

## 2.3 Risk Trading

In finance, risk refers to the degree of uncertainty and/or potential financial loss inherent in an investment decision. In general, as investment risks rise, investors seek higher returns to compensate themselves for taking such risks.

The major elements of risk are defined as below:

- **Systematic Risk:** Interest Risk, Inflation Risk, Market Risk, etc.
- **Unsystematic Risk:** Business Risk and Financial Risk.

### Types of Risk

- Operational Risk:** This refers to any risk incurred as a result of failure in people, internal processes and policies, and systems.
- Market Risk:** Also known as systematic risk, market risk refers to any losses resulting from changes in the global financial market. Sources of market loss include economic recessions, natural disasters, political unrest, and changes in interest.
- Liquidity Risk:** This refers to inability to meet its obligations, thereby jeopardizing its financial standing or even its very existence. Liquidity risks effectively prevent a bank from being able to convert its assets into cash without sacrificing capital due to insufficient interest.
- Compliance Risk:** Any risk incurred as a result of failure to comply with laws or industry regulations. Compliance risk can lead to financial forfeiture, reputational damage, and legal penalties.
- Reputational Risk:** As its name implies, reputational risk refers to any potential damage to brand or reputation of an institution.
- Credit Risk:** Credit risk is the possibility that a borrower (individual, company, or government) will not be able to repay a loan or meet other financial obligations.
- Business Risk:** This refers to any risk that stems from a bank's long-term business strategy and affects the bank's profitability. Common sources of business risk to banks include closures and acquisitions, loss of market share, and inability to keep up with competitors.

Risk-taking comes naturally to banks. Banks engage themselves in the process of financial intermediation by taking risks to earn more than what they pay to the depositors.

There is a direct relationship between risk and reward and the quest for profit maximization has given rise to accelerated risk-taking for enhanced rewards. Whatever be the type of risk, the impact is primarily financial. Ultimately risk manifests in the form of loss of income and reputation.

Each bank as well as every banker needs to understand and appreciate that risk is unavoidable. The existence and quantum of risk associated with each transaction cannot be ascertained with certainty.

Whatever models have been developed for risk management, are primarily based on observed occurrences of the past, which may or may not be repeated in the future. Risk is inherent to the business. Since it cannot be eliminated, it has to be managed.

### Credit Risk in Business

Credit risk is the potential loss a lender faces when a borrower defaults on their debt obligations, meaning they fail to repay the principal and interest as agreed.

- Consequences for Lenders:** If a borrower defaults, the lender risks losing the principal amount, interest payments, and incurring additional costs associated with debt recovery.

**(b) Factors Contributing to Credit Risk:**

- (i) **Borrower's Financial Situation:** A borrower's income, debt levels, credit history, and overall financial stability all play a role in assessing credit risk.
- (ii) **Economic Conditions:** Economic downturns, recessions, or other economic shocks can increase the likelihood of borrowers defaulting.
- (iii) **Industry and Sector:** Certain industries or sectors may be more vulnerable to economic downturns and therefore present higher credit risk.
- (iv) **Loan Terms:** Factors like loan amount, interest rate, repayment schedule, and collateral can influence the level of credit risk.

**Credit Risk Management:**

Lenders employ various strategies to assess and mitigate credit risk, including:

- (i) **Credit Scoring:** Using credit scores and other data to assess a borrower's creditworthiness.
- (ii) **Credit Analysis:** Evaluating a borrower's financial statements, credit history, and other relevant information.
- (iii) **Collateral:** Requiring borrowers to pledge assets as collateral to secure the loan.
- (iv) **Credit Limits:** Setting limits on the amount of credit extended to borrowers.
- (v) **Diversification:** Spreading lending activities across different borrowers and sectors to reduce concentration risk.

**Risk and Insurance**

Insurance plays a crucial role in risk management by providing financial protection against unforeseen events, transferring the risk of potential losses from the insured to the insurer, and enabling businesses and individuals to mitigate the impact of unexpected events.

**How Insurance Addresses Risk:**

- (i) **Risk Transfer:** Insurance works by transferring the risk of potential losses from the insured (the individual or business) to the insurance company (the insurer).
- (ii) **Financial Protection:** By paying premiums, the insured receives a guarantee of financial compensation in the event of a covered loss.
- (iii) **Mitigation of Uncertainty:** Insurance helps individuals and businesses to cope with uncertainty and reduce the financial impact of unexpected events.

**Risk-taking or bearing Institutions**

In India, risk-bearing institutions include financial institutions like banks, insurance companies, and investment firms, as well as organizations involved in disaster risk financing and insurance, such as the National Disaster Management Authority (NDMA) and the Insurance Institute of India.

- (i) **Banks:** Commercial banks (both public and private sector) and cooperative banks play a crucial role in lending and managing financial risks.
- (ii) **Insurance Companies:** Insurance companies, both general and life, are primarily focused on managing and transferring risks to others.
- (iii) **Investment Firms:** Investment banks, asset management companies, and other financial institutions are involved in managing investment risks.

- (iv) **Development Financial Institutions:** Institutions like IFCI Limited, IDBI, EXIM Bank, IIBI Limited, TFCI Limited, IDFC Limited, NABARD, NHB and SIDBI also play a role in risk bearing.
- (v) **Deposit Insurance:** The Deposit Insurance and Credit Guarantee Corporation (DICGC) insures deposits in banks, mitigating the risk of loss for depositors.

Organizations Involved in Disaster Risk Financing and Insurance:

- (i) **National Disaster Management Authority (NDMA):** The NDMA is responsible for disaster risk management and works with various stakeholders to implement disaster risk financing and insurance schemes.
- (ii) **Insurance Institute of India:** This institute plays a role in promoting insurance education and research, contributing to the development of a robust insurance sector for disaster risk financing.
- (iii) **GIC Re:** The General Insurance Corporation of India (GIC Re) is a reinsurer that plays a crucial role in managing and transferring risks related to natural disasters.
- (iv) **World Bank:** The World Bank provides financial and technical assistance to developing countries, including India, for disaster risk financing and insurance.
- (v) **Reinsurance Companies:** Companies like Swiss Re and Munich Re are involved in providing reinsurance, which helps insurance companies manage large-scale risks.
- (vi) **Other Organizations:** Organizations like Lloyds, AXA XL India, Oriental Insurance Co. Ltd, General Insurance Council, Bajaj Allianz, ICICI, and IRDAI are also involved in disaster risk financing and insurance.

### 3. Interest rates and Exchange Rate

In this section, we shall learn interest rates and exchange rates.

#### 3.1 Interest Rates

Interest is the price the borrowers must pay to lenders to obtain the use of money for a period of time. As all the other prices are determined in different markets, the equilibrium rate of interest is also determined by the forces of supply and demand in the financial market.

In finance, "interest" refers to the cost of borrowing money (for borrowers) or the return earned on investments or savings (for lenders/investors), typically expressed as a percentage of the principal amount.

In the banking context, "interest" refers to the cost of borrowing money (for loans) or the reward for lending money (for deposits), typically expressed as a percentage of the principal amount.

##### **For Borrowers (Loans):**

When you take out a loan from a bank, you agree to pay back not only the principal amount borrowed but also an additional amount, which is the interest. This interest is the fee the bank charges for lending you the money.

##### **For Depositors (Savings/Investment Accounts):**

When you deposit money in a savings or investment account, the bank pays you interest on that money. This is the reward the bank gives you for allowing them to use your money



### Terms used in Interest

- (i) **Borrowing:** When you borrow money (e.g., through a loan, credit card, or mortgage), you pay interest on top of the principal amount you borrowed.
- (ii) **Lending/Investing:** When you lend money (e.g., through a savings account, or investment), you earn interest on the principal amount.
- (iii) **Interest Rate:** The interest rate is the percentage used to calculate the interest amount.

Interest is of two types: *Pure interest* and *gross interest*.

The **pure interest** is the payment for the use of money as capital when there is neither inconvenience, risk nor any other management problem.

Whereas, **gross interest** is the gross payment which the lender gets from the borrower. It includes not only net interest but also payment for other elements, which have been outlined below.

### Elements of Gross interest

- (i) **Payment for risk:** Every loan, if not secured fully, involves risk of non- payment due to the inability or unwillingness of the borrower to pay back the debt. The lender charges something extra for taking such risk.
- (ii) **Payment for inconvenience:** The moneylender may add extra charges for the inconvenience caused to him. The greater the inconvenience involved, the higher will be such charge and consequently the gross interest. For instance, the borrower may repay at a very inconvenient time to the lender or the borrower may invest the capital for a period longer than the one for which loan has been given.
- (iii) **Payment for management:** The lender expects to be compensated for the additional work he has to do in connection with lending e.g., the form of keeping accounts, sending notices and reminders and other incidental work.
- (iv) **Payment for exclusive use of money, i.e. pure interest:** It is the payment for the use of money which is in addition to payments for the above-mentioned risks, inconvenience and management.

### Interest Rate in Bond Market

Bond yield or interest rate is the return an investor expects to receive each year over the bond's term to maturity, and it's influenced by the interest rate environment.

Bond prices and interest rates move in opposite directions. When interest rates rise, new bonds are issued with higher yields, making existing bonds with lower yields less attractive, thus pushing down their prices. Conversely, if interest rates fall, existing bonds become more attractive, driving up their prices.

### Factors Affecting Bond Yields:

Several factors influence bond yields, including:

- (i) **Inflation:** Higher inflation expectations can lead to higher interest rates and bond yields.
- (ii) **Economic Growth:** Strong economic growth can lead to higher interest rates and bond yields.
- (iii) **Central Bank Policies:** Central banks play a significant role in setting short-term interest rates, which can influence long-term bond yields.
- (iv) **Creditworthiness of the Issuer:** The risk of default by the bond issuer also impacts yields; bonds issued by entities with higher credit risk typically offer higher yields to compensate investors for the increased risk.

## Yield to Maturity (YTM) in Bond Market

Yield to Maturity (YTM) represents the total return an investor can expect from a bond if held until it matures, considering all coupon payments and the difference between the bond's current price and face value.

YTM is a comprehensive measure of a bond's potential profitability, taking into account:

- **Current market price:** The price at which the bond is currently being traded.
- **Face value:** The amount the bondholder will receive at maturity.
- **Coupon rate:** The interest rate the bond pays.
- **Time to maturity:** The remaining years until the bond matures.

### How to compute YTM

**Step 1:** Calculate the annual coupon payment (C) by multiplying the coupon rate by the face value (FV).

**Step 2:** Calculate the numerator:  $C + (FV - PV) / n$ .

**Step 3:** Calculate the denominator:  $(FV + PV) / 2$ .

**Step 4:** Divide the numerator (from Step 2) by the denominator (from Step 3) to get the YTM.

$$\text{Yield to Maturity (YTM)} = \frac{C + \frac{FV - PV}{n}}{\frac{FV + PV}{2}}$$

Variables

**C (Coupon Payment):** The annual interest payment the bondholder receives.

**FV (Face Value):** The amount the bondholder will receive when the bond matures.

**PV (Current Market Price):** The current price of the bond in the market.

**n (Number of Years to Maturity):** The remaining time until the bond matures.

### Example:

Following information is available to a bond:

- Face Value (FV) of a bond: Rs.1,000
- Coupon Rate: 5% (meaning the annual coupon payment is Rs.50)
- Current Market Price (PV): Rs.900
- Years to Maturity (n): 10 years

Calculate YTM.

### Calculation:

- **Step 1:**  $C = \text{Rs.}50$  (5% of Rs.1,000)
- **Step 2:** Numerator:  $\text{Rs.}50 + (\text{Rs.}1,000 - \text{Rs.}900) / 10 = \text{Rs.}50 + \text{Rs.}10 = \text{Rs.}60$
- **Step 3:** Denominator:  $(\text{Rs.}1,000 + \text{Rs.}900) / 2 = \text{Rs.}950$
- **Step 4:**  $\text{YTM} = \text{Rs.}60 / \text{Rs.}950 = 0.0632$  or 6.32%

## 3.2 Exchange Rate

The **Foreign Exchange Market** (Forex, FX, or currency market) is a form of exchange for the global decentralized trading of international currencies. Financial centers around the world function as anchors of trading between a wide range of different types of buyers and sellers around the clock, with the exception of weekends. The foreign exchange market determines the relative values of different currencies. The foreign exchange market assists international trade and investment by enabling currency conversion.

### Characteristics of Foreign Exchange Market

The foreign exchange market is unique because of the following characteristics:

- its huge trading volume representing the largest asset class in the world leading to high liquidity;
- its geographical dispersion;
- its continuous operation: 24 hours a day except weekends, i.e., trading from 20:15 GMT on Sunday until 22:00 GMT Friday;
- the variety of factors that affect exchange rates;
- the low margins of relative profit compared with other markets of fixed income; and
- the use of leverage to enhance profit and loss margins and with respect to account size.

The Foreign Exchange Market has the following major sectors:

- (a) Spot Market
- (b) Forward and Futures Market, and
- (c) Currency Options Market.

### Exchange Rate

In the foreign exchange (forex) market, an exchange rate is the price of one currency expressed in terms of another, representing the value of one currency relative to another.

In finance, an **exchange rate** is the rate at which one currency will be exchanged for another currency. An exchange rate is the rate at which one currency can be converted into another. It's essentially the price of one country's currency in terms of another country's currency.

If the exchange rate between the US dollar and the INR is 88, it means that 1 US dollar can be exchanged for 88 INRs.

### Equilibrium Exchange Rate

Equilibrium Exchange Rate is the one that balances the value of nation's imports and exports. It is based on the flow of goods and services. Equilibrium Exchange Rate is also called as Trade Approach or Elasticity's Approach to determination of exchange rate.

### Bid-Ask Rate

The bid price is the highest price that someone is willing to pay for buying an asset at that moment. The foreign exchange market is nothing more than an ongoing auction to buy and sell. Just as with any auction, buyers place bids.

The asking price is the lowest price at which someone is willing to sell at that moment. Think of it as when you sell a house or other item, you are "asking" a certain price for it. Seller's place asking prices.

Therefore, if you are interested in buying dollars, you should look at the asking price of a seller. You would have a buyer matched with a seller and the trade could be executed.

### **Spread**

Spread is the difference between the dealer's Ask Rate and Bid Rate.

If the exchange rate is expected to be stable, the spread will be narrow. If the exchange rate is volatile, the spread will be wider.

Where volume of transactions is very high, the Bid-Offer Spread will be very low. In case of a thinly-traded currency, the spread will be wider.

### **Different Rate and Quotes Used in a Foreign Exchange Market**

- (i) **Exchange Rate:** It is the price of one currency quoted in terms of another currency.
- (ii) **Spot Rate:** It is the exchange rate applicable for an immediate settlement, i.e. the exchange rate prevailing now.
- (iii) **Forward Rate:** It is the exchange rate contracted today for exchange of currencies at a future date.
- (iv) **Direct Quote:** It refers to the expression of exchange rate where one unit of foreign currency is expressed in terms of number of units of local / domestic currency. Example \$1 = INR 88.00 [in India]
- (v) **Indirect Quote:** It refers to quoting per unit of Local / Domestic Currency in terms of number of units of Foreign Currency. Example: Rs.1 = \$0.025.
- (vi) **Two Way Quote:** Two Way Quote refers to quoting Exchange Rates by an Exchange Dealer in terms of Buying (Bid) Rate and Selling (Ask) Rate

## **4. Money Market**

The money market is a market for financial assets that are close substitutes for money. It is a market for overnight to short-term funds and instruments having a maturity period of one or less than one year. It is not a physical location (like the stock market), but an activity that is conducted over the telephone. The money market constitutes a very important segment of the Indian financial system.

### **Characteristics of money market**

The characteristics of the money market are as follows:

- (i) It is not a single market but a collection of markets for several instruments.
- (ii) It is a wholesale market of short-term debt instruments.
- (iii) Its principal feature is honour where the creditworthiness of the participants is important.
- (iv) It is a need-based market wherein the demand and supply of money shape the market.
- (v) Transactions in the money market can be both secured and unsecured, i.e., without collaterals.

### **Organized Sector of Indian Money Market**

- (i) **RBI:** The central bank plays a crucial role in regulating and managing the money market.
- (ii) **Commercial Banks:** Scheduled commercial banks, including public and private sector banks, foreign banks, and cooperative banks (excluding Land Development Banks) participate in the money market as both lenders and borrowers.
- (iii) **Primary Dealers (PDs):** These financial institutions are authorized to deal in government securities and are also active in the money market.

- (iv) **Non-Bank Financial Institutions (NBFI):** Insurance companies, mutual funds, and other financial institutions can participate in the money market, often indirectly through banks.
- (v) Corporations and other institutional investors.

### **Unorganized Sector of Indian Money Market**

- (i) This sector includes indigenous moneylenders, chit funds, and other informal financial entities.
- (ii) These entities are not regulated by the RBI and operate outside the formal financial system.

### **Participants of Money Market**

The main participants of money market are:

- Reserve Bank of India (RBI)
- Discount and Finance House of India (DFHI)
- Mutual funds
- Insurance companies
- Banks
- Corporate investors
- Non-banking finance companies (NBFCs)
- State governments
- Provident funds
- Primary dealers
- Securities Trading Corporation of India (STCI)
- Public sector undertakings (PSUs), and
- Non-resident Indians.

### **Instruments Traded in Money Market**

The instruments traded in the Indian money market are:

1. Call/notice money market—Call (overnight) and short notice (up to 14 days);
2. Treasury Bills (T-bills)
3. Commercial Papers (CPs)
4. Certificates of Deposits (CDs)
5. Commercial Bills (CBs)
6. Inter Bank Participation Certificate
7. Collateralized Borrowing and Lending Obligation (CBLO)

These are discussed below:

#### **1. Call Money Market**

Call/Notice money is an amount borrowed or lent on demand for a very short period. If the period is more than one day and upto 14 days, then it is called **notice** money. If the period is more than 14 days, then it is known as **call** money.

Banks borrow in this money market for the following purposes:

- (i) To fill the gaps or temporary mismatches in funds.
- (ii) To meet the cash reserve ratio (CRR) and statutory liquidity ratio (SLR) mandatory requirements as stipulated by RBI.
- (iii) To meet sudden demand for funds arising out of large outflows.

**Participants of call money:**

- (a) **Borrows and Lenders:** Participants in call/notice money market currently include banks (excluding RRBs) and Primary Dealers (PDs), both as borrowers and lenders
- (b) **Lenders:** In the Indian money market, lenders include the Reserve Bank of India (RBI), commercial banks, cooperative banks, primary dealers, and non-bank financial institutions like insurance companies and mutual funds.

**2. Treasury Bills Market**

Treasury bills are short-term instruments issued by the Reserve Bank of India (RBI) on behalf of the government to tide over short-term liquidity shortfalls. This instrument is used by the government to raise short-term funds to bridge seasonal or temporary gaps between its receipts (revenue and capital) and expenditure. They form the most important segment of the money market not only in India but all over the world as well.

T-bills are repaid at par on maturity. The difference between the amount paid by the tenderer at the time of purchase (which is less than the face value) and the amount received on maturity represents the interest amount on T-bills and is known as the discount. Tax deducted at source (TDS) is not applicable on T-bills.

**Types of Treasury Bills**

At present, there are 91-day, 182-day, and 364-day T-bills in vogue.

**Features of T-bills**

- (i) They are negotiable securities.
- (ii) They are highly liquid as they are of shorter tenure and there is a possibility of inter-bank repos in them.
- (iii) There is an absence of default risk.
- (iv) They have an assured yield, low transaction cost, and are eligible for inclusion in the securities for Statutory Liquidity Ratio (SLR) purposes.
- (v) Treasury bills are available for a minimum amount of Rs. 25,000 and in multiples thereof.

**Issue Price:** Treasury Bills are issued at a discount and redeemed at face value.

**Auction Method:** The 91 days T-Bills are auctioned under uniform price auction method (every Friday by the RBI) whereas 364 days T-Bills are auctioned on the basis of multiple price auction method (every alternate Wednesday i.e., the Wednesday preceding the reporting Friday).

**Participants in the Treasury Bills Market:** The Reserve Bank of India, banks, mutual funds, financial institutions, primary dealers, provident funds, corporates, foreign banks, and foreign institutional investors are all participants in the T-bills market. The state governments can invest their surplus funds as non-competitive bidders in T-bills of all maturities.

**Yield in Treasury Bills:** It is calculated as per the following formula:

$$\text{Yield} = \frac{100-P}{P} \times \frac{365}{D} \times 100$$

Where,

P = Purchase price

D= Days to maturity

Day Count for Treasury Bill: Actual number of days to maturity/ 365

### Example

Assuming that the price of a 91 -Day Treasury Bill issues at Rs.98.20, the yield on the same would be-

$$\text{Yield} = \frac{\text{Rs.}100 - \text{Rs.}98.20}{\text{Rs.}98.20} \times \frac{365}{91} \times 100$$

= 7.3521%

## 3. Commercial Paper Market

The commercial paper (CP) market is a short-term, unsecured debt market where corporations issue promissory notes, or CP, to raise funds for short-term needs, typically up to 270 days, and are attractive to investors seeking short-term, relatively low-risk investments.

### Features of Commercial Paper

- (i) **Short-Term Debt Instrument:** Commercial paper (CP) is a short-term, unsecured debt instrument issued by corporations to raise funds for immediate needs, such as financing working capital, inventories, or meeting short-term liabilities.
- (ii) **Unsecured:** Unlike bonds or loans, CP is not backed by collateral, meaning investors rely solely on the issuer's creditworthiness.
- (iii) **Maturity:** CP typically has a maturity of up to 270 days, but the average maturity is around 30 days.
- (iv) **Issuers:** Corporations, financial institutions, and other eligible entities issue CP.
- (v) **Investors:** Investors include money market funds, institutional investors, and sometimes, high-net-worth individuals.
- (vi) **Liquidity:** The CP market is generally considered to be liquid, meaning it is easy to buy and sell CP.

### Who are eligible to issue of CP?

- (a) Companies, PDs and FIs are permitted to raise short-term resources through CP.
- (b) A company would be eligible to issue CP provided:
  - (i) the tangible net worth of the company, as per the latest audited balance sheet, is not less than Rs.4 crore;
  - (ii) the company has been sanctioned working capital limit by bank/s or FIs; and
  - (iii) the borrowal account of the company is classified as a standard asset by the financing bank/institution.

### Buyback of CP

- (i) Issuers may buy-back the CP, issued by them to the investors, before maturity.
- (ii) Buy back of CP shall be through the secondary market and at prevailing market price.
- (iii) The CP shall not be bought back before a minimum period of 7 days from the date of issue.
- (iv) Issuer shall intimate the IPA of the buy-back undertaken.
- (v) Buy-back of CPs should be undertaken after taking approval from the Board of Directors.

## 4. Certificate of Deposits

Certificates of Deposits (CDs) (introduced since June 1989) are unsecured, negotiable, short-term instruments in bearer form, issued by a Commercial Bank(s)/Financial Institution(s) at discount to face

value at market rates, with maturity ranging from 15 days to one year. CDs are generally considered high-cost liabilities and banks have recourse to them only under tight liquidity conditions.

### **Features of Certificate of Deposits**

- (i) CDs can be issued to individuals, corporations, companies, trusts, funds, associates, etc.
- (ii) NRIs can subscribe to CDs on non-repatriable basis.
- (iii) CDs attract stamp duty as applicable to negotiable instruments.
- (iv) Banks have to maintain SLR and CRR on the issue price of CDs. no ceiling on the amount to be issued.
- (v) the minimum issue size of CDs is rs1 lakh and in multiples thereof.
- (vi) CDs are transferable by endorsement and delivery.
- (vii) The minimum lock-in-period for CDs is 15 days.

### **Investors in CD:**

CDs can be issued to Individuals, Corporations, Companies, Trusts, Funds, Associations, etc. Non-resident Indians (NRIs) may subscribe to CDs, but only on non-repatriable basis which should be clearly stated on the Certificate. Such CDs cannot be endorsed to another NRI in the secondary market.

### **Maturity Period:**

- (a) **CD's issued by Banks:** Not less than 7 days and not more than 1 year from the date of issue.
- (b) **CD's issued by FIs:** Not less than 1 year and not exceeding 3 years from the date of issue.

## **5. Commercial Bills Market**

Commercial bill is an important tool to finance credit sales. Commercial bills are negotiable instruments drawn by the seller on the buyer which are, in turn, accepted and discounted by commercial banks.

### **Types of Commercial Bills:**

It may be a demand bill or a usance bill. A demand bill is payable on demand, i.e., immediately at sight or on presentation to the drawee. A usance bill is payable after a specified time. If the seller wishes to give some time for payment, the bill would be payable at a future date. These bills can either be clean bills or documentary bills. In a clean bill, documents are enclosed and delivered against acceptance by the drawee, after which it becomes clear. In the case of a documentary bill, documents are delivered against payment accepted by the drawee and documents of the file are held by bankers till the bill is paid.

Commercial bills can be inland bills or foreign bills.

### **Inland bills must:**

- (i) be drawn or made in India and must be payable in India: or
- (ii) drawn upon any person resident in India

**Foreign bills**, on the other hand, are:

- (i) drawn outside India and may be payable and by a party outside India, or may be payable in India or drawn on a party in India or
- (ii) it may be drawn in India and made payable outside India A related classification of bills is export bills and import bills. While export bills are drawn by exporters in any country outside India, import bills are drawn on importers in India by exporters abroad.



## 6. Inter Bank Participation Certificate

Inter Bank Participation Certificates (IBPC) are short-term instruments to even out the short-term liquidity within the Banking system particularly when there are imbalances affecting the maturity mix of assets in Banking Book.

**Objective:** To provide a degree of flexibility in the credit-portfolio of Banks. It can be issued by Scheduled commercial Bank and can be subscribed by any commercial Bank.

**Types:** There are two types of participation certificates-

| Aspect     | Without risk to lender  | With risk to lender   |
|------------|---|---|
| Period     | Period not exceeding 90 Days  | 91 Days to 180 Days   |
| Disclosure | Issuing Bank: Disclose as Liability under Borrowing from Banks.<br>participating Bank: Advances to Bank | Issuing Bank: Reduce from Advances Outstanding.<br>Participating Bank: Under Advances |

### Other Features:

- (i) Interest rate on **IBPC** is freely determined in the market, i.e., negotiable.
- (ii) Certificates are neither transferable nor prematurely redeemable by the Issuing Bank.
- (iii) Issuing Bank can secure funds against advances without actually diluting its asset-mix.

## 7. Collateralized Borrowing and Lending Obligation (CBLO)

A Collateralized Borrowing and Lending Obligation (CBLO) is a short-term money market instrument that allows entities to borrow and lend funds against collateral, typically government securities, for managing liquidity and short-term funding requirements.

It facilitates short-term borrowing and lending, helping financial institutions manage their liquidity and funding needs.

### Participants in CBLO

CBLO is used by financial institutions to manage their short-term funding and investment needs.

### How it works?

The borrower sells the CBLO to the lender, and the lender buys it, effectively lending money to the borrower. The CBLO includes terms and conditions, including maturity, which can range from overnight to about one week.

## 5. Capital Market

Capital market is a market for equity shares and long-term debt. In this market, the capital funds comprising of both equity and debt are issued and traded. Capital market includes financial instruments with more than one year maturity.

Capital market is defined as a market in which money is provided for periods longer than a year, as the raising of short-term funds takes place on other markets (e.g., the money market).

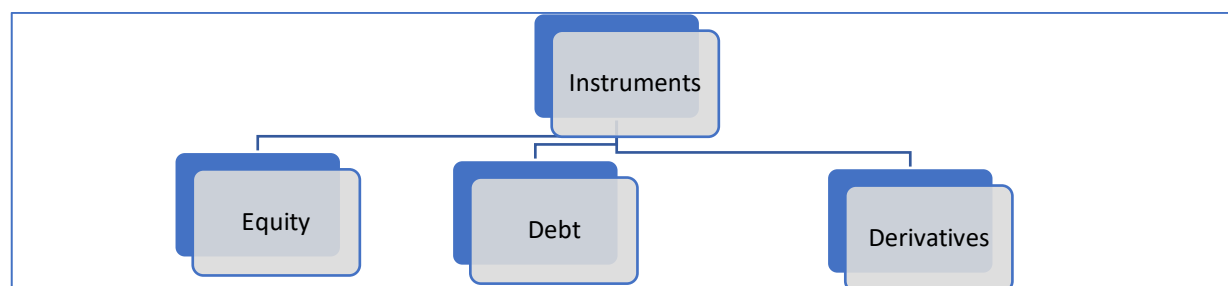
The capital market is characterized by a large variety of financial instruments:

Equity and preference shares, fully convertible debentures (FCDs), non-convertible debentures (NCDs) and partly convertible debentures (PCDs) currently dominate the capital market, however new instruments are being introduced such as debentures bundled with warrants, participating preference shares, zero-coupon bonds, secured premium notes, etc.

A capital market can be classified into primary and secondary markets.

The primary market is meant for new issues and the secondary market is one where outstanding issue are traded. In other words, the primary market creates long-term instruments for borrowings, whereas the secondary market provides liquidity through the marketability of these instruments.

The secondary market is also known as the stock market. Following types of instruments are traded in the capital market.



- (a) Domestic Equity issues by — Corporates (primary issues) — Financial intermediaries (secondary issues)
- (b) Debt instruments by — Government (primary issues) — Corporates (primary issues) — Financial intermediaries (secondary issues)

External issues

- (a) External Equity issues through issue of — Global Depository Receipts (GDR) and American Depository Receipts (ADR)
- (b) Debt instruments through — External Commercial Borrowings (ECB)
- (c) Other External Borrowings Foreign Direct Investments (FDI) — in equity and debt form Foreign Institutional Investments (FII) — in the form of portfolio investments Non-resident Indian Deposits (NRI) — in the form of short-term and medium-term deposits.

### Functions of Capital Market

The functions of an efficient capital market are as follows:

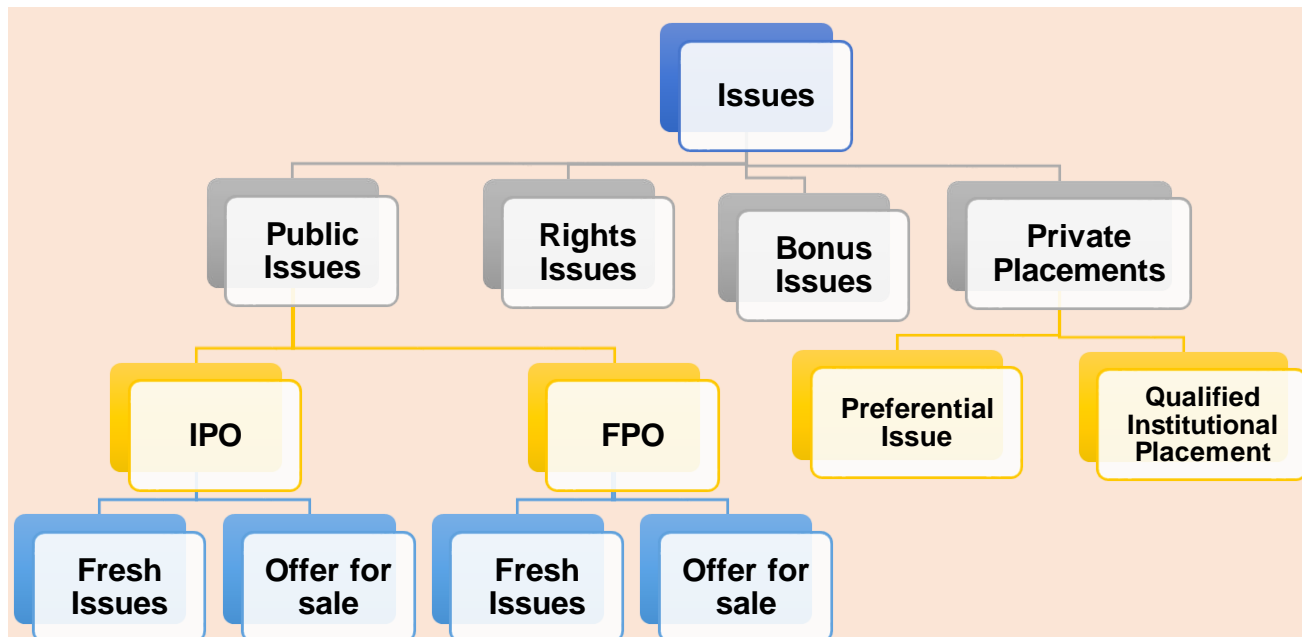
- (i) Mobilises long-term savings to finance long-term investments.
- (ii) Provide risk capital in the form of equity or quasi-equity to entrepreneurs.
- (iii) encourage broader ownership of productive assets.
- (iv) Provide liquidity with a mechanism enabling the investor to sell financial assets.
- (v) lower the costs of transactions and information.
- (vi) Improve the efficiency of capital allocation through a competitive pricing mechanism.
- (vii) Enable quick valuation of financial instruments-both equity and debt.
- (viii) Provide insurance against market risk or price risk through derivative trading and default risk through investment protection fund.

## 5.1 Primary Market

The primary market is a market for new issues. It is also called the new issues market. Funds are mobilized in the primary market through prospectus, rights issues, and private placement.

Initial Public Offering (IPO) refers to the process where private companies sell their shares to the public to raise equity capital from the public investors. The process of IPO transforms a privately-held company into a public company. This process also creates an opportunity for smart investors to earn a handsome return on their investments.

### Types of Issues in Primary Market



- (i) **Public Issue:** Initial Public offering (IPO)- this is the offer of sale of securities of an unlisted company for the first time. Follow-on Public Offering (FPO)-This is the offer of sale of securities by listed Company.
- (ii) **Rights Issue:** If a company issue share in the market to raise additional capital, the existing members are given the first preference to apply for new shares in proportion to their existing share holdings. this is known as right issue mentioned in sec 62(1) of the Companies act 2013.
- (iii) **Bonus Issue:** Bonus issues are made by the company when it has huge number of accumulated reserves and wants to capitalize the reserves. Bonus shares are issued on fully paid-up shares only, to the existing shareholders free of cost. sec 63 of companies act states this.
- (iv) **Private placement:** When an issuer makes an issue of shares or convertible securities to a select group of persons not exceeding 49, and which is neither a rights issue nor a public issue, it is called a

private placement. Private placement of shares or convertible securities by listed issuer can be of three types:

- (a) **Preferential allotment:** When a listed issuer issues shares or convertible securities, to a select group of persons in terms of provisions of Chapter VII of SEBI (ICDR) Regulations, 2009, it is called a preferential allotment. The issuer is required to comply with various provisions which inter-alia include pricing, disclosures in the notice, lock-in etc., in addition to the requirements specified in the Companies Act.
- (b) **Qualified institutions placement (QIP):** When a listed issuer issues equity shares or non-convertible debt instruments along with warrants and convertible securities other than warrants to Qualified Institutions Buyers only, in terms of provisions of Chapter VIII of SEBI (ICDR) Regulations, 2009, it is called a QIP.
- (c) **Institutional Placement Programme (IPP):** When a listed issuer makes a further public offer of equity shares, or offer for sale of shares by promoter/promoter group of listed issuers in which the offer, allocation and allotment of such shares is made only to qualified institutional buyers in terms Chapter VIII A of SEBI (ICDR) Regulations, 2009 for the purpose of achieving minimum public shareholding, it is called an IPP.
- (v) **Bought out deals:** When the new issued shares of an unlisted company are bought large by investor or by small investors in group it is known as the bought-out deal.
- (vi) **Depository Receipts:** issue of negotiable equity instruments by Indian companies for raising capital from the international capital market. Example- ADRs, GDRs.

#### **Intermediaries to an Issue of Shares in Primary Market**

- (i) Merchant Bankers
- (ii) Bankers to an issue
- (iii) Registrar to an issue
- (iv) Underwriters to the issue
- (v) Debenture Trustees
- (vi) Investment Banks
- (vii) Depositories
- (viii) Portfolio Managers
- (ix) Custodians
- (x) Investment banks

#### **Initial Public Offering (IPO)**

In the primary market, securities are directly issued by companies to investors. Securities are issued either by an Initial Public Offer (IPO) or a Further Public Offer (FPO).

Initial Public Offering (IPO) refers to the process where private companies sell their shares to the public to raise equity capital from the public investors. The process of IPO transforms a privately-held company

into a public company. This process also creates an opportunity for smart investors to earn a handsome return on their investments.

The institutional investors, high net worth individuals (HNIs) and the public can access the details of the first sale of shares in the prospectus. The prospectus is a lengthy document that lists the details of the proposed offerings.

The SEBI has laid down eligibility norms for entities raising funds through an IPO and an FPO. The entry norms for making an IPO of equity shares or any other security which may be converted into or exchanged with equity shares at a later date are as follows:

- ✓ Entry Norm I- Profitability Route
- ✓ Entry norm II- QIB Route
- ✓ Entry norm III- appraisal route

However, the SEBI has exempted the following entities from entry norms:

- ❖ Private sector banks.
- ❖ Public sector banks.
- ❖ An infrastructure company whose project has been appraised by a PFI or IDFC or IL&FS or a bank which was earlier a PFI and not less than 5 per cent of the project cost is financed by any of these institutions.
- ❖ Rights issue by a listed company.

The IPO process in India consists of the following steps:

- ❖ Appointment of merchant banker and other intermediaries
- ❖ Registration of offer document
- ❖ Marketing of the issue
- ❖ Post- issue activities

### **Eligibility of the Issuer**

An issuer cannot make a public issue or rights issue of equity shares and convertible securities under the following conditions:

- (a) If the issuer, any of its promoters, promoter group or directors or selling shareholders are debarred from accessing the capital market by SEBI, or of any other company which is debarred from accessing the capital market under the order or directions made by SEBI.
- (b) Unless an application is made to one or more stock exchanges for “in principle” approval of listing of equity shares and convertible securities on such stock exchanges and has chosen one of them as a designated stock exchange. In case of an initial public offer, the issuer should make an application for listing in at least one recognised stock exchange having nationwide trading terminals.
- (c) Unless it has entered into an agreement with a depository for dematerialisation of equity shares and convertible securities already issued or proposed to be issued.
- (d) Unless all existing partly paid-up equity shares of the issuer have either been fully paid up or forfeited.
- (e) Unless firm arrangements of finance through verifiable means towards 75% of the stated means of finance, excluding the amount to be raised through the proposed public issue or rights issue or through existing identifiable internal accruals, have been made.

- (f) Promoter's holding is in dematerialised form prior to filing of offer document.
- (g) The amount for general corporate purposes as mentioned in the objects of the issue in the draft offer document shall not exceeds 25% of the amount raised by the issuer.
- (h) A public issue of equity securities, if the issuer or any of its promoters or directors is a wilful defaulter; or
- (i) Issue shall be open for at least 3 days and not more than 10 days.
- (j) Minimum subscription shall be 90% of the issuer size failing which the application money has to be refunded within 15 days of closure of the issue.

### **Appointment of Merchant banker and other intermediaries**

The issuer shall appoint one or more merchant bankers, and at least one of whom should be a lead merchant banker. The issuer should also appoint SEBI registered intermediaries, in consultation with the lead merchant banker, to carry out the obligations relating to the issue. Where the issue is managed by more than one merchant banker, the rights, obligations and responsibilities, relating, inter alia to disclosures, allotment, refund and underwriting obligations, if any, of each merchant banker should be predetermined and disclosed in the offer document.

- (1) The issuer shall, in case of an issue made through the book building process, appoint syndicate member(s) and in the case of any other issue, appoint bankers to issue, at various centres.
- (2) The issuer shall appoint a Registrar to the issue, registered with the Board, which has connectivity with all the depositories:
- (3) The issuer shall appoint a compliance officer who shall be responsible for monitoring the compliance of the securities laws and for redressal of investors

### **Other conditions for Initial Public Offer**

- (a) An issuer may make an initial public offer only in following cases
  - (1) The issuer has net tangible assets of at least Rs. 3 crores in each of the preceding 3 years (of 12 months each) of which not more than 50% are held in monetary assets. If more than 50% of the net tangible assets are held in monetary assets, then the issuer has to make firm commitment to utilize such excess monetary assets in its business or project. The 50% criteria will not apply in case of IPO entirely through offer for sale.
  - (2) It has a minimum average pre-tax operating profit of Rs.15 crores, calculated on a restated and consolidated basis, during the 3 most profitable years out of the immediately preceding 5 years.
  - (3) The issuer company has a net worth of at least Rs.1 crore in each of the preceding 3 full years (of 12 months each).
  - (4) In case of change of name by the issuer company within last one year, at least 50% of the revenue for the preceding 1 year should have been earned by the company from the activity indicated by the new name.
- (b) Any issuer not satisfying any of the conditions stipulated above may make an initial public offer if:

The issue is made through the book building process and the issuer undertakes to allot at least 75% of the net offer to public to qualified institutional buyers and to refund full subscription monies if it fails to do so.

- (c) An issuer may make an initial public offer of convertible debt instruments without making a prior public issue of its equity shares and listing, provided company has not defaulted payment of principal/ interest for a period of 6 months.
- (d) An issuer cannot make an allotment pursuant to a public issue if the number of prospective allottees are less than one thousand.
- (e) No issuer can make an initial public offer if there are any outstanding convertible securities or any other right which would entitle any person any option to receive equity shares after the initial public offer.
- (f) If the issue size is more than Rs.100 crores, a Bank/PFI shall monitor and report on quarterly basis till 95% utilisation of the proceeds.
- (g) the issuer may obtain grading for its IPO from one or more Credit Rating Agencies (CRA)s registered with SEBI.

### **Pricing of shares in Public Issues**

The issuer determines the price of the equity shares and convertible securities in consultation with the lead merchant banker or through the book building process. In case of debt instruments, the issuer determines the coupon rate and conversion price of the convertible debt instruments in consultation with the lead merchant banker or through the book building process. The issuer may mention a price or price band in offer document and a floor price in red running prospectus. The issue price shall not be less than the face value.

### **Differential Pricing**

An issuer may offer equity shares and convertible securities at different prices, subject to the following condition:

- (a) The retail individual investors/shareholders or employees entitled for reservation making may be offered equity shares at a price which is not lower than 10% the price at which net offer is made to other categories of applicants.
- (b) In case of a book-built issue, the price of the equity shares and convertible securities offered to an anchor investor cannot be lower than the price offered to other applicants.
- (c) In case the issuer opts for the alternate method of book building, the issuer may offer specified securities to its employees at a price lower than the floor price. However, the difference between the floor price and the price at which equity shares and convertible securities are offered to employees should not be more than 10% of the floor price.
- (d) Face value may be less than 10 but not less than Rs.1 if the issue price is Rs.500 or more per share. If issue price is less than Rs. 500 the face value shall be Rs.10 per share.

### **Promoters' Contribution**

In case of an initial public offer, the minimum contribution should not be less than 20% of the post issue capital.

#### **Lock-in of specified securities held by promoters.**

- (a) minimum promoters' contribution is locked-in for a period of 3 years from the date of commencement of commercial production or date of allotment in the public issue, whichever is later.
  - (b) promoters' holding in excess of minimum promoters' contribution is locked-in for a period of 1 year.
- However, excess promoters' contribution in a further public offer are not subject to lock-in.

### **Book Building process**

Book Building means a process undertaken to elicit demand and to assess the price for determination of the quantum or value of specified securities.

- (a) In an issue made through the book building process, the allocation in the net offer to public category is made as follows:

- (1) Not less than 35% to retail individual investors.
- (2) Not less than 15% to non-institutional investors i.e. investors other than retail individual investors and qualified institutional buyers.
- (3) Not more than 50% to Qualified Institutional Buyers; 5% of which would be allocated to mutual funds; provided that in addition to 5% allocation available in terms of clause (3), mutual funds shall be eligible for allocation under the balance available for qualified institutional buyers.

In an issue made through the book building process under sub-regulation (2) of regulation 6, the allocation in the net offer to public category shall be as follows:

- (1) not more than 10% to retail individual investors;
- (2) not more than 15% to non-institutional investors;
- (3) not less than 75% to qualified institutional buyers, 5% of which shall be allocated to mutual funds:

In an issue made through the book building process, the issuer may allocate up to 60% of the portion available for allocation to qualified institutional buyers to an anchor investor in accordance with the conditions specified.

- (b) In an issue made other than through the book building process, allocation in the net offer to public category will be made as follows:
  - (1) minimum 30% to retail individual investors, and
  - (2) remaining to individual applicants other than retail individual investors and other investors including corporate bodies or institutions, irrespective of the number of equity shares and convertible securities applied for.
  - (3) the unsubscribed portion in either of the categories specified above (point 1 and 2) may be allocated to applicants in the other category.

If the retail individual investor category is entitled to more than 50% on proportionate basis, the retail individual investors will be allocated that higher percentage.

### **Follow on Public Offer (FPO):**

A follow-on offering (FPO) is an offer of sale of securities by a listed company. A follow-on offering can be either of two types (or a mixture of both): dilutive and non-dilutive.



For example, Google's initial public offering (IPO) included both a primary offering (issuance of Google stock by google) and a secondary offering (sale of google stock held by shareholders, including the founders).

In the case of the dilutive offering, the company's board of directors agrees to increase the share float for the purpose of selling more equity in the company. This new inflow of cash might be used to pay off some debt or used for needed company expansion. When new shares are created and then sold by the company, the number of shares outstanding increases and this causes dilution of earnings on a per share basis. Usually, the gain of cash inflow from the sale is strategic and is considered positive for the longer-term goals of the company and its shareholders. Some owners of the stock however may not view the event as favorably over a more short-term valuation horizon.

One example of a type of follow-on offering is an at-the-market offering (ATM offering), which is sometimes called a controlled equity distribution. In an ATM offering, exchange-listed companies incrementally sell newly issued shares into the secondary trading market through a designated broker-dealer at prevailing market prices. The issuing company is able to raise capital on an as-needed basis with the option to refrain from offering shares if unsatisfied with the available price on a particular day.

The non-dilutive type of follow-on offering is when privately held shares are offered for sale by company directors or other insiders (such as venture capitalists) who may be looking to diversify their holdings. Because no new shares are created, the offering is not dilutive to existing shareholders, but the proceeds from the sale do not benefit the company in any way. Usually however, the increase in available shares allows more institutions to take non-trivial positions in the company.

As with an IPO, the investment banks who are serving as underwriters of the follow-on offering will often be offered the use of a green shoe or over-allotment option by the selling company.

A non-dilutive offering is also called a secondary market offering. Follow on Public offering is different from initial public offering.

- ❖ IPO is made when company seeks to raise capital via public investment while FPO is subsequent public contribution.
- ❖ First issue of shares by the company is made through IPO when company first becoming a publicly traded company on a national exchange while Follow on Public Offering is the public issue of shares for an already listed company.

SEBI has introduced fast track issues (FTI) in order to enable well-established and compliant listed companies satisfying certain specific entry norms/conditions to raise equity through follow-on and rights issues. These norms reduce the process of issue and thereby the time period thus enabling issuers a quick access to primary capital market. Such companies can proceed with follow-on public offers (FPOs)/right issues by filing a copy of Red Herring Prospectus (RHP)/prospectus with the registrar of companies (RoC) or the letter of offer with designated stock exchange (SE), SEBI and stock exchanges. Moreover, such companies are not required to file draft offer document for SEBI comments and to stock exchanges as the relevant information is already in the public domain.

## **5.2 Secondary Market**

The secondary market is a market in which existing securities are resold or traded. This market is also known as the stock market. In India, the secondary market consists of recognized stock exchanges operating under rules, by-laws and regulations duly approved by the government.

### Functions of Secondary Market

- (i) The secondary market is a platform where investors buy and sell securities (like stocks and bonds) that have already been issued in the primary market.
- (ii) The secondary market allows investors to easily convert their investments into cash by selling their securities.
- (iii) The interaction of buyers and sellers in the secondary market determines the price of securities.
- (iv) The secondary market enables the transfer of ownership of securities from one investor to another.

### Difference between Primary and Secondary Market:

| Basis of difference  | Primary Market   | Secondary Market   |
|----------------------|--|--|
| Nature of Securities | It deals with new securities, i.e. securities which were not previously available, and are offered for the first time to the investors.                | It is a market for old securities which have been issued already and granted stock exchange quotation.   |
| Sale/Purchase        | Securities are acquired from issuing companies themselves.   | Securities are purchased and sold by the investors without any involvement of the companies.   |
| Nature of Financing  | It provides funds to new enterprises & also for expansion and diversification of the existing one and its contribution to company financing is direct. | It does not supply additional funds to company since the company is not involved in transaction.   |
| Liquidity            | It does not lend any liquidity to the securities.  | The secondary market provides facilities for the continuous purchase and sale of securities, thus lending liquidity and marketability to the securities. |

### Types of Secondary Market

The two main types of secondary markets are exchange-traded markets (like stock exchanges) and over-the-counter (OTC) markets.

- (i) **Exchange-Traded Markets:** These are centralized platforms, like stock exchanges (e.g., National Stock Exchange (NSE), Bombay Stock Exchange (BSE), New York Stock Exchange (NYSE)), where securities are traded.
- (ii) **Over-the-Counter (OTC) Markets:** These are decentralized networks where trading happens directly between buyers and sellers, without a centralized exchange. Examples include the bond market.

In India, the Securities and Exchange Board of India (SEBI) regulates the stock market. SEBI ensures that listed companies comply with regulations and disclosure requirements.

### 5.3 Stock Exchange

A stock exchange, also known as a securities exchange or bourse, is a marketplace where investors can buy and sell shares of publicly traded companies, bonds, and other financial instruments.

A stock exchange is defined under Section 2(3) of the Securities Contracts (Regulation) Act, 1956, 'as anybody of individuals whether incorporated or not, constituted for the purpose of assisting, regulating or controlling the business of buying, selling or dealing in securities.'

#### Functions of Stock Exchange

- (1) **Marketplace for Securities:** Stock exchanges provide a platform for investors to buy and sell shares of publicly traded companies.
- (2) **Price Discovery:** They facilitate the determination of market prices for securities through the interaction of buyers and sellers.
- (3) **Liquidity:** Stock exchanges enhance liquidity, making it easier for investors to buy and sell securities quickly and efficiently.
- (4) **Capital Raising:** Companies can raise capital by issuing shares on the stock exchange, which funds investment and growth.
- (5) **Investment Channel:** The stock exchange provides a platform for investors to allocate their capital towards potentially profitable companies.
- (6) **Economic Growth:** By facilitating capital formation and investment, stock exchanges contribute to overall economic growth.
- (7) **Transparency and Fair Dealing:** Stock exchanges are regulated to ensure fair and transparent trading practices, protecting investors from fraud and manipulation.
- (8) **Risk Management:** They implement measures to manage market risks and ensure the stability of the financial system.
- (9) **Surveillance:** Stock exchanges monitor trading activity to detect and prevent illegal or unethical behavior.
- (10) **Attracting Foreign Investment:** A well-regulated and transparent stock exchange can attract foreign investors, boosting capital inflows and economic growth.
- (11) **Promoting Savings and Investment:** Stock exchanges encourage savings and investment by providing a platform for individuals to invest in the stock market.
- (12) **Education and Awareness:** They can play a role in educating the public about investing and the stock market.

#### Stock Exchanges in India

At present, in India there are 7 stock exchanges operating in India.

1. BSE Ltd.
  2. Calcutta Stock Exchange Ltd.
  3. Indian Commodity Exchange Limited
  4. Metropolitan Stock Exchange of India Ltd.
  5. Multi Commodity Exchange of India Ltd.
  6. National Commodity & Derivatives Exchange Ltd.
  7. National Stock Exchange of India Ltd.
- (Source: SEBI Website)

## **Leading stock exchanges**

### **1. Bombay Stock Exchange (BSE):**

Established in 1875, BSE (formerly known as Bombay Stock Exchange), is Asia's first & the Fastest Stock Exchange in world with the speed of 6 micro seconds and one of India's leading exchange groups. Over the past 143 years, BSE has facilitated the growth of the Indian corporate sector by providing it an efficient capital-raising platform. Popularly known as BSE, the bourse was established as 'The Native Share & Stock Brokers' Association' in 1875. In 2017 BSE become the 1st listed stock exchange of India.

(Source: BSE)

### **2. National Stock Exchange (NSE):**

Founded in 1992, it's India's first dematerialized electronic exchange. It's also located in Mumbai and is known for its efficient trading platform. The NIFTY 50 index, a benchmark index, represents the performance of the top 50 large-cap stocks listed on the NSE. The National Stock Exchange (NSE) has around 2,671 listed companies, with 2,084 on the mainboard and 587 on the NSE Emerge platform as on 31<sup>st</sup> March 2025.

The products on the Exchange are organized into 3 asset classes for trading: Capital market for the listing and trading of equities, fixed income securities and the derivatives market.

Equity and equity-linked products available for trading in the cash market include stocks, IDRs, ETFs (including those benchmarked the NIFTY indices) and units of closed-ended mutual fund schemes, as well as a segment devoted to the growth of the SME's listed on EMERGE.

Under the Derivatives segment, NSE offers derivative contracts on Equity, Indices, Currency, Interest Rates and Commodities.

The fixed income securities and Debt products include Negotiated Trade Reporting in Government securities, Corporate Bonds, Sovereign Gold Bonds and other debt securities traded on multiple platforms.

(Source: NSE)

### **3. Metropolitan Stock Exchange (MSEI):**

It is a recognized stock exchange by the Securities and Exchange Board of India (SEBI). It facilitates trading in the capital market, futures & options, currency derivatives and debt market segments.

### **4. India International Exchange (India INX):**

A wholly-owned subsidiary of BSE, it is India's first international exchange.

### **5. Multi Commodity Exchange (MCX):**

India's first listed commodity exchange, offering commodity derivatives.

### **6. National Commodity and Derivatives Exchange (NCDEX):**

A commodity exchange, particularly popular for agro commodities.

## 7. Calcutta Stock Exchange (CSE):

While it was established in 1863, there hasn't been any trading on the CSE platform since 2013.

### Segments of Stock Exchange

There are three segments in stock market.

#### (i) Equity Segment:

The equity segment of the stock market is where shares of publicly traded companies are bought and sold, allowing companies to raise capital and investors to potentially profit from the growth of those companies. Investors purchase shares with the expectation that the value of those shares will increase over time, allowing them to sell them later at a higher price for a profit.

#### Key Participants:

- (a) **Companies:** Companies list their shares on stock exchanges to raise capital from investors.
- (b) **Investors:** Individuals and institutions who buy and sell shares in the market.
- (c) **Stock Exchanges:** Platforms like the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) facilitate the trading of shares.

#### Types of trading:

- (a) **Spot/Cash Market:** Stocks are traded for immediate delivery and payment.
- (b) **Futures Market:** Stocks are traded with a contract to buy or sell at a predetermined price and date in the future.

#### Important Considerations:

- (a) **Risk:** Equity investments involve risk, as the value of shares can fluctuate, and investors could lose money.
- (b) **Regulation:** The equity market is regulated by financial watchdogs to ensure fair and transparent trading practices.

#### (ii) Derivative Segments:

Derivatives are financial contracts whose value is derived from (or "derivative" of) an underlying asset, a group of assets, or a benchmark.

Examples of Derivatives: Common types of derivatives include futures, options, forwards, and swaps.

**Futures:** Contracts obligating the buyer to purchase and the seller to sell an underlying asset at a predetermined price and future date.

**Options:** Contracts giving the holder the right, but not the obligation, to buy (call option) or sell (put option) an underlying asset at a specified price before or on a specific expiration date.

#### Why use Derivatives?

- (a) **Hedging:** Derivatives can be used to protect against potential losses in the underlying asset's price.
- (b) **Speculation:** Investors can bet on the future price movements of an underlying asset.

#### Who uses Derivatives?

- (a) **Hedgers:** Individuals or businesses who use derivatives to reduce their exposure to price fluctuations.
- (b) **Speculators:** Investors who bet on the future price movements of the underlying asset, aiming to profit from those movements.

#### Where to trade Derivatives?

- (a) **Exchange-Traded Derivatives:** These are standardized contracts traded on organized exchanges, like the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) in India.
- (b) **Over-the-Counter (OTC) Derivatives:** These are privately negotiated contracts between two parties and are not traded on an exchange

### (iii) Debt Segment

In the stock market, the "debt segment" (also known as the debt market) is a platform where investors buy and sell debt securities, or fixed-income instruments, such as bonds and treasury bills, issued by governments, corporations, and financial institutions.

#### Who uses it:

- (a) **Issuers:** Governments, corporations, financial institutions, and public sector units use the debt market to raise funds by issuing debt securities.
- (b) **Investors:** Individuals and institutions invest in these debt securities to earn a fixed income or capital appreciation.

#### Types of debt instruments traded:

- (a) **Government securities: Treasury bills, government bonds.**
- (b) **Corporate bonds: Bonds issued by companies.**
- (c) **Other debt instruments: Commercial papers, certificates of deposit, corporate debentures, floating rate bonds, zero-coupon bonds.**

#### How it works:

- (a) Issuers offer debt securities to investors, promising to repay the principal amount along with interest payments.
- (b) Investors purchase these securities, effectively lending money to the issuers.
- (c) The debt market provides a platform for trading these securities, allowing investors to buy and sell them among themselves.

#### Examples of Debt Segment in India

- (a) **BSE (formerly Bombay Stock Exchange):** The BSE has a debt segment where various debt instruments are traded.
- (b) **NSE (National Stock Exchange):** The NSE also has a debt segment for trading debt securities.
- (c) **Wholesale Debt Market (WDM):** A formal trading platform for trading a wide range of debt securities.

## 6. Securities and Exchange Board of India (SEBI)

The Securities and Exchange Board of India was constituted as a non-statutory body on April 12, 1988 through a resolution of the Government of India.

The Securities and Exchange Board of India (SEBI), is a statutory regulatory body established in the year 1992 to protect investor interests, promote the development of the securities market, and regulate its functioning to ensure transparency and fairness.

#### Objectives of SEBI

##### (A) Investor Protection:

- (i) **Ensuring fair practices:** SEBI aims to prevent unfair or fraudulent practices in the securities market, such as insider trading, price manipulation, and misleading statements.
- (ii) **Promoting transparency:** SEBI mandates that companies disclose information accurately and transparently to investors, enabling them to make informed investment decisions.
- (iii) **Providing investor education and awareness:** SEBI conducts investor education programs and produces educational materials to empower investors with knowledge and skills to make informed decisions.
- (iv) **Addressing investor grievances:** SEBI provides a platform for investors to lodge complaints and facilitates their resolution.

**(B) Regulation of the Securities Market:**

- (i) **Regulating intermediaries:** SEBI regulates the activities of various intermediaries in the securities market, such as stockbrokers, merchant bankers, and investment advisors, to ensure they adhere to ethical standards and regulations.
- (ii) **Regulating takeovers:** SEBI regulates the takeover of companies to ensure that takeovers are done in a fair and transparent manner and that investors' interests are protected.
- (iii) **Preventing market manipulation:** SEBI monitors the market for any signs of manipulation and takes action against those involved in such activities.

**(C) Promoting Sustainable Market Growth:**

- (i) **Developing a robust secondary market:** SEBI plays a crucial role in developing a robust secondary market by introducing reforms and initiatives to enhance liquidity, transparency, and efficiency in trading.
- (ii) **Fostering innovation:** SEBI encourages innovation in the financial technology realm while maintaining the stability and fairness of the securities market.
- (iii) **Promoting financial literacy:** SEBI promotes financial literacy among the general public to encourage informed investment decisions.

**Functions of SEBI**

**(A) Regulatory Functions:**

- (i) **Protecting Investor Interests:** SEBI's primary goal is to safeguard investors in the securities market by preventing fraud, ensuring fair practices, and providing redressal mechanisms.
- (ii) **Regulating Market Participants:** SEBI regulates various market participants, including stock exchanges, brokers, mutual funds, and other intermediaries, ensuring they adhere to regulations and guidelines.
- (iii) **Monitoring and Preventing Unfair Practices:** SEBI monitors the market for any signs of malpractices, such as insider trading, market manipulation, and fraudulent activities, and takes action to prevent them.
- (iv) **Formulating Regulations and Guidelines:** SEBI formulates regulations and guidelines that govern the securities market, ensuring a fair, transparent, and efficient environment for investors.
- (v) **Enforcing Regulations:** SEBI has the power to investigate violations of regulations and take enforcement actions against those who violate them.
- (vi) **Regulating Takeovers:** SEBI regulates and oversees the process of corporate takeovers, ensuring fair and transparent procedures.

- (vii) **Regulating Mutual Funds:** SEBI regulates the operations of mutual funds, ensuring that they operate in a fair and transparent manner.
- (viii) **Regulating Credit Rating Agencies:** SEBI regulates the operations of credit rating agencies, ensuring that they provide accurate and reliable credit ratings.
- (ix) **Regulating Depositories:** SEBI regulates the operations of depositories, ensuring that they operate in a fair and transparent manner.
- (x) **Regulating Securities Market Intermediaries:** SEBI regulates the operations of various intermediaries in the securities market, including brokers, portfolio managers, and investment advisors.

### **Developmental Functions:**

- (i) **Promoting Financial Literacy:** SEBI conducts research and training programs to promote financial literacy among investors, helping them make informed decisions.
- (ii) **Developing the Securities Market:** SEBI takes measures to promote the development of the securities market, including promoting new products and services, and improving market infrastructure.
- (iii) **Training Intermediaries:** SEBI organizes training programs for intermediaries to enhance their skills and knowledge.
- (iv) **Promoting Self-Regulatory Organizations:** SEBI encourages the formation of self-regulatory organizations to promote ethical and responsible conduct in the market.

### **Powers of SEBI**

The SEBI has three main powers:

- (i) **Quasi-Judicial:** SEBI can issue rulings against fraud and other unethical behaviour in the securities industry. This powerful authority allows SEBI to promote and encourage fairness, transparency, and accountability easily.
- (ii) **Quasi-Executive:** SEBI has the authority to enforce the rules and rulings imposed as well as to pursue legal action against those who violate them. SEBI can review and analyse your books of accounts and relevant documents if it finds any rule violations.
- (iii) **Quasi-Legislative:** SEBI retains the authority to enact laws and regulations to safeguard investors' interest and prevent misconduct.

**Since inception, SEBI issued time to time Acts, Rules, Regulations, Guidelines, Master Circulars, General Orders and Circulars**

### **SEBI Regulations**

1. Securities and Exchange Board of India (Delisting of Equity Shares) Regulations, 2021 [Last amended on August 3, 2021]
2. Securities and Exchange Board of India (Issue and Listing of Non-Convertible Securities) Regulations, 2021



3. Securities and Exchange Board of India (Share Based Employee Benefits and Sweat Equity) Regulations, 2021
4. Securities and Exchange Board of India (Underwriters) (Repeal) Regulations, 2021
5. Securities and Exchange Board of India (Vault Managers) Regulations, 2021
6. Securities and Exchange Board of India (Portfolio Managers) Regulations, 2020
7. Securities and Exchange Board of India (Foreign Portfolio Investors) Regulations, 2019
8. Securities and Exchange Board of India (Appointment of Administrator and Procedure for Refunding to the Investors) Regulations, 2018
9. Securities and Exchange Board of India (Buy-back of Securities) Regulations 2018
10. Securities and Exchange Board of India (Depositories and Participants) Regulations, 2018
11. Securities and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations 2018
12. Securities and Exchange Board of India (Settlement Proceedings) Regulations, 2018
13. Securities Contracts (Regulation) (Stock Exchanges and Clearing Corporations) Regulations, 2018
14. SEBI (Procedure for Search and Seizure) Repeal Regulations, 2015
15. Securities and Exchange Board of India (Issue and Listing of Municipal Debt Securities) Regulations, 2015
16. Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015
17. Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 2015
18. Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014
19. Securities and Exchange Board of India (Real Estate Investment Trusts) Regulations, 2014
20. Securities and Exchange Board of India (Research Analysts) Regulations, 2014
21. Securities and Exchange Board of India (Investment Advisers) Regulations, 2013
22. Securities and Exchange Board of India (Issue and Listing of Non-Convertible Redeemable Preference Shares) Regulations, 2013
23. Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012
24. Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations, 2011
25. Securities and Exchange Board of India {KYC (Know Your Client) Registration Agency} Regulations, 2011
26. SEBI (Investor Protection and Education Fund) Regulations, 2009

27. SEBI (Issue of Capital and Disclosure Requirements) Regulations, 2009
28. Securities and Exchange Board of India (Intermediaries) Regulations, 2008
29. Securities and Exchange Board of India (Issue and Listing of Debt Securities) Regulations, 2008
30. Securities and Exchange Board of India (Issue and Listing of Securitised Debt Instruments and Security Receipts) Regulations, 2008
31. SEBI (Certification of Associated Persons in the Securities Markets) Regulations, 2007
32. SEBI (Regulatory Fee on Stock Exchanges) Regulations, 2006
33. SEBI (Self-Regulatory Organisations) Regulations, 2004 [last amended on March 6, 2017]
34. SEBI (Ombudsman) Regulations, 2003
35. SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market) Regulations, 2003
36. SEBI (Procedure for Board Meetings) Regulations, 2001
37. Securities and Exchange Board of India (Employees' Service) Regulations, 2001
38. Securities and Exchange Board of India (Foreign Venture Capital Investor) Regulations, 2000
39. Securities and Exchange Board of India (Collective Investment Scheme) Regulations, 1999
40. Securities and Exchange Board of India (Credit Rating Agencies) Regulations, 1999
41. SEBI (Buy Back Of Securities) Regulations, 1998 [Last amended on on March 6, 2017]
42. Securities and Exchange Board of India (Custodian) Regulations, 1996
43. Securities and Exchange Board of India (Mutual Funds) Regulations, 1996
44. Securities and Exchange Board of India (Bankers to an Issue) Regulations, 1994 [
45. Securities and Exchange Board of India (Debenture Trustees) Regulations, 1993
46. Securities and Exchange Board of India (Registrars to an Issue and Share Transfer Agents) Regulations, 1993
47. Securities and Exchange Board of India (Merchant Bankers) Regulations, 1992
48. Securities and Exchange Board of India (Stock Brokers) Regulations, 1992

### **Multiples Choice Questions (MCQs)**

1. Which of these is not a fundamental objective of Indian Financial System?

- (a) To give time value to money
- (b) Offer Services that reduce risk of loss
- (c) Issuing Bank Notes
- (d) Provide a payment System

**Answer: (c)**

2. Which of the following is not a function performed by a financial system?

- (a) Saving function
- (b) Liquidity function
- (c) Social function
- (d) Risk function

**Answer: (c)**

3. Financial assets permit all of the following except \_\_\_\_\_.

- (a) Consumption timing
- (b) Allocation of risk
- (c) Separation of ownership and control
- (d) Elimination of risk.

**Answer: (b)**

4. Which of these is not a type of Financial Assets?

- (a) Cheque
- (b) Call Money
- (c) Notice Money
- (d) Treasury Bills

**Answer (a)**

5. Which of the following is a type of Capital Market?

- (a) Corporate Securities Market
- (b) Government Securities Market
- (c) Long Term Loan Market
- (d) All of the Above

**Answer: (d)**

6. Which of the following is/are financial intermediaries?

- (a) Commercial banks
- (b) Insurance companies
- (c) Investment companies
- (d) All of the above.

**Answer (d)**

7. Financial intermediaries exist because small investors cannot efficiently-

- (a) Diversify their portfolios
- (b) Gather all relevant information
- (c) Assess credit risk of borrowers
- (d) All of the above

**Answer (d)**

8. The means by which individuals hold their claims on real assets in a well-developed economy are -.

- (a) Investment assets
- (b) Depository assets
- (c) Derivative assets
- (d) Financial assets

**Answer (d)**

9. When you purchase shares of corporate stock, then:

- (a) You have loaned money to the corporation
- (b) You own part of the corporation
- (c) You have made new funds available to the corporation
- (d) All of the above

**Answer (b)**

10. Which of the following is a short-term financial instrument?

- (a) Treasury bill
- (b) Share of Tata Finance Ltd.
- (c) Government bond with a maturity of 2 years
- (d) Residential mortgage

**Answer (a)**

11. All of the following are financial intermediaries except \_\_\_\_\_.

- (a) Commercial banks
- (b) Insurance companies
- (c) Treasury
- (d) Mutual funds

**Answer (c)**

12. A bond that is registered in the owner's name by the issuing company is called a \_\_\_\_\_ bond.

- (a) Certified
- (b) Coupon
- (c) Registered
- (d) Zero-coupon

**Answer (c)**

13. Gilt edged securities are the bonds issued by \_\_\_\_\_.

- (a) Big corporate
- (b) Multinational corporate
- (c) Global corporations
- (d) Central government

**Answer (d)**

14. Which of the following is not a financial asset?

- (a) Secured premium notes
- (b) National defence gold bond
- (c) Bullion
- (d) Capital investment bond

**Answer (c)**

15. The following one is kind of fee-based activity of a financial intermediary.

- (a) Hire purchase financing.
- (b) Leasing
- (c) Capital issue management
- (d) Underwriting of shares

**Answer (c)**

16. Which of the following is /are not regulatory institutions?

- (a) RBI
- (b) SEBI
- (c) IRDA
- (d) IFCI

**Answer (d)**

17. Which of the following is a fee-based service?

- (a) Hire purchase
- (b) Leasing
- (c) Capital issue management
- (d) Underwriting

**Answer (c)**

18. RBI is the lender of last resort for \_\_\_\_\_.

- (a) Central Government
- (b) State Governments
- (c) Stock markets
- (d) Commercial Banks

**Answer (d)**

19. Assets Management company is formed

- (a) To manage bank's assets
- (b) To manage mutual funds investments
- (c) To construct infrastructure projects
- (d) To run a stock exchange

**Answer (b)**

20. Prime duty of a merchant banker is

- a) Maintaining records of clients
- b) Giving loans to clients
- (c) Working as a Capital Market Intermediary
- (d) None of the above

**Answer (c)**

21. Which of the following is not regulated by SEBI?

- (a) Foreign Institutional Investors
- (b) Foreign Direct Investment
- (c) Mutual Funds
- (d) Depositories

**Answer (b)**

22. In India, Commercial Papers are issued as per the lines issued by

- (a) Securities and Exchange Board of India
- (b) Reserve Bank of India
- (c) Forward Market Commission
- (d) RBI

**Answer (b)**

23. Which of the following is the benefit of Depositories?

- (a) Reduction in the share transfer time to the buyer
- (b) Reduced Risk of stolen, fake, forged shares
- (c) No Stamp duty on transfer of shares in dematerialized form
- (d) All of the above

**Answer (d)**

24. The first computerised online stock exchange in India was

- (a) NSE
- (b) OTCEI
- (c) BSE
- (d) MCX

**Answer (b)**

25. Commercial paper is a type of

- (a) Fixed coupon Bond
- (b) Unsecured short-term debt
- (c) Equity share capital
- (d) Government Bond

**Answer (b)**

26. Secondary Market in India is regulated by

- (a) Reserve Bank of India
- (b) Ministry of Finance
- (c) Forward Market Commission
- (d) Securities and Exchange Board of India

**Answer (d)**

27. Certificate of Deposits can be issued for a minimum period of

- |              |              |
|--------------|--------------|
| (a) 45 days  | (b) 3 months |
| (c) 6 months | (d) 1 year   |

**Answer (b)**

28. Registrar to an issue is an intermediary in:

- (a) Primary market
- (b) Secondary market
- (c) Capital market
- (d) Money market

**Answer (a)**

29. The primary function of Stock Exchange is to:

- (a) mobilize savings from the public for long-term investment
- (b) offer a secondary market for shares and other securities
- (c) facilitate barter deals between buyer and seller holding different securities
- (d) enable Reserve Bank of India to trade in Government securities in their efforts to control money supply in the economy

**Ans: (b)**



30. The term structure of interest rates is:

- (a) the relationship between the rates of interest on all securities
- (b) The relationship between the interest rate on a security and its time to maturity
- (c) The relationship between the yield on a bond and its default rate
- (d) All of the above

**Ans: (b)**

31. Intermediaries who are agents of investors and match buyers with sellers of securities are called:

- (a) Investment bankers
- (b) Traders
- (c) Brokers
- (d) Dealers

**Ans: (c)**

32. If market interest rates rise \_\_\_\_\_.

- (a) Bond prices must rise.
- (b) Bond prices must fall.
- (c) Bond prices cannot fall.
- (d) Bond prices will either rise or fall.

ANSWER: (b)

## **Unit 2:**

### **Financial Intermediaries**

#### **Syllabus:**

- a. Banks
- b. NBFCs
- c. RBI
- d. Other Financial Institutions

#### **Objectives of this unit:**

This Unit will enable you to develop an understanding of the following:

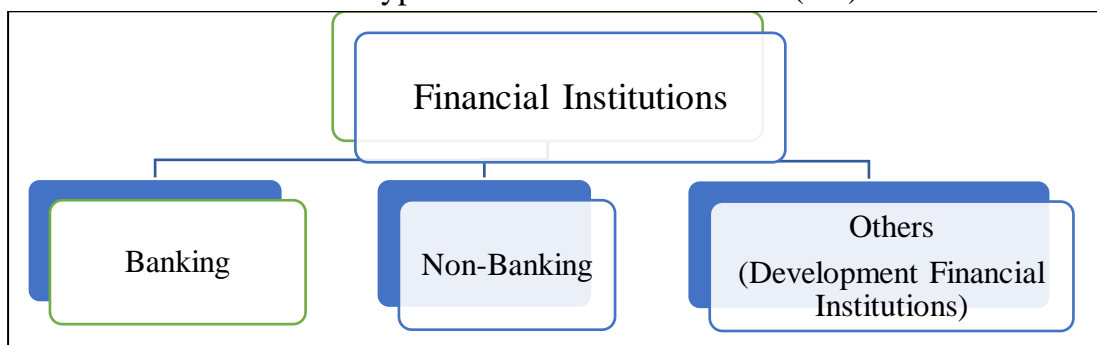
- Structure of Indian Banking system, types, functions
- Meaning and Types of NBFCs,
- Differences between Banks and NBFCs
- Role and Functions of RBI, Credit control mechanism
- Types of other financial institutions in India

## Introduction

A financial intermediary is an entity that acts as the middleman between two parties in a financial transaction, such as a commercial bank, investment bank, mutual fund, or pension fund. Financial intermediaries offer a number of benefits to the average consumer, including safety, liquidity, and economies of scale involved in banking and asset management. Although in certain areas, such as investing, advances in technology threaten to eliminate the financial intermediary, disintermediation is much less of a threat in other areas of finance, including banking and insurance.

- Financial intermediaries serve as middlemen for financial transactions, generally between banks or funds.
- These intermediaries help create efficient markets and lower the cost of doing business.
- Intermediaries can provide leasing or factoring services, but do not accept deposits from the public.
- Financial intermediaries offer the benefit of pooling risk, reducing cost, and providing economies of scale, among others.

### Types of Financial Institutions (FIs)



## 1. Banks or Banking Institutions

Banking institutions are those institutions, which participate in the economy's payment system, i.e., they provide transaction services. Their deposits liabilities constitute a major part of the national money supply and they can, as a whole, create deposits or credit, which is money.

### Definition of Banks

**Section 5(b) of the Banking Regulation Act, 1949**, "Banking" means the accepting, for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise, and withdrawal by cheque, draft, order or otherwise.

"Banking company" means any company which transacts the business of banking in India.

### Role of Banking Institutions

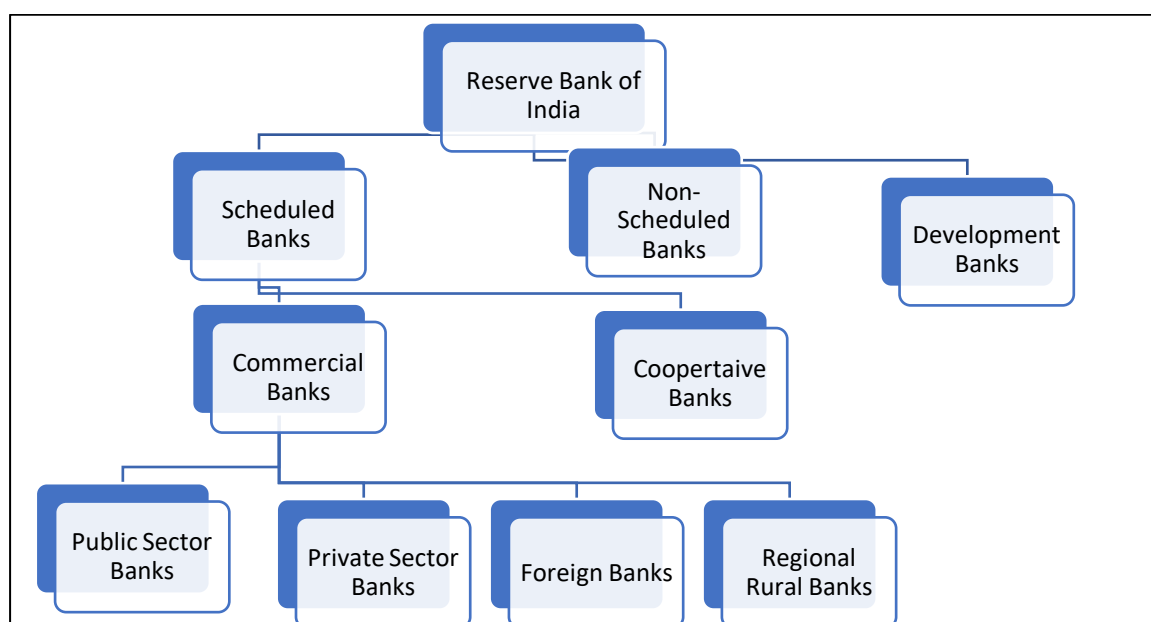
- Banking institutions mobilize the savings of the people.
- They provide a mechanism for the smooth exchange of goods and services.
- They extend credit while lending money.
- They not only supply credit but also create credit.

## Characteristics of the Banking Business

As per Section 5(b) of the Banking Regulation Act, 1949 are as follows:

- (a) Acceptance of deposits from the public
- (b) For the purpose of lending or investment
- (c) Repayable on demand or otherwise
- (d) Withdrawable by means of any instrument whether a cheque or otherwise

## Structure of Indian Banking System



The structure of the banking system of India can be broadly divided into scheduled banks, non-scheduled banks and development banks. Banks that are included in the second schedule of the Reserve Bank of India Act, 1934 are considered to be scheduled banks. Presently, 135 scheduled commercial banks are providing banking services in India. In addition, co-operative banks and local area banks are also providing banking services in various segments in different locations of the country. For the purpose of lending to specific sectors / segments, around 9,306 Non-Banking Financial Companies (registered with RBI as on 30.6.2024) and 5 All India Financial Institutions are also catering the needs of the borrowers.

### I. Commercial Banks:

Commercial banks are joint stock companies dealing in money and credit that accept demand deposits from public which are withdraw able by cheques and use these deposits for lending to others. Deposits are accepted from large group of people in forms of money and deposits are withdrawable on demand.

Commercial banks mobilize savings in urban and rural areas and make them available to large & small industrial units and trading units mainly for working capital requirements. Commercial banks provide various types of financial services to customers in return of fees.

### **Functions of Commercial Banks**

Functions of commercial banks can be divided in two groups—Banking functions (primary functions) and non-banking functions (secondary functions).

**(i) Banking Functions (primary functions):** Most of banking functions are of commercial banks are discussed below:

**(a) Acceptance of deposits from public:** Bank accepts following deposits from public: -

- (i) Demand deposits can be in the form of current account or savings account. These deposits are withdrawable any time by depositors by cheques. Current deposits have no interest or nominal interest. Such accounts are maintained by commercial firms and business man. Interest rate of saving deposits varies with time period. Savings accounts are maintained for encouraging savings of households.
- (ii) Fixed deposits are those deposits which are withdrawable only after a specific period. It earns a higher rate of interest.
- (iii) In recurring deposits, people deposit a fixed sum every month for a fixed period of time.

**(b) Advancing loans:** It extends loans and advances out of money deposited by public to various business units and to consumers against some approved. Usually, banks grant short-term or medium-term loans to meet requirements of working capital of industrial units and trading units. Banks discourage loans for consumption purposes. Loans may be secured or unsecured. Banks do not give loan in form of cash. They make the customer open account and transfer loan amount in the customer's account.

**Banks grant loan in following ways: –**

- (i) **Overdraft:** - Banks grant overdraft facilities to current account holder to draw amount in excess of balance held.
  - (ii) **Cash credit:** - Banks grant credit in cash to current account holder against hypothecation of goods.
  - (iii) **Discounting trade bills:** The banks facilitate trade and commerce by discounting bills of exchange.
  - (iv) **Term loan:** Banks grant term loan to traders and to agriculturists against some collateral securities.
  - (v) **Consumer credit:** Banks grant credit to households in a limited amount to buy durable goods.
  - (vi) **Money at call or short-term advances:** Banks grant loan for a very short period not exceeding 7 days to dealers / brokers in stock exchange against collateral securities.
- (c) Credit creation:** Credit creation is another banking function of commercial bank. i.e., it manufactures money.
- (d) Use of cheque system:** Banks have introduced the cheque system for withdrawal of deposits. There are two types of cheques – bearer & cross cheque. A bearer cheque is encashable immediately at the bank by its possessor. A crossed cheque is not encashable immediately. It has to be deposited only in the payee's account. It is not negotiable.

(e) **Remittance of funds:** Banks provides facilities to remit funds from one place to another for their customers by issuing bank drafts, mail transfer etc.

(f) **Corporate Functions of Banks:**

- (i) **Project Finance & Infrastructure Finance:** Bank provides fund based and non-fund base credit facilities for New Project as well as expansion, diversification and modernisation of existing projects in Infrastructure and Non- Infrastructure Sector. For funding large infrastructure projects, banks also syndicate loans-in which different banks come forward to share the loan amount.
- (ii) **Working Capital Finance:** Banks extend credit facility by way of working capital finance, term loan, project loan, subscription to bonds and debentures/ preference shares/equity shares acquired as a part of the project finance package which is treated as 'deemed advance' and any other form of funded or non-funded finance facility.
- (iii) **Export Finance:** Export Finance at pre-shipment and post shipment stage to exporters in various types of funds based and non-fund-based credit facility.
- (iv) **Bill Financing:** Advances against Inland Bills in the form of limit for purchase of bills, discount of bills or advance against bills sent for collection to borrowers for their genuine trade transactions. Bills facilities are also allowed to the borrowers against bills accompanied by Railway Receipts (RRs), Motor Transport Receipts (MTRs), Govt. Supply Bills, third party DDs and cheques etc.

**(ii) Non-Banking Functions (secondary functions):**

Non-banking functions are (a) Agency services (b) General utility services

(a) **Agency services:** - Banks perform following functions on behalf of their customers: -

- (i) It makes periodic payments of subscription, rent, insurance premium etc as per standing
- (ii) orders from customers.
- (iii) It collects bill, cheques, demand drafts, etc on behalf of their customers
- (iv) It acts as a trustee for property of its customers.
- (v) It acts as attorney. It can help in clearing and forwarding goods of its customers.
- (vi) It acts as correspondents, agents of their clients.

(b) **General utility services:** General utility services of commercial banks are as follows: -

- (i) Lockers are provided by bank to its customers at nominal rate.
- (ii) Shares, wills, other valuables documents are kept in safe custody. Banks return them when demanded by its customers.
- (iii) It provides travellers cheque and ATM facilities.
- (iv) Banks maintain foreign exchange department and deal in foreign exchange.
- (v) Banks underwrites issue of shares and debentures of concerns.
- (vi) It compiles statistics and business information relating to trade & commerce.
- (vii) It accepts public provident fund deposits.

**Types of Commercial Banks**

Commercial Banks refer to both scheduled and non-scheduled commercial banks which are regulated under the Banking Regulation Act, 1949.

**(A) Scheduled Commercial Banks**

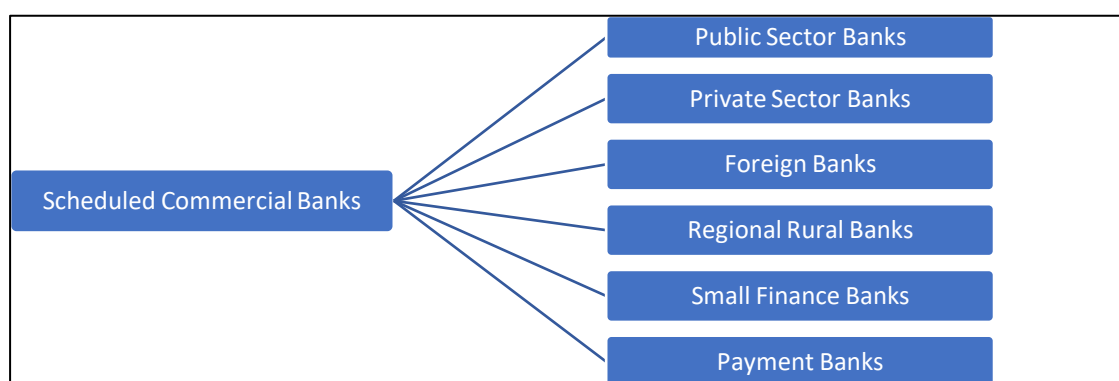
A scheduled bank is so called because it has been included in the Schedule-II of the Reserve Bank of India Act, 1934. To be eligible for this inclusion, a bank must satisfy the following three conditions:

- (i) It must have a paid-up capital and reserves of an aggregate value of at least Rs. 5.00 lakh.
- (ii) It must satisfy the RBI that its affairs are not conducted in a manner damaging to the interests of its depositors; and
- (iii) It must be a corporation and not a partnership or a single-owner firm.

Scheduled banks enjoy certain advantages: - (i) Free / concessional remittance facilities through the offices of the RBI and its agents. (ii) Borrowings facilities from the RBI by depositing necessary documents. In return, the scheduled banks are under obligation to: -

- (i) maintain an average daily balance of cash reserves with the RBI at rates stipulated by it; and
- (ii) submit periodical returns to the RBI under various provisions of the Reserve Bank of India Act, 1934 and the Banking Regulation Act, 1949 (as amended from time to time).

Scheduled Commercial Banks are grouped under following categories:



Scheduled Commercial Banks comprise of Public Sector Banks, Regional Rural Banks, Private Sector Banks, Small Finance Banks (SFBs), Scheduled Payments Banks and Foreign Banks. Public Sector banks comprise of State Bank of India (including erstwhile associate banks and Bharatiya Mahila Bank of period prior to April 1, 2017) and Nationalized banks. IDBI Bank Limited which was classified as "Public Sector Banks" before January 21, 2019, is now classified as "Private Sector Banks".

- 1. Public Sector Banks:** State Bank of India and 11 Nationalised Banks are established under the State Bank of India Act, 1955 and Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970/1980, respectively.

**List of Public Sector Banks**

- (i) Bank of Baroda
- (ii) Bank of India
- (iii) Bank of Maharashtra
- (iv) Canara Bank
- (v) Central Bank of India
- (vi) Indian Bank

- (vii) Indian Overseas Bank
- (viii) Punjab National Bank
- (ix) Punjab & Sind Bank
- (x) State Bank of India
- (xi) Union Bank of India
- (xii) UCO Bank

**2. Private Sector Banks:** Private Sector Banks are banking companies licensed to operate under Banking Regulation Act, 1949.

**New Private Sector Banks**

- (i) Axis Bank Ltd
- (ii) Development Credit Bank Ltd
- (iii) HDFC Bank Ltd
- (iv) ICICI Bank Ltd
- (v) IndusInd Bank Ltd
- (vi) Kotak Mahindra Ltd
- (vii) Yes Bank Ltd
- (viii) IDFC Bank
- (ix) Bandhan Bank Ltd.

**Old Private sector Banks**

- (i) City Union Bank Ltd.
- (ii) Dhanlaxmi Bank Ltd.
- (iii) Karnataka Bank Ltd.
- (iv) Nainital bank Ltd.
- (v) South Indian Bank Ltd.
- (vi) Catholic Syrian bank Ltd.
- (vii) Federal Bank Ltd
- (viii) Jammu & Kashmir Bank Ltd
- (ix) Karur Vysya Bank Ltd
- (x) Lakshmi Vilas Bank Ltd
- (xi) RBL Bank Ltd.
- (xii) Tamilnad Mercantile Bank Ltd.

**3. Foreign Banks:** Foreign Bank is a bank that has its headquarters outside the India but runs its offices as a private entity at any other locations in India. Such banks are under an obligation to operate under the regulations provided by RBI as well as the rule prescribed by the parent organization located outside India.

**4. Regional Rural Banks (RRB):** Regional Rural Banks (RRB) are the banks established under the Regional Rural Banks Act, 1976 with the aim of ensuring sufficient institutional credit for agriculture and other rural sectors. The area of operation of RRBs is limited to the area notified by the Central Government. RRBs are owned jointly by the Government of India, the State Government and Sponsor Banks.

**5. Small Finance Banks:** Small Finance Banks licensed under Banking Regulation Act, 1949 and created with an objective of furthering financial inclusion by primarily undertaking basic banking activities to un-served and underserved sections including small business



units, small and marginal farmers, micro and small enterprises and other underserved sections.

On 27 November 2014, the Reserve Bank of India issued the required guidelines that have to be followed for licensing of small finance banks in the private sector. The small finance bank shall primarily undertake basic banking activities of acceptance of deposits and lending to the unserved and underserved sections including small business units, small and marginal farmers, micro and small industries and unorganized sector entities.

**List of Small Finance Banks (2015)**

- (i) Au Financiers (India) Ltd., Jaipur
- (ii) Capital Local Area Bank Ltd., Jalandhar
- (iii) Disha Microfin Private Ltd., Ahmedabad
- (iv) Equitas Holdings Private Limited, Chennai
- (v) ESAF Microfinance and Investments Private Ltd., Chennai
- (vi) Janalakshmi Financial Services Private Limited, Bengaluru
- (vii) RGVN (North East) Microfinance Limited, Guwahati
- (viii) Suryoday Micro Finance Private Ltd., Navi Mumbai
- (ix) Ujjivan Financial Services Private Ltd., Bengaluru
- (x) Utkarsh Micro Finance Private Ltd., Varanasi

- 6. Payment Banks:** Payment Banks are public limited companies licensed under Banking Regulation Act, 1949, with specific licensing conditions restricting its activities mainly to acceptance of demand deposits and provision of payments and remittance services.

The Reserve Bank of India issued the guidelines for licensing of payments banks on 27 November 2014. The objectives of setting up of payment banks will be to process further the financial inclusion by providing (i) small savings accounts and (ii) payments/remittance services to migrant labour workforce, low-income households, small businesses, other unorganized sector entities and other users.

**List of Payment Banks**

- (i) Aditya Birla Nuvo Limited
- (ii) Airtel M Commerce Services Limited
- (iii) Cholamandalam Distribution Services Limited
- (iv) Department of Posts
- (v) Fino PayTech Limited
- (vi) National Securities Depository Limited
- (vii) Reliance Industries Limited
- (viii) Shri Dilip Shantilal Shanghvi
- (ix) Shri Vijay Shekhar Sharma
- (x) Tech Mahindra Limited
- (xi) Vodafone m-pesa Limited
- (xii) Tech Mahindra,
- (xiii) Cholamandalam Investment and Finance Company
- (xiv) IDFC Bank and Telenor Financial Services

- 7. Regional Rural Banks (RRBs):** The Government of India promulgated on September 26, 1975, the Regional Rural Bank Ordinance, to set up regional rural banks throughout the country; the Ordinance was replaced by the Regional Rural Banks Act, 1976. The main objective of the regional rural banks is to provide credit and other facilities particularly to the small and marginal farmers, agricultural labourers, artisans and small entrepreneurs so as to develop agriculture, trade, commerce, industry and other productive activities in rural areas. There are 43 Regional Rural Banks (RRBs) in India, with 21,856 branches across 26 States and 3 UTs. They are sponsored by 12 Scheduled Commercial Banks (SCBs).

### **Objectives of RRBs**

The following are the main objectives of regional rural banks:

- (i) To provide credit and other facilities particularly to the small and marginal farmers, agricultural labourers, artisans, small entrepreneurs and other weaker sections.
- (ii) To develop agriculture, trade, commerce, industry and other productive activities in the rural areas.
- (iii) To provide easy, cheap and sufficient credit to the rural poor and backward classes and save them from the clutches of money lenders.
- (iv) To encourage entrepreneurship.
- (v) To increase employment opportunities.
- (vi) To reconcile rural business aims and social responsibilities.

### **Functions of RRBs**

The functions of Regional Rural Bank are as follows:

- (i) Granting of loans and advances to small and marginal farmers and agricultural labourers, either individually or in groups.
- (ii) Granting of loans and advances to co-operative societies, agricultural processing societies and co-operative farming societies primarily for agricultural purposes or for agricultural operations and other related purposes.
- (iii) Granting of loans and advances to artisans, small entrepreneurs and persons of small means engaged in trade, commerce and industry or other productive activities within a specified region.
- (iv) Accepting various types of deposits.

### **(B) Non-scheduled Banks:**

Non-scheduled banks are also subject to the statutory cash reserve requirement. But they are not required to keep them with the RBI; they may keep these balances with themselves. They are not entitled to borrow from the RBI for normal banking purposes, though they may approach the RBI for accommodation under abnormal circumstances.

### **Features of non-scheduled banks**

- (i) They are not listed in the Second Schedule of the RBI Act, 1934

- (ii) They are unable to protect and serve the interests of depositors
- (iii) They must meet cash reserve requirements, but not with reserve banks, but with themselves
- (iv) They have a reserve capital of less than 5 lakh rupees
- (v) They are typically smaller banks that serve a specific niche market

Examples of non-scheduled banks

1. Andaman and Nicobar State Cooperative Bank Ltd
2. Manipur State Cooperative Bank Ltd
3. Baroda City Co-op. Bank Limited
4. Bardoli Nagrik Sahakari Bank Ltd

### **Licencing of Banks**

The Reserve Bank of India (RBI) issues licences to entities to carry on the business of banking and other businesses in which banking companies may engage, as defined and described in Sections 5 (b) and 6 (1) (a) to (o) of the Banking Regulation Act, 1949, respectively.

The payments bank will be registered as a public limited company under the Companies Act, 2013, and licensed under Section 22 of the Banking Regulation Act, 1949, with specific licensing conditions.

### **Banking Regulations in India**

Indian banks are regulated by the following acts and rules:

1. Reserve Bank of India Act, 1934
2. Banking Regulation Act, 1949
3. Foreign Exchange Management Act, 1999
4. Payment and Settlement Systems Act, 2007
5. Deposit Insurance and Credit Guarantee Corporation Act, 1961

### **Non-performing Assets (NPA) of Banks**

NPA is defined as a credit facility/advance whose:

- (i) Interest and/or instalment of principal remain overdue (i.e. an amount due has not been paid on the due date fixed by the bank) for more than 90 days (one quarter) in respect of a term-loan,
- (ii) Account remains 'out of order' for more than 90 days in respect of an overdraft (OD)/cash credit (CC).
- (iii) Bill remains overdue for more than 90 days in case of bills purchased/discounted.
- (iv) Interest and/or instalment of principal remains overdue for two harvest seasons but for a period not exceeding two half-years in case of advances granted for agricultural purposes, and
- (v) Amount to be viewed remains overdue for more than 90 days in respect of other accounts.

## **Types of NPA**

There are three types of NPA

- (a) Sub-standard assets,
- (b) Doubtful assets, and
- (c) Loss assets

### **Sub-standard asset**

A sub-standard asset is one which is classified as NPA for a period not exceeding 12 months. In such cases, the current net worth of the borrower/guarantor or the current market value of the security charged is not enough to ensure full recovery of bank dues.

### **Doubtful assets**

A doubtful asset is one which has remained NPA for a period exceeding 12 months.

A loan classified as doubtful has all the weaknesses inherent in sub-standard assets, with the added characteristic that the weakness make collection or liquidation in full, on the basis of currently known facts, conditions and values, highly questionable and improbable.

### **Loss assets**

A loss asset is one where loss has been identified by the bank or its internal or external auditors, or by the RBI inspection, though the amount has not been written off wholly.

In other words, such an asset is considered uncollectible and of such little value that its continuance as a bankable asset is not warranted although there may be some salvage or recovery value.

## **NPA Management**

The mechanism comprises:

(1) DRTs, (2) Recovery officers and (3) Debt Recovery Appellate Tribunals (DRATs).

Corporate debt restructuring (CRD) system

Securitization and reconstruction of Financial Assets and Enforcement of Security Interest (SRFAESI Act 2002)

IBC Code 2016

## **II. Cooperative Banks**

Cooperative banks are financial institutions owned and controlled by their members, who are also their customers, operating on principles of cooperation, mutual aid, and democratic decision-making.

The State Cooperative Bank is a central institution at the State level which works as a final link in the chain between the small and widely scattered primary societies, on the one hand, and the money market, on the other. It balances the seasonal excess and deficiency of funds and equate the demand for and supply of capital. It takes-off the idle money in the slack season and supplies affiliated societies and Central Co-operative Banks with fluid resources during the busy season. It is the vertex of the pyramidal structure in a state for the provision of short and

medium-term credit to agriculturists on co-operative basis. These are formed by joining together all districts central cooperative banks in a particular state. It collects funds by way of share capital, deposits from public, loan from commercial banks etc.

## **2. Non-Banking Financial Companies (NBFCs)**

The Reserve Bank of India is entrusted with the responsibility of regulating and supervising the Non- Banking Financial Companies by virtue of powers vested in Chapter III B of the Reserve Bank of India Act, 1934.

The regulatory and supervisory objective is to:

- (a) ensure healthy growth of the financial companies;
- (b) ensure that these companies function as a part of the financial system within the policy framework, in such a manner that their existence and functioning do not lead to systemic aberrations; and that
- (c) the quality of surveillance and supervision exercised by the Bank over the NBFCs is sustained by keeping pace with the developments that take place in this sector of the financial system.

### **Definition of Non-Banking Financial Companies (NBFCs)**

According to the Reserve Bank of India (RBI), a Non-Banking Financial Company (NBFC) is a company registered under the Companies Act, 1956 or 2013, that is engaged in the business of loans and advances, acquiring securities, or other financial activities, but excluding those of a banking company.

A Non-Banking Financial Company (NBFC) is a company registered under the Companies Act, 2013 engaged in the business of loans and advances, acquisition of shares/stocks/bonds/debentures/ securities issued by Government or local authority or other marketable securities of a like nature, leasing, hire-purchase, insurance business, chit business but does not include any institution whose principal business is that of agriculture activity, industrial activity, purchase or sale of any goods (other than securities) or providing any services and sale/purchase/construction of immovable property. A non-banking institution which is a company and has principal business of receiving deposits under any scheme or arrangement in one lump sum or in instalments by way of contributions or in any other manner, is also a non-banking financial company (Residuary non-banking company).

### **Difference between Banks & NBFCs**

NBFCs lend and make investments and hence their activities are akin to that of banks; however, there are a few differences as given below:

- (i) NBFC cannot accept demand deposits;
- (ii) NBFCs do not form part of the payment and settlement system and cannot issue cheques drawn on itself;

- (iii) Deposit insurance facility of Deposit Insurance and Credit Guarantee Corporation is not available to depositors of NBFCs, unlike in case of banks.

### **Different Types/ Categories of NBFCs registered with the RBI**

NBFCs are categorized (a) in terms of the type of liabilities into Deposit and Non-Deposit accepting NBFCs, (b) non deposit taking NBFCs by their size into systemically important and other non-deposit holding companies (NBFC-NDSI and NBFC-ND) and (c) by the kind of activity they conduct. Within this broad categorization the different types of NBFCs are as follows:

- 1. Asset Finance Company (AFC):** An AFC is a company which is a financial institution carrying on as its principal business the financing of physical assets supporting productive/economic activity, such as automobiles, tractors, lathe machines, generator sets, earth moving and material handling equipments, moving on own power and general-purpose industrial machines. Principal business for this purpose is defined as aggregate of financing real/physical assets supporting economic activity and income arising therefrom is not less than 60% of its total assets and total income respectively.
- 2. Investment Company (IC):** Investment company means any company which is a financial institution carrying on as its principal business the acquisition of securities,
- 3. Loan Company (LC):** Loan Company means any company which is a financial institution carrying on as its principal business the providing of finance whether by making loans or advances or otherwise for any activity other than its own but does not include an Asset Finance Company.
- 4. Infrastructure Finance Company (IFC):** Infrastructure Finance Company is a non-banking finance company a) which deploys at least 75 per cent of its total assets in infrastructure loans, b) has a minimum Net Owned Funds of ₹ 300 crore, c) has a minimum credit rating of 'A' or equivalent d) and a CRAR of 15%.
- 5. Systemically Important Core Investment Company (CIC-ND-SI):** CIC-ND-SI is an NBFC carrying on the business of acquisition of shares and securities which satisfies the following conditions: -
  - (a) it holds not less than 90% of its Total Assets in the form of investment in equity shares, preference shares, debt or loans in group companies;
  - (b) its investments in the equity shares (including instruments compulsorily convertible into equity shares within a period not exceeding 10 years from the date of issue) in group companies constitutes not less than 60% of its Total Assets;
  - (c) it does not trade in its investments in shares, debt or loans in group companies except through block sale for the purpose of dilution or disinvestment;
  - (d) it does not carry on any other financial activity referred to in Section 45I(c) and 45I(f) of the RBI act, 1934 except investment in bank deposits, money market instruments, government securities, loans to and investments in debt issuances of group companies or guarantees issued on behalf of group companies.
  - (e) Its asset size is ₹ 100 crore or above and
  - (f) It accepts public funds

- 6. Infrastructure Debt Fund:** Non- Banking Financial Company (IDF-NBFC) : IDF-NBFC is a company registered as NBFC to facilitate the flow of long term debt into infrastructure projects. IDF-NBFC raise resources through issue of Rupee or Dollar denominated bonds of minimum 5-year maturity. Only Infrastructure Finance Companies (IFC) can sponsor IDF-NBFCs.
- 7. Non-Banking Financial Company - Micro Finance Institution (NBFC-MFI):** NBFC-MFI is a non-deposit taking NBFC having not less than 85% of its assets in the nature of qualifying assets which satisfy the following criteria:
  - (a) loan disbursed by an NBFC-MFI to a borrower with a rural household annual income not exceeding ₹1,00,000 or urban and semi-urban household income not exceeding ₹ 1,60,000;
  - (b) loan amount does not exceed ₹ 50,000 in the first cycle and ₹ 1,00,000 in subsequent cycles;
  - (c) total indebtedness of the borrower does not exceed ₹ 1,00,000;
  - (d) tenure of the loan not to be less than 24 months for loan amount in excess of ₹ 15,000 with prepayment without penalty;
  - (e) loan to be extended without collateral;
  - (f) aggregate amount of loans, given for income generation, is not less than 50 per cent of the total loans given by the MFIs;
  - (g) loan is repayable on weekly, fortnightly or monthly instalments at the choice of the borrower
- 8. Non-Banking Financial Company – Factors (NBFC-Factors):** NBFC-Factor is a non-deposit taking NBFC engaged in the principal business of factoring. The financial assets in the factoring business should constitute at least 50 percent of its total assets and its income derived from factoring business should not be less than 50 percent of its gross income.
- 9. Mortgage Guarantee Companies (MGC) -** MGC are financial institutions for which at least 90% of the business turnover is mortgage guarantee business or at least 90% of the gross income is from mortgage guarantee business and net owned fund is ₹ 100 crore.
- 10. NBFC- Non-Operative Financial Holding Company (NOFHC)** is financial institution through which promoter / promoter groups will be permitted to set up a new bank .It's a wholly-owned Non-Operative Financial Holding Company (NOFHC) which will hold the bank as well as all other financial services companies regulated by RBI or other financial sector regulators, to the extent permissible under the applicable regulatory prescriptions.

### 3. Reserve Bank of India (RBI)

The Reserve Bank of India was established on April 1, 1935 in accordance with the provisions of the Reserve Bank of India Act, 1934. The RBI is the central bank of India, and regulatory body responsible for regulation of the Indian banking system and Indian currency.

#### **RBI at a Glance**

- ❖ Managed by Central Board of Directors
- ❖ India's monetary authority

- ❖ Supervisor of financial system
- ❖ Issuer of currency
- ❖ Manager of foreign exchange reserves
- ❖ Banker and debt manager to government
- ❖ Supervisor of payment system
- ❖ Banker to banks
- ❖ Maintaining financial stability
- ❖ Developmental functions
- ❖ Research, data and knowledge sharing

### **Functions of the Reserve Bank of India**

The Reserve Bank is the umbrella network for numerous activities, all related to the nation's financial sector, encompassing and extending beyond the functions of a typical central bank.

Functions of RBI are discussed below:

1. Monetary Authority
  2. Issuer of Currency
  3. Banker and Debt Manager to Government
  4. Banker to Banks
  5. Regulator of the Banking System
  6. Manager of Foreign Exchange
  7. Maintaining Financial Stability
  8. Regulator and Supervisor of the Payment and Settlement Systems
  9. Developmental Role
1. **Monetary Authority:** The RBI formulates, implements and monitors the monetary policy. Monetary policy refers to the use of instruments under the control of the central bank to regulate the availability, cost and use of money and credit. The Reserve Bank's Monetary Policy Department (MPD) formulates monetary policy. The Financial Markets Department (FMD) handles day-to-day liquidity management operations. There are several direct and indirect instruments that are used in the formulation and implementation of monetary policy.
  2. **Issuer of currency:** The RBI issues, exchanges and destroys currency notes as well as puts into circulation coins minted by Government of India. The objective of this function is to give the public adequate quantity of supplies of currency notes and coins and in good quality. In consultation with the government, RBI routinely addresses security issues and target ways to enhance security features to reduce the risk of counterfeiting or forgery.
  3. **Banker and Debt Management to Government:** Managing the government's banking transactions is a key RBI role. Like individuals, businesses and banks, governments need a banker to carry out their financial transactions in an efficient and effective manner, including the raising of resources from the public. As a banker to the central government, the Reserve Bank maintains its accounts, receives money into and makes payments out of



these accounts and facilitates the transfer of government funds. RBI also act as the banker to those state governments that has entered into an agreement.

4. **Banker to Banks:** Like individual consumers, businesses and organisations of all kinds, banks need their own mechanism to transfer funds and settle inter-bank transactions—such as borrowing from and lending to other banks—and customer transactions. As the banker to banks, the Reserve Bank fulfils this role. In effect, all banks operating in the country have accounts with the Reserve Bank, just as individuals and businesses have accounts with their banks.
5. **Regulator of the Banking System:** The central bank has a critical role to play in ensuring the safety and soundness of the banking system—and in maintaining financial stability and public confidence in this system. As the regulator and supervisor of the banking system, the Reserve Bank protects the interests of depositors, ensures a framework for orderly development and conduct of banking operations conducive to customer interests and maintains overall financial stability through preventive and corrective measures.
6. **Manager of Foreign Exchange:** The RBI manages the Foreign Exchange Management Act, 1999. The objective is to facilitate external trade and payment and promote orderly development and maintenance of foreign exchange market in India. On a given day, the foreign exchange rate reflects the demand for and supply of foreign exchange arising from trade and capital transactions. The RBI's Financial Markets Department (FMD) participates in the foreign exchange market by undertaking sales / purchases of foreign currency to ease volatility in periods of excess demand for/ supply of foreign currency.
7. **Regulator and Supervisor of Payment and Settlement Systems:** The RBI introduces and upgrades safe and efficient modes of payment systems in the country to meet the requirements of the public at large. The objective is to maintain public confidence in payment and settlement system. The Payment and Settlement Systems Act of 2007 (PSS Act) gives the Reserve Bank oversight authority, including regulation and supervision, for the payment and settlement systems in the country.
8. **Maintaining Financial Stability:** Pursuit of financial stability has emerged as a key critical policy objective for the central banks in the wake of the recent global financial crisis. Central banks have a critical role to play in achieving this objective. Though financial stability is not an explicit objective of the Reserve Bank in terms of the Reserve Bank of India Act, 1935, it has been an explicit objective of the Reserve Bank since the early 2000s.
9. **Developmental role:** The RBI performs a wide range of promotional functions to support national objectives. This includes ensuring credit availability to the productive sectors of the economy, establishing institutions designed to build the country's financial infrastructure, expanding access to affordable financial services and promoting financial education and literacy.

### **Monetary Policy of RBI**

Monetary policy refers to the policy to control the supply of credit/money in the economy. Its objective is to correct the economy's inflation and deflation situations. It states the use of financial instruments under the control of the Reserve Bank of India to achieve the ultimate

objective of economic policy mentioned in the Reserve Bank of India Act, 1934 which is to standardise magnitudes such as availability of credit, interest rates, and money supply.

The primary goal of monetary policy is to maintain price stability while pursuing growth. Price stability is an essential prerequisite to sustainable growth.

The Reserve Bank of India (RBI) uses several instruments of monetary policy, including repo rate, reverse repo rate, cash reserve ratio (CRR), statutory liquidity ratio (SLR), and open market operations (OMOs) to manage liquidity and influence the money supply.

#### **(A) Quantitative Instruments:**

(i) **Repo Rate:** The rate at which RBI lends money to commercial banks for short periods, typically overnight. Present Repo Rate is 6.25%.

(ii) **Reverse Repo Rate:** The rate at which RBI absorbs liquidity from commercial banks by lending to them. Current Reverse Repo Rate is 3.35%.

(iii) **Cash Reserve Ratio (CRR):** The percentage of a bank's deposits that it is required to hold with RBI. The present CRR is 4.00%.

This means that banks must keep 4.00% of their Net Demand and Time Liabilities (NDTL) with the RBI as liquid cash reserves.

NDTL (Net Demand and Time Liabilities)

- “Demand liabilities” means liabilities which must be met on demand, and
- “Time liabilities” means liabilities which are not demand liabilities;
- This includes the sum of demand and time deposits held by the bank. Demand deposits are those that can be withdrawn anytime, whereas time deposits have a fixed maturity date.

(iv) **Statutory Liquidity Ratio (SLR):** The percentage of a bank's deposits that it is required to hold in liquid assets. The SLR is the minimum percentage of deposits that banks must keep in cash, gold, and other liquid assets. The RBI can change the SLR limit as needed, and the maximum limit is 40%. As of March 30, 2025, the Statutory Liquidity Ratio (SLR) of the Reserve Bank of India (RBI) is 18%. This means that for every ₹100 of deposits a bank holds, it must keep at least ₹18 in liquid assets.

SLR Requirement

The following lending institutions are liable to maintain an SLR, per the Banking Regulation Act 1949:

- Scheduled Commercial Banks
- Local Area Banks
- Primary (Urban) Co-operative Banks
- State Co-operative Banks
- Central Co-operative Banks

Calculation of SLR

$$SLR = \{ (\text{Liquid assets held by the bank}) / (\text{Net demand and time liabilities (NDTL)}) \} \times 100$$

Liquid assets such as cash, gold, and government securities. The total of these liquid assets

(v) **Open Market Operations (OMOs):** Buying or selling government securities by RBI in the open market to influence liquidity.

#### **(B) Qualitative Instruments:**

- (i) **Liquidity Adjustment Facility (LAF):** A mechanism used by RBI to adjust liquidity in the system, including repo and reverse repo operations.
- (ii) **Fine-tuning Operations:** These are small adjustments to liquidity in the market to keep the weighted average call rate (WACR) close to the policy rate.
- (iii) **Marginal Standing Facility (MSF):** A facility where banks can borrow from RBI overnight against the security of government securities, at a rate higher than the repo rate.
- (iv) **Standing Deposit Facility (SDF):** A facility where banks can deposit funds with RBI at a rate lower than the reverse repo rate.
- (v) **Bank Rate:** The rate at which RBI lends to commercial banks as a last resort, typically used as a signal for the overall interest rate environment. The present bank rate is 6.50%.

#### 4. Other Financial Institutions

“Other development financial institution” means a development financial institution licensed under Section 29 of the National Bank for Financing Infrastructure and Development Act, 2021.

- (1) NABARD
- (2) SIDBI
- (3) SFCs
- (4) EXIM Bank

These are discussed below:

##### (1) National Bank for Agriculture and Rural Development (NABARD)

NABARD is India's apex development bank, established in 1982 to promote sustainable and equitable agriculture and rural development through financial and technical support.

##### Role and Functions:

- (a) **Apex Development Bank:** NABARD serves as the apex development bank for India, providing financial and technical support to promote rural development.
- (b) **Supervisory Body:** It acts as an apex supervisory body for Regional Rural Banks, State Cooperative Banks, and District Central Cooperative Banks.
- (c) **Refinance Support:** NABARD provides refinance support to financial institutions for lending to rural areas.
- (d) **Infrastructure Development:** It plays a crucial role in building rural infrastructure.
- (e) **Credit Planning:** NABARD prepares district-level credit plans and guides the banking industry in achieving credit targets.

##### Areas of Focus:

- (a) **Agriculture and Related Sectors:** NABARD focuses on promoting sustainable agriculture and rural development through various initiatives.
- (b) **Natural Resource Management:** It supports projects in natural resources management, including water management and watershed development.

- (c) **Rural Livelihood Improvement:** NABARD works towards improving rural livelihoods through microfinance, skill development, and entrepreneurship.
- (d) **Climate Change:** A significant portion of NABARD's disbursements are related to climate change adaptation and mitigation activities.

#### **Key Initiatives:**

- (a) **SHG Bank Linkage Project:** NABARD is at the forefront of promoting Self-Help Groups (SHGs) and Joint Liability Groups (JLGs) for microfinance.
- (b) **Watershed Development Programme:** NABARD supports projects aimed at improving land and water management, enhancing agricultural productivity, and ensuring livelihood security in rural areas.
- (c) **Digitalization of Cooperatives:** NABARD is actively involved in the digitalization of Primary Agricultural Credit Societies (PACS) to enhance their efficiency and transparency.
- (d) **AgriSURE:** NABARD promotes Agri-tech startups and encourages investment in the agriculture and rural sector.

## **(2) Small Industries Development Bank of India (SIDBI)**

SIDBI, or the Small Industries Development Bank of India, is a principal financial institution mandated to promote, finance, and develop the Micro, Small, and Medium Enterprise (MSME) sector in India, established under an Act of Parliament in 1990.

### **Functions of SIDBI**

- (a) **Promotion, Financing, and Development of MSMEs:** SIDBI's primary mandate is to foster the growth and development of the Micro, Small, and Medium Enterprise (MSME) sector.
- (b) **Coordination:** SIDBI coordinates the activities of various institutions involved in promoting, financing, and developing the MSME sector.
  - (i) **Financial Assistance: Indirect Lending:** SIDBI provides refinance facilities to banks and financial institutions, enabling them to extend credit to MSMEs.
  - (ii) **Direct Lending:** SIDBI also offers direct loans to MSMEs to address credit gaps and support their growth.
  - (iii) **Fund of Funds:** SIDBI manages a fund of funds to provide equity support to startups and emerging businesses.
- (c) **Promotion and Development:** SIDBI promotes entrepreneurship and provides handholding support to budding entrepreneurs, focusing on holistic development of the MSME sector through credit-plus initiatives.
- (d) **Facilitator:** SIDBI acts as a facilitator, including serving as a Nodal Agency for MSME-oriented schemes of the government.
- (e) **Marketing Support:** SIDBI assists MSMEs in expanding their marketing channels, both domestically and internationally.
- (f) **Technology Upgradation:** SIDBI supports the modernization and technological upgradation of MSME units.
- (g) **Employment Generation:** SIDBI promotes employment-oriented industries, particularly in semi-urban areas, to create jobs and prevent migration to cities.

- (h) **Venture Funding:** SIDBI promotes venture funds and works with state-level venture funds to support innovation and growth.
- (i) **Infrastructure Development:** SIDBI supports infrastructure development in MSME clusters through the SIDBI Cluster Development Fund (SCDF).
- (j) **Green Financing:** SIDBI is launching initiatives under green financing for projects involving renewable energy, climate change, electric vehicles, and energy efficiency.
- (k) **Promotion and Development:** SIDBI promotes entrepreneurship and provides handholding support to budding entrepreneurs through credit-plus initiatives.
- (l) **Facilitator:** SIDBI plays a facilitator role, including serving as a Nodal Agency for MSME-oriented schemes of the Government.

### **Financial Assistance**

- (a) **Indirect Lending:** SIDBI provides financial assistance to banks, SFBs, NBFCs, MFIs, and New Age Fintechs, which in turn extend credit to MSMEs.
- (b) **Direct Lending:** SIDBI offers demonstrative and innovative lending products to directly address credit gaps in the MSME sector.
- (c) **Fund of Funds:** SIDBI manages the Fund of Funds to support emerging startups through equity support.

### **(3) State Financial Corporations (SFCs)**

The State Financial Corporations Act, 1951, empowered state governments to set up SFCs. State Financial Corporations (SFCs) are the financial institutions that were set up by the state governments in India, post-Independence.

There are 18 SFCs in India, with 17 established under the State Financial Corporations Act, 1951, and the Tamil Nadu Industrial Investment Corporation Ltd. established under the Companies Act, 1949.

The objective was to provide credit and other support services to small businesses and farmers. The important functions of State Finance Corporations are:

- (i) The SFCs grant loans mainly for acquisition of fixed assets like land, building, plant and machinery.
- (ii) The SFCs provide financial assistance to industrial units whose paid-up capital and reserves do not exceed Rs. 3 crore (or such higher limit up to Rs. 30 crore as may be specified by the central government).
- (iii) The SFCs underwrite new stocks, shares, debentures etc., of industrial concerns.
- (iv) The SFCs provide guarantee loans raised in the capital market by scheduled banks, industrial concerns, and state co-operative banks to be repayable within 20 years.

### **(4) Export-Import Bank of India (EXIM Bank)**

The EXIM Bank is a government-owned financial institution established in 1982 to promote, finance, and facilitate India's international trade, supporting exporters and importers with financial assistance.

Different aspects of EXIM Bank are discussed below:

- (a) **Objectives:** Exim Bank's primary function is to finance, facilitate, and promote India's international trade, integrating foreign trade and investment with the country's economic growth.
- (b) **Establishment:** It was established in 1982 under the Export-Import Bank of India Act, 1981.
- (c) **Ownership:** The bank is wholly owned by the Government of India and operates as a statutory corporation.
- (d) **Services:** EXIM Bank provides a wide range of financial services to Indian exporters and importers, including export credit, pre-shipment credit, post-shipment credit, and overseas investment finance.
- (e) **Global Presence:** EXIM Bank has offices across India and in select locations worldwide.
- (f) **Support for Businesses:** The bank aims to boost the businesses of industries and Small and Medium Enterprises (SMEs).
- (g) **Lines of Credit:** EXIM Bank extends lines of credit to various countries to promote Indian projects, products, and services.

## Multiple Choice Questions

1. The Definition of 'Banking' is given in

- (a) Negotiable Instrument Act, 1881
- (b) RBI Act, 1934
- (c) The Banking Regulation Act, 1949
- (d) Contract Act

**Answer (c)**

2. Which of the following banks are not commercial banks?

- (a) Foreign Banks
- (b) State Co-operative Banks
- (c) Private Banks
- (d) Regional Rural Banks

**Answer (b)**

3. Cash deposit ratio means:

- (a) The percentage of cash-in-hand-balance with the Central Bank to the aggregate deposits
- (b) The percentage of total cash money received as deposits by banks
- (c) All the above
- (d) None of the above

**Answer (a)**

4. A rise in the reserve ratio of banks-

- (a) Will lead to an increase in the money supply

- (b) Will lead to a proportionate increase in the money supply
- (c) Will lead to a decrease in the money supply
- (d) None of these

Answer (c)

5. Bank conducts Government business at its branches as an agent of -

- (a) RBI
- (b) SBI
- (c) Government of India
- (d) None of the above

Answer (a)

6. Commercial banks influence money supply through

- (a) Printing of one-rupee notes
- (b) Augmentation of savings and time deposits
- (c) Provision of high denomination notes
- (d) Creation of demand deposits

Answer (d)

7. Open market operations, one of the measures taken by Reserve Bank of India (RBI) in order to control credit expansion in the economy means:

- (a) Sale or purchase of Government Securities
- (b) Issuance of different types of Bonds
- (c) Auction of Gold
- (d) To make available Direct Finance to borrowers

Answer (a)

8. Which one of the following is not a development bank of India?

- (a) Industrial Finance Corporation of India
- (b) Small Industries Development Bank of India
- (c) National Bank for Agriculture and Rural Development
- (d) State Bank of India

Answer (d)

9. The NABARD was set up in

- (a) 1982
- (b) 1984
- (c) 1986
- (d) 1991

Answer: (a)

10. Small Industries Development Bank of India is wholly subsidiary of

- (a) RBI
- (b) Exim Bank
- (c) NABARD
- (d) IDBI

Answer (d)

11. State Financial Corporation extend financial assistance to

- (a) Proprietary and partnership firms
- (b) Public and private limited companies and co-operative societies
- (c) Hindu undivided family concerns
- (d) All the above

Answer (d)

12. The Regional Rural Banks were set up in

- (a) January 1, 1975
- (b) March 11, 1975
- (c) April 1, 1975
- (d) October 2, 1975

Answer (d)

13. The commercial paper can be issued to raise deposits by-

- (a) Commercial banks
- (b) Reserve Bank of India
- (c) IDBI
- (d) Every non-banking company

Answer: (a)

14. Time deposits mean (a)

- (a) The deposits which are lent to bank for a fixed period
- (b) Time deposits include over due fixed deposits
- (c) Time deposits do not include recurring deposits as well
- (d) Time deposits do not include deposits under Home Loan Account Scheme

Answer: (a)

15. Which one of the following is not a national level development bank

- (a) Industrial Finance Corporation of India
- (b) Small Industries Development Bank of India
- (c) National Bank for Agriculture and Rural Development
- (d) State Financial Corporation

**Answer: (d)**

16. The rate at which the RBI lends short-term money to the banks?

- a) Prime Lending Rate
- b) Cash Reserve Ratio
- c) Repo Rate
- d) Reverse Repo Rate

**Ans: (c)**

17. The rate of which discounting the bills of first class banks is done by RBI is called \_\_\_\_\_.

- (a) Discounting Rate



- (b) Bank Rate
- (c) Prime Lending Rate
- (d) Loan Rate

**ANSWER: (b)**

18. The first development financial institution in India that has got merged with a bank is \_\_\_\_\_.

- (a) IDBI
- (b) ICICI
- (c) IDFC
- (d) UTI

**ANSWER: (b)**

## **Unit 3:**

### **Insurance (General Insurance)**

#### **Objectives of this unit:**

This unit will enable you to develop an understanding of the following:

- Meaning and importance of insurance
- Principles of insurance
- Types of insurance
- Structure of insurance industry in India
- Life insurance
- General insurance (Products, General Insurance Council)
- Reinsurance
- Insurance Intermediaries
- Insurance Regulation

#### **1. Introduction**

In day-to-day life, man is confronted with various risks. However great a genius he may be, it is impossible for him to foresee all the calamities in store for him and provide necessities for them to advance. Many happy lives are ruined either by the untimely death of the earning member of the family or by other disastrous calamities such as floods, fire, earthquakes, war, accidents, etc., which may take a heavy toll on human life. These risks cannot be known in advance as to when they will happen, and it is physically impossible for an individual to make provision against them by him.

Insurance is a device not to avert these risks but to mitigate their rigor on individuals. Insurance is defined as a cooperative device to spread the loss caused by a particular risk over several persons exposed to it and who agree to insure themselves against that risk.

The risk is the uncertainty of a financial loss. It should not be confused with the chance of loss which is the probable number of losses out of a given number of exposures. It should not be confused with peril which is defined as the cause of the loss, or with a hazard which is a condition that may increase the chance of loss.

Finally, risk must not be confused with the loss itself, which is the unintentional decline in or disappearance of value arising from a contingency.

Wherever there is uncertainty concerning a probable loss, there is a risk.

The risk is the uncertainty of a financial loss. It should not be confused with the chance of loss, which is the probable number of losses out of a given number of exposures.

It should not be confused with “peril,” which is defined as the cause of the loss, or with “hazard,” which is a condition that may increase the chance of loss.

## 2. Meaning and Definition of Insurance

Before fully elaborating on the definition of insurance; get familiar with the following terms;  
The definition of insurance can be made from two points:

- Functional Definition and,
- Contractual Definition.

Let's get a brief idea about the two points;

### **Functional Definition of Insurance:**

Insurance is a cooperative device to spread the loss caused by a particular risk over some persons exposed to it and who agree to insure themselves against the risk. Thus, the insurance is; A co-operative device to spread the risk;

The system to spread the risk over many persons who are insured against the risk;

The principle to share the loss of each member of the society based on the probability of loss to their risk; and

The method to provide security against losses to the insured. Similarly, another definition can be given.

Insurance is a cooperative device for distributing losses falling on an individual or his family over many persons, each bearing a nominal expenditure and feeling secure against heavy loss.

### **Contractual Definition of Insurance:**

Insurance is defined as a form of risk management primary insurance has been defined to be that in which a sum of money as a premium is paid in consideration of the insurance incurring the risk of paying a large sum upon a given contingency.

The insurance, thus, is a contract whereby;

- A certain sum, called premium, is charged in consideration,
- Against the said consideration, a large sum is guaranteed to be paid by the insurer who received the premium,
- The payment will be made in a certain definite sum, i.e., the loss or the policy amount, whichever may be, and
- The payment is made only upon a contingency.

A more specific definition can be given as follows "Insurance may be defined as a consisting one party (the insurer) agrees to pay to the other party (the insured) or his beneficiary, a certain sum upon a given contingency (the risk) against which insurance is sought."

So, it is clear that every risk involves the loss of one or the other kind. The function of insurance is to spread this loss over many persons through the mechanism of cooperation.

The persons exposed to a particular risk cooperate to share the loss caused by that risk whenever it takes place.

Thus, the risk is not averted, but the members share the loss of its occurrence. The Significance of this fact will be clear in the following example.

The legal definition focuses on a contractual arrangement whereby one party agrees to compensate another party for losses.

The financial definition provides for the funding of the losses. In contrast, the legal definition provides for the legally enforceable contract that spells out the legal rights, duties, and obligations of all the parties to the contract.

Every risk involves the loss of one or another kind. The function of insurance is to spread the loss over many persons who agree to co-operate with each other at the time of loss.

The risk cannot be averted, but loss occurring due to a certain risk can be distributed amongst the agreed persons.

They agree to share the loss because the chances of loss, i.e., the time, and amount to a person, are unknown. Anybody may suffer a loss to a given risk, so the rest of the persons who are agreed will share the loss.

The larger the number of such persons, the easier the process of distribution of loss.

The loss is shared by them by payment of premium which is calculated on the probability of loss. In olden times, the contribution by the persons was made at the time of loss.

Insurance is also defined as a social device to accumulate funds to meet the uncertain losses arising through a certain risk to a person insured against the risk.

### **3. Features of Insurance**

From the above explanation, find the following characteristics, which are generally observed in life, marine, fire, and general insurances.

#### **(i) Sharing of Risk:**

Insurance is a device to share the financial losses which might befall an individual or his family in the happening of a specified event. The event may be the death of a breadwinner to the family in the case of life insurance, marine-perils in marine insurance, fire in fire insurance, and other certain events in general insurance, e.g., theft in burglary insurance, accident in motor insurance, etc. The loss arising from these events, if insured, is shared by all the insured in the form of a premium.

#### **(ii) Co-operative Device:**

The most important feature of every insurance plan is the cooperation of a large number of persons who, in effect, agree to share the financial loss arising due to a particular risk that is insured. Such a group of persons may be brought together voluntarily or through publicity or solicitation of the agents. An insurer would be unable to compensate for all the losses from his capital. So, by insuring or underwriting a large number of persons, he can pay the amount of loss. Like all cooperative devices, there is no compulsion here on anybody to purchase the insurance policy.

#### **(iii) Value of Risk:**

The risk is evaluated before insuring to charge the share of an insured, herein called, consideration or premium. There are several methods of evaluation of risks. If there is an expectation of more loss, a higher premium may be charged. So, the probability of loss is calculated at the time of insurance.

#### **(iv) Payment at Contingency:**

The payment is made at a certain contingency insured. If the contingency occurs, payment is made. Since the life insurance contract is a contract of certainty, because the contingency, the death, or the expiry of the term will certainly occur, the payment is certain. The contingency is

that the fire or the marine perils, etc., may or may not occur in other insurance contracts. So, if the contingency occurs, payment is made. Otherwise, no amount is given to the policy-holder. Similarly, in certain policies, payment is not certain due to the uncertainty of a particular contingency within a particular period. For example, in term insurance, payment is made only when the assured death occurs within the specified term, maybe one or two years. Similarly, in Pure Endowment, payment is made only at the survival of the insured at the expiry of the period.

**(v) Payment of Fortuitous Losses:**

Another characteristic of insurance is the payment of fortuitous losses. A fortuitous loss is unforeseen and unexpected and occurs as a result of chance. In other words, the loss must be accidental. The law of large numbers is based on the assumption that losses are accidental and occur randomly. For example, a person may slip on an icy sidewalk and break a leg. The loss would be fortuitous. Insurance policies do not cover intentional issues.

**(vi) Amount of Payment:**

The amount of payment depends on the value of loss due to the particular insured risk provided insurance is there up to that amount. In life insurance, the purpose is not to make good the financial loss suffered. The insurer promises to pay a fixed sum on the happening of an event. If the event or the contingency takes place, the payment does fail due if the policy is valid and in force at the time of the event, like property insurance, the dependents will not be required to prove the occurring loss and the amount of loss.

It is immaterial in life insurance what was the amount of loss was at the time of contingency. But in the property and general insurances, the amount of loss and the happening of loss is required to be proved.

**(vii) A large number of Insured Persons:**

To spread the loss immediately, smoothly, and cheaply, a large number of persons should be insured. The co- operation of a small number of persons may also be insurance, but it will be limited to the smaller area. The cost of insurance for each member may be higher. So, it may be unmarketable. Therefore, to make the insurance cheaper, it is essential to ensure many persons or properties because the lessor would be the cost of insurance, so the lower would be the premium.

## **4. Benefits of Insurance**

Insurance gives benefits to individuals and organizations in many ways. Some of the benefits are discussed below:

- (i) The obvious benefit of insurance is the payment of losses.
- (ii) It manages cash flow uncertainty when paying capacity at the time of losses is reduced significantly.
- (iii) It complies with legal requirements by meeting contractual and statutory requirements, and also provides evidence of financial resources.
- (iv) Insurance promotes risk control activity by providing incentives to implement a program of losing control because of policy requirements.
- (v) The efficient use of the insured's resources.

- (vi) It provides a source of investment funds. Insurers collect the premiums and invest those in a variety of investment vehicles.
- (vii) Insurance is support for the insured's credit.
- (viii) It facilitates loans to organizations and individuals by guaranteeing the lender payment at the time when collateral for the loan is destroyed by an insured event. Hence, reducing the uncertainty of the lender's default by the party borrowing funds.
- (ix) It reduces the social burden by reducing uncompensated accident victims and the uncertainty of society.

## 5. Principles of Insurance

The contract of insurance between an insurer and insured is based on certain principles, let us know the principles of insurance in detail.

To ensure the proper functioning of an insurance contract, the insurer and the insured have to uphold the seven principles of Insurance mentioned below:

- (i) Utmost Good Faith.
- (ii) Proximate Cause.
- (iii) Insurable Interest.
- (iv) Indemnity.
- (v) Subrogation.
- (vi) Contribution.
- (vii) Loss Minimization.

Let us understand each principle of insurance with an example:

### (i) Principle of Utmost Good Faith:

The fundamental principle is that both the parties in an insurance contract should act in good faith towards each other, i.e., they must provide clear and concise information related to the terms and conditions of the contract. The Insured should provide all the information related to the subject matter, and the insurer must give precise details regarding the contract.

**Example** – Mr. X took a health insurance policy. At the time of taking insurance, he was a smoker and failed to disclose this fact. Later, he got cancer. In such a situation, the Insurance company will not be liable to bear the financial burden as Jacob concealed important facts.

### (ii) Principle of Proximate Cause:

This is also called the principle of 'Causa Proxima' or the nearest cause. This principle applies when the loss is the result of two or more causes. The insurance company will find the nearest cause of loss to the property. If the proximate cause is the one in which the property is insured, then the company must pay compensation. If it is not a cause the property is insured against, then no payment will be made by the insured.

**Example:** Due to a fire, a wall of a building was damaged, and the municipal authority ordered it to be demolished. While demolition the adjoining building was damaged. The owner of the adjoining building claimed the loss under the fire policy. The court held that fire is the nearest cause of loss to the adjoining building, and the claim is payable as the falling of the wall is an inevitable result of the fire. In the same example, the wall of the building was damaged due to fire, fell due to a storm before it could be repaired, and damaged an adjoining building. The owner of the adjoining building claimed the loss under the fire policy. In this case, the fire was

a remote cause, and the storm was the proximate cause; hence the claim is not payable under the fire policy.

**(iii) Principle of Insurable interest:**

This principle says that the individual (insured) must have an insurable interest in the subject matter. Insurable interest means that the subject matter for which the individual enters the insurance contract must provide some financial gain to the insured and also lead to a financial loss if there is any damage, destruction, or loss.

**Example** – The owner of a vegetable cart has an insurable interest in the cart because he is earning money from it. However, if he sells the cart, he will no longer have an insurable interest in it.

To claim the amount of insurance, the insured must be the owner of the subject matter both at the time of entering the contract and at the time of the accident.

**(iv) Principle of Indemnity:**

This principle says that insurance is done only for the coverage of the loss; hence insured should not make any profit from the insurance contract. In other words, the insured should be compensated the amount equal to the actual loss and not the amount exceeding the loss. The purpose of the indemnity principle is to set back the insured in the same financial position as he was before the loss occurred. The principle of indemnity is observed strictly for property insurance and does not apply to the life insurance contract.

**Example** – The owner of a commercial building enters an insurance contract to recover the costs for any loss or damage in the future. If the building sustains structural damages from fire, then the insurer will indemnify the owner for the costs to repair the building by way of reimbursing the owner for the exact amount spent on repair or by reconstructing the damaged areas using its authorized contractors.

**(v) Principle of Subrogation:**

Subrogation means one party stands in for another. As per this principle, after the insured, i.e., the individual has been compensated for the incurred loss to him on the subject matter that was insured, the rights of the ownership of that property go to the insurer, i.e., the company.

Subrogation gives the right to the insurance company to claim the amount of loss from the third party responsible for the same.

**Example** – If Mr. A gets injured in a road accident, due to reckless driving of a third party, the company with which Mr. A took the accidental insurance will compensate for the loss that occurred to Mr. A and will also sue the third party to recover the money paid as claim.

**(vi) Principle of Contribution:**

The contribution principle applies when the insured takes more than one insurance policy for the same subject matter. It states the same thing as in the principle of indemnity, i.e. the insured cannot make a profit by claiming the loss of one subject matter from different policies or companies.

**Example** – A property worth Rs. 5 Lakhs is insured with Company A for Rs. 3 lakhs and with company B for `1 lakhs. The owner in case of damage to the property for 3 lakhs can claim the full amount from Company A but then he cannot claim any amount from Company B. Now, Company A can claim the proportional amount reimbursed value from Company B.

**(vii) Principle of Loss Minimization:**

This principle says that as an owner, it is obligatory on the part of the insurer to take necessary steps to minimize the loss to the insured property. The principle does not allow the owner to be irresponsible or negligent just because the subject matter is insured.

Example: If a fire breaks out in Insured factory, Insured should take reasonable steps to put out the fire. Insured cannot just stand back and allow the fire to burn down the factory because Insured know that the insurance company will compensate for it.

## 6. Structure of Insurance Industry in India

India's Insurance industry is one of the premium sectors experiencing upward growth. This upward growth of the insurance industry can be attributed to growing incomes and increasing awareness in the industry. India is the fifth largest life insurance market in the world's emerging insurance markets, growing at a rate of 32-34% each year. In recent years, the industry has been experiencing fierce competition among its peers which has led to new and innovative products within the industry.

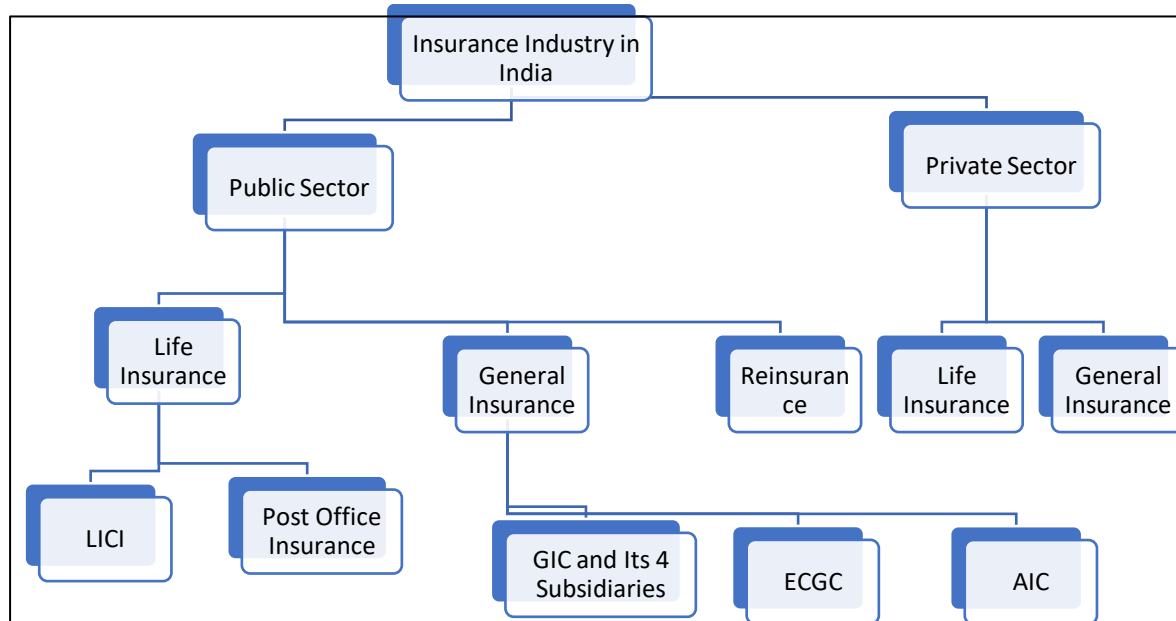
Over the past nine years, the insurance sector has attracted substantial foreign direct investment amounting to nearly Rs. 54,000 crore (US\$ 6.5 billion), driven by the government's progressive relaxation of overseas capital flow regulations.

The insurance industry of India has 57 insurance companies - 24 are in the life insurance business, while 34 are non-life insurers. Among the life insurers, Life Insurance Corporation (LIC) is the sole public sector company. There are six public sector insurers in the non-life insurance segment. In addition to these, there is a sole national re-insurer, namely General Insurance Corporation of India (GIC Re).

The insurance industry has undergone numerous transformations in terms of new developments, modified regulations, proposals for amendments and growth in 2022. These developments have opened new avenues of growth for the industry while ensuring that insurers stay relevant with changing times and the latest digital disruptions.

(Source: <https://www.ibef.org/industry/insurance-sector-india> dated 14.03.2025)

The structure of insurance industry in India is shown below:





There are two broad categories of insurance:

**A. Life Insurance**

**B. General Insurance**

These are discussed below:

## **7. Life Insurance**

The insurance policy whereby the policyholder (insured) can ensure financial freedom for their family members after death. It offers financial compensation in case of death or disability. While purchasing the life insurance policy, the insured either pays the lump-sum amount or makes periodic payments known as premiums to the insurer. In exchange, of which the insurer promises to pay an assured sum to the family if insured in the event of death or disability or at maturity.

Depending on the coverage, life insurance can be classified into the below-mentioned types:

- (a) **Term Insurance:** Gives life coverage for a specific period.
- (b) **Whole life insurance:** Offer life cover for the whole life of an individual
- (c) **Endowment policy:** a portion of premiums goes toward the death benefit, while the remaining is invested by the insurer.
- (d) **Money back Policy:** a certain percentage of the sum assured is paid to the insured in intervals throughout the term as a survival benefit.
- (e) **Pension Plans:** Also called retirement plans are a fusion of insurance and investment. A portion of the premiums is directed towards retirement corpus, which is paid as a lump sum or monthly payment after the retirement of the insured.
- (f) **Child Plans:** Provides financial aid for children of the policyholders throughout their lives.
- (g) **ULIPS:** Unit Linked Insurance Plans: same as endowment plans, a part of premiums goes toward the death benefit while the remaining goes toward mutual fund investments.

### **List of Registered Insurance Companies in India—Life Insurance**

**Public Sector:** Life Insurance Corporation (LIC) of India

**Private Sector:**

1. Aegon Religare Life Insurance Company Ltd.
2. Aviva Life Insurance Company Ltd.
3. Bajaj Allianz Life Insurance Company Ltd.
4. Birla Sun Life Insurance Company Ltd.
5. Bharti AXA Life Insurance Company Ltd.
6. Canara HSBC Oriental Bank of Commerce Life Insurance Company Ltd.
7. DLF Pramerica Life Insurance Company Ltd.
8. Future Generali India Life Insurance Company Ltd.
9. HDFC Standard Life Insurance Company Ltd.

10. ICICI Prudential Life Insurance Company Ltd.
11. IDBI Fortis Life Insurance Company Ltd.
12. ING Vysya Life Insurance Company Ltd.
13. India First Life Insurance Company Ltd.
14. Kotak Mahindra Old Mutual Life Insurance Ltd.
15. Max New York Life Insurance Company Ltd.
16. Metlife India Insurance Company Pvt. Ltd.
17. Reliance Life Insurance Company Ltd.
18. SBI Life Insurance Company Ltd.
19. Sahara India Life Insurance Company Ltd.
20. Shriram Life Insurance Company Ltd.
21. Star Union Dai-ichi Life.
22. TATA AIG Life Insurance Company Ltd.

## 8. General Insurance

Everything apart from life can be insured under general insurance. It offers financial compensation for any loss other than death. General insurance covers the loss or damages caused to all the assets and liabilities. The insurance company promises to pay the assured sum to cover the loss related to the vehicle, medical treatments, fire, theft, or even financial problems during travel.

The transactions of general insurance business in India are governed by two main statutes, namely:

- The Insurance Act, 1938
- General Insurance Business (Nationalisation) Act, 1972

The Insurance Act was passed in 1938 and was brought into force from 1st July, 1939. This act applies to the GIC and the four subsidiaries. The act was amended several times in the years 1950, 1968, 1988, 1999. This Act specifies the restrictions and limitations applicable as specified by the Central Government under powers conferred by section 35 of the General Insurance Business (Nationalization) Act, 1972. The important provisions of the Act relate to: **Registration:** Every insurer is required to obtain a Certificate of Registration from the Controller of Insurance, by making the payment of requisite fees. Registration should be renewed annually.

**Accounts and audit:** An insurer is required to maintain separate accounts of the receipts and payments in each class of insurance viz. Fire. Marine and Miscellaneous Insurance.

Apart from the regular financial statements, the companies are required to maintain the following documents in respect of each class of insurance:

- Record of Cover notes specifying the details of the risk covered
- Record of policies

- Record of premiums
- Record of endorsements
- Record of Bank guarantees
- Record of claims
- Register of agency force and business procured by each with details of commission
- Register of employees
- Cash Books
- Reinsurance details
- Claims register

General Insurance can cover almost anything, and everything but the five key types of insurance available under it are:

- Health Insurance:** Covers the cost of medical care.
- Fire Insurance:** give coverage for the damages caused to goods or property due to fire.
- Travel Insurance:** compensates the financial liabilities arising out of non-medical or medical emergencies during travel within the country or abroad
- Motor Insurance:** offers financial protection to motor vehicles from damages due to accidents, fire, theft, or natural calamities.
- Home Insurance:** compensates for the damage caused to a home due to man-made disasters, natural calamities, or other threats.

## General Insurance Products

General Insurance products are discussed below:

### (i) Motor insurance:

Motor insurance policy is a contract between the insured and the insurer in which the insurer promises to indemnify the financial liability in event of loss to the insured.

The Motor Vehicles Act in 1939 was passed to mainly safeguard the interests of pedestrians. According to Section 24 of Motor Vehicles Act, “No person shall use or allow any other person to use a motor vehicle in a public place, unless the vehicle is covered by a policy of Insurance.” Insurance of Motor Vehicles are covered under the Motor Vehicles Act 1939. Insurance of motor vehicles against damage is not made compulsory, but the insurance against third party liability arising out of the use of motor vehicles in public places is made compulsory. Insurance Cover against damage is known as “Own Damages” and against injury or death to a third party is known as “Third Party” claim. No motor vehicle can play in a public place without such insurance. Recently, pursuant to a Supreme Court decision, all Insurers are mandated to issue long term policy for Third Party risks- Three years for new private cars and five years for new two wheelers.

Motor insurance is broadly classified as follows:

- Private Cars- vehicles used only for social, domestic and pleasure purposes.
- Private Motor cycles and Motor scooters
- Commercial vehicles – sub divided into Goods carrying vehicles, Passenger carrying vehicles and Miscellaneous vehicles.

The risks under motor insurance are of two types:

- (1) Legal liability due to bodily injury, death or damage caused to the property of others.

(2) Loss or damage to one's own vehicle\ injury to or death of self and other occupants of the vehicle.

**When does claim arise and how to settle?**

- (i) The insured's vehicle is damaged or any loss incurred.
- (ii) Any legal liability is incurred for death of or bodily injury
- (iii) Or damage to the third party's property.

The claim settlement in India is done by opting for any of the following by the insurance company:

- (a) Replacement or reinstatement of vehicle
- (b) Payment of repair charges

**(ii) Fire Insurance:**

Fire insurance covers: (a) house, building and flats, (b) fixed assets like furniture & fixture, etc, and (c) loss of profit.

It is a comprehensive policy that generally covers loss due to fire, earthquake, riots, floods, strike, etc. This policy can be taken by the owner of the premises only. Usually, the banks, and other lending institutions and housing finance companies insist on the premises being insured against fire.

The fire rates have been revised by the government in two occasions in the years 1979 and 1987. Competition is very severe in this segment among insurance companies as maximum premium comes from corporate clients having large industrial assets. Fire insurance accounts for 20% of the total business of general insurance companies and brings most profits for them.

**(iii) Marine Cargo Insurance:**

Marine cargo insurance covers: (a) cargo in transit, and (b) cargo declaration policy.

Marine hull insurance covers: (i) Inland vessels, (ii) Ocean going vessels, (iii) Fishing and scaling vessels, (iv) Freight at risk, (v) Construction of ship, (vi) Voyage insurance of various vessels, (vii) Ship breaking insurance, and (viii) Oil and energy in respect of onshore and offshore risks.

With effect from April 2005, IRDA has removed the price control on insuring marine hull. Currently, marine cargos as well as marine hull insurance have come under the purview of 'file and use' regulations, as applicable to non-tariff products. The marine hull insurance represents a business of Rs. 400 crores. The competition in this sector is strong particularly after de-tariffing.

**(iv) Personal Accident Insurance:**

The Policy provides that, if the insured shall sustain any bodily injury resulting solely and directly from accident caused by external, violent and visible means, then the Insurance company shall pay to the insured or his legal personal representative(s), as the case may be, a Sum assured under the Policy. The Policy covers the contingency of death, loss of body parts and Permanent and Temporary disablements.

**(v) Liability Insurance:**

The purpose of liability insurance is to provide indemnity in respect of damages payable

under law for personal liability of any nature. This legal liability may arise under the common law on the basis of negligence or under statutory law (e.g., Public Liability Insurance Act or workman's Compensation Act) on 'no fault basis', i.e. even when there is no negligence.

**(vi) Engineering Insurance:**

Engineering insurance covers the various risks in a manufacturing organisation, especially plants. The various categories of Engineering insurance are as follows:

- (a) Contractors All Risks Policy – designed to protect the interests of contractors and principals in respect of civil engineering projects like buildings, bridges, tunnels etc.
- (b) Erection All Risks Policy – is concerned with erection of electrical plant and machinery and equipment and structures involving no or very little civil engineering work.
- (c) Marine-cum-erection Policy – comments with the delivery of the first consignment of plant and machinery at the site of erection.
- (d) Machinery breakdown Policy – Insurable property includes boilers, electrical, mechanical and lifting equipment.
- (e) Contractors Plant & Machinery Policy – Policy given to a Contractor who may be using his plant and machinery at different projects during the course of the year
- (f) Boiler & Pressure Plant Policy.
- (g) Machinery Loss of Profits Policy or Machinery insurance indemnify an insured against material damage resulting from breakdown or explosion or collapse of machinery – such damage may also result in business interruption at the Insured's premises.
- (h) Advance Loss of Profits Policy – risk of delay of project due to accidental damage to project materials.
- (i) Deterioration of Stock Policy – covers loss due to breakdown of refrigeration.
- (j) Electronic Equipment Policy - physical loss or damage necessitating repairs or replacement.
- (k) External Data Media – covers cost of replacing damaged external storage media.
- (l) Increased cost of working – indemnifies against all additional cost incurred to ensure continued data processing on substitute equipment if such costs are incurred as an unavoidable consequence of loss or damage indemnifiable under material damage section of the policy.

**(vii) Miscellaneous Insurance:**

Miscellaneous Insurance products include the following products:

- (a) Burglary insurance
- (b) Householders' Insurance
- (c) Shopkeepers' Insurance
- (d) Bankers' Blanket Policies
- (e) Jewellers' Block Policies
- (f) Blood Stock (Horse) Insurance
- (g) All Risks Insurance Policy – includes jewellery, valuables, antiques, paintings, watches, cameras etc.
- (h) Money insurance – covers the risk of loss of money in transit

- (i) Fidelity guarantees – covers the risk of arising out of dishonesty of employees
- (j) Television insurance
- (k) Pedal cycle insurance
- (l) Plate Glass insurance – breakage of plain glass
- (m) Neon sign insurance

**(viii) Rural Insurance:**

Rural insurance includes the following categories of products:

- (a) Cattle Insurance
- (b) Sheep and Goat Insurance
- (c) Poultry Insurance
- (d) Dog Insurance
- (e) Silk Worm Insurance
- (f) Honey Bee Insurance
- (g) Horticulture/Plantation Insurance Scheme
- (h) Comprehensive Floriculture Insurance
- (i) Agriculture Pump set Policy
- (j) Salt Works Insurance
- (k) Cycle Rickshaw Policy
- (l) Animal Driven Cart Insurance
- (m) Gobar Gas Insurance
- (n) Hut Insurance
- (o) Weather/Crop Insurance

**Investments:**

Investments of insurance company are usually made in approved investments under the provisions of the Act. The guidelines and limitations are issued by the Central Government from time to time.

**Tariff Advisory Committee (TAC)**

Tariff Advisory Committee (TAC) is a statutory body set up under the Insurance Act, 1938. TAC looks into the pricing of non-life insurance products. It has been broad-based with representatives from various faculties apart from insurance sector. It has revised fire insurance and engineering tariffs.

TAC determines the tariffs of the insurance industry other than for marine cargo and marine hull covers. It provides floor rates for various insurance products. It assists in preventing uneconomic competition and facilitates classification of risks-based on their characteristics. It controls and regulates the rates, terms and conditions which may be offered by insurers in respect of fire, motor and other covers.

With effect from May 2000, a simplified fire tariff has been introduced with substantial reduction in premium rates.

Large risks in which the threshold limit of probable maximum loss is ₹ 1,054 crore or above, at any one location, or in which the sum insured at any one location is ₹ 10,000 crore or above, have been de-tariffed. These risks have been considered as the risks beyond the tariff regime

and would be guided as per the premium rates existing in international insurance markets which are substantially cheaper than the tariff rates in India. Moreover, these large risks require customisation of products which are not available in the Indian insurance market. Therefore, the insurers can issue comprehensive insurance package policy for large risk on reinsurance-based rates, terms and conditions.

As we have mentioned before that the tariff regime is getting phased out gradually, the IRDA has drafted a vision document for TAG mentioning its future role.

### **General Insurance Council**

The General Insurance Council is an executive committee consisting of (a) nominees of IRDA [viz. member (nonlife) as chairman and executive director (non-life) and the secretary general of the council], and (b) the CEOs of all non-life insurance companies licenced by IRDA. The council organises meetings of the executive committee, chief underwriters, heads of health insurance departments, etc. periodically.

The missions of the council are: (a) Expanding and deepening penetration of non-life insurance in India, (b) Promoting a responsible and disciplined pro-consumer service regime, and (c) Imbibing best global practices by way of a self-regulatory mechanism.

As we have observed from the mission statement, the council concentrates on issues relating to (a) promotion of non-life insurance market, (b) promotion of consumer education and awareness of non-life insurance products, and (c) development of insurance intermediaries, viz. agents and brokers. The council puts forward its opinion about the industry to the government, IRDA, and other policy makers, problems existing in the industry, and cooperation needed. It also deliberates on necessity for level playing field between life and non-life insurers in health portfolio, and adopting best global practices in health management.

### **List of the Registered Insurance Companies in India—General Insurance**

#### **Public Sector:**

1. New India Assurance Company Ltd.
2. National Insurance Company Ltd.
3. Oriental Insurance Company Ltd.
4. United India Insurance Company Ltd.
5. Export Credit Guarantee Corporation of India Ltd. (ECGCI)
6. Agricultural Insurance Company of India Ltd. (AIC)

#### **Private Sector:**

1. Acko General Insurance Limited
2. Agriculture Insurance Company of India Limited
3. Bajaj Allianz General Insurance Company Ltd.
4. Cholamandalam MS General Insurance Company Ltd.
5. Future Generali India Insurance Company Limited
6. Go Digit General Insurance Limited

7. HDFC ERGO General Insurance Company Limited
8. ICICI LOMBARD General Insurance Company Limited
9. IFFCO TOKIO General Insurance Company Limited
10. Zurich Kotak General Insurance Company (India) Limited (formerly known as Kotak Mahindra General Insurance Company Limited)
11. Kshema General Insurance Limited
12. Liberty General Insurance Limited
13. Magma General Insurance Limited (" Erstwhile Magma HDI General Insurance Company Limited ")
14. Navi General Insurance Limited
15. Raheja QBE General Insurance Company Ltd.
16. Reliance General Insurance Company Limited
17. Royal Sundaram General Insurance Company Limited
18. SBI General Insurance Company Limited
19. Shriram General Insurance Company Limited
20. Tata AIG General Insurance Company Limited
21. Universal Sompo General Insurance Company Limited
22. Zuno General Insurance Ltd. (formerly known as Edelweiss General Insurance Company Limited)

## **9. Reinsurance**

Reinsurance is a risk transfer mechanism whereunder an insurance company passes on the risk on an insurance policy to another entity called Reinsurer for a consideration under a Reinsurance treaty (contract).

Under reinsurance one direct insurance company (also called Ceding company) transfers (cedes) part of the risk to another insurance company (called Reinsurer). This helps in reducing the liability of the direct insurer to a large extent. If there is no reinsurance, it could result in a dent in the financial position of an insurance company, especially when a natural calamity happens.

Some of the global reinsurance companies who have opened reinsurance offices in India include Swiss Re., Munich Re., RGA, Hannover Re. etc. The Indian Reinsurer is GIC Re. (General Insurance Corporation of India).

Reinsurers have their teams which comprise of competent technical professionals who are experts in Actuarial, Claims, Underwriting etc.

Reinsurers take a proportion of the premium paid by the Policyholder and promises to pay the proportionate amount of any claims insured under the Policy.

### **Reinsurance Companies**

1. General Insurance corporation of India
2. General Reinsurance AG - India Branch
3. Munich Re - India Branch
4. RGA Life Reinsurance Co. of Canada – India Branch



5. SCOR SE - India Branch
6. Swiss Reinsurance Company Ltd.-India Branch
7. XL Insurance Co SE - India Reinsurance Branch
8. Hannover Ruck SE - India Branch
9. Lloyd's
10. AXA France VIE – India Reinsurance Branch
11. Allianz Global Corporate & Speciality SE, India Branch

## 10. Insurance Intermediaries

Insurance is considered a complex product, and it is not easy for the insurer to take care of all the processes involved in sales and administration of related services. An insurance intermediary acts as a bridge between the insurance provider and the end customer. They could be involved in the sales process like an insurance agent or an insurance broker, or the claims process like a surveyor or a third-party administration. Let us look at each of the intermediaries in some detail below.

### (1) Agent:

An agent is an individual or a corporation that is authorised to solicit and procure insurance business for the insurance company they represent. The business could be related to renewal and revival of existing policies or sale of new policies. An agent who represents both a life insurer and a general insurer is known as a Composite Insurance Agent.

### (a) Individual Agents:

These are individuals who can be appointed by an insurance company to sell insurance policies on their behalf.

As per Section 42 of the Insurance Act, 1938, an insurer may appoint any person to act as insurance agent for the purpose of soliciting and procuring insurance business.

No person shall act as an insurance agent for more than one life insurer, one general insurer, one health insurer at a time.

Provided that the Authority shall, while framing regulations, ensure that no conflict of interest is allowed to arise for any agent in representing two or more insurers for whom he may be an agent.

### (b) Corporate Agents:

In the case of a Corporate Agency, a Partnership firm or a Company may apply for doing insurance agency, as against individuals which we saw earlier. However, unlike Individual agent who can work for only 1 insurer in a line of business (Life/Non-Life/Standalone health), a corporate agent is allowed to work for upto 3 insurers in each line of business. Therefore, a corporate agent can work up to a maximum of 9 insurers, with a cap of 3 insurers in each line of business.

Following are the key provisions under the IRDAI (Registration of Corporate Agents) Regulations, 2015:

- **Maximum tie ups for a Corporate Agent:** Maximum 3 insurance companies – in life, non-life and Health insurance separately or a Composite licence for all categories.
- **Two types of corporate agencies:** Exclusive & non-exclusive corporate agencies - An exclusive corporate agent is one who does only insurance solicitation and a non-exclusive

corporate agent is one whose primary business is something different and insurance solicitation is a secondary line of business. For example, Banks are Non-exclusive Corporate agents whose primary business is banking and secondary business is insurance solicitation.

- **Minimum capital and net worth requirement:** only for exclusive corporate agents: Rs. 50 lakhs.
- **At least 1 Principal Officer & as many Specified Persons as required to be appointed:** A Principal Officer, an employee of the corporate agent, is the Primary person responsible for the Corporate Agency and shall be accountable to IRDAI for compliance with the Regulations. He may be the CEO for the Corporate agency business. A Specified Person is an employee of the corporate agency entity responsible for solicitation of insurance business. Only Specified Persons and Principal Officers are eligible to sell on behalf of the corporate agent.

## **(2) Insurance Broker:**

An insurance broker is an individual licenced by IRDAI to arrange insurance contracts with an insurer on behalf of a client. A broker can represent multiple insurance companies.

Broker Vs. Agent: An agent is permitted to represent only one insurance company within a sector i.e., a general insurer, a life insurer, or both, but not two general insurers. A broker can represent multiple general or life insurers or both. IRDAI licences both agents and brokers for general insurance or life insurance or both. They have to follow the code of conduct laid down by IRDAI under respective regulations.

It is important to remember that neither an agent nor a broker can give a discount on the premiums to be paid for the insurance policy. Any such offer would be against Section 41 of the Insurance Act. Only an insurance company can offer a discount on premium, and it has to be in accordance with the policy's terms and conditions.

## **(3) Surveyor and Loss Assessors:**

A surveyor or a loss assessor plays the role of determining the extent of damage sustained by the insured. When a loss event occurs, the insured and the insurer may not agree on the actual loss. An independent surveyor brings them on the same page. To be a surveyor or loss assessor, the company or the individual has to meet the criteria laid out by IRDAI. The criteria vary based on the kind of surveys to be performed. For example, a surveyor for motor insurance must be either a mechanical engineer or an automobile engineer. On the other hand, a surveyor for marine insurance must be a marine engineer or a naval architect. A surveyor is engaged only if the claimed losses are over Rs. 50,000 in motor insurance or over Rs. 1 lakh in other insurance. These limits are reviewed and revised by IRDAI every three years.

### **Duties and Responsibilities of a Surveyor and Loss Assessor:**

It shall be the duty of every Licensed Surveyor and Loss Assessor to investigate, manage, quantify, validate and deal with losses (whether insured or not) arising from any contingency, and report thereon to the insurer or insured, as the case may be., All Licensed Surveyors and Loss Assessors shall carry out the said work with competence, objectivity and professional integrity and strictly adhere to the code of conduct as stipulated in these.

- (i) Declaring whether he has any interest in the subject matter in question or whether it pertains to any of his relatives, business partners, or through material shareholding;

- (ii) Bringing to the notice of the Authority, any change in the information or particulars furnished at the time of issuance of the license, within a period not exceeding fifteen days from the date of occurrence of such change that has a bearing on the license granted by the Authority.
- (iii) Maintaining confidentiality and neutrality without jeopardizing the liability of the insurer and claim of the insured;
- (iv) Conducting inspection and re-inspection of the property in question suffering a loss;
- (v) Examining, inquiring, investigating, verifying, and checking upon the causes and the circumstances of the loss in question including the extent of loss, nature of the ownership and insurable interest;
- (vi) Conducting spot and final surveys, as and when necessary, and comment upon the franchise, excess/under insurance, and any other related matter;
- (vii) Estimating, measuring, and determining the quantum and description of the subject under loss;
- (viii) Advising the insurer and the insured about loss minimization, loss control, security, and safety measures, wherever appropriate, to avoid further losses;
- (ix) Commenting on the admissibility of the loss as also the observance of warranty conditions under the policy contract;
- (x) Surveying and assessing the loss on behalf of an insurer or insured;

#### **(4) Third-Party Administrator:**

Third-party administrator or (TPA) is an organisation that has been licensed by IRDAI to process claims and provide cashless facility. Insurance companies outsource claim management or some aspects thereof to TPA with an aim to provide a quick turnaround to end customers. They act as an intermediary between the insurance provider, the policyholder and a service provider (for example, a hospital in the case of health insurance and a mechanic in case of motor insurance). While TPAs can be involved with various aspects of claim processing, their primary responsibility is to provide cashless services, especially cashless hospitalisation. These are the primary insurance intermediaries currently defined by IRDAI. They can add other intermediaries based on the evolution of the insurance industry. Intermediaries help in achieving standardisation of the service provided and allow insurers to achieve greater efficiency. Further, they also help increase insurance penetration in a wide market like India.

#### **(5) Bancassurance:**

Bancassurance is a new concept in financial services sector means using the bank's distribution channels to sell insurance products. The philosophy behind Bancassurance is to combine the manufacturing capability and selling culture of insurance companies with the distribution network and large receptive client base of banks. It is a phenomenon wherein insurance products are offered through the distribution channels of the banking services along with a complete range of banking and investment products and services. To put it simply, Bancassurance tries to exploit synergies between both the insurance companies and banks. Bancassurance if taken in right spirit and implemented properly can be win-win situation for all the participants viz., banks, insurers and the customer.

#### **Need for Bancassurance:**

The growth of Bancassurance as a distribution channel can be ascribed to the following:

- (a) **Conducive environment:** Progressive dismantling of laws relating to undertaking of insurance businesses by banks, increasing use of electronic channels and automation, growing needs for private retirement plans to complement public pensions, the concern for providing total financial services to customers, etc. have paved the way for Bancassurance.
- (b) **Cost effectiveness:** Insurers look to Bancassurance as an alternative cost-effective mode of distribution as against the costly agency services. It is estimated that 50% of the insurer's cost structure is directly or indirectly related to distribution
- (c) **Fee-based income:** A bank expects to increase its fee-based income and overall productivity by leveraging its branch network, brand image and client base by optimally using its assets/infrastructure and by positioning itself as a one-stop-shop with value-added service for its customers, thereby increasing customer loyalty and retention. Bancassurance enables a bank to satisfy the risk protection needs of its clients without assuming underwriting risk.
- (d) **Fund Management:** Life insurance (where premium is about 55% of the insurance premium worldwide) is a savings market. It is one of the methods to increase the deposits of banks. Both life and non-life insurance business provide additional flow of float funds besides fee-based income to banks, through the same channel of distribution and with the same people.
- (e) **Innovations and efficiency:** Increased convergence of banking and insurance would lead of melding of their corporate cultures, skill and synergising/innovating the marketing of financial services.
- (f) **Models of Bancassurance:** Different Bancassurance business models as given below are prevalent in different countries:
- (g) **Distribution agreements:** In simplest form called 'tied agent', the bank's personnel sell the products of one insurer exclusively, either in stand-alone basis or bundled with bank products.
- (h) **Strategic alliance:** This is a higher degree of intervention in product development, service provision and channel management by way of bank investing sizably in insurance business without any contingent liability.
- (i) **Joint venture:** Here a large bank with a well-developed customer database partner with a large insurer with strong product and channel experience, to develop a powerful new distribution model. Alternatively, a bank and insurance company may agree to have cross holdings between them to share the profits.
- (j) **Financial service group:** Under further integration between a bank and insurer, an insurance company may build/ buy a bank or a bank may build/buy an insurance company.

Thus, banks could associate themselves with insurance companies by becoming a distributor or by being a strategic investor or developing a joint venture or by becoming a promoter. Most of the bancassurance operations fall in the first model.

## 11. Health Insurance Policies

Health insurance policies in India can be classified in two groups, viz.

- (i) Indemnity-based policies such as, (a) mediclaim, (b) health guard, healthwise, etc. and
- (ii) Benefit type policies such as, (a) daily allowance, (b) hospital cash, (c) critical illness (standalone), or (d) as a rider with life insurance policy.

*Indemnity-based policies* provide for reimbursement of expenses incurred for hospitalisation necessitated by a covered diseases, illness, or injury. *Benefit type policies* provide for lumpsum payment on happening of an event insured against by the policy.

In India following types of policies are in vogue:

(1) Standard health insurance policy, (2) Reimbursement and cashless policy, (3) Floater policy, (4) Group mediclaim policy, (5) Cancer medical expenses insurance policy, (6) Health riders with life insurance, and (7) Other health insurance policies, viz. (a) Hospital cash policy, (b) Critical illness policy, (c) Jan arogya bima policy, (d) Community-based universal health insurance scheme, (e) Nagrik suraksha policy, (f) Personal accident policy, and (g) Overseas medical insurance policy.

Health insurance policies are discussed below:

### **(1) Standard Health Insurance Policy**

The standard health policy provides cover against the risk of hospitalisation. The operative clause of this policy offers to indemnify the insured against hospitalisation expenses incurred by the insured at a hospital or nursing home on the advice of a duly qualified medical practitioner on account of illness, diseases, injury, etc. Caused during the policy period.

### **(2) Reimbursement and Cashless Policy**

Reimbursement policy is the conventional method of indemnification in all non-life insurance policies. Here, the insured initially bear all expenses which is reimbursed later on by the insurance company, provided the claim is admissible as per the policy. Preliminary notice of claim has to be given by the insured to the insurance company within 7 days from the date of hospitalisation. The notice of claim shall provide particulars, viz. (a) policy number, (b) name of the insured in respect of whom claim has been made, (c) nature of illness/injury, and (d) name and address of attending medical practitioner/hospital/nursing home.

Since the reimbursement claim defeats the very purpose of insurance that is to provide financial support at the time of peril, the insurance companies have introduced an innovative concept called *cashless system* in the mediclaim policy. This system which is in vogue in many western countries has been introduced also in India innovative concept in this country which permits a policy holder to avail of medical treatment at any of the network and listed hospitals of the insurer without any payment of cash. The insurers have a panel of Third Party Administrators (TPAs) who typically offer services in different cities. The TPAs are the contact parties for settlement of claims.

They facilitate smooth operation of health cover by way of functioning as link among the insurance companies, their clients and the hospitals. They enable cashless payment of claims to the insured in which they settle claims with the hospitals. The hospital bills are paid by TPA directly to the hospital, and thereby provide a relief to the insured from the trouble of arranging funds for hospitalisation.

### **(3) Floater Policy**

This policy provides for a common sum insured for the entire family. The sum insured or the amount covered can be used for the principal insured or together for the family members. It implies that the entire family can claim up to the sum insured during the policy period. Technically speaking, this policy recognises the family as a single exposure unit as against the individual family members. Moreover, the premium chargeable for a family floater policy is much less as compared to a standard health insurance policy. More families nowadays prefer to take family floater policy due to reduced premium.

#### **(4) Group Mediclaim Policy**

The group mediclaim policy is available to any group or association or institution, corporate body provided it has a central point of administration and subject to a minimum number of persons to be covered by this policy. This policy offers the same coverage as available in the individual mediclaim policy, but with the difference, that, in this policy, cumulative bonus and health checkup expenses are not payable. Group discount in premium is however, available. Renewal premium is subject to bonus clause and the maternity benefit is available at extra premium.

#### **(5) Cancer Medical Expenses Insurance Policy**

Two types of policies are available to cover medical expenses for treatment of cancer. One such policy is available to the members of Indian Cancer Society and another one for the members of Cancer Patients Aids Association.

#### **(6) Health Riders with Life Insurance**

The IRDA has encouraged both life as well as non-life insurance companies to introduce rider policies offering health cover. Riders are add-on benefits attached to the main policy. The salient features of health riders with life insurance policies are as follows:

The rider is added to a life policy in order to protect the insured in case of critical illness. The extra cover is equal to the sum assured on the base policy and is paid on diagnosis of the illness. It is renewable up to the age of 65 years, without any medical examination. The premium is increased once in every 5 years. The illness covered and the premiums vary among insurers. Most of the insurers cover cancer, coronary artery bypass, heart attack, kidney/renal failure, major organ transplant and paralytic stroke under health riders. Generally, the insurers do not terminate the base policy when a claim is made on the rider. The sum of insurance under a critical insurance policy is required to be selected by the insured from among 4 levels, viz. Rs. 5 lakhs, Rs.10 lakh, Rs. 20 lakhs, and Rs. 25 lakhs. The premium paid for the rider qualifies for deduction of tax under Section 80D of the Income Tax Act.

#### **(7) Other Health Insurance Policies**

The health insurance products provide only for the expenses incurred due to disease, injury or illness covered under the policy. The cover however, excludes pre-existing diseases and conditions, and limit or restrict the cover for payment of pre-hospitalisation expenses up to 30 days and post-hospitalisation expenses up to 60 days. Even congenital diseases are excluded from the scope of the cover. In order to reduce the gap in expectations of the insured, there are

very many other health insurance covers offered by the insurers. We shall mention some of such health insurance policies now.

**(a) Hospital Cash Policy:** The policy provides cover against additional expenses such as, transport, board and lodging, hiring of personal attendant, etc. It provides for cash allowance ranging from Rs. 500 to Rs. 5,000 per day in case of hospitalisation on account of disease, injury, or illness suffered by the insured. For the purpose of the policy, hospitalisation means a continuous stay in the hospital as an in-patient for 24 hours. Some policies have the provisions for paying twice the daily limit per day in case of admission in ICU or ICCU for a period not exceeding 7 days. This policy can be taken for covering entire family, i.e. the proposer, spouse and dependent children in the age bracket of 3 months up to 21 years.

**(b) Critical Illness Policy:** Critical illness policy provides for a lumpsum payment against the listed diseases. The number of diseases covered varies as per the market. Depending on the type of policy the number of diseases covered may vary from 5 to 35 in the policies.

Besides, there are disease specific policies, viz. (a) cancer insurance, (b) diabetes insurance, etc. Available in the market. The basic critical illness policy covers the listed diseases such as: (i) cancer, (ii) coronary artery bypass surgery, (iii) first heart attack, (iv) kidney failure, (v) major organ transplant, and (vi) stroke. The critical illness policy can be taken either on standalone basis or as a rider to the life insurance policy. The standalone critical illness policy is a one-year policy, whereas a rider to the life insurance policy is a long-term policy.

**(c) Jan Arogya Bima Policy:** The general insurance companies introduced jan arogya bima policy in the year 1998. It is a lower version of mediclaim policy. The terms, conditions, and exclusions of this policy is similar to the mediclaim policy. The policy however, does not provide for either the cumulative bonus or the free health checkup feature which are usually available in the mediclaim policy. The policy covers the individual or the entire family on the line of basic policy. The sum insured per person is limited to Rs. 5,000.

There is no agency commission payable. Hence, the policy is generally sold through the NGOs, government agencies, self-help groups, etc. The premium charged for this policy is Rs. 70 per adult person and Rs. 50 per dependent son/ daughter up to the age of 25 years.

**(d) Community-based Universal Health Insurance Scheme:** The community-based universal health insurance scheme was announced in the Union budget 2003—04. It provides health protection and good health services to the weaker sections of the society. The responsibility for implementation of this scheme has been given to the New India Assurance Company Ltd., a public sector insurance company.

Under this scheme, a premium has been fixed in order to be entitled for reimbursement of medical expenses such as: (i) Rs. 1 per day for an individual, (ii) Rs.1.50 per day for a family of 5 (including the first 3 children), and (iii) Rs. 2 per day for a family of 7 (including the first 3 children and dependent parents)

The pattern of medical expenses reimbursement is as follows:

(a) Up to Rs 30,000 for hospitalisation; (b) Up to Rs. 25,000 for death due to accident; and (c) Compensation on account of loss of earnings @ Rs. 50 per day up to a maximum of 15 days, after a waiting period of 3 days. The government contributes? 100 per year towards annual premium for the benefit of the family living below poverty line.

(e) **Nagrik Suraksha Policy:** Nagrik suraksha policy is an accident insurance cover that provides compensation for injuries due to accident and/or reimbursement of expenses incurred in a hospital due to accidental injuries, subject to certain limits.

(f) **Personal Accident Policy:** Personal accident policy provides compensation in case of death, or bodily injury to the insured, directly and exclusively due to accident, by way of external, visible and violent means.

It is a 24 hours cover operating all over the world. It provides comprehensive cover of death, permanent disablement, and temporary total disablement. This policy is available in family package in which the proposer, spouse and dependent children are covered under a single policy. Group personal accident policy is also available for specified groups.

(g) **Overseas Medical Insurance Policy:** Overseas medical insurance policy covers medical expenses of the insured while travelling abroad for business/holiday/study/ employment. The premium under this policy is payable in Rupees and claims are settled abroad in foreign currency.

#### **Rules and Guidelines for Health and Mediclaim Insurance by IRDAI:**

The IRDAI is the primary authority in charge of developing new health insurance policies and recommendations. In 2020, the regulator released new IRDAI rules for health and medical insurance, which are as follows:

**Claims Rejection:** The insurer cannot reject the claim if the policyholder has renewed the policy for eight years without an interruption or lapse. The moratorium period will be in effect throughout this time. Except in fraud cases or when the claim is brought against a policy exclusion, the insurer cannot appeal the claim denial to the IRDAI.

**Inclusion of Telemedicine:** The medical service has altered with the advent of digitization, and one can now visit a doctor via online consultations. The Insurance Regulatory and Development Authority of India (IRDAI) has ordered insurers to incorporate telemedicine consultations in their policies.

**Claim Settlement:** If an insurer fails to settle a claim within a reasonable time, the insurer is obligated to pay interest on the claim amount. It should ensure that the claim is settled within 30 to 45 days of the policyholder submitting the final document.

IRDAI is a regulatory body that is responsible for everything right and wrong any insurance company does. Insured can either contact them or let them know about Insured grievances if the insurance company denies to answer. Insured can also raise any queries about the insurance policy and insurer in case of a fraud. In either way, the role of IRDAI is very significant for complete transparency and making changes to the rules and regulations from time to time.

#### **Differences between General Insurance and Life Insurance**

| General Insurance | Life Insurance |
|-------------------|----------------|
|-------------------|----------------|



|  |   |
|--|---|
| 1. It covers non-life assets.  | 1. It covers life of an individual.   |
| 2. It is not a type of savings   | 2. This insurance helps you accumulate savings for future                   |
| 3. Annual contract with a lumpsum premium.                               | 3. Long-term contract with the option of installment premiums               |
| 4. Pays sum assured in case of an eventuality such as theft or accident. | 4. Pays sum assured to the nominee in case of the death of the policyholder |

## 12. Insurance Regulations in India

Following the recommendations of the Malhotra Committee report, in 1999, the Insurance Regulatory and Development Authority (IRDA) was constituted as an autonomous body to regulate and develop the insurance industry. The IRDA was incorporated as a statutory body in April, 2000. The key objectives of the IRDA include promotion of competition so as to enhance customer satisfaction through increased consumer choice and lower premiums, while ensuring the financial security of the insurance market.

### Insurance Sector Reforms

The insurance sector in India has gone through the process of reforms following these recommendations. The Insurance Regulatory & Development Authority (IRDA) Bill was passed by the Indian Parliament in December 1999. The IRDA became a statutory body in April, 2000 and has been framing regulations and registering the private sector insurance companies. The insurance sector was opened upto the private sector in August 2000. Consequently, some Indian and foreign private companies have entered the insurance business now. There are about 33 general insurance and 24 life insurance companies operating in the private sector in India, early in 2022.

Insurance Regulatory and Development Authority of India (IRDAI), is a statutory body formed under an Act of Parliament, i.e., Insurance Regulatory and Development Authority Act, 1999 (IRDA Act, 1999) for overall supervision and development of the Insurance sector in India.

### Objectives of IRDAI

- Protect the interests of policyholders.
- Promote the orderly growth of the insurance industry.
- Ensure the financial security of the insurance market.
- Promote fairness and transparency in financial markets.
- Ensure speedy settlement of genuine claims.
- Promote competition to increase consumer choice and lower premiums.

### IRDAI's functions

- Register and regulate insurance companies.
- License and establish norms for insurance intermediaries.
- Regulate and oversee premium rates.
- Specify financial reporting norms.

- Regulate investment of policyholders' funds.
- Ensure insurance coverage in rural areas and for vulnerable sections of society
- Issue to the applicant a certificate of registration, renew, modify, withdraw, suspend or cancel such registration;
- protection of the interests of the policy holders in matters concerning assigning of policy, nomination by policy holders, insurable interest, settlement of insurance claim, surrender value of policy and other terms and conditions of contracts of insurance;
- specifying requisite qualifications, code of conduct and practical training for intermediary or insurance intermediaries and agents
- specifying the code of conduct for surveyors and loss assessors;

**Promotion and Regulation:**

- Promoting efficiency in the conduct of insurance business;
- Promoting and regulating professional organisations connected with the insurance and re-insurance business;
- Levying fees and other charges for carrying out the purposes of this Act;
- Calling for information from, undertaking inspection of, conducting enquiries and investigations including audit of the insurers, intermediaries, insurance intermediaries and other organisations connected with the insurance business;
- Control and regulation of the rates, advantages, terms and conditions that may be offered by insurers in respect of general insurance business not so controlled and regulated by the Tariff Advisory Committee under section 64U of the Insurance Act, 1938 (4 of 1938);
- Specifying the form and manner in which books of account shall be maintained and statement of accounts shall be rendered by insurers and other insurance intermediaries;
- Regulating investment of funds by insurance companies;
- Regulating maintenance of margin of solvency;

**Other duties:**

- Adjudication of disputes between insurers and intermediaries or insurance intermediaries;
- Supervising the functioning of the Tariff Advisory Committee;
- Specifying the percentage of premium income of the insurer to finance schemes for promoting and regulating professional organisations referred to in clause (f);
- Specifying the percentage of life insurance business and general insurance business to be undertaken by the insurer in the rural or social sector; and
- Exercising such other powers as may be prescribed.

### Multiple Choice Questions

1. Contract of insurance is a contract of -
- |              |               |
|--------------|---------------|
| (a) Agency   | (b) Indemnity |
| (c) Bailment | (d) Guarantee |

**Answer: (b)**

2. -----increases the frequency of loss.
- (a) Peril
  - (b) Subjective risk
  - (c) Hazard
  - (d) Objective risk

**Answer (c)**

3. \_\_\_\_ hazard increases the probability of loss due to dishonesty or character defects of an insured person.
- (a) Moral
  - (b) Morale
  - (c) Legal
  - (d) Physical

**Answer (a)**

4. Master policy is issued for \_\_\_\_\_
- (a) Term insurance schemes
  - (b) permanent insurance
  - (c) individual insurance
  - (d) group insurance schemes

**Answer (d)**

5. Subrogation means \_\_\_\_\_
- (a) something of monetary value
  - (b) to make good loss
  - (c) payment of premium
  - (d) transfer of rights of an insured to another person

**Answer (d)**

6. \_\_\_\_\_ risks happen within a stable environment and are constant over an observed period of time.
- (a) Speculative
  - (b) Pure
  - (c) Static
  - (d) Dynamic

**Answer (c)**

7. Which among the following is not a pure risk?
- (a) Personal risk
  - (b) Property risk
  - (c) Loss of income risk
  - (d) Strategic risk

**Answer (d)**

8. Which of the following method reduces the chance of loss to zero?

- (a) Risk Transferring
- (b) Risk avoidance
- (c) Risk retention
- (d) Risk reduction

**Answer (b)**

9. \_\_\_\_ refers to the manner in which the risk control measures that have been implemented shall be financed.

- (a) Risk financing
- (b) Risk retention
- (c) Risk transfer
- (d) Risk sharing

**Answer (a)**

10. \_\_\_\_ is the most famous tool of risk management

- (a) Certainty risk
- (b) Insurance
- (c) Loss prevention
- (d) Uncertainty risk

**Answer (b)**

11. \_\_\_\_ is still the most leading channel in India for distributing insurance products.

- (a) Brokers
- (b) Agency power
- (c) Insurance market
- (d) National market

**Answer (b)**

12. An insurance agent represents the \_\_\_\_\_.

- (a) Insured
- (b) Insurer
- (c) Government
- (d) Adjustment bureau

**Answer (b)**

13. \_\_\_\_ is a whole life policy that insures two lives with the proceeds payable on the second (later) death.

- (a) Survivorship life insurance policy
- (b) Group life insurance
- (c) Joint life insurance
- (d) Prepaid insurance

**Answer (a)**

14. The \_\_\_\_\_ is formed with four subsidiary companies.

- (a) Life insurance Corporation of India
- (b) ICICI Prudential Life Insurance Company
- (c) General Insurance Corporation of India
- (d) Bajaj Allianz General Insurance Company

**Answer (c)**

15. the following is not a concern of the insurance regulatory framework?

- (a) It has to safeguard the interests of the customers.
- (b) It has to safeguard the interests of the stakeholders.
- (c) It has to ensure the financial soundness of the insurance industry.
- (d) It has to help in the healthy growth of the insurance market.

**Answer (b)**

16. Insurable interest means

Statement A: Legal right to insure.

Statement B: Have suffered financial loss.

- (a) Both statements are correct
- (b) Both statements are wrong
- (c) Statement A is correct
- (d) Statement B is correct

**Answer: (a)**

17. One of the fundamental principles of life insurance is

- (a) There is an insurer & policyholder
- (b) Utmost good faith
- (c) Insurable interest
- (d) Both b & c

**Answer: (d)**

18. Which Insurance policy gives holder the benefits of both Insurance and Investment?

- (a) Term Insurance Policies
- (b) Money-back Policies
- (c) Pension Policies
- (d) Unit-linked Investment Policies

**Answer: (d)**

19. Which of the following is the proof of contract between the Insurer and the Insured?

- (a) Policy Document
- (b) Proposal-Form
- (c) Claim-Form
- (d) Nomination-Form

**Answer (a)**

20. Insurer is a person who has:

- (a) Insured his life on goods
- (b) Helped person to get an insurance policy
- (c) Undertaken to make good the loss of the subject matter of insurance
- (d) Filed a suit in a court of law to recover an insurance claim

**Answer: (c)**

21. Insurable interest in a life insurance contract should:

- (a) At the time of the contract
- (b) At the time of maturity
- (c) At the time of claim
- (d) At the time of surrender

**Answer: (a)**

22. Match List I with List II and select the correct answer by using codes given below the lists:

| List- I (Description)  | List –II (Micro-insurance) |
|--|----------------------------|
| (I) This model is useful for delivering simple insurance products such as, term life insurance.                | 1. Full-service Model      |
| (II) This model is useful in managing low severity risks like primary health care.                             | 2. Provider-driven Model   |
| (III) This model is useful for complicated and service intensive covers such as, health and weather insurance. | 3. Community-based Model   |
| (IV) This model integrates services like health care with insurance.   | 4. Partner-Agent Model     |

Codes:

|     | (I) | (II) | (III) | (IV) |
|-----|-----|------|-------|------|
| (a) | 1   | 2    | 3     | 1    |
| (b) | 2   | 1    | 4     | 3    |
| (c) | 3   | 2    | 1     | 3    |
| (d) | 4   | 3    | 1     | 2    |

**Answer (d) 4 3 1 2**

23. Insurance to cover risks arising out of professional negligence is known as

- (a) Business Insurance
- (b) Professional Insurance
- (c) Liability Insurance
- (d) Risk Insurance

**Answer: (c) Liability Insurance**

24. Match List I with List II and select the correct answer by using codes given below the lists:

| List- I               | List -II  |
|-----------------------|---|
| A. Evaluation Risk    | 1. This risk arises due to holding of shares in other weak or sick enterprise by the insurer.                 |
| B. Depreciation Risk  | 1. This risk arises due to investments losing their value on account of non-payment, credit and market risks. |
| C. Participation Risk | 3. This risk arises due to insufficient technical provisions.   |

Codes:

|              | A | B        | C        |
|--------------|---|----------|----------|
| (a)          | 1 | 2        | 3        |
| (b)          | 2 | 3        | 1        |
| (c)          | 3 | 2        | 1        |
| (d)          | 1 | 3        | 2        |
| Answer (c) 3 |   | <b>2</b> | <b>1</b> |

25. Consider the following statements:

(I) Moral hazards are insurable

(II) Physical hazards are insurable

Which of the statement(s) given above is/are correct?

(a) Only (I)

(b) Only (II)

(c) Both (I) and (II)

(d) Neither (I) nor (II)

**Answer: (b) Only (II)**

26. Which of the following steps in the risk management process helps in determining sum insured under policies?

(a) Risk identification

(b) Risk retention

(c) Risk transfer

(d) Risk evaluation

**Answer: (D)**

27. Which one of the following is non-technical risk in insurance?

(a) Growth risk

(b) Third party guarantee risk

(c) Liquidity risk

(d) Interest rate risk

**Answer: (b)**

28. Consider the following statements:

The life insurance contracts are contracts of utmost good faith because:

- (I) Only insured knows about his health
- (II) Only insured knows about his family history
- (III) Insured cannot attempt to make profit out of his health condition
- (IV) Insurer's risk is related to the disclosures made by insured

Which of the statement(s) given above is/are correct?

- (a) I, II and III
- (b) I, II, III and IV
- (c) I, II and IV
- (d) II, III and IV

**Answer: (b)**

29. Floater policy -

- (a) provides for a common sum assured for the entire family
- (b) provides for a lumpsum payment against the listed diseases
- (c) provides cover against additional expenses such as transport, board and lodging, hiring, of personal attendant etc.
- (d) is available to any group or association or institution or corporate body subject to a minimum number of persons to be covered by the policy

**Answer (a)**

30. A kind of insurance which provides for indemnity for loss against health such as loss of time and medical expenses due to sickness is called \_\_\_\_\_.

- (a) Fidelity insurance
- (b) Crop insurance
- (c) Health insurance
- (d) Fire insurance

**Answer: (c)**

31. Term assurance provides the following benefits \_\_\_\_\_.

- (a) death benefits if the person dies within term.
- (b) death and survival benefits.
- (c) periodic payments at predictable intervals.
- (d) death benefits with bonus.

**Answer (a)**

32. The process of transfer of risk from one insurer to another insurer is called:

- (a) Transfer insurance
- (b) Double insurance
- (c) Reinsurance



(d) Joint insurance

**Answer (c)**

33. Which of the following is not a pure risk?

- (a) Personal risk
- (b) Property risk
- (c) Loss of income risk
- (d) Strategic risk

**Answer (d)**

34. Which of the following is correct for insurance regulation in India?

- (a) The Insurance Act, 1958
- (b) The General Insurance Business (Nationalisation) Act, 1972
- (c) Life Insurance Corporation Act, 1959
- (d) Insurance Regulatory and Development Authority Act, 2001

**Answer (b)**

35. Which one of the following is a private sector general insurance organisation in India?

- (a) National Insurance Co Ltd.
- (b) The New India Assurance Co. Ltd.
- (c) United India Insurance Co. Ltd.
- (d) ICICI Lombard General Insurance Co. Ltd.

**Answer (d)**

## **Unit -4**

### **Mutual Funds**

Objectives of this unit:

This unit will enable you to develop an understanding of the following:

- Concept and Definition of Mutual Funds
- History of Mutual Funds in India
- Types of Mutual Funds/ Schemes
- Advantages, limitations of investing in Mutual Funds
- Constituents of mutual funds
- Evaluation of Mutual Fund Schemes

### **1. Introduction**

A mutual fund is a collective investment vehicle that collects & pools money from a number of investors and invests the same in equities, bonds, government securities, money market instruments.

The money collected in mutual fund scheme is invested by professional fund managers in stocks and bonds etc. in line with a scheme's investment objective. The income / gains generated from this collective investment scheme are distributed proportionately amongst the investors, after deducting applicable expenses and levies, by calculating a scheme's "Net Asset Value" or NAV. In return, mutual fund charges a small fee.

In short, mutual fund is a collective pool of money contributed by several investors and managed by a professional Fund Manager.

Mutual Funds in India are established in the form of a Trust under Indian Trust Act, 1882, in accordance with SEBI (Mutual Funds) Regulations, 1996.

The fees and expenses charged by the mutual funds to manage a scheme are regulated and are subject to the limits specified by SEBI.

### **2. History of Mutual Fund in India**

The mutual fund industry in India started in the year 1963 with the formation of Unit Trust of India, at the initiative of Government of India and Reserve Bank of India with the primary objective was to mobilize the small savings.

The history of mutual fund industry can be divided into five phases.

#### **Phase I: Establishment and Growth of Unit Trust of India 1964-1987**

Unit Trust of India was established in the year 1963 by an Act of Parliament. It was set up by RBI and it continued to operate under the regulating control of the RBI until the two were delinked in the year 1978 and the entire control was transferred in the hands of Industrial Development Bank of India.

UTI's first innovative and most successful launch was Unit Scheme 1964 or popularly known as US-64. Other innovative products of UTI include: (a) Unit Linked Investment Plan or ULIP in 1971; (b) Children's Gift Growth Fund and India Fund in 1986; (c) Master share (India's first equity dividend scheme), 1987; (d) Monthly income scheme. From 1964 to 1987, 23 long years, UTI enjoyed the complete monopoly.

### **Phase II Entry of Public Sector Funds (1987-1993)**

In 1986, the Government of India amended banking regulation act and allowed public sector commercial banks to set up mutual funds. This led to SBI, PNB, Canara Bank, Bank of India, Bank of Baroda, etc. commercial banks to set up their own mutual funds.

In 1987, GoI further granted permission to insurance corporations in the public sector to float mutual funds and accordingly LIC and GIC set up their own mutual funds. The period of 1987-1993 can be termed as the period of public sector mutual funds, from a single player in 1985 to 8 players in 1993. However, UTI remained the leader with about 60% market share and asset under management of the industry has increased seven times to `47,100 crores.

### **Phase III Emergence of Private Sector Banks (1993-1996)**

The permission was given to the private sector funds including foreign funds management companies (most of them entering through joint venture with Indian promoter) to enter the mutual fund industry in 1993. In 1993, the first mutual fund regulation came into being under which all mutual funds, except UTI was to be registered. The Kothari Pioneer (now merged with Franklin Templeton) was the first private sector mutual fund registered in July 1993).

### **Phase IV Growth and SEBI Regulation (1996-2004)**

The mutual fund industry witnessed robust growth and strict regulations from SEBI after 1996. The mobilization of funds and the number of players operating in the industry reached new heights as investors started showing more interest in mutual funds.

Investor's interests were safeguarded when SEBI (Mutual Funds) Regulation 1996 was introduced and the Government of India offered tax benefits to investors through their budget proposal in the year 1999 which exempted all divided incomes in the hands of the investors. Various investor awareness programmes were also initiated by SEBI and Association of Mutual Funds in India (AMFI).

### **Phase V Growth and Consolidation (2004 Onwards)**

During this phase, the industry witnessed several mergers and acquisitions, e.g. Alliance Mutual Fund have been taken over by Birla Sun Life. Simultaneously, more international mutual fund players entered India like Fidelity, Franklin Templeton Mutual Fund, etc. During this period excellent performance of the stock market, low interest rate, tax holidays on some schemes have helped for robust growth. Still, the penetration of mutual fund in the retail investors segment is still low at 6% of GDP against 72% in U.S. Active participation of the retail investors will boost the mutual fund industry in India. Today, the mutual fund industry is dominated by urban investors and to some extent semi-urban investor. Mutual fund industry must tap the huge untapped potential particularly in rural areas.

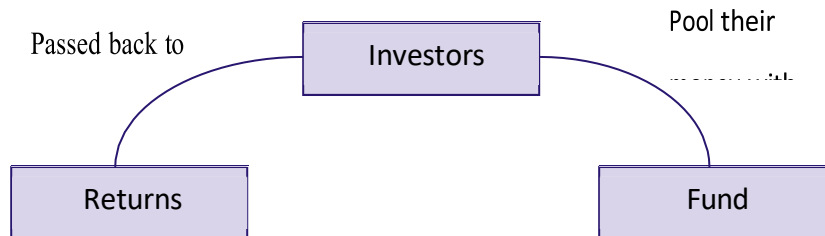
## **3. How does a mutual fund work?**

A mutual fund is a professionally managed investment scheme, usually run by an asset management company that brings together a group of people and invests their money in stock, bonds and other securities. The investors in mutual fund are given the share in its total funds which is proportionate to their investments, and which is evidenced by the unit certificates.

However, unlike shareholders in a company, the shareholders in mutual funds do not have any voting rights. Mutual fund is the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed basket of securities at a relatively low cost.

In India, a mutual fund is required to be registered with the Securities and Exchange Board of India which regulates securities markets before it can collect funds from public.

How does a Mutual Fund Work?



#### 4. Definition of Mutual Fund

Mutual Fund (MF) is a fund established in the form of a Trust, to raise monies through sale of units to the public or a section of the public under one or more schemes for investing in Securities, including Money Market Instruments. [Trust Deed should be duly registered under the Indian Registration Act, 1908.]

#### 5. Who can invest in Mutual Funds?

Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds by buying units of a particular mutual fund scheme that has a defined investment objective and strategy.

#### 6. Advantages of investing in Mutual Funds:

- (i) **Professional Management:** Investors avail the services of experienced and skilled professionals who are backed by a dedicated investment research team which analyses the performance and prospects of companies and selects suitable investments to achieve the objectives of the scheme.
- (ii) **Diversification:** MFs invest in a number of companies across a broad cross-section of industries and sectors. Investors achieve this diversification through a MF with less money and risk.
- (iii) **Convenient Administration:** Investing in a MF reduces paper work and helps investors to avoid many problems such as bad deliveries, delayed payments and unnecessary follow up with brokers and companies.
- (iv) **Return Potential:** Over a medium to long term, MF has the potential to provide a higher return as they invest in a diversified basket of selected securities.
- (v) **Low Costs:** MFs are a relatively less expensive way to invest compared to directly investing in the capital markets because the benefits of scale in brokerage, custodial & other fees translate into lower costs for investors.

- (vi) **Liquidity:** In open ended schemes, investors can get their money back promptly at Net Asset Value (NAV) related prices from the Mutual Fund. With close-ended schemes, investors can sell their units on a stock exchange at the prevailing market price, or avail of the facility of direct repurchase at NAV related prices which some close ended and interval schemes offer periodically.
- (vii) **Transparency:** Investors get regular information on the value of their investment in addition to disclosure on the specific investments made by scheme, the proportion invested in each class of assets and the Fund Manager's investment strategy and outlook.

## 7. Limitations of taking the Mutual Fund route for investment:

Limitations of investing mutual funds are mentioned below:

- (i) **No choice of Securities:** Investors cannot choose the securities which they want to invest in.
- (ii) **Relying on other's Performance:**
  - ❖ Investors face the risk of Fund Manager not performing well. Investors in Mutual Fund have to rely on the fund manager for receiving any earning made by the fund, i.e. they are not automatic.
  - ❖ If fund manager's pay is linked to performance of the fund, he may be tempted to perform only on short-term and neglect long-term performance of the fund.
- (iii) **High Management Fee:** the management fees charged by the fund reduces the return available to the investors.
- (iv) **Diversification:** Diversification minimizes risk but does not guarantee higher return.
- (v) **Diversion of Funds:** There may be unethical practices e.g. diversion of mutual fund amounts by mutual fund/s to their sister concerns for making gains for them.
- (vi) **Lock-In Period:** Many mutual fund schemes are subject to lock in period and therefore, deny the investors market drawn benefits.

## 8. Activities involved in Mutual Funds

Following are the activities involved in mutual funds:

- (i) **Formulation of Scheme:** A Mutual Fund formulates a scheme with a specified objective to meet the investment needs of various investors i.e. High Return Scheme, Fixed Return Scheme etc. The Scheme should be approved by the Trustees and filed with SEBI.
- (ii) **Sale of Units:** Units under the scheme are sold to the investors to collect funds from them.
- (iii) **Investment by AMC:** An AMC can invest in any of the schemes of a MF only if full disclosure of its intention to invest has been made in the offer documents. An AMC shall not be entitled to charge any fees on its investment in that scheme.
- (iv) **Portfolio Creation:** Resources so received from investors are pooled to create a diversified portfolio of securities by investing the money in instruments, which are in line with the objectives of respective schemes.
- (v) **Investment Pattern:** The Investment Pattern of Mutual Funds is governed partly by Government Guidelines and partly by nature and objective of Mutual Fund.
- (vi) **Daily Operations:** Daily operations are managed by professionals and Expert Fund Managers who take investment decisions regarding where, when and what to invest and disinvest to get the maximum return as well as higher capital appreciation.

- (vii) **Meeting of Expenses:** Expenses like custodial fee, cost of dividend warrants, Registrar's Fee, Asset Management Fee etc., are borne by the respective scheme.
- (viii) **Purchase and Repurchase Price:** The purchase and repurchase price of Mutual Funds are generally fixed and also vary in Stock Exchanges if the security is quoted on the basis of its Net Asset Value.
- (ix) **Maturity:** Balance remaining in the scheme is returned to the investors upon its maturity on the basis of the Net Assets Value of the scheme on that date.

## 9. Role of Mutual Fund in Financial Market:

Important role of mutual funds in financial markets are as follows:

- (i) **Organized Investments:** Due to participation of Mutual Funds in a large scale, it has transformed the Financial Market Transactions into a much more organized. Individual investors may speculate to the maximum, but under the collective investment scheme (i.e. Mutual Fund), the tendency to speculate greatly reduced at an individual level.
- (ii) **Evolution of Stock Markets:** Large scale transactions entered into by Mutual Funds, headed by team professionals, have helped in the evolution of stock markets and financial markets.
- (iii) **Household Savings:** They are the ideal route for many a household to invest their savings for a higher return, than normal term deposits with banks.

## 10. Constituents of Mutual Funds

In India, the mutual funds are under the active supervision of the 'Securities and Exchange Board of India' (SEBI). The constituents of mutual funds are as follows:

- (i) **Sponsors/Promoters:** Sponsor includes any entity acting alone or in collaboration with a body corporate establishing a mutual fund. For Mutual Fund Registration with SEBI, the fulfillment of the underlined criteria is required: -
  - (a) Net Worth (Assets- Liabilities) should be positive for the last five years. No loss should be revealed by the sponsor during the last three years as loss disqualifies sponsorship. The Sponsors should contribute 40% share of Net Worth of Asset Management Companies.
  - (b) The capital contributed towards the Asset Management Company should be less than the net worth of the sponsors in the immediately preceding year in which it applied for sponsorship.
- (ii) **Trust or Trustees:** Trustees function under the sponsor for protecting the interest of beneficiaries under a Trust deed. The Trustees are to comply with SEBI (*Mutual Fund Regulations*). Trustees control AMCs and can claim Trusteeship fees if the trust deed is created under the Indian Registration Act, 1908.
- (iii) **Asset Management Companies (AMCs):** AMCs function under professional fund managers for all activities of the fund. Fund managers get remuneration and are appointed by the Trustees. Assistance is received from brokers, auditors, bankers, and lawyers during the operations of the AMCs. One of the mandatory duties of Amies to disclose the Net Asset Value (*NAV*) of a scheme on day-to-day basis.
- (iv) **Custodian:** Custodian operates under the Board of Trustees and safeguards the assets of Mutual Fund. SEBI registration of Custodian is mandatory and Custodian is different from sponsors.
- (v) **Registrar and Transfer Agents (RTAs):** RTA provides support function to mutual funds with respect to investment records, disbursement of dividends and communication with investors regarding

various reports. In case of In-house functioning of RTA, funds can charge service charges at competitive market rate.

- (vi) **Auditors:** To perform the important task of audit of accounts of Asset Management Company and that of each separate mutual fund scheme, auditors are appointed by the Trustee. System audit is also conducted for mutual fund. Audit report increases transparency and integrity.
- (vii) **Brokers:** Brokers help the mutual fund investors in transacting unit of mutual fund, through online platform and they also provide research reports to the fund managers. However, the cost is likely to increase because of brokerage.
- (viii) **Distributors:** Distributors may include individuals or institutions (banks, post office, financial organisations etc.). Functioning of distributors in Tier-I, Tier-II and Tier –III cities of India has resulted in growth of Asset Under Management of Indian Mutual Fund Industry.
- (ix) **Banks:** Bank appointed by AMCs provide support services with respect to transactions of mutual fund schemes.

## 11.Types of Mutual Fund Schemes

Mutual funds come in many varieties, designed to meet different investor goals. Mutual funds can be broadly classified based on:

1. Organisation Structure: Open ended, Close ended, Interval
2. Management of Portfolio: Actively or Passively
3. Investment Objective: Growth, Income, Liquidity
4. Underlying Portfolio: Equity, Debt, Hybrid, Money market instruments, Multi Asset
5. Thematic / solution oriented: Tax saving, Retirement benefit, Child welfare, Arbitrage
6. Exchange Traded Funds
7. Overseas funds
8. Fund of funds

These are discussed below:

### 1. Scheme Classification by Organization Structure

- (i) **Open-ended schemes** are perpetual, and open for subscription and repurchase on a continuous basis on all business days at the current NAV.
- (ii) **Close-ended schemes** have a fixed maturity date. The units are issued at the time of the initial offer and redeemed only on maturity. The units of close-ended schemes are mandatorily listed to provide exit route before maturity and can be sold/traded on the stock exchanges.
- (iii) **Interval schemes** allow purchase and redemption during specified transaction periods (intervals). The transaction period has to be for a minimum of 2 days and there should be at least a 15-day gap between two transaction periods. The units of interval schemes are also mandatorily listed on the stock exchanges.

#### Differences between open-ended and close-ended funds

| Aspect               | Open End Funds   | Closed End Funds  |
|----------------------|--|---|
| Initial Subscription | Open-End Fund is one which is available for subscription all through the year. | Fund is open for subscription only during a specified period. |

|                         |   |  |
|-------------------------|---|--|
| Maturity                | Do not have a fixed maturity.                                       | Stipulated maturity period (3 to 15 Years)   |
| Subsequent Transactions | Investors can buy and sell units at Net Asset Value related prices. | Investors can invest at the time of the initial public issue and thereafter they can buy or sell the units of the scheme on the stock exchanges where they are listed. |
| Repurchase              | Any time.   | Based on terms of the fund.<br>Periodic repurchase at NAV related price.   |

## 2. Scheme Classification by Portfolio Management

### (i) Active Funds

In an Active Fund, the Fund Manager is 'Active' in deciding whether to Buy, Hold, or Sell the underlying securities and in stock selection. Active funds adopt different strategies and styles to create and manage the portfolio.

- The investment strategy and style are described upfront in the Scheme Information document (offer document)
- Active funds expect to generate better returns (alpha) than the benchmark index.
- The risk and return in the fund will depend upon the strategy adopted.
- Active funds implement strategies to 'select' the stocks for the portfolio.

### (ii) Passive Funds

Passive Funds hold a portfolio that replicates a stated Index or Benchmark e.g. –

- Index Funds
- Exchange Traded Funds (ETFs)

In a Passive Fund, the fund manager has a passive role, as the stock selection / Buy, Hold, Sell decision is driven by the Benchmark Index and the fund manager / dealer merely needs to replicate the same with minimal tracking error.

Active v/s Passive Funds

Active Fund –

- Rely on professional fund managers who manage investments.
- Aim to outperform Benchmark Index
- Suited for investors who wish to take advantage of fund managers' alpha generation potential.

Passive Funds –

- Investment holdings mirror and closely track a benchmark index, e.g., Index Funds or Exchange Traded Funds (ETFs)
- Suited for investors who want to allocate exactly as per market index.
- Lower Expense ratio hence lower costs to investors and better liquidity

## 3. Classification by Investment Objectives

Mutual funds offer products that cater to the different investment objectives of the investors such as –

- (a) Capital Appreciation (Growth)
- (b) Capital Preservation
- (c) Regular Income
- (d) Liquidity
- (e) Tax-Saving



Mutual funds also offer investment plans, such as Growth and Dividend options, to help tailor the investment to the investors' needs.

**(a) Growth funds**

- Growth Funds are schemes that are designed to provide capital appreciation.
- Primarily invest in growth-oriented assets, such as equity
- Investment in growth-oriented funds require a medium to long-term investment horizon.
- Historically, Equity as an asset class has outperformed most other kind of investments held over the long term. However, returns from Growth funds tend to be volatile over the short-term since the prices of the underlying equity shares may change.
- Hence investors must be able to take volatility in the returns in the short-term.

**(b) Income funds**

- The objective of Income Funds is to provide regular and steady income to investors.
- Income funds invest in fixed income securities such as Corporate Bonds, Debentures and Government securities.
- The fund's return is from the interest income earned on these investments as well as capital gains from any change in the value of the securities.
- The fund will distribute the income provided the portfolio generates the required returns. There is no guarantee of income.
- The returns will depend upon the tenor and credit quality of the securities held.

**(c) Liquid / Overnight /Money Market Mutual Funds**

- Liquid Schemes, Overnight Funds and Money market mutual fund are investment options for investors seeking liquidity and principal protection, with commensurate returns.
  - The funds invest in money market instruments\* with maturities not exceeding 91 days.
  - The return from the funds will depend upon the short-term interest rate prevalent in the market.
- These are ideal for investors who wish to park their surplus funds for short periods.
  - Investors who use these funds for longer holding periods may be sacrificing better returns possible from products suitable for a longer holding period.

\* Money Market Instruments includes commercial papers, commercial bills, treasury bills, Government securities having an unexpired maturity up to one year, call or notice money, certificate of deposit, usance bills, and any other like instruments as specified by the Reserve Bank of India from time to time.

**4. Classification by Investment Portfolio**

Mutual fund products can be classified based on their underlying portfolio composition.

- (i) The first level of categorization will be on the basis of the asset class the fund invests in, such as: Equity / debt / money market instruments or gold.
- (ii) The second level of categorization is on the basis of strategies and styles used to create the portfolio, such as, Income fund, Dynamic Bond Fund, Infrastructure fund, Large-cap/Mid-cap/Small-cap Equity fund, Value fund, etc.

The portfolio composition flows out of the investment objectives of the scheme.

Funds are classified into Equity Funds, Debt Funds and Special Funds.

(a) **Equity Funds:** Equity funds invest primarily in stocks. A share of stock represents a unit of ownership in a company. If a company is successful, shareholders can profit in two ways:

- the stock may increase in value, or
- the company can pass its profits to shareholders in the form of dividends.

If a company fails, a shareholder can lose the entire value of his or her shares; however, a shareholder is not liable for the debts of the company.

Equity Funds are of the following types viz.

- (i) **Growth Funds:** They seek to provide long term capital appreciation to the investor and are best to long term investors.
- (ii) **Aggressive Funds:** They look for super normal returns for which investment is made in start-ups, IPOs and speculative shares. They are best to investors willing to take risks.
- (iii) **Income Funds:** They seek to maximize present income of investors by investing in safe stocks paying high cash dividends and in high yield money market instruments. They are best to investors seeking current income.

#### (b) Debt Funds

Debt Funds are of two types viz.

- (i) **Bond Funds:** They invest in fixed income securities e.g. government bonds, corporate debentures, convertible debentures, money market. Investors seeking tax free income go in for government bonds while those looking for safe, steady income buy government bonds or high-grade corporate bonds. Although there have been past exceptions, bond funds tend to be less volatile than stock funds and often produce regular income. For these reasons, investors often use bond funds to diversify, provide a stream of income, or invest for intermediate-term goals. However, like stock funds, bond funds also have following risks and can lose money.
- (ii) **Gilt Funds:** They are mainly invested in Government securities.

#### (c) Special Funds

Special Funds are of four types viz.

- (i) **Index Funds:** Every stock market has a stock index which measures the upward and downward sentiment of the stock market. Index Funds are low cost funds and influence the stock market. The investor will receive whatever the market delivers.
- (ii) **International Funds:** A mutual fund located in India to raise money in India for investing globally.
- (iii) **Offshore Funds:** A mutual fund located in India to raise money globally for investing in India.
- (iv) **Sector Funds:** They invest their entire fund in a particular industry e.g. utility fund for utility industry like power, gas, public works.

### 5. Thematic / solution oriented: Tax saving, Retirement benefit, Child welfare, Arbitrage

A Thematic fund focuses on trends that are likely to result in the 'out-performance' by certain sectors or companies. The theme could vary from multi-sector, international exposure, commodity exposure etc. Unlike a sector fund, theme funds have a broader outlook.

However, the downside is that the market may take a longer time to recognize views of the fund house with regards to a particular theme, which forms the basis of launching a fund.

#### (a) Tax Saving Schemes:

Object: Provide tax rebates to the investors under specific provisions of the Indian Income Tax laws as the Government offers tax incentives for investment in specified avenues.

For Whom? For persons who seek to park their otherwise taxable income in funds for a moderate income, to reduce their tax liability.

**(b) Equity Linked Savings Scheme (ELSS)**

ELSS is one of the options for investors to save taxes under Section 80 C of the Income Tax Act. They also offer the perfect way to participate in the growth of the capital market, having a lock-in-period of three years. Besides, ELSS has the potential to give better returns than any traditional tax savings instrument.

Moreover, by investing in an ELSS through a Systematic Investment Plan (SIP), one can not only avoid the problem of investing a lump sum towards the end of the year but also take advantage of “averaging”.

**(c) Arbitrage Funds**

Typically, these funds promise safety of deposits, but better returns, tax benefits and greater liquidity. Pru-ICICI is the latest to join the list with its equities and derivatives funds.

instruments and lower volatility in comparison to equity.

This fund is aimed at an investor who seeks the return of small savings instruments, safety of bank deposits, tax benefits of RBI relief bonds and liquidity of a mutual fund.

Arbitrage fund finally seeks to capitalize on the price differentials between the spot and the futures market.

The other schemes in the arbitrage universe are Benchmark Derivative, JM Equity and Derivatives, Prudential ICICI Balanced, UTI Spread and Prudential ICICI Equity and Derivatives.

**6. Exchange Traded Funds**

Exchange Traded Funds (ETFs) are hybrids product that combine the features of listed stocks and index fund. These funds are listed on the stock exchanges and their prices are linked to the underlying index. The authorized participants act as market makers for ETFs.

ETFs can be bought and sold like any other stock on an exchange. In other words, ETFs can be bought or sold any time during the market hours at prices that are expected to be closer to the NAV at the end of the day. Therefore, one can invest at real time prices as against the end of the day prices as is the case with open-ended schemes.

Index Funds attempt to replicate the performance of a particular index such as the BSE Sensex or the NSE 50

**7. Overseas Funds or International Funds**

A mutual fund located in India to raise money globally for investing in India.

An international mutual fund, also known as a foreign or global fund, is a type of investment vehicle that pools money from multiple investors to invest in a diversified portfolio of stocks or bonds from companies and governments outside of the investor's home country.

- **Global Funds:** Invest in companies from around the world, including the investor's home country.
- **International Funds:** Invest in companies from countries outside the investor's home country.
- **Regional Funds:** Focus on specific regions or countries, such as a fund focused on emerging markets or a fund focused on the US market.

## 8. Fund of Funds

Fund of Funds (FoF) as the name suggests are schemes which invest in other mutual fund schemes. It is a Mutual Fund Scheme, where the subscription proceeds are invested in other Mutual Funds, instead of investing in Equity or Debt Instruments.

These funds offer and achieve a greater diversification than traditional mutual funds.

Expense/Fees on such funds are higher than those on regular funds because they include part of the expense fees charged by the underlying funds.

Indirectly, the proceeds of Fund of Funds may be invested in its own funds, and can be difficult to keep track of overall holdings.

## 12. Systematic Investment Plan (SIP) and Systematic Withdrawal Plan (SWP):

### Systematic Investment Plan (SIP):

- (i) **Nature:** Under a SIP, an investor can invest in the units of mutual funds at periodic intervals (monthly or quarterly) prevailing unit price of that time. This fund is for those investors who do not want to accumulate their savings and invest in one go. this fund permits them to accumulate their savings by directly investing in the mutual fund.
- (ii) **Feature:** Investors can save a fixed amount of rupees every month or quarter, for the purchase of additional units.

### Systematic Withdrawal Plan (SWP):

- (i) **Nature:** SWP permits the investor to make an investment at one go and systematically withdraw at periodic intervals, at the same time permitting the balance funds to be re-invested.
- (ii) **Features:**
  - ❖ Investors can receive regular income while still maintaining their investment's growth potential.
  - ❖ SWP includes convenient payout options and has several tax advantages.
  - ❖ Withdrawal can be done either on a monthly basis or on a quarterly basis, based on needs and investment goals of an investor.
  - ❖ Tax is not deducted, & dividend distribution tax is not applicable. There are no entry or exit loads.

## 13. Factors Affecting selection of Mutual Funds:

- (i) **Past Performance:** The Net Asset Value is the yardstick for evaluating a Mutual Fund. An increase in NAV means a capital appreciation of the investor. While evaluating the performance of the fund, the dividends distributed is to be considered as the same signifies income to the investor. Dividends distributed during a period go on to reduce the Net Asset Value of the fund to the extent of such distribution.
- (ii) **Timing:** The timing when the mutual fund is raising money from the market is vital. In a bullish market, investment in mutual fund falls significantly in value whereas in a bearish market, it is the other way round where it registers growth.
- (iii) **Size of Fund:** Managing a small sized fund and managing a large sized fund is not the same as it is not dependent on the product of numbers. Purchase through large sized fund may by

itself push prices up while sale may push prices down. Medium sized funds are generally preferred.

- (iv) **Age of Fund:** Longevity of the fund in business needs to be determined and its performance in rising, falling and steady markets have to be checked for consistency.
- (v) **Largest Holding:** It is important to note where the largest holdings in mutual fund have been invested in order to identify diversion of funds to Group Concerns.
- (vi) **Fund Manager:** One should have an idea of the person handling the fund management. A person of repute gives confidence to the investors. His performance across varying market scenarios should also be evaluated.
- (vii) **Expense Ratio:** SEBI has laid down the upper ceiling for Expense Ratio. A lower Expense Ratio will give a higher return which is better for an investor.
- (viii) **PE Ratio:** The ratio indicates the weighted average PE Ratio of the stocks that constitute the fund portfolio with weights being given to the market value of holdings. It helps to identify the risk levels in which the mutual fund operates.
- (ix) **Portfolio Turnover:** The fund manager decides as to when he should enter or quit the market. A very low portfolio turnover indicates that he is neither entering nor quitting the market very frequently. A high ratio, on the other hand, may suggest that too frequent moves have led the fund manager to miss out on the next big wave of investments. A simple average of the portfolio turnover ratio of a peer group updated by mutual fund tracking agencies may serve as a benchmark. The ratio is annual purchase plus annual sale to average value of the portfolio.

#### **14. Net Asset Value (NAV) in relation to a Mutual Fund:**

Net asset Value (NAV) of a mutual fund (mf) scheme is the market Value per unit of all the assets of the scheme. It is the value of each unit of the scheme. it includes dividends, interest accruals and reduction of liabilities and expenses.

For example, if the market value of securities of a mutual fund scheme is ₹200 lakh and the mutual fund has issued 10 lakh units of ₹ 10 each to the investors, then the NAV per unit of the fund is ₹ 20 (i.e., ₹200 lakh/10 lakh).

Since market value of securities changes every day, NAV of a scheme also varies on day-to-day basis. NAVs of mutual fund schemes are published on respective mutual funds' websites as well as AMFI's website daily.

Unlike stocks, where the price is driven by the stock market and changes from minute-to-minute, NAVs of mutual fund schemes are declared at the end of each trading day after markets are closed, in accordance with SEBI Mutual Fund Regulations. Further, Units of mutual fund schemes under all scheme (except Liquid & Overnight funds) are allotted only at prospective NAV, i.e., the NAV that would be declared at the end of the day, based on the closing market value of the securities held in the respective schemes.

A mutual fund may accept applications even after the cut-off time, but you will get the NAV of the next business day. Further, the cut-off time rules apply for redemptions too.

There are three aspects which need to be highlighted:

- (i) It is the net value of all assets less liabilities. NAV represents the market value of total assets of the Fund less total liabilities attributable to those assets.

(ii) NAV changes daily. The value of assets and liabilities changes daily. NAV today will not be NAV tomorrow or day later.

(iii) NAV is computed on per unit basis i.e. dividing the Net Asset Value by number of Outstanding Units.

**(A) Ascertainment:**

- (i) The investors' subscription is treated as the capital in the Balance sheet of the fund, and the investments on their behalf are treated as assets.
- (ii)  $\text{NAV per Unit} = \frac{\text{Net asset Value of the fund}}{\text{No. of Units Outstanding}}$ .
- (iii) It reflects the realizable value that the investor will get for each unit that he is holding if the scheme is liquidated on that date.
- (iv)  $\text{Net Assets} = \text{Market Value of Investments} + \text{Receivables} + \text{Accrued Income} + \text{Other Assets} - \text{Accrued Expenses} - \text{Payables} - \text{Other Liabilities}$

**(B) Utility:**

- (i) The performance of a particular scheme of a mutual fund is denoted by NAV.
- (ii) NAV plays an important part in investors' decisions to enter or to exit the Scheme.
- (iii) Analysts use the NAV to determine the yield on the schemes. investors' rights & Obligations under the Mutual Fund Regulations.

**Investors' Rights & Obligations under the Mutual Fund Regulations**

**(A) Rights:**

- (i) Unit holder has a proportionate right in the beneficial ownership of the scheme assets, as well as any dividend or income declared under the scheme.
- (ii) Unit holder is entitled to receive dividend warrant within 42 days.
- (iii) AMC can be terminated by 75% of the unit holders.
- (iv) Unit Holder has the right to inspect major documents i.e., material contracts, Memorandum of Association and Articles of Association of the AMC, Offer Document, etc.
- (v) 75% of the unit holders have the right to approve any changes in the close-ended scheme.
- (vi) Every unit holder have right to receive copy of the annual statement.

**Limitations to Investors' Rights:**

- (i) No right against Trust: Unit holders cannot sue the Trust, but they can initiate proceedings against the Trustees, if they feel that they are being cheated.
- (ii) No right to sue for lower returns: Except in certain circumstances, AMC cannot assure a specified level of return to the investors. AMC cannot be sued to make good any shortfall in such schemes.

**Investors' Obligations:**

- (i) Study of risk factors: An investor should carefully study the risk factors and other information provided in the Offer Document. Failure to study will not entitle him for any rights thereafter.
- (ii) Monitoring schemes: It is the responsibility of the investor to monitor his schemes, by studying the Reports and other Financial Statements of the Funds.

**Sale Price**

Sale Price is the price payable per unit by an investor for purchase of units (subscription) and/or switch-in from other schemes of a mutual fund.

SEBI vide circular no. SEBI / IMD / CIR No. 4 / 168230 / 09 dated June 30, 2009 has abolished Entry Load for all mutual fund schemes.

Hence, during the New Fund Offer (NFO), the Sale Price per unit is at Face Value per unit specified in the respective Scheme Information Document (SID) and Key Information Memorandum (KIM). During the 'Ongoing Offer' period (i.e., the date from which the scheme re-opens for subscriptions/redemptions after the closure of the NFO period.), the units may be purchased at NAV i.e., the Sale Price per unit is equivalent to applicable NAV on the date of subscription.

### **Repurchase/Redemption Price**

The Repurchase/Redemption Price is the price per Unit at which a Mutual Fund would 'repurchase' the units (i.e., buys back units from the investor) upon redemption of units or switch-outs of units to other schemes/plans of the Mutual Fund by the investors, and includes Exit Load, if / wherever applicable.

### **Redemption price is calculated as follows:**

Redemption Price = Applicable NAV\*(1- Exit Load, if any)

For Example: If the Applicable NAV is ₹10 and Exit Load is 2%, then the Redemption Price will be = ₹10\* (1-0.02) = ₹9.80

It may be noted that an AMC / Trustee has the right to modify existing Exit Load structure and/or to introduce Exit Loads subject to a maximum limit prescribed under the Regulations.

Any change in Load structure will be effective on prospective basis and will not affect the existing mutual fund units in any manner.

As per SEBI (Mutual Funds) Regulations, 1996, in respect of Open-Ended Schemes, Repurchase Price (commonly referred to as Redemption price) shall not be lower than 95% of NAV.

It may be noted that units of Closed Ended Schemes cannot be Repurchased prematurely.

(Source: <https://www.amfiindia.com/investor-corner/knowledge-center/net-asset-value.html#accordion3>)

### **Entry and Exit Load in Mutual Funds**

Some Asset Management Companies (AMCs) have sales charges, or loads, on their funds (entry load and/or exit load) to compensate for distribution costs. Funds that can be purchased without a sales charge are called no-load funds.

Entry load is charged at the time an investor purchases the units of a scheme. The entry load percentage is added to the prevailing NAV at the time of allotment of units.

Exit load is charged at the time of redeeming (or transferring an investment between schemes). The exit load percentage is deducted from the NAV at the time of redemption (or transfer between schemes). This amount goes to the Asset Management Company and not into the pool of funds of the scheme. In simple terms, therefore, Entry and Exit Load in Mutual Fund are the charges one pays while buying and selling the fund respectively.

## **15. Methods for evaluating the performance of Mutual Fund**

Following are the methods for evaluating the performance of Mutual Fund

### **1. Sharpe Ratio:**

(a) **Nature:** Sharpe Ratio is a composite measure to evaluate the performance of Mutual Funds by



comparing the reward to risk ratio of different funds. This formula uses the volatility of portfolio return.

- (b) **Basis:** The reward, i.e. portfolio return in excess of the average risk-free rate of return, is divided by standard deviation. Since it considers standard deviation as a measure of risk, it takes into account both Systematic and Unsystematic Risk.
- (c) **Risk Premium:** This measure indicates the risk premium return per unit of total risk. Excess return earned over the risk-free return on portfolio to the portfolio's total risk measured by the standard deviation.
- (d) **Computation:**  
$$\text{Sharpe Ratio} = (R_p - R_f) \div \sigma_p$$

Where,  
 $R_p$  = Return on Portfolio  
 $R_f$  = Risk Free Return  
 $\sigma_p$  = Standard Deviation of Portfolio
- (e) **Use:** Sharpe Ratio is an appropriate measure of performance for an overall portfolio when it is compared with another portfolio. The result on its own cannot lead to any comparison. It has to be compared with returns from another portfolio for making any meaningful conclusion.

## 2. Treynor's Ratio:

- (a) **Nature:** Treynor Ratio is a measure to evaluate the performance of mutual funds by comparing the reward to volatility ratio of different funds. Risk considered here is only Systematic Risk, and not Total Risk.
- (b) **Assumption:** It assumes a completely diversified portfolio, i.e. that the investor would have eliminated all the unsystematic risk by holding a diversified portfolio.
- (c) **Basis:** Excess return earned over the risk-free return on portfolio to the portfolio's total risk measured by the Beta of Portfolio. The ratio expresses the portfolio's risk premium per unit of beta.
- (d) **Computation:**  
$$\text{Treynor's Ratio} = (R_p - R_f) \div \beta_p$$

Where,  $R_p$  = Return on Portfolio  
 $R_f$  = Risk Free Return  
 $\beta_p$  = Beta of Portfolio
- (e) **Use:** It is appropriate only in case of comparison with completely diversified portfolio. As in the case of Sharpe Ratio, Treynor's measure cannot be used in an isolated manner. It should be compared with such results of other portfolio to draw conclusions.

## 3. Jensen's Alpha:

- (a) **Nature:** It is an absolute measure of evaluating a fund's performance. It compares desired performance (based on benchmark portfolio) with actual performance.
- (b) **Benchmark Performance:** Benchmark Performance is computed using Capital Asset Pricing Model (CAPM), i.e. by factoring the sensitivity of the portfolio return to that the Market Portfolio.
- (c) **Computation:**  
$$\text{Jensen's Alpha } [\alpha] = \text{Actual Return Less Return under CAPM}$$



(d) Evaluation and Appropriateness:

- If Jensen's Alpha is positive, it reflects that the Mutual Fund has exceeded the expectations and outperformed the Market Portfolio and vice-versa.
- Alpha would give meaningful results only if its used to compare two portfolios of similar beta factor
- It is used for measuring performance of a portfolio and to identify the part of the performance that can be attributed solely to the portfolio.
- This model considers only systematic risk and not the total risk.

**Different kinds of expenditure incurred by a Mutual Fund and the way to treat them in computing the net asset value:**

(i) **Initial Issue Expenses:** AMC incur some expenses when a scheme is launched. The benefits of these expenses accrue over many years. Therefore, they cannot be charged to any single year.

SEBI permits amortization of initial expenses as follows —

- (a) **Close End Scheme:** Such schemes floated on a load basis; the initial issue expense shall be amortized on a weekly basis over the period of the scheme.
- (b) **Open Ended Scheme:** Initial issue expenses may be amortized over a period not exceeding 5 years. Issue expenses incurred during the life of an open-end scheme cannot be amortized.

(ii) **Recurring Expenses:** It includes the followings:

- (a) Marketing and selling expenses including agent's commission
- (b) Brokerage and transaction costs
- (c) Registrar services for transfer of units sold or redeemed.
- (d) Audit fees
- (e) Custodian charges
- (f) Costs related to investor communication
- (g) Cost of fund transfers from location to location
- (h) Cost of providing accounts statements and dividend/ redemption cheques and warrants
- (i) Insurance Premium paid by the Fund
- (j) Winding up costs for terminating a fund or a scheme
- (k) Costs of statutory advertisements.
- (l) Other costs as approved by SEBI.

(iii) **Total Expenses:** Total Expenses of the scheme as charged by the AMC excluding issue or redemption expenses but including investment management and advisory fees, are subject to the following limits-

- (a) On the first Rs.100 Crores of the average weekly Net Assets - 1.5%
- (b) On the next Rs. 300 Crores of the average weekly Net Assets - 2.25%
- (c) On the next Rs.300 Crores of the average weekly Net Assets - 2.0%
- (d) On the balance of the assets 1.75%

## **16.Value of Traded Securities and Non-Traded Securities of Mutual Fund**

**Traded Securities:**

- (a) **Last Quoted Closing Price:** Traded Securities should be valued at the last quoted closing price on the Stock Exchange.

- (b) **More than One Stock Exchange:** If the securities are traded on more than one Stock Exchange then the valuation should be as per the last quoted closing price on the Stock Exchange where the security is principally traded.
- (c) **No Trading on Principal Stock Exchange:** When on a particular valuation day, a security has not been traded on the selected Stock Exchange, the value at which it is traded on another Stock Exchange may be used.

#### **Non-Traded Securities:**

- (a) **Meaning:** If a security is not traded on any Stock Exchange for a period of 60 days prior to the valuation date, the scrip must be valued as a non-trade scrip.
- (b) **Valuation:** Non-Traded Scrips should be valued in good faith by the AMC on the basis of valuation methods approved by the AMC.
- (c) **General Principles in Valuation:**
  - ❖ **Equity Instruments:** Valued on the basis of capitalization of earnings solely or in combination with the Net Asset Value. Price Earnings Ratios of comparable traded securities, with an appropriate discount for lower liquidity, should be used for the purpose of capitalization.
  - ❖ **Debt Instruments:** Valued on YTM (Yield to Maturity) basis. Capitalization factor being determined for comparable traded securities with an appropriate discount for lower liquidity.
  - ❖ **Government Securities:** Valued at YTM based on the prevailing market rate.
  - ❖ **Money Market Instruments:** Valued at Cost Plus Accruals.
  - ❖ **Convertible Debentures/Bonds:** Non-convertible component should be valued as a debt Instrument, and Convertibles as any Equity Instrument.

## **17. Rating of Mutual Funds Scheme in India**

In India, Mutual funds schemes are evaluated by independent institutions amongst which CRISIL, Value Research India and Economic Times are most popular.

**CRISIL:** This rating shows how likely a particular MF is going to deliver the returns on time and within the policy framework. Their calculations include: (a) superior return scope; (b) portfolio concentration analysis; (c) mean return and volatility; (d) quality of assets; (e) exposure to sensitive sector; (f) liquidity analysis; (g) tracking error for index funds. It indicates how much a fund's performance can fluctuate regarding the index that it tracks. A lower tracking error is a positive indicator. It covers the schemes and ranks in the following five categories equity, debt, balanced, gilt and liquid.

CRISIL rating starts from 1 star to 5 star. Top 10% funds get 5-star ratings (very good), the next 20% good, the next 40% average, the next 20% below average and the last 10% poor.

**Value Research India:** Value research fund rating (risk-adjusted rating) is a metric that can be defined as a composite measure of both the returns and risk associated with a particular fund. The rating is almost in line with CRISIL. Each scheme is assigned a risk grade and a return grade and composite measure of performance is calculated by subtracting the risk grade from the return grade. Within each category, the top 10%, are considered 5 star, the next 22.5% four star the next 35% three star, the next 22.5% two star, and the last 10% one star.

**Economic Times:** It evaluates MF schemes on a quarterly basis and uses a risk-adjusted tracker for the measurement of performance known as Sortino ratio. It assesses the fund performance under five categories: equity diversified, ELSS, balanced, MIP and debt. The top 10% of funds in each category are classified as platinum, the next 20% as gold and balance 70% as silver.

### **Morningstar Ratings**

One of the best-known and widely used by the investors regarding mutual fund performance today is the rating system developed by Morningstar. Investors quickly search the ratings made by Morningstar when they wish to invest in mutual fund. They feel that such a rating is a likely predictor of future success. However, it is important to note that this rating system is measuring historical risk-adjusted performance of funds that have at least a three- year history.

When both the risk and return measures are put together, a rating can be determined for all fund in a set. Top 10% receive 5 stars, next 22.5% receive four stars, next 35% receive three stars, next 22.5 two stars and balance 10% one star.

The Morningstar rating system, using one to five stars, remains a popular measure of mutual fund performance. Although not perfect even now, it is a sound, well-regarded tool for investors if used properly. Morningstar itself has always urged investors to use its star system of ratings as a starting point in selecting funds, not as the bottom line. This is a good advice to remember.

## **Illustrations**

### **Illustration 1**

A mutual fund has a net asset value of Rs.50 at the beginning of the year. During the year, a sum of Rs.4 was distributed as income (dividend) besides Rs.3 as capital gains distribution. At the end of the year, NAV was Rs.55. Calculate total return for the year. Suppose the aforesaid mutual fund in the next year declared a dividend of Rs.5 as income distribution and no capital gains distribution and NAV at the end of second year was Rs.50, what is the return for the second year?

|                                  |              |
|----------------------------------|--------------|
| Name of the Scheme               | ABC          |
| Size of the Scheme               | Rs.100 lakhs |
| Face Value of the Share          | Rs.10        |
| Number of the outstanding shares | 10 lakhs     |

|  |              |
|--|--------------|
| Market value of the fund's investments Receivables | Rs.180 lakhs |
| Accrued Income                                     | Rs.1 lakh    |
| Receivables  | Rs.1 lakh    |
| Liabilities  | Rs.50,000    |
| Accrued expenses                                   | Rs.50,000    |

Find NAV per unit?

**Answer:**

NAV per unit = (Investment + Recoverable + Accrued Income – Liabilities – Accrued expenses)/No of units (mutual fund) = (180 lakhs + 1 lakh + 1 lakh – 0.50 lakh – 0.50 lakh)/10 lakhs = 18.1 lakhs.

## Illustration 2

A mutual fund made an issue of 20,00,000 units of ₹10 each on January 01, 2024. No entry load was charged. It made the following investments:

| Particulars                               | Amount (₹)  |
|---|-------------|
| 1,00,000 Equity shares of ₹100 each @₹160 | 160,00,000  |
| 8% Government Securities                  | 16,00,000   |
| 11% Debentures (unlisted)                 | 10,00,000   |
| 10% Debentures (listed)                   | 10,00,000   |
| Total                                     | 1,96,00,000 |

During the year, dividends of ₹24,00,000 were received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year equity shares and 11% debentures (unlisted) are quoted at 180% and 85% respectively. Other investments are at par.

Find out the Net Asset Value (NAV) per unit given that operating expenses paid during the year amounted to ₹10,00,000. Also find out the NAV, if the mutual fund had distributed a dividend of ₹0.75 per unit during the year to the unitholders.

**Answer:**

### Calculation of NAV

| Particulars                           | Amount (₹)          |
|---------------------------------------|---------------------|
| Cash Balance in the Beginning         | 4,00,000.00         |
| (Rs.200 Lakh -196 Lakh)               |                     |
| Dividend Received                     | 24,00,000.00        |
| Interest on 8% Govt. Securities       | 1,28,000.00         |
| Interest on 11% Debentures (unlisted) | 1,10,000.00         |
| Interest on 10% Debentures (listed)   | 1,00,000.00         |
|                                       | 31,38,000.00        |
| Less; Operating Expenses              | <u>10,00,000.00</u> |
| Net Cash Balance at the end           | <u>21,38,000.00</u> |
| Calculation of NAV _                  |                     |
| Cash Balance                          | 21,38,000.00        |
| 8% Government Securities              | 16,00,000.00        |

|                                 |                |
|---------------------------------|----------------|
| 11% Debentures (unlisted)       | 8,50,000.00    |
| 10% Debentures (listed)         | 10,00,000.00   |
| 1,00,000 Equity shares @ Rs.180 | 1,80,00,000.00 |
| Total Assets                    | 2,35,88,000.00 |
| No of Units                     | 20,00,000      |
| NAV per Unit                    | 11.79          |

Calculation of NAV, if dividend of Re.0.75 is paid

| Particulars                       | Amount (₹)     |
|-----------------------------------|----------------|
| Total Assets                      | 2,35,88,000.00 |
| Less: Dividend (Re.0.75 per unit) | 15,00,000.00   |
| Net Assets                        | 2,20,88,000.00 |
| No of Units                       | 20,00,000      |
| NAV per Unit                      | 11.04          |

### Illustration 3

Moon Light Mutual Fund Co. has the following assets under it on the close of business as on:

| Company | No. of Shares | 1 <sup>st</sup> March 2024<br>Market price per share (₹) | 2 <sup>nd</sup> March 2024<br>Market price per share (₹) |
|---------|---------------|--|--|
| A Ltd.  | 20,000        | 20.00  | 20.40  |
| B Ltd.  | 30,000        | 315.50   | 363.00   |
| C Ltd.  | 20,000        | 360.30   | 381.20   |
| D Ltd.  | 60,000        | 507.20   | 505.80   |

Total number of units is 600,000.

Calculate the Net Asset Value (NAV) per unit of the Fund on 1<sup>st</sup> March 2024.

**Answer:**

NAV of the fund currently is the market value of securities divided by the outstanding number of units  
Market Value of Securities as on 1<sup>st</sup> March 2024

| Company | No. of Shares | 1 <sup>st</sup> March 2022<br>Market Price of Share (₹) | Market Value of Securities<br>(₹) |
|---------|---------------|---|-----------------------------------|
| A Ltd.  | 20,000        | 20.00   | 400,000                           |
| B Ltd.  | 30,000        | 315.50  | 9,465,000                         |
| C Ltd.  | 20,000        | 360.30  | 7,206,000                         |
| D Ltd.  | 60,000        | 507.20  | 30,432,000                        |
|         |               | Total   | 47,503,000                        |

$$\text{NAV} = \frac{\text{₹}47,503,000}{6,00,000} = \text{₹}79.17$$

**Illustration 4**

Find out Net Asset Value (NAV) per unit from the following information of Scheme Grow Money.

Name of the scheme Grow Money

|  |             |
|--|-------------|
| Size of the scheme                     | ₹ 250 Lakhs |
| Face value of the unit                 | ₹ 10        |
| Number of the outstanding units        | 2.5 Lakhs   |
| Market value of the fund's investments | ₹ 160 Lakhs |
| Cash and other assets in hand          | ₹ 1 Lakh    |
| Receivables                            | ₹ 3 Lakhs   |
| Liabilities                            | ₹1.2 Lakhs  |

**Answer:**

Total Assets

|  |             |
|--|-------------|
| Market value of the fund's investments | ₹ 160 Lakhs |
| Cash and other assets in hand          | ₹ 1 Lakhs   |
| Receivables                            | ₹ 3 Lakhs   |
| Total                                  | ₹ 164 Lakhs |

Total Liabilities

|             |            |
|-------------|------------|
| Liabilities | ₹1.2 Lakhs |
|-------------|------------|

$$\begin{aligned}
 \text{Net Asset Value (NAV)} &= \frac{\text{Total Assets} - \text{Total Liabilities}}{\text{No. of Units Outstanding}} \\
 &= \frac{\text{Rs.164 lakhs} - \text{Rs.1.2 Lakhs}}{2.5 \text{ lakhs}} \\
 &= ₹65
 \end{aligned}$$

**Illustration 5**

The following portfolio details of a mutual fund scheme are given below:

| Stock | No. of shares | Price (₹) |
|-------|---------------|-----------|
| P     | 4 Lakh        | 45        |
| Q     | 6 Lakh        | 50        |
| R     | 8 Lakh        | 25        |
| S     | 12 Lakh       | 30        |

The scheme has accrued expenses towards portfolio managers of ₹ 6 Lakh. There are 80 lakh units outstanding. Find out the NAV (Net Asset Value) per unit of the scheme.

**Answer:**

Portfolio of the Scheme

| Stock | No. of shares | Price (₹) | Value (₹) |
|-------|---------------|-----------|-----------|
| P     | 4 Lakh        | 45        | 180 Lakhs |
| Q     | 6 Lakh        | 50        | 300 Lakhs |
| R     | 8 Lakh        | 25        | 200 Lakhs |

|       |         |    |            |
|-------|---------|----|------------|
| S     | 12 Lakh | 30 | 360 Lakhs  |
| Total |         |    | 1040 Lakhs |

$$\begin{aligned}
 \text{NAV per Unit} &= \text{Net Asset Value (NAV)} = \frac{\text{Total portfolio} - \text{Total Expenses}}{\text{No. of Units Outstanding}} \\
 &= \frac{\text{Rs.1040 lakhs} - \text{Rs.6 Lakhs}}{80 \text{ lakhs}} \\
 &= ₹12.925
 \end{aligned}$$

### Illustration 6

Following information is available regarding four mutual funds:

| Mutual Fund | Return (%) | Risk ( $\sigma$ ) | Beta | Risk free rate (%) |
|-------------|------------|-------------------|------|--------------------|
| P           | 13         | 16                | 0.90 | 10                 |
| Q           | 17         | 23                | 0.86 | 10                 |
| R           | 23         | 39                | 1.20 | 10                 |
| S           | 15         | 25                | 1.38 | 10                 |

Evaluate performance of these mutual funds using Sharp Ratio and Treynor's Ratio. Comment on the evaluation after ranking the funds.

**Answer:**

| Mutual Fund | Under Sharpe's Method $[(R_P - R_F) \div \sigma_P]$ | Ranking | Under Treynor Method $[(R_P - R_F) \div \beta_P]$ | Ranking |
|-------------|---|---------|---|---------|
| P           | $[(13-10) \div 16] = 0.19$                          | 4       | $[(13-10) \div 0.90] = 3.33$                      | 4       |
| Q           | $[(17-10) \div 23] = 0.31$                          | 2       | $[(17-10) \div 0.86] = 8.14$                      | 2       |
| R           | $[(23-10) \div 39] = 0.33$                          | 1       | $[(23-10) \div 1.20] = 10.83$                     | 1       |
| S           | $[(15-10) \div 25] = 0.2$                           | 3       | $[(15-10) \div 1.38] = 3.63$                      | 3       |

**Inference:** Ranks obtained as per Sharpe Ratio as well as Treynor's Ratio is same. This indicates that all the mutual funds seem to be reasonably well diversified.

## Multiple Choice Questions (MCQs)

1. Which of the following statements is incorrect?
- (A) Mutual funds serve as a key financial intermediary.
  - (B) Managers of mutual funds do not analyze economic and industry trends.
  - (C) Because of their diversification, management expertise, and liquidity, mutual funds have grown at a rapid pace.
  - (D) Some mutual funds offer check-writing privileges.

**Answer: (B)**

2. Consider the following statements:  
A mutual fund helps the investor in securing:
- i) professional management
  - ii) diversification of risk
  - iii) steady appreciation
  - iv) lower cost of operation

Of these statements:

- (a) 1 and 2 are correct
- (b) 1,2 and 4 are correct
- (c) 1, 2,3 and 4 are correct
- (d) 2, 3 and 4 are correct

**Ans: (c)**

3. Mutual funds that do not repurchase their shares from investors are \_\_\_\_\_ mutual funds.
- (A) closed-end
  - (B) load
  - (C) no-load
  - (D) open-end

**Answer: (A)**

4. The important role while establishing the mutual fund scheme is played by the
- (A) AMC
  - (B) Trustees
  - (C) Sponsors
  - (D) Custodians

**Answer: (C)**

5. Money market funds invest mostly in:
- (A) Stocks
  - (B) Long-term bonds
  - (C) Real estate
  - (D) Short-term securities

**Answer: (C)**

6. Settlements are done at the instance of the
- (A) Custodian



- (B) AMC
  - (C) Trustees
  - (D) Sponsors
- Answer: (B)**

7. The functions of the trustees is/are
- (A) Marketing the mutual fund schemes
  - (B) To seek the RBI approval in case the scheme is open for NRIs
  - (C) Submitting compliance reports to SEBI
  - (D) All of the above

**Answer: (D)**

8. Balanced funds have the following characteristics
- (A) They consist of equity and bonds in equal proportion
  - (B) They have moderate risk component
  - (C) They have above average growth potential
  - (D) None of the above

**Answer: (B)**

9. The function(s) of AMC is/are
- (A) Taking investment decisions and committing the funds in the primary/secondary market
  - (B) Maintaining the records and necessary information systems
  - (C) Inform the trustees of the latest happenings and decisions
  - (D) All of the above

**Answer: (D)**

10. Which among the following increases the NAV of a mutual fund scheme?
- (A) Value of investments
  - (B) Receivables
  - (C) Accrued income
  - (D) All of (a), (b) and (c)

**Answer: (D)**

11. Following is/are the advantages of investing in mutual funds
- (A) Diversified investment
  - (B) Professional management
  - (C) Tax benefits
  - (D) All of (a), (b) and (c)

**Answer: (D)**

12. Which of the following benefits is not usually conferred by mutual funds?
- (A) Diversified investment portfolio

- (B) Professional stock selection and asset management
- (C) Tax benefits
- (D) Assured returns

**Answer: (D)**

13. Which of the following is not an advantage of mutual funds?

- (A) Expertise in selection and timing of investment
- (B) Economies of scale and lower transaction costs
- (C) Reinvestment of dividend income possible
- (D) Limited investment opportunities and hence no need for the investor to have knowledge on investment management

**Answer: (D)**

14. The mutual funds are likely to perform better in the market than a small investor because they

- (A) Depend on the technical analysis tools and have the expertise to use them
- (B) Depend on the fundamental analysis which ensures the long-term performance of the fund
- (C) Have access to better information, ability and infrastructure to utilize it
- (D) None of the above

**Answer: (C)**

15. Identify the statement that applies to open-end mutual funds

- (A) They do not redeem or issue shares
- (B) Shares of such funds are traded on organized exchanges
- (C) Their price can't fall below the NAV
- (D) Exit from such funds involves selling shares to other investors.

**Answer: (D)**

16. Which of the following is an advantage to investors of exchange traded funds (ETFs) that is not available to investors in open-end mutual funds?

- (A) ETFs allow investors to invest in broad market indexes as well as international indexes
- (B) Investors can avoid incurring an expense in the form of a bid ask spread by purchasing an ETF rather than
- (C) investing in an open-end mutual fund
- (D) ETFs offer a potential tax advantage to investors who incur capital gains taxes only when they sell ETF shares ETF prices cannot deviate from net asset value

**Answer: (B)**

17. Which of the following mutual fund scheme that provides tax benefits under 80C?

- (A) Gilt Funds
- (B) Fixed Income Fund
- (C) Equity Linked Saving Scheme (ELSS)
- (D) Growth Funds

**Answer: (C)**

18. Basic objective of a money market mutual fund is

- (A) Guaranteed rate of return
- (B) Investment in short-term securities
- (C) Both (a) and (b)
- (D) None of (a) and (b)

**Answer: (B)**

19. The NAV of mutual fund scheme must by mutual fund on \_\_\_\_ basis

- (A) Yearly
- (B) Monthly
- (C) Weekly
- (D) Daily

**Answer: (D)**

20. Who conducts the certification that have to be passed by persons/entities engaged in marketing and selling of mutual funds?

- (A) SEBI
- (B) AMFI
- (C) IRDAI
- (D) PFRDA

**Answer: (B)**

21. Fund of funds (FoF) mutual funds invests in \_\_\_\_\_

- (A) Equities
- (B) Corporate Bonds
- (C) G-Sec
- (D) Other Mutual Funds

**Answer: (D)**

22. You are given the following information:

- Size of the mutual fund ₹300 crore;
- Face value per unit ₹10;
- Market value of investment ₹320 crore;
- Receivables ₹3 crore;
- Accrued income ₹2 crore;

Liabilities ₹3 crore;

Accrued expenses ₹1 crore.

The NAV per unit of the mutual fund scheme is:

(A) ₹12.00

(B) ₹11.50

(C) ₹13.00

(D) ₹ 10.70

**Answer: (D)**

23. The market price (ex-dividend) of an open-ended mutual fund scheme unit was ₹30. A dividend of ₹3 has been paid during the year. The ex-dividend price of the unit is ₹35. The rate of return of the past year of the unit is-

(A) 24.32%

(B) 25.52%

(C) 26.67%

(D) 28.56%

**Answer: (C)**

$$\begin{aligned}\text{Return} &= (\text{Cash dividend} + \text{Capital Appreciation} + \text{Capital Gains}) / \text{Opening NAV} \\ &= (3+5)/30=26.67\%\end{aligned}$$

24. The NAV of each unit of a close ended fund at the beginning of the year was ₹20. At the end of the year NAV increases to ₹23.50. At the beginning of the year, each unit was selling at a 5% premium to NAV. By the end of the year, each unit is selling at a discount of 4% to NAV. The fund paid year end distribution of income and capital gains of ₹3.50 on each unit. The rate of return to the investor in the fund during the year is

(A) 23.47%

(B) 23.96%

(C) 24.09%

(D) 26.33%

**Answer: (C)**

The price of the unit at the beginning of the year = ₹20 × 1.05 = ₹21.00

The price of the unit at the end of the year = ₹23.50 × 0.96 = ₹22.56

$$\begin{aligned}\text{Return} &= (\text{Cash dividend} + \text{Capital Appreciation} + \text{Capital Gains}) / \text{Opening NAV} \\ &= [3.5 + (22.56 - 21.00)] / 21.00 = 24.09\%\end{aligned}$$

25. Following information is available regarding a mutual fund:

Return                      12%

Risk (S.D. i.e.  $\sigma$ )    15%

Beta ( $\beta$ )                    0.90

Risk Free Rate          9%

The Treynor's Ratio of the mutual fund is-

(A) 3.33

(B) 3.75

(C) 3.90

(D) 4.33

**Answer: (A)**

Treynor's Ratio =  $(R_p - R_f) / \beta = (12 - 9) / 0.90 = 3.33$

Where  $R_p$  = Return

$R_f$  = Risk Free Rate of Return

$\beta$  = Beta

26. Following information is available regarding a mutual fund:

Return 13%

Risk (S.D. i.e.  $\sigma$ ) 16%

Beta ( $\beta$ ) 0.90

Risk Free Rate 10%

The Sharpe Ratio of the mutual fund is-

(A) 0.1875

(B) 0.1845

(C) 0.1975

(D) 0.2045

**Answer: (A)**

Sharpe Ratio =  $(R_p - R_f) / \sigma = (13 - 10) / 16 = 0.1875$

Where  $R_p$  = Return

$R_f$  = Risk Free Rate of Return

$\sigma$  = Standard Deviation (risk)

27. An investor invested in a mutual fund when the Net Asset Value (NAV) was ₹ 15.65. After 60 days, the Net Asset Value per unit of the fund was ₹15.25. Meanwhile, he received a cash dividend of ₹ 0.50 and a Capital Gain distribution of ₹30. The annualized return of the fund will be-

(A) 14.25%

(B) 15.57%

(C) 15.90%

(D) 16.60%

**Answer: (B) 15.57%**

Capital appreciation = (₹0.40) = (Opening NAV - Closing NAV) = ₹15.25 - ₹15.65.

Returns = [Dividend + Capital Gain Distribution + Capital Appreciation] / Opening NAV.

= [₹0.50 + ₹0.30 - ₹0.40] / ₹15.65 = 2.56%

Annualized return = Return  $\times$  365 days  $\div$  period

= 2.56%  $\times$  365 Days  $\div$  60 days = 15.57%

28. The market price (ex-dividend) of an open-ended mutual fund scheme unit was ₹25. A dividend of ₹3 has been paid during the year the ex-dividend price of the unit is ₹29. The rate of return of the past year of the unit is

(A) 30%

(B) 32%

(C) 28%

(D) 19%

Ans: (C) Return = (Cash dividend + Capital Appreciation + Capital Gains) / Opening NAV  
= (3+4)/25 = 28%

# **Unit 1:**

## **Project Identification, Planning and Formulation**

### Contents

- Introduction
- Meaning of Project
- Characteristics of a Project
- Project Performance Dimensions
- Primary Constraints of a Project
- Project Classification
- Project Life Cycle
- Project Life Cycle path
- Project Identification
  - Features of Project Identification
  - Important Tasks in Project Identification
  - Stages of Project Identification
- Planning of Project
  - Formulation of Project
  - Project Planning
  - Objectives of Project Planning
  - Processes of Project Planning
  - Elements of Project Planning
  - Benefits of Project Planning
- Project Formulation
  - Steps of Project Formulation
- MCQs

### **1.1 Introduction**

People have been undertaking projects since the earliest days of organized human activity. The hunting parties of our prehistoric ancestors were projects, for example; they were temporary undertakings directed at the goal of obtaining meat for the community. Large complex projects have also been with us for a long time. The pyramids and the Great Wall of China were in their day of

roughly the same dimensions as the Apollo project to send men to the moon. We use the term “project” frequently in our daily conversations.

A project has distinctive attributes that distinguish it from ongoing work or business operations. Projects are temporary in nature. They are not an everyday business process and have definitive start dates and end dates. This characteristic is important because a large part of the project effort is dedicated to ensuring that the project is completed at the appointed time. To do this, schedules are created showing when tasks should begin and end. Projects can last minutes, hours, days, weeks, months, or years.

## **1.2. Meaning of a Project**

Project in general refers to a new endeavor with specific objective and varies so widely that it is very difficult to precisely define it. Some of the commonly quoted definitions are as follows.

- Project is a temporary endeavor undertaken to create a unique product or service or result.
- A project is defined as a one-time activity with a series of tasks that produces a specific outcome to achieve organizational goals.
- Projects are a set of interdependent tasks that have a common goal. No matter what the project is, each project is broken down into objectives and what needs to be done to achieve them, ensuring that the project stays on track and is completed as per plan.
- A project is defined as a sequence of activities undertaken for getting a set of tasks done to achieve the desired business goals successfully. Project Management centres on planning and managing everything involved in delivering a Project.

Project is a unique process, consist of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective confirming to specific requirements, including the constraints of time cost and resource. (ISO10006)

Examples of project include Developing a watershed, creating irrigation facility, developing new variety of a crop, developing new breed of an animal, Developing agro-processing centre, Construction of farm building, sting of a concentrated feed plant etc. It may be noted that each of these projects differ in composition, type, scope, size and time.

- Construction of any physical infrastructure
- The development of software for an improved business process
- The relief effort after a natural disaster
- The expansion of sales into a new geographic market
- Start-up Project
- Long-term project



- Short-term projects

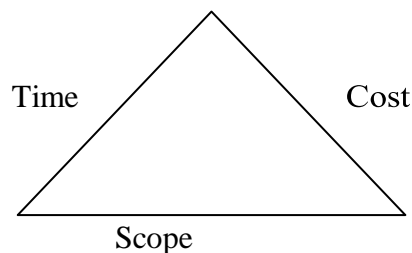
### 1.3 Characteristics of a Project

Despite above diversities, projects share the following common characteristics.

- (i) It is unique in nature.
- (ii) Project have definite objectives (goals) to achieve.
- (iii) It requires set of resources.
- (iv) Project have a specific time frame for completion with a definite start and finish.
- (v) It involves risk and uncertainty.
- (vi) It requires cross-functional teams and interdisciplinary approach.

### 1.4 Project Performance Dimensions

Three major dimensions that define the project performance are scope, time, and resource. These parameters are interrelated and interactive. The relationship generally represented as an equilateral triangle. The relationship is shown in figure 1.



Scope: Figure 1. Project performance dimensions

It is evident that any change in any one of dimensions would affect the other.

For example, if the scope is enlarged, project would require more time for completion and the cost would also go up. If time is reduced the scope and cost would also be required to be reduced. Similarly, any change in cost would be reflected in scope and time. Successful completion of the project would require accomplishment of specified goals within scheduled time and budget. In recent years a fourth dimension, stakeholder satisfaction, is added to the project. However, the other school of management argues that this dimension is an inherent part of the scope of the project that defines the specifications to which the project is required to be implemented. Thus, the performance of a project is measured by the degree to which these three parameters (scope, time and cost) are achieved. Mathematically,

$$\text{Performance} = f(\text{Scope}, \text{Cost}, \text{Time})$$

In management literature, this equilateral triangle is also referred as the “Quality triangle” of the

project.

### 1.5 Primary Constraints of a Project

- (i) **Time:** The schedule for the project to reach completion.
- (ii) **Cost:** The budget allocated for the project to meet its objectives and complete it on time
- (iii) **Scope:** The specific deliverables of the project.
- (iv) **Quality:** The standard of the outcome of the project.

### 1.6 Project Classification

There is no standard classification of the projects. However, considering project goals, these can be classified into two broad groups, industrial and developmental. Each of these groups can be further classified considering nature of work (repetitive, non- repetitive), completion time (long term, short term etc.), cost (large, small, etc.), level of risk (high, low, no-risk), mode of operation (build, build-operate-transfer etc.).

Industrial projects also referred as commercial projects, which are undertaken to provide goods or services for meeting the growing needs of the customers and providing attractive returns to the investors/stake holders. Following the background, these projects are further grouped into two categories i.e., demand based and resource / supply based.

The demand-based projects are designed to satisfy the customers' felt as well the latent needs such as complex fertilizers, agro-processing infrastructure etc. The resource/ supply-based projects are those which take advantage of the available resources like land, water, agricultural produce, raw material, minerals and even human resource. Projects triggered by successful R&D are also considered as supply based. Examples of resource-based projects include food product units, metallurgical industries, oil refineries etc. Examples of projects based on human resource (skilled) availability include projects in IT sector, Clinical Research projects in bio services and others.

Development projects are undertaken to facilitate the promotion and acceleration of overall economic development. These projects act as catalysts for economic development providing a cascading effect. Development projects cover sectors like irrigation, agriculture, infrastructure health and education. The essential differences between Industrial projects and Developmental project are summarized in the following table 1.

Table 1. Difference between Industrial and Developmental Projects

| Dimension        | Industrial Project          | Developmental Project            |
|------------------|-----------------------------|----------------------------------|
| Scale of Project | Limited                     | Large                            |
| Promoters        | Entrepreneurs or corporates | Government, Public Sectors, NGOs |
| Investment       | ---                         | High                             |

|                                      |  |   |
|--------------------------------------|--|---|
| Gestation Period                     | ---  | High  |
| Profitability                        | High, Considered on IRR (Internal Rate of Return)                | Modest, Considered on ERR (Economic Rate of Return)   |
| Finance                              | Stringent debt equity norms                                      | Operates on higher debt-equity norms  |
| Source of fund                       | National stock markets and from domestic financial institutions  | International organizations like World Bank, IMF, ADB, DFID and others mostly as loan, yet times providing for some grants. |
| Interest rates and repayment period: | Market rate and the repayment period is generally, 7 to 10 years | Very low for borrowed funds and the repayment period extends up to 25 years and even beyond.                                |

## 1.7 Project Life Cycle/Phases

Every project, from conception to completion, passes through various phases of a life cycle synonym to life cycle of living beings. There is no universal consensus on the number of phases in a project cycle. An understanding of the life cycle is important to successful completion of the project as it facilitates to understand the logical sequence of events in the continuum of progress from start to finish. Typical project consists of four phases - Conceptualization, Planning, Execution and Termination. Each phase is marked by one or more deliverables such as Concept note, Feasibility report, Implementation Plan, HRD plan, Resource allocation plan, Evaluation report etc.

### 1) Conceptualization Phase/ Initiation Phase

Conception phase, starting with the seed of an idea, it covers identification of the product/service, Pre-feasibility, Feasibility studies and Appraisal and Approval. The project idea is conceptualized with initial considerations of all possible alternatives for achieving the project objectives. As the idea becomes established a proposal is developed setting out rationale, method, estimated costs, benefits and other details for appraisal of the stakeholders. After reaching a broad consensus on the proposal the feasibility dimensions are analyzed in detail.

### 2) Planning Phase

In this phase, the project structure is planned based on project appraisal and approvals. Detailed plans for activity, finance, and resources are developed and integrated to the quality parameters. In the process major tasks need to be performed in this phase are

- Identification of activities and their sequencing
- Time frame for execution
- Estimation and budgeting

- Staffing

A Detailed Project Report (DPR) specifying various aspects of the project is finalized to facilitate execution in this phase.

### 3) Project Quality Management:

The main principle of project quality management is to ensure the project will meet or exceed stakeholder's needs and expectations.

Project Quality management consists of four main processes:

- (i) **Quality Definition:** Quality management implies the ability to anticipate situations and prepare actions that will help bring the desired outcomes. The goal is the prevention of defects through the creation of actions that will ensure that the project team understands what is defined as quality.
- (ii) **Quality Assurance:** Quality Assurance is a process to provide confirmation based on evidence to ensure to the donor, beneficiaries, organization management and other stakeholders that product meet needs, expectations, and other requirements. It assures the existence and effectiveness of process and procedures tools, and safeguards are in place to make sure that the expected levels of quality will be reached to produce quality outputs.
- (iii) **Quality Control:** Quality control is the use of techniques and activities that compare actual quality performance with goals and define appropriate action in response to a shortfall.
- (iv) **Quality Improvements:** Quality improvement refers to the application of methods and tools to close the gap between current and expected levels of quality by understanding and addressing system deficiencies and strengths to improve, or in some cases, re-design project processes.

### 4) Implementation or Execution Phase

This phase of the project witnesses the concentrated activity where the plans are put into operation. Each activity is monitored, controlled and coordinated to achieve project objectives. Important activities in this phase are-

- Communicating with stakeholders
- Reviewing progress
- Monitoring cost and time
- Controlling quality
- Managing changes

## 5) Termination or Close out Phase

This phase marks the completion of the project wherein the agreed deliverables are installed and project is put in to operation with arrangements for follow-up and evaluation.

### **Example: Project Phases on a Large Multinational Project**

A U.S. construction company won a contract to design and build the first copper mine in northern Argentina. There was no existing infrastructure for either the mining industry or large construction projects in this part of South America. During the initiation phase of the project, the project manager focused on defining and finding a project leadership team with the knowledge, skills, and experience to manage a large complex project in a remote area of the globe.

The project team set up three offices. One was in Chile, where large mining construction project infrastructure existed. The other two were in Argentina. One was in Buenos Aires to establish relationships and Argentinian expertise, and the second was in Catamarca—the largest town close to the mine site. With offices in place, the project start-up team began developing procedures for getting work done, acquiring the appropriate permits, and developing relationships with Chilean and Argentine partners. During the planning phase, the project team developed an integrated project schedule that coordinated the activities of the design, procurement, and construction teams. The project controls team also developed a detailed budget that enabled the project team to track project expenditures against the expected expenses. The project design team built on the conceptual design and developed detailed drawings for use by the procurement team. The procurement team used the drawings to begin ordering equipment and materials for the construction team; develop labor projections; refine the construction schedule; and set up the construction site. Although planning is a never-ending process on a project, the planning phase focused on developing sufficient details to allow various parts of the project team to coordinate their work and allow the project management team to make priority decisions. The implementation phase represents the work done to meet the requirements of the scope of work and fulfill the charter. During the implementation phase, the project team accomplished the work defined in the plan and made adjustments when the project factors changed. Equipment and materials were delivered to the work site, labor was hired and trained, a construction site was built, and all the construction activities, from the arrival of the first dozer to the installation of the final light switch, were accomplished. The closeout phase included turning over the newly constructed plant to the operations team of the client. A punch list of a few remaining construction items was developed and those items completed. The office in Catamarca was closed, the office in Buenos Aires archived all the project documents, and the

Chilean office was already working next project. The accounting books were reconciled and closed, final reports written and distributed, and the project manager started on a new project.

**Source: Project Management, The Open University of Hong Kong, pp 39-40.**

## 1.8 Project Life Cycle Path

The life cycle of a project from start to completion follows either a “S” shaped path or a “J” shaped path (Figure 2 and 3). In “S” shape path the progress is slow at the starting and terminal phase and is fast in the implementation phase. For example, implementation of watershed project. At the beginning detailed sectoral planning and coordination among various implementing agencies etc. makes progress slow and similarly towards termination, creating institutional arrangement for transfer and maintenance of assets to the stakeholders progresses slowly.

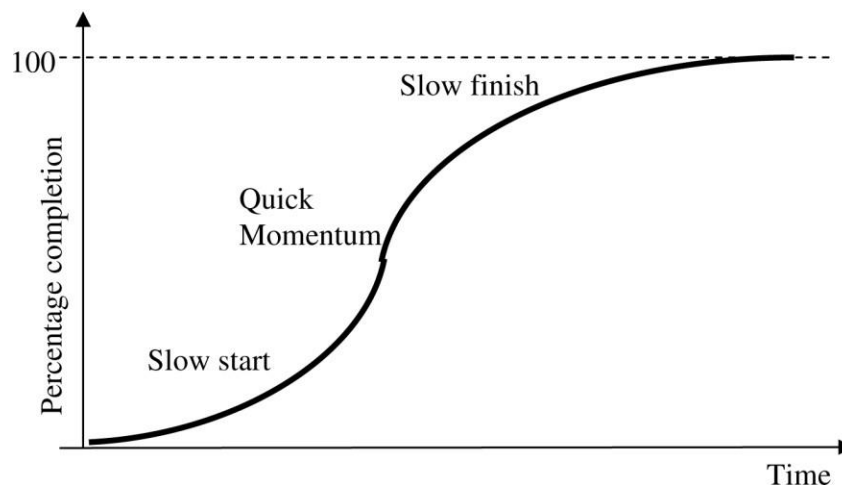


Figure 2. Project life path – “S” shape

In “J” type cycle path the progress in beginning is slow and as the time moves on the progress of the project improves at fast rate. Example, in a developing an energy plantation. In this the land preparation progresses slowly and as soon as the land and seedling are transplantation is under taken. This is shown in figure 3.

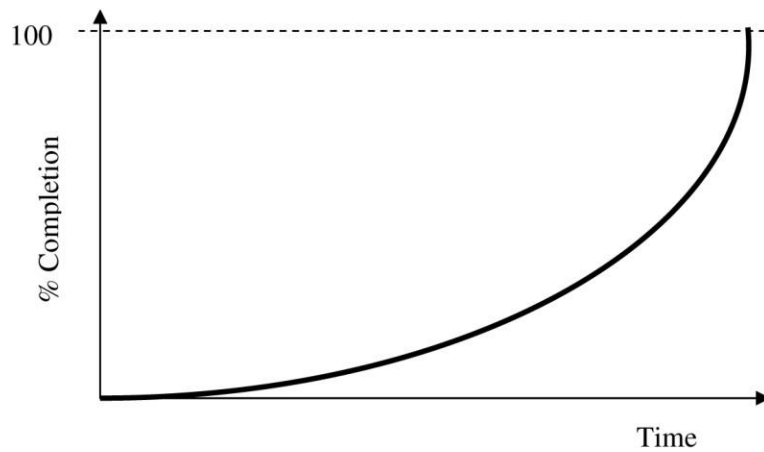


Figure 3. Project life cycle path - “J” Shape

## 2. Project Identification

Project identification is the process of brainstorming, analyzing, and selecting a project to initiate as a preliminary step before the first phase of the project life cycle begins. In many cases, the individual responsible for identifying and pursuing a new project is also responsible for creating the project proposal. This proposal generally contains a final goal, cost and time estimates, and a list of tasks and activities to be completed.

### 2.1 Features of Project Identification

Important features of project identification as follows:

- (i) **Initial Stage:** It is the very first step in the project management process, preceding planning and execution.
- (ii) **Identifying Needs:** The goal is to pinpoint a specific need, problem, or opportunity that the project aims to address.
- (iii) **Preliminary Proposal:** The outcome of project identification is often a project proposal or business case, which outlines the project's purpose, goals, and initial scope.
- (iv) **Data Collection and Analysis:** It involves gathering, compiling, and analyzing relevant information to understand the situation and identify potential solutions.
- (v) **Feasibility Assessment:** Project identification helps determine the feasibility of a project by assessing its potential benefits, risks, and resources.
- (vi) **Stakeholder Involvement:** Identifying and understanding the needs, expectations, and priorities of stakeholders is crucial during this phase.

## 2.2 Important Tasks in Project Identification

Following are important tasks of project identification:

- (i) **Needs Assessment:** Conduct surveys, interviews, or other methods to understand the specific needs or problems that the project aims to address.
- (ii) **Stakeholder Identification:** Identify all individuals or groups who will be affected by or have an interest in the project.
- (iii) **Goal Setting:** Define the objectives and desired outcomes of the project.
- (iv) **Resource Analysis:** Assess the resources (financial, human, technical) available or required for the project.
- (v) **Feasibility Study:** Conduct a preliminary assessment of the project's viability based on factors like cost, time, and technical capabilities.
- (vi) **Project Prioritization:** Evaluate and prioritize project ideas based on their potential impact and alignment with organizational goals.
- (vii) **Project Scope Definition:** Define the boundaries and deliverables of the project.
- (viii) **Documentation:** Create a project proposal or business case that summarizes the findings of the project identification phase.

## 2.3 Stages of Project Identification

The stages of project identification are mentioned below:

- (1) **Brainstorming:** Every idea is valid during the initial brainstorm session, and we shall figure out which ones are feasible and worthwhile in the following steps.
- (2) **Initiation:** Experienced PMs use this stage to develop an initial project brief or scope, but it will likely undergo some revisions in the latter stages of the process.
- (3) **Feasibility analysis:** Project feasibility analysis is usually performed following its own multi-step process. Some of the common steps include:
  - Analyzing the validity of the project as a whole
  - Outlining the resources necessary to complete the project
  - Researching the market to confirm the need for your project
  - Organizing individual project tasks, activities, milestones, and goals
  - Collecting feedback from team members and project stakeholders
  - Making a final decision on whether or not to move forward with the project



The feasibility analysis is an invaluable tool when trying to determine if it is worth the time and effort to move forward with any project ideas.

(4) **Project scheduling:** Once you have decided to move forward with a project, the next step is to schedule the individual tasks that comprise the project as a whole. To do this, create a list of activities that all lead to an ultimate goal. Provide an estimated timeframe for each task and assign responsibilities to teammates as appropriate.

(5) **Risk analysis:** Every project carries some amount of risk. Some common risks include:

- Scope risks
- Performance-based risks
- External hazards
- Technological risks
- Operational risks
- Communication issues
- Budgeting and cost risks
- Lack of necessary skills amongst teammates

Since every project is different, it only makes sense that some of the exact risks involved will differ as well. It's critical to use the project identification process to identify specific risks and how they could affect your project.

(6) **Close-out:** This is the final stage before pursuing project approval. Use this phase to review the resource and time estimations you've made thus far and try to ensure they are as accurate as possible. Not only will this make the entire process smoother and more efficient, but it will save you from not having enough—or having too many—resources assigned to the project at hand.

(7) **Project approval:** The final step before moving forward with your project is to gain the approval of key project stakeholders. If you've been diligent with the project identification process up to this point, most proposed projects should be approved with few, if any, unexpected complications.

### 3. Project Planning

Planning begins with well-defined objectives. The project team may be drawn from several organizational departments, e.g., engineering, production, marketing, and accounting. Project definition involves identifying the controllable and uncontrollable variables involved, and establishing project boundaries. Performance criteria should relate to the project objectives, which

are often evaluated in terms of time,  
cost, and resource utilisation.

Project planning is at the heart of the project life cycle, and tells everyone involved in the project. The planning phase is when the project plans are documented, the project deliverables and requirements are defined, and the project schedule is created. It involves creating a set of plans to help guide your team through the implementation and closure phases of the project. The plans created during this phase will help you manage time, cost, quality, changes, risk, and related issues. Project team will also help control staff and external suppliers to ensure the delivery of the project on time, within budget, and within schedule.

### 3.1 Objectives of Project Planning

Project planning outlines the "what, how, when, and who" of a project, providing a structured approach to execution.

- It establishes business requirements.
- It establishes cost, schedule, list of deliverables, and delivery dates.
- It establishes resources plans.
- It obtains management approval and proceed to the next phase.

### 3.2 Processes of Project Planning

The basic processes of project planning are:

- (i) **Scope of planning:** It specifying the in-scope requirements for the project to facilitate creating the work breakdown structure.
- (ii) **Preparation of the work breakdown structure:** It spelling out the breakdown of the project into tasks and sub-tasks.
- (iii) **Project schedule development:** It listing the entire schedule of the activities and detailing their sequence of implementation.
- (iv) **Resource planning:** It indicating who will do what work, at which time, and if any special skills are needed to accomplish the project tasks.
- (v) **Budget planning:** It specifying the budgeted cost to be incurred at the completion of the project.
- (vi) **Procurement planning:** It focusing on vendors outside your company and subcontracting.
- (vii) **Risk management:** It planning for possible risks and considering optional contingency plans and mitigation strategies.
- (viii) **Quality planning:** It assessing quality criteria to be used for the project.

- (ix) **Communication planning:** It designing the communication strategy with all project stakeholders.

When articulating the project objectives you should follow the SMART rule:

- **Specific** – get into the details. Objectives should be specific and written in clear, concise, and understandable terms.
- **Measurable** – use quantitative language. You need to know when you have successfully completed the task.
- **Acceptable** – agreed with the stakeholders.
- **Realistic** – in terms of achievement. Objectives that are impossible to accomplish are not realistic and not attainable. Objectives must be centered in reality.
- **Time based** – deadlines not durations. Objectives should have a time frame with an end date assigned to them.

### 3.3 Elements of Project Planning

Elements of project planning are given below:

- Objectives:** Defining what the project aims to achieve.
- Scope:** Identifying the boundaries of the project, including tasks and deliverables.
- Timeline:** Establishing a schedule with start and end dates for each task and milestone.
- Resources:** Determining the resources (personnel, budget, equipment, etc.) needed for the project.
- Activities:** Breaking down the project into smaller, manageable tasks.
- Risk Management:** Identifying and planning for potential risks and challenges.

### 3.4 Benefits of Project Planning

Important benefits of project planning are mentioned below:

- Improved Organization:** Project planning helps to stay organized and on track, ensuring that all tasks are completed on time and within budget.
- Enhanced Communication:** A well-defined plan facilitates better communication among team members and stakeholders.
- Increased Success Rate:** By outlining the project's goals, scope, and timeline, project planning increases the likelihood of successful project completion.

- (iv) **Better Resource Allocation:** Planning helps to identify and allocate resources effectively, ensuring that the right resources are available at the right time.
- (v) **Reduced Risks:** By identifying potential risks early on, project planning allows for proactive measures to be taken to mitigate them.

## 4. Project Formulation

‘Project Formulation’ is the processes of presenting a project idea in a form in which it can be subjected to comparative appraisals for the purpose of determining in definitive terms the priority that should be attached to a project under severe resource constraints.

### Objective of Project Implementation

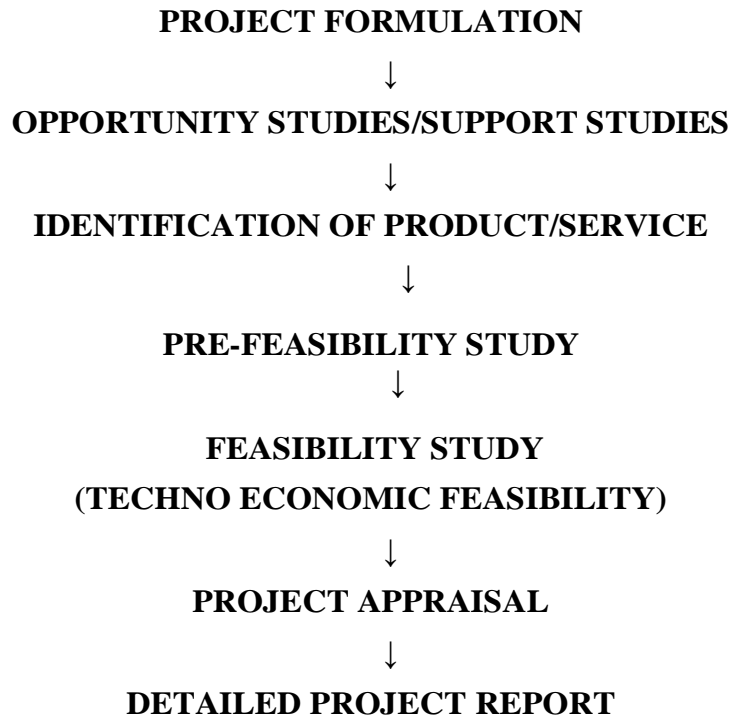
- (i) **Achieving Project Objectives:** Implementation is the bridge between planning and achieving the desired project outcomes.
- (ii) **Staying on Track:** Effective implementation helps ensure that projects stay within scope, budget, and timeline.
- (iii) **Managing Risks:** Identifying and addressing potential problems early on can prevent major issues from arising.
- (iv) **Improving Communication:** Clear and consistent communication helps keep all stakeholders informed and aligned.
- (v) **Ensuring Quality:** Implementation focuses on delivering high-quality deliverables that meet the requirements of the project.

### 4.1 Steps of Project Formulation

The formulation of a good project proposal is not an easy task. It requires a lot of exercise on the part of proposal formulator both before and during the preparation of project proposal. Before writing a project proposal, the project coordination or institution has to take care of following pre- project formulation aspects.

Project Formulation involves the following steps:

Figure 1. Project Formulation –Schematic view



### **Step 1: Opportunity Studies**

An opportunity study identifies investment opportunities and is normally undertaken at macro level by agencies involved in economic planning and development. In general opportunity studies there are three types of study – Area Study, sectoral and Sub-sectoral Studies and Resource Based Studies. Opportunity Studies and Support studies provide sound basis for project identification.

### **Step 2: Identification of Product/Service**

Identifying a product or service involves defining and understanding its core purpose, target audience, and unique value proposition. This process helps businesses clearly define their offerings and differentiate them from competitors. Products are generally tangible goods, while services are intangible, and the distinction between them can be blurred.

### **Step 3: Pre-feasibility Studies**

A pre-feasibility study should be viewed as an intermediate stage between a project opportunity study and a detailed feasibility study, the difference being primarily the extent of details of the information obtained. It is the process of gathering facts and opinions pertaining to the project. This information is then vetted for the purpose of tentatively determining whether the project idea is worth pursuing furthering. Pre-feasibility study lays stress on assessing market potential, magnitude of investment, technical feasibility, financial analysis, risk analysis etc. The breadth and depth of pre-feasibility depend upon the time available and the confidence of the decision maker. Pre-feasibility studies help in preparing a project profile for presentation to various stakeholders including funding agencies to

solicit their support to the project. It also throws light on aspects of the project that are critical in nature and necessitate further investigation through functional support studies.

Support studies are carried out before commissioning pre-feasibility or a feasibility study of projects requiring large-scale investments. These studies also form an integral part of the feasibility studies. They cover one or more critical aspects of project in detail. The contents of the Support Study vary depending on the nature of the study and the project contemplated. Since it relates to a vital aspect of the project the conclusions should be clear enough to give a direction to the subsequent stage of project preparation.

#### **Step 4: Feasibility Study**

Feasibility Study forms the backbone of Project Formulation and presents a balanced picture incorporating all aspects of possible concern. The study investigates practicalities, ways of achieving objectives, strategy options, methodology, and predict likely outcome, risk and the consequences of each course of action. It becomes the foundation on which project definition and rationale will be based so that the quality is reflected in subsequent project activity. A well conducted study provides a sound base for decisions, clarifications of objectives, logical planning, minimal risk, and a successful cost-effective project. Assessing feasibility of a proposal requires understanding of the STEEP factors. These are as under Social, Technological, Ecological, Economic, and Political.

A feasibility study is not an end in itself but only a means to arrive at an investment decision. The preparation of a feasibility study report is often made difficult by the number of alternatives (regarding the choice of technology, plant capacity, location, financing etc.) and assumptions on which the decisions are made. The project feasibility studies focus on

- Economic and Market Analysis
- Technical Analysis
- Market Analysis
- Financial Analysis
- Economic Benefits
- Project Risk and Uncertainty
- Management Aspects

(Detail discussion is in next unit)

#### **Step 5: Project Appraisal**

Project appraisal is a comprehensive evaluation process used to assess the feasibility, viability, and potential of a proposed project before it's implemented. It involves analyzing various aspects like economic, financial, technical, social, management, and environmental factors. Essentially, project

appraisal determines if a project is worthwhile and if resources should be allocated to it.

Project appraisal is crucial for making informed decisions about whether to invest in a project, as it assesses its viability and potential success. It helps identify risks, resource needs, and potential benefits, ensuring that resources are allocated effectively and that projects align with organizational goals. By evaluating different aspects like market, technical, financial, and social factors, appraisal supports better decision-making and improves project implementation.

#### **Step 6: Detailed Project Report (DPR)**

A Detailed Project Report (DPR) is a comprehensive document outlining all aspects of a proposed project, serving as a roadmap for stakeholders and decision-makers. It provides a detailed analysis of the project's feasibility, scope, potential outcomes, and implementation plan. Essentially, it's a blueprint for project execution and helps ensure the project is viable and sustainable.

The major aspects are mentioned in a DPR:

- (i) Sector background context & broad project rationale
- (ii) Project definition, concept and scope
- (iii) Project cost
- (iv) Project institution framework
- (v) Project financial structuring
- (vi) Project phasing
- (vii) Project O&M framework and planning
- (viii) Project financial viability/sustainability
- (ix) Project benefits assessments

## MCQs

1. Which one of the following are the characteristics of Project Mindset?
  - (a) Time, Responsiveness, Information sharing, Processes, structured planning
  - (b) Time, Project management, Information sharing, Processes, structured planning
  - (c) Time, Responsiveness, Information sharing, capability, structured planning
  - (d) Time, Responsiveness, Information sharing, Processes, project planning

**Answer (b)**

2. What is the primary purpose of project evaluation?
  - (a) To determine if the project meets its objectives and goals.
  - (b) To track progress and monitor the project's performance.
  - (c) To identify lessons learned and areas for improvement in future projects.
  - (d) All of the above.

**Answer: (d)**

3. Which of the following is NOT a key step in the project evaluation process?
  - (a) Defining evaluation objectives
  - (b) Collecting data
  - (c) Implementing changes
  - (d) Writing the report

**Answer: (c)**

4. Which is the first stage in the project management model?
  - (a) Understanding the project environment
  - (b) Project definition
  - (c) Project control
  - (d) Project planning

**Answer (a)**

5. Which one is the key feature of project management?
  - (a) Project
  - (b) Project Manager
  - (c) Project Planning
  - (d) All of the above

**Answer: (b)**

6. Design phase of a project consists of
  - (a) Input received
  - (b) Output received
  - (c) Both (A) and (B)



(d) None of the above

**Answer (a)**

7. Following are the phases of Project Management Life Cycle. Arrange them in correct order: 1. Design, 2. Marketing, 3. Analysis and evaluation, 4. Inspection, testing and delivery.

(a) 3-2-1-4

(b) 1-2-3-4

(c) 2-3-1-4

(d) 4-3-2-1

**Answer (b)**

8. Which from the following represents the correct project cycle?

(a) Planning→ Initiating→ Executing→ Closing

(b) Planning→ Executing→ Initiating→ Closing

(c) Initiating→ Planning→ Executing→ Closing

(d) Initiating→ Executing→ Planning→ Closing

**Answer: (c)**

9. Project selection criteria are typically classified as:

(a) Financial and non-financial

(b) Short-term and long-term

(c) Strategic and tactical

(d) Required and optional

**Answer: (a)**

10. Project performance consists of

(a) Time

(b) Cost

(c) Quality

(d) All of the above

**Answer: (d)**

## **Unit 2:**

# **Project Selection, Feasibility Studies and Project Appraisal**

### **Contents**

- Project Selection
  - Benefits of Project Selection
  - Role of Project Manager in Project Selection
  - Project Selection Criteria
  - Project Evaluation Factors
  - Types of Project Selection Models
- Feasibility Study
- Project Appraisal

### **2.1. Introduction**

A project in the economic sense directly or indirectly adds to the economy of the Nation. However, an introspection of the project performance clearly indicates that the situation is far from satisfactory. Most of the major and critical projects in public sector that too in crucial sectors like irrigation, agriculture, and infrastructure are plagued by tremendous time and cost overruns. Even in the private sector the performance is not all that satisfactory as is evident from the growing sickness in industry and rapid increase in non-performing assets (NPAS) of Banks and Financial Institutions. The reasons for time and cost overruns are several and they can be broadly classified under-technical, financial, procedural and managerial. Most of these problems mainly stem from inadequate project formulation and haphazard implementation.

### **2.2. Project Selection**

Project selection is the process of choosing which projects to pursue based on criteria such as organizational goals, available resources, budget, and expected outcomes. It involves evaluating different project proposals to prioritize projects that align with the organization's objectives and offer the highest value or return on investment.

Effective project selection considers the impact of each project on the organization's operations, stakeholders, and market position. It requires collaboration from various stakeholders to ensure a

strategic and analytical approach to identifying opportunities that drive growth and achieve organizational success.

The project selection process involves assessing the feasibility and potential benefits of various project ideas. This evaluation is typically conducted by individuals such as project portfolio managers, program managers, or the project management office (PMO).

Successful project selection leads to a higher return on investment (ROI), which is crucial for achieving financial success in any project endeavor.

### 2.2.1 Benefits of Project Selection

Important benefits of project selection are as follows:

- (i) **Increase Success Rates:** Effective project selection significantly boosts the likelihood of project success by focusing on viable, well-aligned initiatives and minimizing the chances of failure due to poor planning, inadequate resources, or misalignment with organizational goals
- (ii) **Optimize Resource Allocation:** By prioritizing and selecting the right projects, organizations can allocate their resources—including financial, human, and material resources—more efficiently and effectively, maximizing the return on investment and minimizing waste
- (iii) **Risk Management:** Risk Management can help organizations to carefully do project selection to identify and evaluate potential risks connected with various projects, allowing them to make smart decisions and adopt risk mitigation techniques to reduce negative outcomes
- (iv) **Enhance Financial Performance:** Selecting projects based on their potential return on investment, net present value and other financial metrics can lead to improved financial performance, increased profitability, and enhanced shareholder value
- (v) **Improve Decision-making:** Utilizing structured and data-driven project selection methods and criteria helps organizations make more informed, objective, and consistent decisions, reducing biases and subjectivity in the decision-making process
- (vi) **Stakeholder Satisfaction:** Selecting and prioritizing projects that align with stakeholders' interests, expectations, and needs can increase stakeholder satisfaction, engagement, and support for organizational initiatives

### 2.2.2 Role of Project Manager in Project Selection

The project manager plays a pivotal role in project selection, acting as a strategic gatekeeper and champion.

- (i) **Identifying Opportunities:** Project managers actively seek and identify potential opportunities aligning with organizational goals and strategic objectives.

- (ii) **Feasibility Assessment:** They conduct preliminary assessments to evaluate the feasibility of proposed projects, considering factors such as technical requirements, resource availability, and potential risks.
- (iii) **Project Proposal Development:** Project managers assist in developing detailed project proposals, outlining objectives, scope, deliverables, timelines, and resource requirements.
- (iv) **Data Collection and Analysis:** They gather and analyze relevant data, metrics, and information to assess the potential impact, benefits, and ROI of proposed projects.
- (v) **Stakeholder Engagement:** Project managers engage with stakeholders, subject matter experts, and cross-functional teams to gather insights, feedback, and perspectives during the project selection process.
- (vi) **Prioritization and Recommendation:** Based on evaluations and analyses, project managers prioritize project proposals and make recommendations to senior management or decision-making committees for final approval.
- (vii) **Alignment with Organizational Strategy:** They ensure that selected projects align with the organization's strategic goals, priorities, and available resources.
- (viii) **Risk Assessment and Mitigation:** Project managers identify potential risks and challenges associated with proposed projects and develop mitigation strategies to address them effectively.
- (ix) **Documentation and Reporting:** They maintain documentation of the project selection process, decisions, and outcomes and provide regular updates and reports to stakeholders and management as required.

### 2.2.3 Project Selection Criteria

Project selection is the process of evaluating proposed projects or groups of projects, and then choosing to implement some set of them so that the objectives of the parent organization will be achieved. This same systematic process can be applied to any area of the organization's business in which choices must be made between competing alternatives. For example, a manufacturing firm can use evaluation/selection techniques to choose which machine to adopt in a part-fabrication process; a TV station can select which of several syndicated comedy shows to rerun in its 7:30 p.m. weekday time-slot; a construction firm can select the best subset of a large group of potential projects on which to bid; or a hospital can find the best mix of psychiatric, orthopedic, obstetric, and other beds for a new wing. Each project will have different costs, benefits, and risks. Rarely are these known with certainty. In the face of such differences, the selection of one project out of a set is a difficult task. Choosing a number of different projects, a portfolio, is even more complex.

When a firm chooses a project selection model, the following criteria, based on Souder (1973), are most important.

**1. *Realism*:** The model should reflect the reality of the firm's decision situation, especially the multiple objectives of both the firm and its managers, bearing in mind that without a common measurement system, direct comparison of different projects is impossible. The model should also take into account the realities of the firm's limitations on facilities, capital, personnel, and so forth, and include factors that reflect project technical and market risks: performance, cost, time, customer rejection, and implementation.

**2. *Capability*:** The model should be sophisticated enough to deal with the relevant factors: multiple time periods, situations both internal and external to the project (e.g., strikes, interest rate changes), and so on.

**3. *Flexibility*:** The model should give valid results within the range of conditions that the firm might experience. It should be easy to modify in response to changes in the firm's The project selection process is typically orchestrated by a collaborative team comprising project managers, the Project Management Office (PMO), executive leadership, cross-functional departments, stakeholders, subject matter experts, and finance teams, environment; for example, tax law changes, new technological advancements that alter risk levels, and, above all, organizational goal changes.

**4. *Ease of use*:** The model should be reasonably convenient, not take a long time to execute, and be easy to use and understand. It should not require special interpretation, data that are difficult to acquire, excessive personnel, or unavailable equipment.

**5. *Cost*:** Data-gathering and modeling costs should be low relative to the cost of the project and less than the potential benefits of the project. All costs should be considered, including the costs of data management and of running the model.

**6. *Easy computerization*:** It should be easy and convenient to gather and store the information in a computer database, and to manipulate data in the model through use of a widely available, standard computer package such as Excel®.

#### **2.2.4 Project Evaluation/Selection Factors**

Following are the project evaluation factors:

##### **Production Factors**

1. Time until ready to install
2. Length of disruption during installation
3. Learning curve—time until operating as desired
4. Effects on waste and rejects

5. Energy requirements
6. Facility and other equipment requirements
7. Safety of process
8. Other applications of technology
9. Change in cost to produce a unit output
10. Change in raw material usage
11. Availability of raw materials
12. Required development time and cost
13. Impact on current suppliers
14. Change in quality of output

### **Marketing Factors**

1. Size of potential market for output
2. Probable market share of output
3. Time until market share is acquired
4. Impact on current product line
5. Consumer acceptance
6. Impact on consumer safety
7. Estimated life of output
8. Spin-off project possibilities

### **Financial Factors**

1. Profitability, net present value of the investment
2. Impact on cash flows
3. Payout period
4. Cash requirements
5. Time until break-even
6. Size of investment required
7. Impact on seasonal and cyclical fluctuations

### **Personnel Factors**

1. Training requirements
2. Labor skill requirements
3. Availability of required labor skills
4. Level of resistance from current work force
5. Change in size of labor force
6. Inter- and intra-group communication requirements

7. Impact on working conditions

#### **Administrative and Miscellaneous Factors**

1. Meet government safety standards
2. Meet government environmental standards
3. Impact on information system
4. Reaction of stockholders and securities markets
5. Patent and trade secret protection
6. Impact on image with customers, suppliers, and competitors
7. Degree to which we understand new technology
8. Managerial capacity to direct and control new process

(Source: Jack R. Meredith and Samuel J. Mantel, Jr., Project Management, A Managerial Approach, p 40-44)

#### **2.2.5 Types of Project Selection Models**

Two basic types of project selection models (numeric and nonnumeric), nonnumeric models are older and simpler.

##### **Non-numeric project selection models:**

Non-numeric project selection models use subjective, qualitative criteria rather than numerical data to evaluate projects. Examples include the "Sacred Cow" model, where projects are selected based on their importance to high-level stakeholders, and the "Operating Necessity" model, where projects are chosen due to their strategic or operational requirements. These models help organizations prioritize projects based on strategic alignment and operational needs.

- Sacred Cow Model:** This model prioritizes projects that are considered vital or essential by high-level stakeholders, often regardless of their financial viability. The name "sacred cow" reflects the idea that these projects are often protected from rigorous evaluation due to their perceived importance.
- Operating Necessity Model:** This model focuses on projects that are deemed necessary for the organization's operations or to address specific strategic objectives. These projects are often selected based on their direct impact on the company's bottom line or their ability to meet regulatory requirements.
- Competitive Necessity Model:** This model considers projects that are needed to stay competitive in the market or to respond to changes in the industry. Projects are selected based on their ability to help the organization maintain or improve its competitive position.
- Product Line Extension Model:** This model focuses on projects that extend or improve existing product lines. Projects are selected based on their potential to increase market share or enhance

the organization's product portfolio.

### **Numeric project selection models:**

Numeric models, also known as quantitative models, use financial and other numerical data to evaluate and select projects. These models are used to make informed decisions on whether a project is financially viable and worth undertaking. Examples include profitability models like Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period, as well as scoring models that evaluate projects based on various criteria, including weighted scoring models.

### **Profitability Models:**

- (i) **Net Present Value (NPV):** Calculates the present value of future cash inflows minus the initial investment. Projects with a positive NPV are generally considered profitable.
- (ii) **Internal Rate of Return (IRR):** The discount rate at which the NPV of a project is zero. A higher IRR is generally preferred.
- (iii) **Payback Period:** The time it takes for a project to recoup its initial investment. A shorter payback period is usually desirable.
- (iv) **Profitability Index (PI):** The ratio of the present value of future cash inflows to the initial investment. A PI greater than 1 indicates a profitable project.

### **Scoring Models:**

- (i) **Unweighted Scoring Models:** Assign equal importance to different factors when evaluating projects.
- (ii) **Weighted Scoring Models:** Give different weights to different factors, reflecting their relative importance.
- (iii) **Constrained Weighted Scoring Models:** Apply constraints or limitations to the project selection process, such as budget constraints or resource limitations.

### **Benefits of using numeric models:**

- (a) **Objectivity:** Numeric models provide a more objective and data-driven approach to project selection compared to subjective assessments.
- (b) **Comparison:** They allow for easy comparison of different project alternatives based on numerical criteria.
- (c) **Financial Viability:** They help assess the financial viability of projects and ensure that



projects are likely to generate a return on investment.

- (d) **Decision Support:** They provide decision support for project selection, helping organizations make informed decisions about which projects to pursue.

**Limitations of numeric models:**

- (a) **Oversimplification:** Numeric models can sometimes oversimplify complex project realities and may not fully capture all relevant factors.
- (b) **Subjectivity:** Even in scoring models, subjective judgments may be needed to determine the weights assigned to different factors.
- (c) **Uncertainty:** Future cash flows and other data used in the models may be subject to uncertainty, which can affect the accuracy of the results.

### **2.3. Feasibility Study**

A feasibility study is a comprehensive analysis of a proposed project to assess its viability and potential for success. It examines various factors, including economic, technical, legal, and operational aspects, to determine if the project is practical and worthwhile. The goal is to identify potential problems early on and make informed decisions about whether to proceed with the project.

The project feasibility studies focus on:

- Economic and Market Analysis
- Technical Analysis
- Market Analysis
- Financial Analysis
- Economic Benefits
- Project Risk and Uncertainty
- Management Aspects

**(i) Economic and Market Analysis**

In the recent years the market analysis has undergone a paradigm shift. The demand forecast and projection of demand supply gap for products / services can no longer be based on extrapolation of past trends using statistical tools and techniques. One has to look at multiple parameters that influence the market. Demand projections are to be made keeping in view all possible developments. Review of the projects executed over the years suggests that many projects have failed not because of technological and financial problems but mainly because of the fact that the projects ignored customer requirements and market forces.

In market analysis a number of factors need to be considered covering – product specifications, pricing, channels of distribution, trade practices, threat of substitutes, domestic and international competition, opportunities for exports etc. It should aim at providing analysis of future market scenario so that the decision on project investment can be taken in an objective manner keeping in view the market risk and uncertainty.

**(ii) Technical Analysis**

Technical analysis is based on the description of the product and specifications and also the requirements of quality standards. The analysis encompasses available alternative technologies, selection of the most appropriate technology in terms of optimum combination of project components, implications of the acquisition of technology, and contractual aspects of licensing. Special attention is given to technical dimensions such as in project selection. The technology chosen should also keep in view the requirements of raw materials and other inputs in terms of quality and should ensure that the cost of production would be competitive.

In brief the technical analysis included the following aspects:

|                |                          |
|----------------|--------------------------|
| Technology     | Availability             |
|                | Alternatives             |
|                | Latest / state-of-art    |
|                | Other implications       |
| Plant capacity | Market demand            |
|                | Technological parameters |
| Inputs         | Raw materials            |
|                | Components               |
|                | Power                    |
|                | Water                    |
|                | Fuel                     |
|                | Others                   |

- Availability skilled man power
- Location
- Logistics
- Environmental consideration – pollution, etc.,
- Requirement buildings/ foundation Other relevant details

### **(iii) Environmental Impact Studies:**

All most all projects have some impact on environment. Current concern of environmental quality requires the environmental clearance for all projects. Therefore, environ impact analysis needs to be undertaken before commencement of feasibility study.

#### **Objectives of Environmental Impact Studies:**

- To identify and describe the environmental resources/values (ER/Vs) or the environmental attributes (EA) which will be affected by the project (in a quantified manner as far as possible).
- To describe, measure and assess the environmental effects that the proposed project will have on the ER/Vs.
- To describe the alternatives to the proposed project which could accomplish the same results but with a different set of environmental effects

The environmental impact studies would facilitate providing necessary remedial measures in terms of the equipments and facilities to be provided in the project to comply with the environmental regulation specifications.

### **(iv) Financial Analysis**

The Financial Analysis, examines the viability of the project from financial or commercial considerations and indicates the return on the investments. Some of the commonly used techniques for financial analysis are as follows.

- (a) Pay-back period
- (b) Return on Investment (ROI)
- (c) Net Present Value (NPV)
- (d) Profitability Index (PI)/Benefit Cost Ratio
- (e) Internal Rate of Return (IRR)

#### **(a) Pay-back Period**

The PBP method is the simplest way to budget for a new project. It measures the amount of time it will take to earn enough cash inflows from your project to recover what you invested. It is the most popular and widely recognized traditional methods of evaluating the investment proposals. It can be defined as the number of years to recover the original capital invested in a project. According to Weston and Brigham, the PBP is the number of years it takes for the firm to recover its original investment by net returns before depreciation, but after taxes:

- **When cash flows are uniform:** If the proposed project's cash inflows are uniform the following formula can be used to calculate the payback period.

$$\text{Payback Period} = \text{Annual Cash Inflows} / \text{Initial Investment}$$

- **When cash flows are not uniform**

When the project's cash inflows are not uniform, but vary from year-to-year payback period is calculated by the process of cumulating cash inflows till the time when cumulative cash flows become equal to the original investment outlay.

### Example 1 (Uniform annual return)

A farmer has invested about Rs. 20,000/- in constructing a fish pond and gets annual net return of Rs.5,000/- (difference between annual income and expenditure). The payback period for the project is 4 years (20000/ 5000).

### Example 2. (Varying annual return)

In a project Rs.1,00,000/- an initial investment of establishing a horticultural orchard. The annual cash flow is as under.

| Time                                 | Annual Income | Annual Expenditure | Annual return | Cumulative return |
|--------------------------------------|---------------|--------------------|---------------|-------------------|
| 1st Year                             | 60,000        | 30,000             | 30,000        | 30,000            |
| 2nd Year                             | 70,000        | 30,000             | 40,000        | 70,000            |
| 3rd Year                             | 85,000        | 25,000             | 60,000        | 1,30,000          |
| Pay-back period = Two and half years |               |                    |               |                   |

### Example 3

Pioneer Ltd. is considering two mutually-exclusive projects. Both require an initial cash outlay of ₹ 10,000 each for machinery and have a life of 5 years. The company's required rate of return is 10% and it pays tax at 50%. The projects will be depreciated on a straight-line basis. The net cash flows (before taxes) expected to be generated by the projects and the present value (PV) factor (at 10%) are as follows:

|                           | 2017<br>(Year 1) | 2018<br>(Year 2) | 2019<br>(Year 3) | 2020<br>(Year 4) | 2021<br>(Year 5) |
|---------------------------|------------------|------------------|------------------|------------------|------------------|
| <b>Project 1 (₹)</b>      | 4000             | 4000             | 4000             | 4000             | 4000             |
| <b>Project 2 (₹)</b>      | 6000             | 3000             | 3000             | 5000             | 5000             |
| <b>PV factor (at 10%)</b> | 0.909            | 0.826            | 0.751            | 0.683            | 0.621            |

You are required to calculate the Pay Back Period of each project.

**Solution:**

(₹)

**Pay Back Periods of Project - 1**

| Year                  | 2017<br>(Year 1) | 2018<br>(Year 2) | 2019<br>(Year 3) | 2020<br>(Year 4) | 2021<br>(Year 5) |
|-----------------------|------------------|------------------|------------------|------------------|------------------|
| Cash Flows            | 4000             | 4000             | 4000             | 4000             | 4000             |
| Less: Depreciation    | 2000             | 2000             | 2000             | 2000             | 2000             |
| EBT                   | 2000             | 2000             | 2000             | 2000             | 2000             |
| Less: Tax at 50%      | 1000             | 1000             | 1000             | 1000             | 1000             |
| Net Income            | 1000             | 1000             | 1000             | 1000             | 1000             |
| Cash flows after tax  | 3000             | 3000             | 3000             | 3000             | 3000             |
| Cumulative cash flows | 3000             | 6000             | 9000             | 12000            | 15000            |

Pay Back period would be the time when initial investment is recovered in cash. The investment is ₹ 10000. Payback period would be between 3 and 4 years.

$$\begin{aligned}
 \text{Payback Period} &= 3 + \frac{10000 - 9000}{9000} \\
 &= 3.11 \text{ years}
 \end{aligned}$$

(₹)

| Pay Back Periods of Project - 2 |                  |                  |                  |                  |                  |
|---------------------------------|------------------|------------------|------------------|------------------|------------------|
| Year                            | 2017<br>(Year 1) | 2018<br>(Year 2) | 2019<br>(Year 3) | 2020<br>(Year 4) | 2021<br>(Year 5) |
| Cash Flows                      | 6000             | 3000             | 2000             | 5000             | 5000             |
| Less: Depreciation              | 2000             | 2000             | 2000             | 2000             | 2000             |
| EBT                             | 4000             | 1000             | 0                | 3000             | 3000             |
| Less: Tax at 50%                | 2000             | 500              | 0                | 1500             | 1500             |
| Net Income                      | 2000             | 500              | 0                | 1500             | 1500             |
| Cash flows after tax            | 4000             | 2500             | 2000             | 3500             | 3500             |
| Cumulative cash flows           | 4000             | 6500             | 8500             | 1200             | 15500            |

Payback period would be between 3 and 4 years.

$$\begin{aligned}
 \text{Payback Period} &= 3 + \frac{10000 - 8500}{3500} \\
 &= 3.43 \text{ years}
 \end{aligned}$$

The drawback in this method is that it ignores any return received after the payback period and assumes equal value for the income and expenditure irrespective of the time. It is also possible that projects with high return on investments beyond the pay-back period may not get the deserved importance i.e., two projects having same pay-back period – one giving no return and the other providing large return after pay-back period will be treated equally, which is logically not correct.

### (b) Return on Investment (ROI)

Return on investment (ROI) is a performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments. A 20% ROI means that the investment has generated a 20% return on the initial amount invested.

The ROI is the annual return as percentage of the initial investment and is computed by dividing the annual return with investment.

When return is uniform, ROI is as follows:

For example, the ROI of the fish ponds is  $(Rs.5000/Rs.10,000) \times 100 = 50\%$ .

When the return is not uniform the average of annual returns over a period is used.

For horticultural orchard average return is  $(Rs.1,30,000/3) = 43333$ .  $ROI = (43333/100000) \times 100 = 43.3 \%$ .

Computation of ROI also suffers from similar limitation as of pay-back period. It does not differentiate between two projects one yielding immediate return (lift irrigation project) and another project where return is received after some gestation period say about 2-3 years (developing new variety of crop).

Both the pay-back period and ROI are simple ones and more suited for quick analysis of the projects and sometimes provide inadequate measures of project viability. It is desirable to use these methods in conjunction with other discounted cash flow methods such as Net Present Value (NPV), Internal Rate of Return (IRR) and Benefit-Cost ratio.

### **Discounted Cash Flow Analysis:**

The principle of discounting is the reverse of compounding and takes the value of money over time. To understand this let us take an example of compounding first. Assuming return of 10 %, Rs 100 would grow to Rs110/- in the first year and Rs 121 in the second year. In a reverse statement, at a discount rate of 10% the return of `110 in the next year is equivalent to Rs100 at present. In other words, the present worth of next year's return at a discount rate 10 % is only Rs.90.91 i.e.,  $(100/110)$ . Similarly Rs121 in the second year worth Rs 100/- at present or the present value of a return after two years is Rs. 82.64  $(100/121)$ . These values Rs.90.91 and Rs. 82.64 are known as present value of future annual return of Rs.100 in first and second year respectively.

$$\text{Present Value (PV)} = \frac{FV}{(1+r)^n}$$

**where:**

FV=Future Value

$r$ =Rate of return

$n$ =Number of periods

The computed discount factor tables are also available for ready reference or you can calculate PV by using Excel Formula.

In the financial analysis the present value is computed for both investment and returns. The results are presented in three different measures i.e. NPV, B-C Ratio, and IRR.

### (c) Net Present Value (NPV)

Net Present Value is considered as one of the important measures for deciding the financial viability of a project. Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting and investment planning to analyze the profitability of a projected investment or project. In other words, it is a method of calculating the present value of cash flows (inflows and outflows) of an investment proposal using the cost of capital as an appropriate discounting rate. The net present value will be arrived at by subtracting the present value of cash outflows from the present value of cash inflows.

Formula of Net Present Value (NPV)

$$NPV = \sum_{t=1}^n \frac{C_t}{(1+i)^t} - I$$

Where,

$C_t$ =Net cash inflow - outflows during a single period  $t$ .

$i$ =Discount rate or return that could be earned in alternative investments.

$t$ =Number of timer periods.

In words, **NPV = PVECF – PVICF**

Where,

PVECF=Present value of the expected cash inflows

PVICF=Present value of invested cash outflows

The accept/reject criterion under the NPV method is as follows:

**If, NPV>Zero                      then, Accept**  
**If, NPV<Zero                      then, Reject**

**If, NPV=0                      then, May accept or reject**

#### Example 4

A project requires an initial investment of ₹ 225,000 and is expected to generate the following net cash inflows:

**Year 1 (2018): ₹95,000; Year 2 (2019): ₹80,000; Year 3 (2020): ₹ 60,000; Year 4 (2021): ₹55,000.**

Compute net present value of the project if the minimum desired rate of return is 12%.

**Solution:**

#### Computation of PVECF

(₹)

| Period | Cash Inflows<br>Amount (Rs.) | PVIF @ 12% | Present Value (Rs.) |
|--------|------------------------------|------------|---------------------|
|--------|------------------------------|------------|---------------------|

|                      |        |       |                 |
|----------------------|--------|-------|-----------------|
| <b>Year 1 (2018)</b> | 95,000 | 0.893 | 84,835          |
| <b>Year 2 (2019)</b> | 80,000 | 0.797 | 63,760          |
| <b>Year 3 (2020)</b> | 60,000 | 0.712 | 42,720          |
| <b>Year 4 (2021)</b> | 55,000 | 0.636 | 34,980          |
| <b>PVECF</b>         |        |       | <b>2,26,295</b> |

Here, Initial investment i.e., PVICF = ₹ 2,25,000.

Now, **NPV = PVECF – PVICF**

Where,

PVECF=Present value of the expected cash inflows

PVICF=Present value of invested cash outflows

$$= ₹ (2,26,295 - 2,25,000)$$

$$= ₹ 1,295$$

The project seems attractive because its net present value is positive.

#### **(d) Benefit-Cost Ratio (B-C Ratio) or Profitability Index (PI)**

The B-C Ratio also referred as Profitability Index (PI), reflect the profitability of a project and computed as the ratio of total present value of the returns to the total present value of the investments (B/C). Higher the ratio better is the return.

$$\text{Profitability Index} = \frac{\text{Present value of the expected cash Inflows}}{\text{Present value of cash outflows}}$$

The accept/reject criterion under the PI method is as follows:

If,  $PI > 1$  then, Accept

If,  $PI < 1$  then, Reject

If,  $PI = 0$  then, May accept or reject

#### **Example 6**

A project requires an initial investment of Rs. 225,000 and is expected to generate the following net cash inflows:

**Year 1 (2018):** Rs. 95,000; **Year 2 (2019):** Rs. 80,000; **Year 3 (2020):** Rs. 60,000; **Year 4 (2021):** Rs. 55,000. Compute profitability index of the project if the appropriate discount rate for this project is 12%.

**Solution:**

#### **Computation of PVECF**



| Period        | Cash Inflows<br>Amount (₹) | PVIF @ 12% | Present Value (₹) |
|---------------|----------------------------|------------|-------------------|
| Year 1 (2018) | 95,000                     | 0.893      | 84,835            |
| Year 2 (2019) | 80,000                     | 0.797      | 63,760            |
| Year 3 (2020) | 60,000                     | 0.712      | 42,720            |
| Year 4 (2021) | 55,000                     | 0.636      | 34,980            |
| <b>PVECF</b>  |                            |            | <b>2,26,295</b>   |

Here, Initial investment i.e. PVICF = ₹ 2,25,000.

Now, **PI = PVECF ÷ PVICF**

Where,

PVECF=Present value of the expected cash inflows

PVICF=Present value of invested cash outflows

$$= ₹ (2,26,295 ÷ 2,25,000)$$

$$= ₹ 1.00058$$

The project seems attractive because its profitability index is greater than 1.

#### (e) Internal Rate of Return (IRR):

Internal Rate of Return (IRR) indicates the limit or the rate of discount at which the project total present value of return (B) equals to total present value of investments (C) i.e. B-C = Zero. In other words, it is the discount rate at which the NPV of the project is zero. The IRR is computed by iteration i.e. computing NPV at different discount rate till the value is nearly zero. It is desirable to have projects with higher IRR.

The formula for the net present value can be written as:

$$IRR = \frac{\text{Present value of the expected cash inflows}}{(1+i)^n} - \text{Initial Investment}$$

Where, i = Discount rate

n = No. of period

The rate at which the cost of investment and the present value of future cash flows match will be considered as the ideal rate of return. A project that can achieve this is a profitable project. In other

words, at this rate the cash outflows and the present value of inflows are equal, making the project attractive.

Remember, the internal rate of return is using the interpolation technique to calculate it and it is very important to understand this concept so that you can get a better understanding of how IRR works. In order to find out the exact IRR between two near rates, the following formula is to be used.

$$IRR = L + \frac{P_1 - C_0}{P_1 - P_2} \times D$$

Where, L = Lower rate of interest

P<sub>1</sub> = Present value at lower rate of interest

P<sub>2</sub> = Present value at higher rate of interest

C<sub>0</sub> = Cash outlay

D = Difference in rate of interest

### Example 7

Calculate IRR by using interpolation technique when initial investment is ₹ 56,000.

|     |        |
|-----|--------|
| 10% | 60,000 |
| 11% | 50,000 |

**Solution:**

|         |        |
|---------|--------|
| 10%     | 60,000 |
| IRR = ? | 56,000 |
| 11%     | 50,000 |

$$IRR = L + \frac{P_1 - C_0}{P_1 - P_2} \times D$$

Where, L = Lower rate of interest = 10%

P<sub>1</sub> = Present value at lower rate of interest = 60,000

P<sub>2</sub> = Present value at higher rate of interest = 50,000

C<sub>0</sub> = Cash outlay or Initial investment = 56,000

D = Difference in rate of interest = 11% - 10% = 1%

$$= 10 + \frac{60000 - 56000}{60000 - 50000} \times 1$$

$$= 10.4\%$$

**(v) Risk and Uncertainty**

Risk and Uncertainty are associated with every project. Risk is related to occurrence of adverse consequences and is quantifiable. It is analysed through probability of occurrences. Whereas uncertainty refers to inherently unpredictable dimensions and is assessed through sensitivity analysis. It is therefore necessary to analyse these dimensions during formulation and appraisal phase of the programme. Factors attributing to risk and uncertainties of a project are grouped under the following;

- Technical –relates to project scope, change in technology, quality and quantity of inputs, activity times, estimation errors etc.
- Economical- pertains to market, cost, competitive environment, change in policy, exchange rate etc.
- Socio-political- includes dimensions such as labour, stakeholders etc.
- Environmental – factors could be level of pollution, environmental degradation etc.

**(vi) Economic Benefits:**

Apart from the financial benefits (in terms of Return on Investment) the economic benefits of the project are also analyzed in the feasibility study. The economic benefits include employment generation, economic development of the area where the project is located, foreign exchange savings in case of import substitutes or earning of foreign exchange in case of export-oriented projects and others.

**(vii) Management Aspects:**

Management aspects are becoming very important in project feasibility studies. The management aspects cover the background of promoters, management philosophy, the organization set up and staffing for project implementation phase as well as operational phase, the aspects of decentralization and delegation, systems and procedures, the method of execution and finally the accountability.

**(viii) Time Frame for Project Implementation:**

The feasibility study also presents a broad time frame for project implementation. The time frame influences preoperative expenses and cost escalations which will impact the profitability and viability of the project.

**(ix) Feasibility Report:**

Based on the feasibility studies the Techno economic feasibility report or the project report is prepared to facilitate project evaluation and appraisal and investment decisions.

## 2.4. Project Appraisal

The project appraisal is the process of critical examination and analysis of the proposal in totality. The appraisal goes beyond the analysis presented in the feasibility report. At this stage, if required compilation of additional information and further analysis of project dimensions are undertaken. At the end of the process an appraisal note is prepared for facilitating decision on the project implementation.

The appraisal process generally concentrates on the following aspects.

- (i) **Market Appraisal:** Focusing on demand projections, adequacy of marketing infrastructure and competence of the key marketing personnel.
- (ii) **Technical Appraisal:** Covering product mix, Capacity, Process of manufacture engineering know-how and technical collaboration, Raw materials and consumables, Location and site, Building, Plant and equipments, Manpower requirements and Breakeven point.
- (iii) **Environmental Appraisal:** Impact on land use and micro-environment, commitment of natural resources, and Government policy.
- (iv) **Financial Appraisal:** Capital, rate of return, specifications, contingencies, cost projection, capacity utilization, and financing pattern.
- (v) **Economic Appraisal:** Considered as a supportive appraisal it reviews economic rate of return, effective rate of protection and domestic resource cost.
- (vi) **Managerial Appraisal:** Focuses on promoters, organization structure, managerial personnel, and HR management.

## 2. 5 Social Cost Benefit Analysis (SCBA)

Social Cost Benefit Analysis is a methodology for evaluating projects from the social point of view and focuses on social cost and benefits of a project. There often tend to differ from the costs incurred in monetary terms and benefits earned in monetary terms by the project SCBA may be based on UNIDO method or the Little-Mirriles (L-M) approach. Under UNIDO method the net benefits of the project are considered in terms of economic (efficiency) prices also referred to as shadow prices.

As per the L-M approach the outputs and inputs of a project are classified into (1) traded goods and services (2) Non traded goods and services; and (3) Labor. All over the world including India currently the focus is on Economic Rate of Return (ERR) based on SCBA assume importance in project formulation and investment decisions.

## MCQs

1. What is the primary purpose of project selection models?

- (a) To determine the project budget
- (b) To define project scope
- (c) To help choose which projects to undertake
- (d) To assign project team members

**Answer:(c)**

2. Which of the following is NOT a numerical project selection model?

- (a) Payback period
- (b) Cost-benefit analysis
- (c) Return on investment (ROI)
- (d) The "sacred cow" model

**Answer: (d)**

3. Which project selection model is best suited for situations where projects are not easily quantifiable in terms of cost or benefit?

- (a) Net Present Value (NPV)
- (b) Cost-benefit analysis
- (c) The "sacred cow" model
- (d) Scoring models

**Answer: (c)**

4. If the NPV is positive or at least equal to zero, the project can be \_\_\_\_\_.

- (a) Break even situation
- (b) accepted or rejected
- (c) rejected
- (d) accepted

**Answer: (c)**

5. Internal rate of return is

- (a) The rate at which discounted cash inflow is equal to the discounted cash outflow
- (b) The rate at which discounted cash inflow is less than discounted cash outflow
- (c) The rate at which discounted cash inflow is more than discounted cash outflow
- (d) None of the above

**Answer: (a)**

6. Which of the following is NOT a key step in discounted cash flow (DCF) analysis?

- (a) Projecting future cash flows
- (b) Determining the discount rate
- (c) Calculating the terminal value
- (d) Calculating the market price of the asset

**Answer: (d)**

7. A project whose acceptance does not prevent or require the acceptance of one or more alternative projects is referred to as \_\_\_\_\_.

- (a) a mutually exclusive project
- (b) an independent project
- (c) a dependent project
- (d) a contingent project

**Answer: (b)**

8. When operating under a single-period capital-rationing constraint, you may first want to try selecting projects by descending order of their \_\_\_\_\_ in order to give yourself the best chance to select the mix of projects that adds most to firm value.

- (a) profitability index (PI)
- (b) net present value (NPV)
- (c) internal rate of return (IRR)
- (d) payback period (PBP)

**Answer: (a)**

9. A project whose acceptance precludes the acceptance of one or more alternative projects is referred to as \_\_\_\_\_.

- (a) a mutually exclusive project.
- (b) an independent project.
- (c) a dependent project.
- (d) a contingent project.

**Answer: (a)**

10. Which of the following is NOT a typical step in project appraisal?

- (a) Financial feasibility analysis
- (b) Market demand assessment
- (c) Project implementation planning
- (d) Technical design analysis

**Answer: (c)**

11. Project appraisal is done by:

- (a) government.
- (b) financial institution only
- (c) entrepreneur only
- (d) both financial institution and entrepreneur

**Answer: (c)**

12. If project A has a net present value (NPV) of Rs. 30,00,000 and project B has an NPV of Rs. 50,00,000, what is the opportunity cost if project B is selected?

- (a) Rs. 23,00,000
- (b) Rs. 30,00,000
- (c) Rs. 20,00,000
- (d) Rs. 50,00,000

**Explanatory Comment:**

Opportunity cost represents the next best alternative foregone. If B is chosen, only A is being foregone and hence the NPV of `30,00,000 is the Net present value of the opportunity lost.

## **Unit -3**

### **Project Organisation**

#### **Contents**

- Project Organisation and Project Management
- Benefits of Project Organisation
- Types of Project Organisation
  - Functional Structure
  - Matrix Structure
  - Balanced Structure
- Project Management

#### **3.1 Introduction**

Each project has its unique characteristics and the design of an organizational structure should consider the organizational environment, the project characteristics in which it will operate, and the level of authority the project manager is given. A project structure can take on various forms with each form having its own advantages and disadvantages. One of the main objectives of the structure is to reduce uncertainty and confusion that typically occurs at the project initiation phase.

#### **3.2 Project Organisation**

A project organization is a structure that facilitates the coordination and implementation of project activities. Its main reason is to create an environment that fosters interactions among the team members with a minimum amount of disruptions, overlaps and conflict. One of the important decisions of project management is the form of organizational structure that will be used for the project.

The structure defines the relationships among members of the project management and the relationships with the external environment. The structure defines the authority by means of a graphical illustration called an organization chart. A properly designed project organization chart is essential to project success. An organization chart shows where each person is placed in the project structure. An organization chart is drawn in pyramid form where individuals located closer to the top of the pyramid have more authority and responsibility than members located toward the bottom. It is the relative locations of the individuals on the organization



chart that specifies the working relationships, and the lines connecting the boxes designate formal supervision and lines of communication between the individuals.

A company's project organization refers to the structure used to manage and coordinate project activities, encompassing roles, responsibilities, and authority. It's not a single PDF document, but rather a framework that varies based on the company's size, industry, and project type. Common structures include functional, matrix, and projectized.

### **3. 2.1 Benefits of a well-defined Project Organization**

Following are the benefits of well-defined project organisation

- (i) **Improved Communication:** Clear lines of authority and reporting ensure efficient communication.
- (ii) **Enhanced Collaboration:** Defined roles and responsibilities encourage collaboration and teamwork.
- (iii) **Increased Efficiency:** Project teams can focus on specific tasks and responsibilities, leading to higher efficiency.
- (iv) **Better Resource Allocation:** A clear structure allows for effective allocation of resources across projects.

### **3.3 Types of Project Organization**

Generally, there are three types of organizational structures in project management:

- (i) Functional,
- (ii) Matrix, and
- (iii) projectized.

Each project structure framework is determined by the authority, roles, and responsibilities of the team members within the existing organizational structure.

#### **3.3.1 Functional Structure**

In a functional project organization structure, teams are organized based on their specialized functions, like departments such as engineering, marketing, or finance. Project teams are primarily managed by functional managers who report to an executive, and they are responsible for selecting team members from their respective departments to support projects. This structure emphasizes departmental expertise and efficiency within each functional area.

#### **Role of the project manager within a functional organizational structure**

The project manager has less authority over the members of the project team in the functional structure than in any other form of organizational structure.

The project manager is more of a project coordinator than a real project manager. This is precisely because functional managers maintain complete authority over project team members and project budgets.

- (i) The functional organization is a traditional organizational structure in which the authorities – and therefore the real managers – are divided according to the functions performed by a particular group of people, such as Finance, HR, Marketing and Purchases, etc.
- (ii) Power and authority are in the hands of the functional manager, not in those of the project manager.
- (iii) The functional manager has the authority to release the resources based on their knowledge and their competence – the project manager is therefore always dependent and pending on the decision of the different functional managers.
- (iv) The resource goes back to the functional manager after completing the project – and in any case it is never “completely” separated.
- (v) The resources that work in this type of organization are always under the authority of the functional manager, in any situation.
- (vi) The project manager generally has much less power in this type of organization.
- (vii) Project manager skills are much less used in this type of organization.

### **Features of Functional Structure**

- (i) **Hierarchy:** A clear hierarchy exists, with functional managers reporting to executives.
- (ii) **Resource allocation:** Project work is assigned to individuals within their respective functional areas.
- (iii) **Limited project manager authority:** Project managers often have limited authority and may not have full control over resources or team members.
- (iv) **Focus on specialization:** Employees are grouped based on their functional expertise.
- (v) **Potential for slower decision-making:** Decision-making can be slower due to multiple layers of approval.

### **Benefits of Functional Structure**

- (i) **Specialization and Expertise:** Employees within a functional structure are grouped by their area of expertise, such as marketing, engineering, or operations. This allows for in-depth knowledge and skills within each department.
- (ii) **Increased Efficiency and Effectiveness:** Specialized teams can work more efficiently and effectively, as they are focused on tasks within their area of expertise.

- (iii) **Clear Roles and Responsibilities:** The functional structure clearly defines the roles and responsibilities of each employee within their department, leading to less ambiguity and better coordination.
- (iv) **Better Coordination and Communication:** Employees within the same department can easily communicate and collaborate with each other, leading to better project outcomes.
- (v) **Flexibility:** While employees are assigned to specific departments, they can still be temporarily assigned to projects, allowing for flexibility in resource allocation.
- (vi) **Easy Post-Project Transition:** After a project is completed, employees can easily return to their regular functional roles and responsibilities.
- (vii) **Reduced Operational Costs:** By organizing employees according to their functional areas, organizations can minimize redundancy and reduce the overall cost of operations.
- (viii) **Skill Development:** Employees can learn from experienced colleagues within their department, leading to enhanced skills and capabilities.

### **Drawbacks of Functional Structure**

- (i) **Slow Decision-Making:** Functional structures often have a top-down decision-making process, requiring approvals from multiple levels before decisions can be made. This can significantly delay projects, especially if feedback is needed from various departments.
- (ii) **Lack of Coordination and Communication:** The vertical separation of functional areas can lead to "siloes" teams, where information and knowledge are not shared effectively. This can hinder cross-departmental collaboration and understanding of the overall project goals.
- (iii) **Competition Between Departments:** Each department may have its own priorities and goals, potentially leading to competition for resources and a lack of focus on the overall project objectives.
- (iv) **Limited Innovation:** A functional structure can be rigid and less adaptable to change. This can stifle innovation and limit the ability to respond to evolving project needs.

### **3.3.2 Matrix Structure**

A matrix structure in project organization is a flexible approach where employees report to both a functional manager and a project manager, creating a grid-like reporting structure. This structure allows for cross-functional collaboration and expertise sharing, as team members from various departments work together on projects. It's particularly useful for complex projects requiring diverse skills and knowledge.

### Features of a Matrix Structure

- (i) **Dual Reporting:** Employees have two supervisors, one for their functional area (like IT, marketing, or finance) and one for the project.
- (ii) **Cross-Functional Teams:** Projects bring together individuals from various functional areas to work on a shared goal.
- (iii) **Shared Authority:** Both the functional and project managers have influence over the project team, though the level of authority can vary (weak, balanced, or strong matrix).
- (iv) **Flexibility and Resource Sharing:** Allows for efficient utilization of resources and expertise across different projects.

### Benefits of Matrix Structure

- (i) **Expertise:** Projects benefit from diverse skills and experience.
- (ii) **Communication:** Facilitates communication and collaboration between different departments.
- (iii) **Resource Sharing:** Reduces duplication of effort and optimizes resource allocation.
- (iv) **Adaptability:** Can adapt to changing project needs and priorities.

### Drawbacks of Matrix Structure:

- (i) **Potential for Conflict:** Multiple reporting lines can create conflicting priorities and authority disputes between functional and project managers.
- (ii) **Reduced Morale:** Employees may feel unsure about which manager's instructions to follow, leading to reduced morale and engagement.
- (iii) **Complexity:** The matrix structure can be complex to manage, requiring clear communication and strong leadership.
- (iv) **Time-Consuming:** Meetings and discussions can be time-consuming due to the multiple stakeholders involved.

### Types of Matrix Structure

Depending on the decision-making capacity of the project manager, a matrix structure is one of three subtypes: weak, balanced, or strong.

#### (a) Weak Structure

A weak structure is similar to the functional organization structure, in which coordination occurs horizontally among staff without a designated project manager. The primary difference between a weak matrix and a functional structure is that the staff across departments, rather than the functional managers, coordinate the project (but the functional manager maintains decision-making authority).

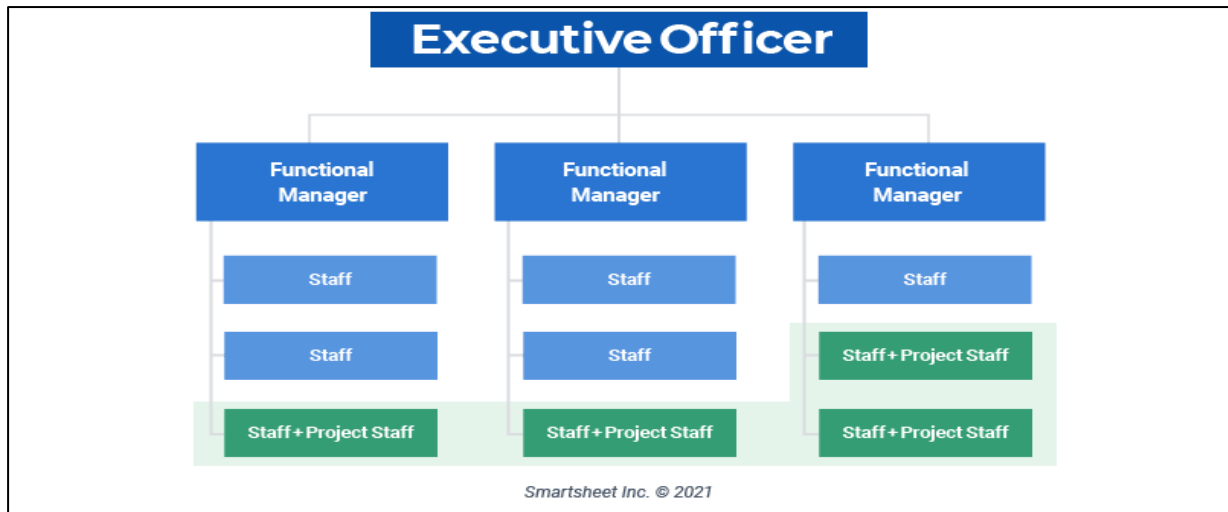


Figure 1: Weak Project Structure

Source: <https://www.smartsheet.com/content/project-management-organization>

### (b) Balanced Structure

In a *balanced matrix*, the project manager also holds a staff position and does not utilize the project manager role to its full capacity. The project manager still has little authority over project decisions, budget, staff, etc., and primarily serves as the point of contact and coordinator.

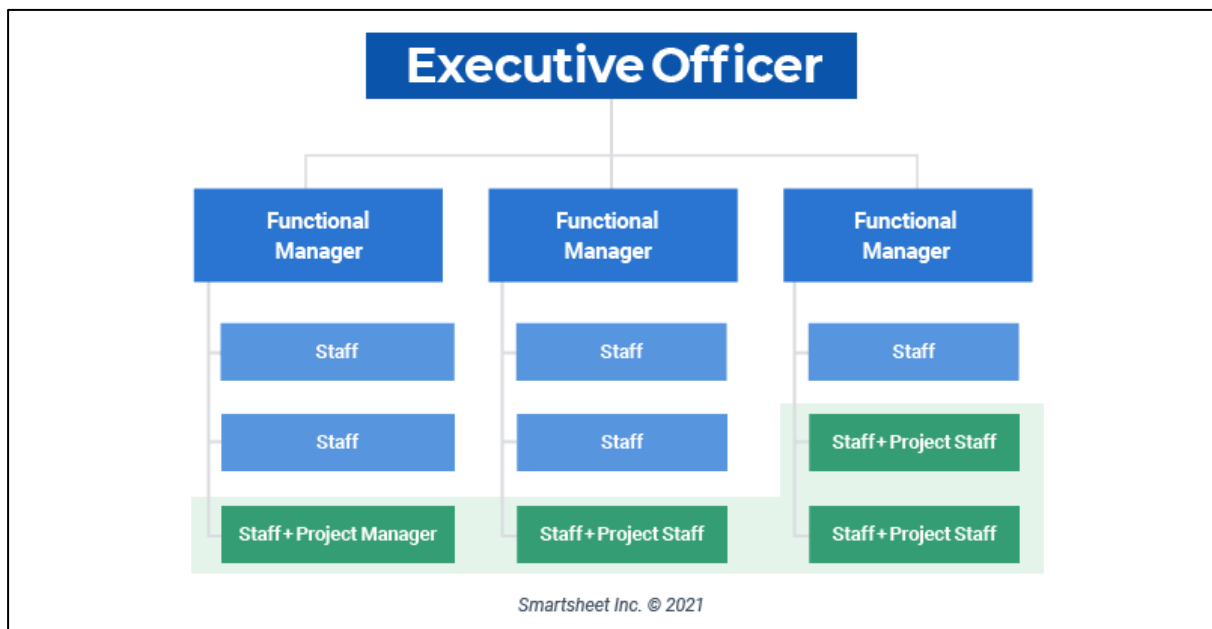


Figure 2: Balanced Project Structure

Source: <https://www.smartsheet.com/content/project-management-organization>

### (c) Strong Structure

A *strong matrix* is most similar to a projectized organizational structure. In it, a dedicated project manager falls under a functional project management department, has dedicated cross-functional staff, and is supported by a manager of all the project managers. This subtype offers the project manager the most authority as they work across a matrixed environment.



Figure 3: Strong Project Structure

Source: <https://www.smartsheet.com/content/project-management-organization>

There is no perfect organizational structure. Instead, a project manager must weigh the pros and cons of resource allocation and optimization within each structure, then select the most optimal structure. In addition to the project team's operational pros and cons, the authority (decision-making power) of the project manager changes depending on the selected project organization structure. This means that the project manager must have both the knowledge and the skills to apply effective managerial and interpersonal techniques that lead to a high-functioning project

### 3.3.3 Projectized Structure:

A *projectized or project-based organizational structure* creates a dedicated project division within an organization. The project coordination operates vertically under this division. Project managers maintain sole authority for the project and are assigned dedicated staff who work toward project goals.

In a projectized organizational structure, the organization is primarily structured around projects, with project managers holding significant authority and control over resources and project teams. This structure is characterized by dedicated teams focusing solely on their assigned projects, with the project manager acting as the primary point of contact for project-related matters.

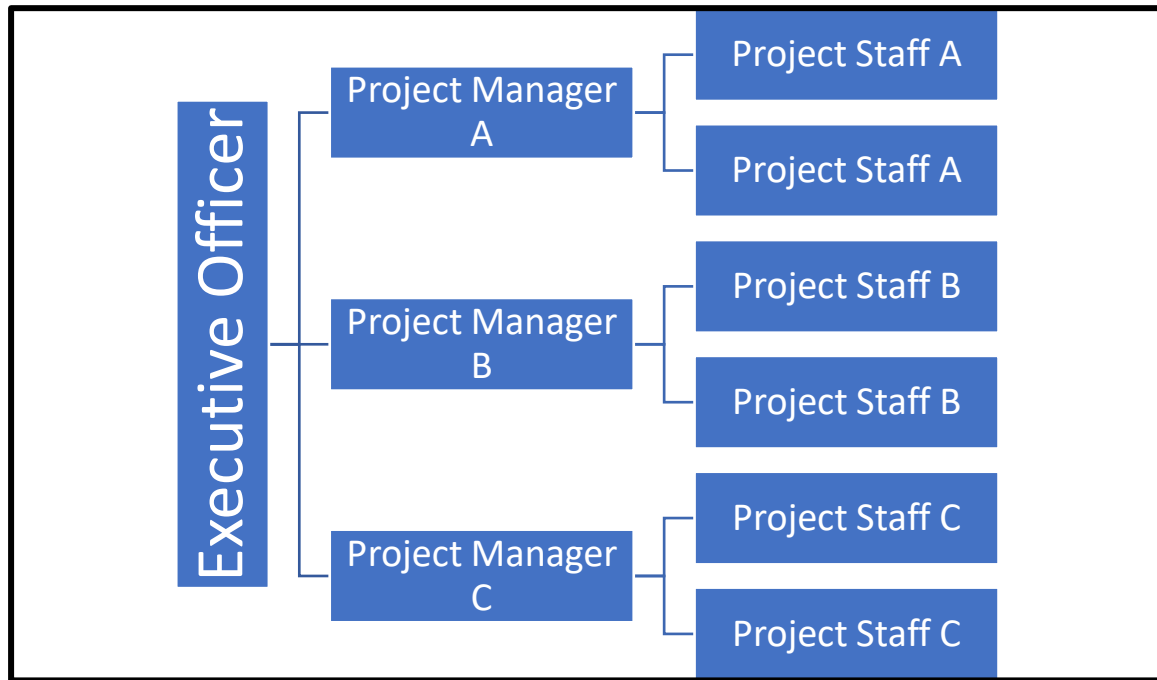


Figure 4: Projectized Project Structure

#### Features of a Projectized Structure:

- (i) **Project-centric focus:** The entire organization's energy and resources are directed toward completing specific projects.
- (ii) **Project manager authority:** Project managers have the power to allocate resources, manage budgets, and make decisions related to their project's success.
- (iii) **Dedicated project teams:** Teams are assembled specifically for a project and may be disbanded once the project is complete, with team members potentially being reassigned to other projects.
- (iv) **Horizontal communication:** Communication flows horizontally within the project team, with the project manager serving as the central hub.
- (v) **Minimal support staff:** A small support staff handles functions like legal, HR, and facilities, while most employees are dedicated to project work.

#### Benefits of a Projectized Structure:

- (i) **Enhanced project focus and execution:** The structure allows for clear project goals and efficient project execution.
- (ii) **Improved decision-making and adaptability:** Project managers can make quick decisions and adapt to changes as needed.
- (iii) **Increased project ownership and accountability:** Project managers have clear ownership and are held accountable for project outcomes.

**Potential Drawbacks:**

- (i) **Resource duplication:** There may be duplication of resources across different projects.
- (ii) **Team member isolation:** Team members may feel isolated from their functional departments.
- (iii) **Cost:** Maintaining a projectized structure can be costly, especially if multiple projects are running simultaneously.
- (iv) **Limited career progression:** Team members may have limited opportunities for career advancement within the projectized structure.

### 3.3.4 Pros and Cons of Project Organisation Structures

| FUNCTIONAL   |  |  |
|--|--|--|
| Project Pros   | Project Cons   | Management Priorities for a Project Manager  |
| <p><b>Optimal Resources:</b> Resources are not in competition with other areas, which leaves little need for competition or negotiation.</p> <p><b>Familiarity:</b> Team members are already</p> | <p><b>Missing the Right People:</b> Projects may need additional specialists if they do not have all the right people within the area.</p> <p><b>Competing Priorities of Team:</b> Team members may feel challenged to balance competing priorities of</p> | <p><b>PM Authority:</b> Low</p> <p><b>Communication Facilitation:</b> Break down silos across departments.</p> <p><b>Coordination:</b> Engage cross-functional teams.</p> <p><b>Teamwork Emphasis:</b> Engage teams outside of their department.</p> |



| FUNCTIONAL   |  |  |
|--|--|--|
| <p>familiar with each other and share similar skills and functions.</p> <p><b>Operational Efficiency:</b> Has the potential to achieve greatest operational efficiency due to the role and communication clarity.</p>  | <p>program responsibilities and project responsibilities.</p> <p><b>Siloed:</b> This structure often creates organizational silos, which can make strategic alignment challenging.</p>   | <p><b>Continuous Goal Clarity:</b> Keep project goals at the forefront in competition with departmental goals distracting the project.</p>   |
| MATRIX   |  |  |
| Project Pros   | Project Cons   | Management Priorities for a Project Manager  |
| <p><b>People Optimization:</b> Leverages each specialist's skill set across multiple projects.</p> <p><b>Flexibility:</b> Employees can work across departmental units without being bound to one.</p> <p><b>Project Control:</b> Strong coordination among team members eases communication and information boundaries.</p> | <p><b>Costs:</b> Administrative costs are higher, due to the operational complexity of the reporting relationships.</p> <p><b>Workload Miscommunication:</b> There is a greater potential for misunderstanding a team's workload, given that they report both to a project manager and a department manager.</p> <p><b>Increased Conflict:</b> Shared authority among managers</p> | <p><b>PM Authority:</b> Medium Influencing and Negotiation Skills: Navigate limited authority with other program managers and interactions with the project team members.</p> <p><b>Servant Leadership:</b> Focus on building deep collaboration and communication with the team, and continuously monitor the division of labor.</p> <p><b>Open Communication Lines:</b> These boundaries</p> |

| FUNCTIONAL  |  |   |
|---|--|---|
|   | potentially creates confusion on roles.  | are essential to spot and resolve conflicts before bigger issues come up.<br><b>Team Recognition:</b> Acknowledge the team comes from multiple parts of the organization. Take time for team building and engagement opportunities.   |
| PROJECTIZED   |  |   |
| Project Pros  | Project Cons   | Management Priorities for a Project Manager   |
| <b>Authority:</b> The project manager owns all project decision making.<br><b>Clarity:</b> Project alignment, lines, goals, and strategy are clear across the team. | <b>Resource Duplication:</b> Resources may not be optimized and can be costly, due to the doubling of resources across multiple projects.<br><b>Stunted Team Growth:</b> Teams can be siloed, binding the team members to one project at a time and limiting their growth. | <b>PM Authority:</b> High<br><b>Role Responsibility:</b> Live up to the trust and leadership that comes with full authority and ownership of the project.<br><b>Maintain Team Morale:</b> Build team trust and keep the team moving to meet tight deadlines.<br><b>Communication:</b> Building strong communication networks across projects is essential in reducing the duplication of efforts. |

#### PROJECT ORGANIZATIONAL STRUCTURE: QUICK REFERENCE

### 3.5 Project Managers

Project managers are organized, goal-oriented professionals who use passion, creativity, and collaboration to design projects that are destined for success. Project managers initiate, execute, and complete projects across various industries using their project management expertise. From mobile apps to the grandiose architecture of international cities, they are the innovators behind some of the most brilliant products, services, and processes that exist today.

#### Role of a Project Manager

- (i) Identifying project goals, needs, and scope.
- (ii) Planning, monitoring, and documenting tasks throughout a project.
- (iii) Ensuring all tasks, deliverables, and project materials are delivered promptly.
- (iv) Managing all resources necessary for project execution.
- (v) Fostering effective communication with stakeholders concerning project status,
- (vi) Foreseeing and strategically eliminating blockers and potential risks,
- (vii) Documenting each step of the process using various project management tools.
- (viii) Ensuring top-quality results and success for a project.

### MCQs

1. Which of the following is NOT a key function of project organization?
  - (a) Defining roles and responsibilities
  - (b) Establishing reporting lines
  - (c) Monitoring project progress
  - (d) Directly overseeing project execution on a daily basis

**Answer: (d)**
2. What is the primary purpose of creating a project organization?
  - (a) To ensure maximum departmental efficiency
  - (b) To establish clear lines of authority and communication
  - (c) To reduce project cost
  - (d) To minimize the risk of project failure

**Answer: (b)**

3. Which of the following is NOT a common type of project organizational structure?

- (a) Functional
- (b) Matrix
- (c) Hierarchical
- (d) Divisional

**Answer: (c)**

4. In a functional project organization, project resources are usually:

- (a) Dedicated to a single project
- (b) Assigned to a project on a part-time basis
- (c) Retained within their functional departments
- (d) Managed by a single project manager

**Answer: (c)**

5. Which of the following is a potential drawback of a matrix project organization?

- (a) Increased project control
- (b) Reduced conflict between functional departments
- (c) Potential for confusion due to multiple reporting lines
- (d) Increased efficiency in resource allocation

**Answer: (c)**

6. Which project organization structure allows team members to report to both their functional manager and the project manager?

- (a) Functional
- (b) Projectized
- (c) Matrix
- (d) Virtual

**Answer (c)**

7. In which project organization structure is the project manager primarily responsible for coordinating the work of team members drawn from different departments?

- (a) Functional
- (b) Projectized
- (c) Matrix
- (d) Organic

**Answer: (a)**

8. Which project organization structure provides the highest level of project autonomy and control to the project team?
- (a) Functional
  - (b) Projectized
  - (c) Matrix
  - (d) Virtual

**Answer: (b)**

9. Which of the following is a key advantage of using a matrix project organization?
- (a) It provides a clear hierarchy of authority.
  - (b) It maximizes functional expertise within the project team.
  - (c) It reduces the need for communication between functional departments.
  - (d) It allows the project manager to have full control over the project team.

**Answer (b)**

10. Project managers who do not understand the role that their project plays in accomplishing the organization's strategy tend to make all the following mistakes except:
- (a) Focusing on low priority problems
  - (b) Overemphasizing technology as an end in and of itself
  - (c) Focusing on the immediate customer
  - (d) All the above are likely mistakes

**Answer (d)**

## **Unit 4:**

### **Sources of Project Finance and Estimation of Project Costs**

#### **Contents**

- Introduction
- Project Finance- Meaning
- Features, Advantages, Importance and Limitations
- Source of Project Finance
  - Equity
  - Debt
  - Hybrid (mezzanine)
  - Lease
  - International source of financing
- Project Cost
  - Component of Project Cost
  - Classification
  - Process of Project Cost Management
  - Estimation Methods

#### **4.0 Introduction**

The success of any project—whether in infrastructure, manufacturing, technology, or services - depends not only on its technical feasibility and strategic value but also on sound financial planning and accurate cost estimation. This unit explores two critical components in the lifecycle of a project: project finance and the estimation of project cost.

Project finance involves structuring the financial framework needed to fund large-scale ventures, often relying on the project's future cash flows for repayment rather than the balance sheets of the project sponsors. It encompasses various sources of funding, risk-sharing mechanisms, and legal arrangements that ensure long-term financial sustainability.

Simultaneously, estimating the cost of a project is fundamental to decision-making and resource allocation. A precise cost estimate informs budgeting, scheduling, and investment analysis, and helps in setting realistic expectations for stakeholders. Inaccurate estimations can lead to cost overruns, delays, and even project failure.

This chapter will delve into the principles of project finance, key stakeholders involved, common financing models, and methods for estimating project costs. It will also highlight the challenges and best practices in managing both aspects effectively to enhance the probability of project success.

#### **4.1 Project Finance - Meaning**

Project finance” refers to financing long-term industrial and infrastructure projects, particularly in sectors like oil and gas, power generation, and transportation. It's also used to finance certain economic bodies like special purpose vehicles (SPVs), which are created to manage a single project.

Finnerty, (1996, p. 2) defines Project Finance (PF) as: “The raising of funds to finance an economically separable capital investment project in which the providers of the funds look primarily to the cash flow from the project as the source of funds to service their loans and provide the return of and a return on their equity invested in the project”.

International Project Finance Association (IPFA) defines project finance as “the financing of long-term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure where project debt and equity used to finance the project are paid back from the cash flow generated by the project”. Although none of these definitions uses the term —non- recourse debt explicitly (i.e., debt repayment comes from the project company only rather than from any other entity), they all recognize that it is an essential feature of project finance.

Project finance comprises the financing of a particular project mainly based on the project’s cash flow. Once a project’s revenue stream has been identified, innovative finance techniques can assist in capitalizing the value of the future project revenues to fund the investment. The financing of the power projects on project finance is in a nascent stage in India.

According to Finnerty, John. D. (1996), to determine whether project finance is an appropriate method of raising funds for a particular project, at least five factors should be considered:

- (1) The credit requirement of the lenders.
- (2) Tax implications of a proposed location.
- (3) The impact of the project on the covenants contained in the agreements governing the sponsor.
- (4) Regulatory requirements and
- (5) The accounting treatment of project liabilities and contractual agreements.

In project finance, a Special Purpose Vehicle (SPV) is created.

#### **4.2.1 Features of Project Finance**

One of the main features of project finance is the spread of risks between all parties involved. Project finance is off - balance sheet financing. In the past, the possibility inherent to project finance of not including debts in the sponsor’s balance sheet was considered as an argument in favour of this instrument from the private contractor’s point of view. Another feature of project finance is limited recourse financing.

The key features of project finance are:

- (i) Legal separation from sponsors, other assets of what is most typically a single large asset constituting a new, self-contained, well-specified investment by the sponsor(s).
- (ii) It is usually raised for a new project rather than an established business (although project finance loans may be refinanced).
- (iii) There is a high ratio of debt to equity (leverage or gearing) roughly speaking, project finance debt may cover 70 -90 percent of the cost of a project.
- (iv) There are no guarantees from the investors in the Project Company (nonrecourse
- (v) finance), or only limited guarantees (limited-recourse finance), for the project finance debt.
- (vi) Lenders rely on the future cash flow projected to be generated by the project for interest and debt repayment (debt service), rather than the value of its assets or analysis of historical financial results.

- (vii) The main security for lenders is the project company's contracts, licenses, or ownership of rights to natural resources; the project company's physical assets are likely to be worth much less than the debt if they are sold off after a default on the financing.

#### 4.2.2 Advantages of Project Finance

Project finance can be beneficial to a company with a proposed project when:

- (i) The project's output would be in such strong demand that purchasers would be willing to enter in to long-term purchase contracts.
- (ii) The contracts would have strong enough provisions that banks would be willing to advance funds to finance construction on the basis of the contracts. Project finance creates value by reducing the agency costs associated with large, transaction-specific assets, and by reducing the opportunity cost of underinvestment due to leverage and incremental distress costs.
- (iii) The other advantage is that sometimes it can be used to improve the return on the capital invested in a project by leveraging the investment to a greater extent than possible in a straight commercial financing of the project.
- (iv) Project finance solves two financing problems:
- (v) It reduces the cost of agency conflicts inside project companies; and
- (vi) It reduces the opportunity cost of underinvestment due to leverage and incremental distress costs in sponsoring firms.

#### 4.2.3 Importance of Project Finance

The importance of project finance is multifaceted and extends across various sectors and economies.

- (1) Enables Large-Scale Infrastructure and Industrial Projects:** Project finance plays a crucial role in the development of infrastructure such as highways, power plants, airports, railways, and telecommunications networks. These projects often require massive capital outlays that may be beyond the capacity of individual firms or governments. Project finance structures allow multiple stakeholders—including banks, private investors, export credit agencies, and multilateral institutions—to pool resources and share risks.
- (2) Risk Sharing among Stakeholders:** One of the defining features of project finance is its ability to distribute risks among various parties—such as sponsors, lenders, contractors, and suppliers—according to their ability to manage them.
- (3) Off-Balance-Sheet Financing:** Since project finance typically does not appear on the sponsoring firm's balance sheet, it helps maintain better financial ratios and credit standing.
- (4) Improves Project Viability and Discipline:** The process of arranging project finance imposes strict due diligence, financial modeling, and contractual structuring. This often leads to more disciplined project planning and execution, as every financial, technical, and legal aspect must be scrutinized by lenders and investors.
- (5) Catalyst for Economic Development:** Project finance is instrumental in fostering economic development, especially in emerging markets. It allows for the creation of critical infrastructure without overburdening public budgets. Moreover, it attracts foreign direct investment (FDI), encourages private sector participation, and promotes public-private partnerships (PPPs), all of which contribute to economic growth and employment generation.
- (6) Facilitates Innovation and Renewable Energy Projects:** With growing emphasis on



sustainability and energy transition, project finance has become an essential tool for funding renewable energy projects like solar farms, wind parks, and bioenergy plants.

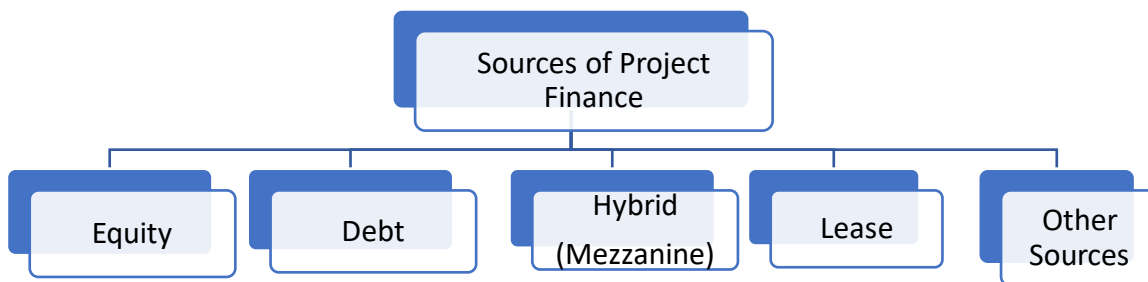
#### 4.2.4 Due Diligence in Project Finance

Due diligence in project finance is a process that consists of multiple steps to ensure the most comprehensive analysis:

- (i) Assessment of promoter history and background;
- (ii) Evaluation of the company and project business model;
- (iii) Legal due diligence;
- (iv) Detailed Analysis of financial statements of the project and its and capital structure;
- (v) Determine major risks associated with the project;
- (vi) Analysis of tax effects;
- (vii) Credit analysis and evaluation of loan terms;
- (viii) Project valuation.

### 4.3 Sources of Project Finance

Sources of project financing will depend on the structuring of the project (which is heavily impacted by project risks). The choice depends on the project's needs, risks, and potential returns. The three main types are equity financing, debt financing, and mezzanine financing. Besides, lease financing, international and others are the source of project finance.



#### 4.3.1 Equity Financing

Equity financing refers to the process of raising capital for a project by selling ownership shares or stakes in the project or company to investors. In project finance, equity represents the **Owners' Capital** and is typically the first layer of funding used to support a project. It plays a foundational role in ensuring financial viability, attracting debt financing, and absorbing early-stage risks.

Equity financing is essential in capital-intensive projects such as infrastructure, energy, mining, transport, and industrial development, where substantial initial investment is required before revenue generation begins.

##### A. Sources of Equity in Project Finance

- (i) **Promoter's Contribution:**
  - (a) Provided by the project sponsor or developer.
  - (b) Demonstrates commitment and credibility to other investors and lenders.
- (ii) **Private Equity Investors:**
  - (c) Includes venture capital firms, institutional investors, and private individuals.
  - (d) Typically invest in projects with high growth or return potential.

(iii) **Public Equity (Stock Market):**

- (e) Capital raised through public offerings (e.g., Initial Public Offering or IPO).
- (f) Suitable for large-scale projects or companies with strong market potential.

(iv) **Strategic Investors / Joint Ventures:**

- (a) Other companies or firms that invest in the project for strategic business interests.
- (b) Often bring technical expertise, market access, or operational support.

## **B. Role of Equity Financing in Project Finance**

(i) **Risk Cushion for Lenders**

Equity capital acts as a *buffer* for debt financiers. In case of financial distress, losses are first absorbed by equity holders, making debt investments relatively safer.

(ii) **Facilitates Leverage (Debt-Raising)**

Lenders typically require a minimum equity contribution (e.g., 20–40% of total project cost) before they provide debt funding. Adequate equity improves the project's creditworthiness.

(iii) **Supports Early-Stage Activities**

Equity is often used to finance:

- Feasibility studies
- Land acquisition
- Environmental clearances
- Initial construction work

These early-stage expenses are considered high-risk and are typically not funded by debt.

## **C. Advantages of Equity Financing**

- (i) **No Repayment Obligation** - Equity does not require fixed interest payments or principal repayment, easing pressure on project cash flows, especially in early years.
- (ii) **Risk Sharing** - Equity investors share project risks and rewards, aligning their interests with project success.
- (iii) **Enhances Creditworthiness** - A strong equity base boosts confidence among lenders and other stakeholders.
- (iv) **Flexible Funding** - Can be structured in various ways (e.g., common equity, preferred equity) to match investor preferences and project needs.

## **D. Limitations of Equity Financing**

- (i) **Dilution of Ownership** - Raising equity means sharing ownership, decision-making rights, and profits with new investors.
- (ii) **Higher Cost of Capital** - Equity investors typically demand higher returns than debt providers due to the greater risk they bear.
- (iii) **Loss of Control** - Equity investors may seek influence through board seats, veto powers, or strategic direction, which can limit the sponsor's autonomy.
- (iv) **Market Dependence (for Public Equity)** - Public equity issuance depends on market conditions and investor sentiment, which can be volatile.

## **E. Examples of Equity Financing in Project Finance**

- (i) **Power Projects:** Promoters and private equity firms may invest in renewable energy projects

like wind or solar farms.

- (ii) **Infrastructure:** Equity used to fund early development of toll roads, airports, or ports before long-term debt is arranged.
- (iii) **Public-Private Partnerships (PPP):** Private partners bring equity to projects in return for a long-term revenue stream from the government or users.

Equity financing is a cornerstone of project finance, providing the foundation upon which the entire financial structure is built. While it may be costlier than debt, its strategic value lies in absorbing early risks, enhancing credibility, and offering financial flexibility. A well-balanced mix of equity and debt is essential for the financial success and sustainability of any large-scale project.

#### 4.3.2 Debt Financing

Debt financing refers the funding is obtained in the form of debt from banks and financial institutions, repayable along with interest. In present scenario, debt is the major source of financing, because, all power projects are adopting non- recourse method of financing. Currently all infrastructure projects are using 75 percent of debt funds in the total capital structure. Leverage in corporate financing is likely to be as low as 50 percent, with a substantial amount equity required for the project. Due to this disadvantage of corporate financing, some projects are adopted exclusively debt method. The required amount of debt can be obtained through the innovative financing instruments, such as: simple subordinated debt, convertible debt, debt with stock warrants, mezzanine finance, external commercial borrowings and debt with an additional interest payment above the coupon rate contingent upon financial performance exist (Ahluwalia,). The debt includes secured and non-secured loans.

##### A. Key Features of Debt Financing

- (i) Fixed or variable interest rates
- (ii) Predefined repayment schedule (amortizing or bullet repayment)
- (iii) Secured by project assets or future revenues
- (iv) Subject to financial covenants and monitoring

##### B. Advantages of Debt Financing

- (i) **No Ownership Dilution:** Lenders do not gain equity or control in the project, preserving full ownership for sponsors.
- (ii) **Lower Cost of Capital:** Interest on debt is typically lower than returns expected by equity investors, making it a more cost-effective source of funding.
- (iii) **Tax Benefits:** Interest payments on debt are tax-deductible, reducing the project's taxable income.
- (iv) **Predictable Repayment Terms:** Fixed schedules allow for better financial planning and budgeting.
- (v) **Enhances Equity Returns:** Properly leveraged projects can increase return on equity (ROE) through financial leverage.

##### C. Disadvantages / Challenges of Debt Financing

- (i) **Fixed Repayment Obligations** - Regardless of project cash flow performance, debt must be repaid on time, which can strain liquidity in early years.
- (ii) **Default Risk** - Failure to meet repayment obligations may lead to penalties, asset seizure, or bankruptcy.

- (iii) **Collateral and Covenants** - Lenders often demand collateral (e.g., project assets) and impose financial covenants restricting certain business actions.
- (iv) **Creditworthiness Requirement** - Projects must demonstrate stable cash flow projections, sponsor experience, and bankable feasibility studies to secure debt.
- (v) **Complex Structuring** - Debt financing in large projects often involves multiple stakeholders, legal agreements, and financial models.

#### **D. Forms of Debt Financing**

There are four types of debt financing to infrastructure projects viz, borrowing, corporate bonds, trade debt, and customer deposits. The most common type of debt financing is borrowing from financial institutions, such as: banks or leasing companies, because it is quick and relatively inexpensive.

##### **(i) Borrowing from Banks and Other Financial Institutions**

Whenever the projects require the funds, they simply go to the financial institutions or the commercial banks to take the loan. Because, inexpensive source when it compared with other sources. Financial institutions borrow money at one rate and lend it out at a higher rate. The spread between the cost and the amount charged for the borrowing shows how financial institutions make money. They do not set out trying to figure out how to make money on a defaulted loan. An organization that does plan to make money on a defaulted loan or places borrowers in a position where they cannot retire their debt is known as a predatory lender. However, the repayment is big problem to the both parts borrower and lender.

To ensure prepayment of the loan, financial institutions consider what is referred to as the four Cs of lending: Credit, Collateral, Cash flow, and Character. The credit component is concerned with the borrowing and repayment history of the borrower. Financial institutions like to see that the borrower has borrowed money in the past and has made timely payments. A history of borrowing and prompt payments indicates to lenders that the borrower takes his obligations seriously.

##### **(ii) Debenture Capital**

Debenture capital has emerged as an important source for project financing in last few years. There are three types of debentures that are commonly used in India:

- Non-Convertible Debentures (NCDs),
- Partially Convertible Debentures (PCDs), and
- Fully Convertible Debentures (FCDs).

Akin to promissory, NCDs are used by companies for raising debt that is generally retired over a period of 5 to 10 years. They are secured by a charge on the assets of the issuing company. The PCDs are partly convertible into equity shares as per pre-determined terms of conversion. The unconverted portion of PCDs remains like NCDs. FCDs, as the name implies, are converted wholly into equity shares as per pre-determined terms of conversion. Hence FCDs may be regarded as delayed equity instruments.

##### **(iii) Rupee Term Loans**

Provided by financial institutions and commercial banks, rupee term loans which represent secured borrowings are a very important source for financing new projects as well as expansion, modernization, and renovation schemes of existing units. These loans are generally repayable over a period of 8-10 years which includes a moratorium period of 1-3 years.

##### **(iv) Corporate bonds**

The second type of debt financing is corporate debt or bonds. A bond is a security sold to an investor. It is a contractual obligation between the issuer and the holder. The issuer promises to make interest

payments to the holder at specific dates and to return the principal at a certain date (maturity). Bonds must be registered with the securities and exchange.

**(v) Trade debt**

Trade debt financing is a fancy phrase for extending accounts payable. The objective here is to delay payment of the payables beyond the sales and accounts receivable collection cycles. At first glance, this method of financing appears to be a cheap source of money. However, be aware of two concerns. Many vendors offer prompt-pay discounts, often between 1 percent and 3 percent of the bill. Ignoring this discount can cost the client an additional 12 percent to 36 percent per year.

**(vi) Bills Rediscounting Scheme**

Operated by the IDBI, the bills' rediscounting scheme is meant to promote the sale of indigenous machinery on deferred payment basis. Under this scheme, the seller realizes the sale proceeds by discounting the bills or promissory notes accepted by the buyer with a commercial bank which in turn rediscounts them with the IDBI. This scheme is meant primarily for balancing equipments and machinery required for expansion, modernization, and replacement schemes.

### **4.3.3 Hybrid Instruments (Mezzanine Financing)**

Mezzanine financing is a hybrid form of capital that combines elements of both debt and equity. It sits between senior debt and equity in the capital structure—hence the name "mezzanine" (meaning "middle"). In project finance, mezzanine financing plays a crucial role in bridging the funding gap when equity and senior debt are insufficient to cover the total project cost.

**Important Instruments:**

- (i) **Subordinated Loans:** Subordinated loans or debt (also known as a subordinated debenture) is an unsecured loan or bond that ranks below other, more senior loans or securities with respect to claims on assets or earnings. Subordinated loans like debentures are thus also known as junior securities. In the case of borrower default, creditors who own subordinated debt will not be paid out until after senior bondholders are paid in full. It faces lower priority than senior debt, higher interest rate.
- (ii) **Convertible Debt:** Convertible debt is a hybrid security that combines features of both debt and equity. It allows the holder to convert the debt into a certain number of shares of the issuing company or cash. Convertible debt is often used by early-stage companies as a way to raise capital without immediately diluting existing shareholders. It converts into equity after a certain period or condition.
- (iii) **Preferred Shares:** Preferred shares, also known as preferred stock, are a type of stock that gives investors a priority claim on dividends and assets compared to common stock. They are essentially a hybrid security, offering some of the characteristics of both stocks and bonds Equity-like instruments with fixed dividends and priority over common shares.

**Benefits:**

- (i) It is flexible in nature.
- (ii) It enhances returns for equity investors.
- (iii) It bridges funding gaps.

**Risks:**

- (i) It represents higher cost than senior debt.
- (ii) It Increases complexity in negotiations

**Example:** A wind farm project using mezzanine debt to cover a funding shortfall after securing senior debt and sponsor equity.

#### 4.3.4 Lease Financing

In project finance, lease financing is commonly used as an alternative to asset ownership, especially for acquiring expensive equipment, machinery, vehicles, or even buildings and infrastructure components without making a large upfront investment.

Lease financing is a financial arrangement in which one party (the *lessor*) allows another party (the *lessee*) to use an asset for a specified period in exchange for periodic payments.

It is a particularly useful financing option for capital-intensive projects where preserving cash flow and maintaining flexibility is crucial.

##### A. Features of lease finance in India:

- (i) Most leases in India are finance leases not operating leases.
- (ii) Lease finance is available for identifiable performing assets.
- (iii) Lease finance is available in small volume.
- (iv) There is a great deal of flexibility in structuring lease finance.
- (v) Lease of immovable assets is not possible by banks.
- (vi) Lease tenors up to eight years is available.

##### B. How Leasing Works as a Source of Project Finance?

- (i) **Asset Acquisition:** The project owner (lessee) agrees to use an asset owned by a lessor (typically a leasing company or financial institution) for a specified period.
- (ii) **Periodic Payments:** The lessee pays regular lease payments (rentals) to the lessor for the right to use the asset.
- (iii) **No Outright Purchase:** The lessee does not own the asset, but has the right to use it during the lease term.

##### C. Importance of Lease Finance

- (i) **Tax Benefits:** Lease payments can be deducted as a business expense, offering tax advantages for the lessee.
- (ii) **Cash Flow Improvement:** Regular lease payments can be more predictable and manageable than loan repayments, improving cash flow.
- (iii) **Capital Preservation:** Leasing allows businesses to conserve capital for other projects or activities.
- (iv) **Access to Equipment:** Businesses can access necessary equipment without tying up large amounts of capital in upfront purchases.
- (v) **Flexibility:** Lease terms can be tailored to specific project needs and can be restructured or terminated under certain conditions.
- (vi) **Reduced Credit Line Impact:** Leasing typically does not impact existing credit lines, providing an additional funding source.

##### D. Limitations of Leasing:

- (i) **Higher Cost than Borrowing:** In some cases, the total cost of leasing (including interest) may be higher than borrowing the same amount.
- (ii) **Limited Ownership:** The lessee does not own the asset, so they cannot sell it or use it as collateral for other loans.
- (iii) **Fixed Term:** Lease terms are fixed, and the lessee cannot return the asset before the



end of the term without incurring penalties.

### E. Types of Leases:

There are two types of lease financing: Financial Lease and Operating Lease

- (i) **Finance Leases:** A finance lease or capital lease is essentially a form of borrowing. These transfer substantially all risks and rewards of ownership to the lessee, often used as a financing tool.

**Salient features of financial lease are:**

- (a) It is an intermediate term to a long-term non-cancellable arrangement. During the initial lease period, referred to as the 'primary lease period'. Which is usually three years or five years or eight years, the lease cannot be cancelled.
- (b) The lease is more or less fully amortised during the primary lease period. This means that during this period, the lessor recovers, through the lease rentals, his investment in the equipment along with an acceptable rate of return. Thus, a finance lease transfers substantially all the risks and rewards incident to ownership to the lessee.
- (c) The lessee is responsible for maintenance, insurance, and taxes.
- (d) The lessee usually enjoys the option for renewing the lease for further periods at substantially reduced lease rentals.
- (e) Long-term lease that covers most of the asset's economic life.
- (f) Lessee bears the risks and rewards of ownership, though legal title may remain with the lessor.
- (g) Lease payments are treated as loan repayments for accounting purposes.

**Use Case:** Heavy machinery, power plant components, or transportation equipment.

- (ii) **Operating Leases:** An operating lease can be defined as any lease other than a finance lease. These are for shorter periods, and the lessor retains more of the risks and rewards of ownership.

The salient features of an operating lease are:

- (a) The lease term is significantly less than the economic life of the equipment.
- (b) The lessee enjoys the right to terminate the lease at a short notice without any significant penalty.
- (c) The lessor usually provides the operating know-how and the related services and undertakes the responsibility of insuring and maintaining the equipment. Such an operating lease is called a 'wet lease'. An operating lease where the lessee bears the costs of insuring and maintaining the leased equipment is called a 'dry lease'.
- (d) Short-term lease where the lessor retains ownership and bears the risk of obsolescence.
- (e) The asset is usually leased for a portion of its useful life.
- (f) Lease payments are considered operating expenses.

**Use Case:** Temporary equipment or technology leases in construction projects.

### F. Limitations of Lease Financing

1. **Higher Long-Term Cost:** Although leasing reduces upfront costs, it may be more expensive than purchasing the asset outright over the asset's full life.
2. **Limited Ownership Benefits:** In most lease arrangements, the lessee does not own the asset, meaning no asset appreciation or salvage value benefit.

3. **Contractual Obligations:** Leasing agreements can be restrictive and may impose penalties for early termination or non-compliance with usage terms.
4. **Dependence on External Parties:** Project execution may become dependent on the leasing company's reliability and service terms.

### G. Applications in Lease Financing in Project

Lease financing is used across a variety of sectors:

- **Energy:** Leasing turbines, transformers, or solar panels.
- **Transportation:** Leasing of railcars, aircraft, or port equipment.
- **Construction:** Leasing cranes, excavators, and other machinery.
- **Telecommunications:** Leasing network equipment and tower infrastructure.

Lease financing is a strategic tool in project finance that enables the use of essential assets without heavy capital investment. It enhances liquidity, improves financial flexibility, and can offer tax advantages. While it may not suit all situations—especially where long-term ownership is critical—it remains a valuable option, particularly in high-cost, asset-intensive projects where managing cash flow and preserving credit lines are key concerns.

### Evaluation of a Lease vs. Buy Option

There is no denying the fact that lease will never entail ownership of asset to the lessee. However, in case of a finance lease that transfers substantially all the risks and rewards incidental to ownership of an asset, such issue may not be that significant as the lessee continues to enjoy all the benefits associated with the asset for almost the entire lifetime of the asset. Hence, the issue that concerns most is the cost. In order to make a comparative analysis all the relevant cash flows are required to be identified. In addition, any tax savings shall also be taken into consideration. Following is a summary of all the cash flows and tax shields associate with the two options.

| Buy (Though Loan)   | Lease   |
|---|---|
| <ul style="list-style-type: none"> <li>• PV of instalments against the loan taken to buy the asset. Interest tax shield</li> <li>• Depreciation tax shield</li> <li>• Present value of residual value of asset to be deducted.</li> </ul> | <ul style="list-style-type: none"> <li>• Present value of after-tax lease rentals</li> <li>• Present value of any maintenance cost</li> </ul> |

### Example 1

Excel Transport needs a truck for which it is considering the following two options:

Buy the asset for Rs. 3,00,000 by borrowing the amount @12% interest and repaying the same together with interest in 4 equal annual instalments.

Acquiring the asset on lease with a payment of annual lease rentals of Rs. 90,000 per annum for 4 years.

The firm follows straight line method of depreciation and is under the income tax bracket of 30%. Life of the asset is 4 years.

Which option – lease or buy, should the firm opt for?

#### Solution:

Applicable discount rate =  $12(1-0.3) = 8.4\%$  p.a.

Lease Option:

Present value of after-tax lease rentals =  $\text{Rs.}90,000 \times (1-0.3) \times \text{PVIFA}(8.4\%, 4 \text{ years})$



$$= \text{Rs. } 63,000 \times 3.28 = \text{Rs. } 2,06,640$$

Buy Option

$$\text{Annual instalment} = \text{Rs. } 3,00,000 \div \text{PVIFA (12\%, 4)} = \text{Rs. } 3,00,000 \div 3.037 = \text{Rs. } 98,782$$

Calculation of interest tax shield (in Rs.)

| Opening outstanding | Interest @ 12% | Instalment | Principal | Closing Outstanding | Tax savings on Interest | PVIF @ 8.4% | PV of tax savings |
|---------------------|----------------|------------|-----------|---------------------|-------------------------|-------------|-------------------|
| 3,00,000            | 36,000         | 98,782     | 62,782    | 2,37,218            | 10,800                  | 0.9225      | 9,963             |
| 2,37,218            | 28,466         | 98,782     | 70,316    | 1,66,902            | 8,540                   | 0.8510      | 7,268             |
| 1,66,902            | 20,028         | 98,782     | 78,754    | 88,148              | 6,008                   | 0.7851      | 4,717             |
| 88,148              | 10,634         | 98,782     | 88,148    | 0                   | 3,190                   | 0.7242      | 2,310             |
| Total               |                |            |           |                     |                         |             | 24,258            |

Calculation of depreciation tax shield (in Rs.)

| Depreciation | Tax savings | PVIF @ 8.4% | PV of tax savings |
|--------------|-------------|-------------|-------------------|
| 75,000       | 22,500      | 0.9225      | 20,756            |
| 75,000       | 22,500      | 0.8510      | 19,148            |
| 75,000       | 22,500      | 0.7851      | 17,665            |
| 75,000       | 22,500      | 0.7242      | 16,295            |
|              |             |             | 73,864            |

Present value of cash flow under buy option

| Particulars   | Rs.      |
|---|----------|
| Present value of instalments ( $98,782 \times 3.2828$ ) | 3,24,282 |
| Less: Interest tax shield                               | 24,258   |
| Less: Depreciation tax shield                           | 73,864   |
| Total   | 2,26,160 |

Since the present value of net cash outflow under leasing option is lower than that of buy option, leasing is preferable to buy option.

#### 4.3.5 International Finance and Syndication of Loans

International project finance and loan syndication are intertwined, offering a way to finance large, cross-border infrastructure or industrial projects. Loan syndication, where multiple lenders pool resources to provide a single loan, is often used in project financing, especially when large sums are needed and individual lenders are hesitant to take on the entire risk. This allows borrowers to take on projects with significantly higher leverage than traditional financing, while lenders share the risk and rewards.

International finance plays a very important role in financing the cost of capital of projects of the corporate sector. In international financial market, the borrower from one country may seek lenders in other countries in specific currency which need not be of the participant country. In international financial market, the availability of foreign currency is assured under four main systems:

**(a) Euro currency market:** funds are made available as loans through syndicated Euro credits/instruments known as Floating Rate Notes FRNs. Interest rates vary every 3 to 6 months based on London—Interbank offered—Rate. Syndicated Euro Currency bank loan has developed into one of

the most important instruments for international lending. Syndicated Euro credit is available through instruments viz. Term loan and Revolving Line facility.

**(b) Export credit facilities:** Export Credit Facilities are made available by several countries through an institutional frame work in which EXIM Banks play a prominent role. EXIM Bank of India is playing a significant role in financing exports and other off shore deals.

**(c) Bond issues:** International Bond Market provides facilities to raise long term funds by using different types of instruments. The bond market is generally known as Euro bond market.

**(d) UN Agency financial institutions viz. IMF of World Bank and its allied agencies, IFC (W), ADB, etc. provide finance in foreign currency.**

International Project Finance involves:

- (i) Cross-border investments:** International project finance involves financing investments across national borders, often through a legally and financially independent project company (SPV).
- (ii) Large infrastructure and industrial projects:** It's commonly used for long-term projects like infrastructure development (e.g., highways, power plants) or industrial projects (e.g., oil and gas, manufacturing).
- (iii) Risk sharing:** Project finance structures allow for risk sharing between the project sponsor (the company undertaking the project) and lenders.
- (iv) Government involvement:** Projects often involve governments, either as partners or regulators, leading to public-private partnerships and potentially reduced risk through government guarantees or credits.

#### **Loan Syndication:**

- (i) Pooling of resources:** Multiple lenders (banks, investors) come together to provide a loan to a borrower.
- (ii) Risk sharing:** The financial burden and risk are shared among the lenders in the syndicate.
- (iii) Large-scale projects:** Syndication allows for financing large projects or borrowers requiring substantial amounts that might be too risky or large for a single lender.
- (iv) Shared loan agreement:** There is typically one loan agreement for the entire syndicate, with each lender's liability limited to their share of the loan.
- (v) Relationship and transaction loans:** Loan syndication combines features of a relationship loan (based on long-term relationships with lenders) and a transaction loan (focused on the specific transaction).

#### **4.3.6 Others**

There are other sources of project finance include:

**A. Angel Investors:** Angel investors can provide project finance solutions through either debt or equity financing they are successful individuals with a strong industry expertise combined with the valuable connections they can bring the enterprise.

**B. Grants:** Grants or funds provided by the government bodies, foundations or corporations to support projects that align with their strategic interests for social benefits. Such project funding does not need to be repaid but projects must meet specific criteria to eligible.

#### **C. Public-Private Partnerships (PPPs)**

In PPP models, private firms finance, build, and operate public projects for a long-term concession period, recovering investment through user fees or government annuities.

- (i) **BOT (Build-Operate-Transfer):** BOT is a framework where the private entity receives a franchise to finance, design, build and operate a facility (and to charge user fees) for a specified period, after which ownership is transferred back to the public sector. This type of arrangement involves greatest level of private sector participation across a set of different functions and often covering a long period. The risk allocation to the private sector may be significant, including volume and finance risk, and potentially price risk.
- (ii) **BOOT (Build-Own-Operate-Transfer):** In this type of PPP model, the developer designs and builds a complete project or a facility at little or no cost to the government, owns and operates the facility as a business for a specified period (usually 10 to 30 years), after which transfers it to the government at a previously agreed-upon or market-price.
- (iii) **Design Build Operate and Transfer (DBOT):** In this type of PPP model the project is financed only to the extent of a certain percentage of the cost by the private investor and this investment is recovered through annuity payments to be made by the Government/Authority over a specified period commencing from the date of commissioning of the project. The balance percentage of the project cost is provided by the Government during the construction period.
- (iv) **Design Build Finance Operate and Transfer (DBFOT):** In this type of PPP mode, the project is developed by the concessionaire on Design, Build, Finance, Operate and Transfer concession framework. In consideration for performing its obligations under the agreement, the private sector party may be paid by the Government agency or from fees collected from the project's end users. The project is transferred back to the Government at the end of the concession duration.
- (v) **Lease Develop Operate Transfer (LDOT):** In this type of PPP arrangement, assets are leased out to the private sector under specific terms, to operate and maintain the asset for the term of the concession period, after which the assets are transferred to the authority.

## 4.4 Project Financing Structures

Two principal project financing structures have evolved over the years: Full recourse structure and limited recourse structure

### A. Full Recourse Structure

A "full recourse" structure in a project context means that all parties involved, including lenders, are fully responsible for the project's financial and operational obligations, regardless of the project's outcome. In a full recourse structure, if the project fails, the lender can pursue the project's sponsor or other parties for the outstanding debt.

#### Features of Full Recourse Structure

- (i) **Full Financial Responsibility:** The project's sponsor or related parties are fully responsible for repaying the loan, even if the project is not profitable or if there are unforeseen circumstances.
- (ii) **Direct Recourse to Debtors:** Lenders have the right to pursue the project's sponsor or related parties for the outstanding debt if the project fails.
- (iii) **Enhanced Risk Allocation:** The full recourse structure places more risk on the project sponsor or related parties, incentivizing them to manage the project effectively and minimize the risk of default.
- (iv) **Project-Specific Information Requirements:** Lenders in a full recourse structure will

typically require more detailed financial and operational information about the project and its sponsor.

- (v) **Loan Structure:** Full recourse loans often have a more complex structure, with more provisions for repayment, default, and enforcement.
- (vi) **Legal and Financial Controls:** Full recourse loans are usually accompanied by legal and financial controls to ensure the project is managed effectively and the lender's interests are protected.

#### **Examples:**

- **Construction Projects:** In construction projects, full recourse is common, where the developer or sponsor is responsible for repaying the loan, even if construction delays or cost overruns occur.
- **Infrastructure Projects:** Full recourse can also be used in infrastructure projects, where the project's sponsor is responsible for the loan's repayment, even if the infrastructure project is not commercially successful.

#### **B. Limited Recourse Structure**

In limited recourse project financing, lenders' claims are primarily limited to the project's assets and cash flows. If the project defaults, the lender's recourse is limited, and they cannot pursue the borrower's general assets. This means the liability of the project company's equity holders is also limited.

#### **Features of Limited Recourse Structure**

- (i) **Limited Liability for Sponsors/Equity Holders:** The primary source of repayment for the loan is the project's cash flow, not the sponsor's or equity holders' personal assets. The sponsor's liability is often limited to their equity investment and any specific guarantees or commitments outlined in the loan agreement.
- (ii) **Security and Collateral:** The project's assets and, in some cases, guarantees from the sponsor or equity holders, serve as the main security for the loan. Lenders typically have the right to take possession of the project's assets if the project defaults, but their recourse is limited to these assets.
- (iii) **Risk Allocation:** The limited recourse structure shifts some of the risk of project failure onto the lenders, as they rely heavily on the project's success. This can lead to higher interest rates or more stringent requirements for the project's completion and operation to ensure sufficient cash flow for repayment.
- (iv) **Contractual Agreements:** A series of contracts, including those between the project company, lenders, suppliers, and customers, are essential in a limited recourse structure. These contracts define obligations, responsibilities, and dispute resolution mechanisms.
- (v) **Common in Large Projects:** Limited recourse financing is often used for large infrastructure projects, like roads, bridges, or power plants, where the project's cash flow is the primary source of repayment.

#### **Examples:**

- A developer financing a real estate project with a limited recourse loan can only have their claim to the property being developed as collateral if they default.
- In hotel financing, lenders may require additional guarantees or commitments from the sponsor, but the recourse to the sponsor is often limited to a specified amount

## 4.5 Project Cost

A large number of companies who are in the business of project design, engineering, procurement and construction, use cost data for arriving at the price of the project as they have to participate in competitive bidding for securing future business. Pricing of a project, although based on quite a great deal of cost data, may still be construed as an art albeit partially. At any rate, it is a strategy - Those who talk, don't know and those who know, don't talk.

Project Cost refers to the total financial resources required to complete a project successfully, from inception to closure. It encompasses all direct and indirect expenses associated with planning, executing, monitoring, and delivering the project objectives. Proper estimation, allocation, and control of project costs are critical to ensure a project stays within its approved budget while meeting its goals.

### 4.5.1 Factors Affecting the Cost of Project

Cost estimation accounts for each and every element required for the project like materials, labour, construction equipments, design of the project, time overrun etc. and calculates a total amount that determines a project's budget from the beginning till end.

Various costs incurred in a construction project are given below:

- (i) **Material Cost:** Many factors can impact the cost of a construction project, and one of them is the materials used. Some materials, like concrete and steel, are very expensive and required in bulk, while others, like wood, are relatively affordable. The type of materials used can have a significant impact on the overall cost of a project.
- (ii) **Impact of Labor Wage on Project Cost:** The impact of labour wages on project cost is an important consideration for any business or organization. Labour costs can have a significant impact on the overall cost of a project, and this needs to be taken into account when budgeting for a project. Several factors can impact the cost of labor, including the type of work being done, the skills required, and the location of the work.
- (iii) **Impact of Method of Construction on Project Cost:** The method of construction is how the project is built, and it can have a significant impact on the overall cost. For example, traditional methods of construction tend to be more expensive than newer methods such as modular construction. Other factors that can impact the cost of a construction project include the size and scope of the project, the location, and the type of materials used.
- (iv) **Impact of Variation Orders on Project Cost:** Projects are often subject to change which modify the scope of work that is requested by the client after the commencement of construction. These changes can be minor, such as adding an extra light fixture to a room, or major, such as adding a floor to a building.
- (v) **Impact of Delay on Cost Overrun in Project Cost:** Construction projects are often delayed due to a variety of factors, including bad weather, material shortages, and problems with the construction crew. While delays can be frustrating, they can also have a significant impact on the overall cost of the project. Cost overruns are common in construction, and they are often the result of delays. When a project is delayed, the contractor may need to pay overtime to the construction crew, and they may also need to pay for storage fees if the project site is not ready to receive materials.
- (vi) **Nature of Construction site:** The project site can heavily influence the construction cost of the project. Site conditions such as poor soil, presence of pipes, uneven land, archaeological site, water bodies and environmentally hazardous spaces could increase the cost of the project

manifold. Thus, they must be essentially covered in the project cost.

- (vii) **Size of the project:** A large-sized project requires a large workforce and more materials. Thus, the construction cost would enormously differ based on the size of the project. For instance, a project on 1,000 sq. ft. will entail lower development cost compared to a project on 5,000 sq. ft.

## 4.5.2 Classification of Project Cost

Project cost classification refers to categorizing various types of costs that are incurred throughout the life cycle of a project. Proper classification allows project managers to track, control, and analyze expenditures accurately, ensure financial accountability, and optimize resource usage.

### 1. Classification by Cost Components

#### a) Direct Costs

- Costs that are directly attributable to the specific project.
- Easily traceable to activities or deliverables.

**Examples:** Materials, Project-specific labour (e.g., contractors, consultants), Equipment used exclusively for the project

#### b) Indirect Costs (Overheads)

- Costs not directly linked to a specific project task but necessary for overall execution.
- Shared across multiple projects or organizational functions.

**Examples:** Office rent, administrative salaries, Utilities

### 2. Classification by Cost Behaviour

#### a) Fixed Costs

- Remain constant regardless of project size or activity level.
- Incurred even if the project output changes.

**Examples:** Equipment leases, Project office rent, Salaried project staff

#### b) Variable Costs - Change proportionally with the level of project activity or output.

**Examples:** Raw material usage, Wages for hourly labour, Fuel for machinery

#### c) Semi-variable Costs

- Have both fixed and variable components.

**Examples:** Utility bills (fixed base + usage-based charges), Maintenance expenses

### 3. Classification by Project Phase

Project costs can be categorized based on when they occur during the project life cycle:

#### a) Initiation Phase Costs

- Feasibility studies
- Business case preparation
- Initial stakeholder meetings

#### b) Planning Phase Costs

- Detailed design and architecture
- Cost estimation and scheduling tools
- Risk assessment costs

#### c) Execution Phase Costs

- Procurement of resources
- Labor, materials, and equipment
- Subcontracting

#### d) Monitoring and Controlling Costs

- Quality control and audits
- Reporting and tracking systems
- Change management costs

**e) Closing Phase Costs**

- Final audits
- Handover expenses
- Documentation and training

**4. Classification by Function**

**a) Construction/Production Costs** - Costs involved in producing tangible outputs.

**Examples:** Concrete, steel, fabrication, building works.

**b) Administrative Costs** - Overhead and back-office support expenses.

**Examples:** Payroll processing, office supplies, insurance.

**c) Marketing and Communication Costs** - Stakeholder engagement, advertisements, brochures.

**d) Legal and Compliance Costs** - Licensing, permits, legal advice, regulatory compliance.

**5. Classification by Cost Purpose**

**a) Capital Costs (Capex)**

- Costs for acquiring long-term assets or investments.
- One-time expenses that are capitalized and depreciated.

**Examples:** Land purchase, Construction of buildings, Equipment procurement

**b) Operating Costs**

- Day-to-day expenses required for project execution.
- Not capitalized; recorded as expenses.

**Examples:** Salaries, Consumables, Fuel and maintenance

**6. Classification by Accounting Relevance**

**a) Controllable Costs** - Can be influenced or controlled by the project manager or team.

**Examples:** Hiring decisions, procurement sources.

**b) Uncontrollable Costs** - Outside the direct control of the project team.

**Examples:** Tax rates, inflation, global fuel prices.

**7. Classification by Risk and Uncertainty**

**a) Base (Estimated) Costs** - Forecasted costs under normal project conditions.

**b) Contingency Costs**

- Allocated for identified risks and uncertainties.
- Managed by the project team.

**c) Management Reserve**

- Set aside for unknown or unforeseen risks.
- Typically controlled by top management.

**8. Classification by Time**

**a) Historical Costs**

- Actual costs incurred in past projects.
- Used for benchmarking and future estimation.

**b) Forecasted/Estimated Costs** - Predicted future costs based on planning data.



Proper cost classification is not just an accounting exercise—it is a strategic tool that supports project success through financial discipline.

### **4.5.3 Process of Project Cost Management**

The process of project cost involves a series of systematic steps that ensure a project is delivered within its approved budget while meeting its goals and quality standards. This process is part of Project Cost Management.

There are four main processes in project cost management:

#### **1. Plan Cost Management**

##### **Purpose:**

To establish the policies, procedures, and documentation required to plan, manage, and control project costs.

##### **Key Activities:**

Develop a cost management plan that defines Units of measure, Precision and accuracy levels, Reporting formats, Rules for performance measurement (e.g., Earned Value Management), Budget change control procedures.

- Align the cost plan with the project scope and schedule.

#### **2. Estimate Costs**

##### **Purpose:**

To determine the approximate cost of resources required to complete project activities.

##### **Key Activities:**

- Identify cost drivers (labour, materials, equipment, etc.).
- **Use estimation techniques:**
  - **Analogous Estimating:** Based on past similar projects.
  - **Parametric Estimating:** Uses statistical models (e.g., cost per square foot).
  - **Bottom-Up Estimating:** Detailed estimation of individual tasks, then summing up.
  - **Three-Point Estimating:** Uses optimistic, pessimistic, and most likely scenarios.
- Factor in risk, inflation, currency fluctuations, and market conditions.
- Document assumptions and constraints.

##### **Outputs:**

- Activity cost estimates
- Basis of estimates
- Cost estimate documentation

This step generates a cost forecast that feeds into budgeting.

#### **3. Determine Budget**

##### **Purpose:**

To aggregate the estimated costs of individual activities or work packages to establish an authorized cost baseline.

##### **Key Activities:**

- Combine all cost estimates to form a total project budget.
- Allocate costs to the project schedule (time-phased budgeting).
- Identify and include contingency reserves (for known risks) and management reserves (for unknowns).
- Ensure alignment with funding limits and organizational financial strategies.
- Gain formal approval of the project budget.



**Outputs:**

- Cost baseline (used to measure performance)
- Project funding requirements

This is the step where cost estimates become the official budget.

**4. Control Costs****Purpose:**

To monitor the status of the project to update the cost baseline and manage changes to the budget.

**Key Activities:**

- Use Earned Value Management (EVM) to assess performance:
  - Planned Value (PV)
  - Earned Value (EV)
  - Actual Cost (AC)
  - Cost Variance (CV) and Cost Performance Index (CPI)
- **Forecast future costs:**
  - Estimate to Complete (ETC)
  - Estimate at Completion (EAC)
- Monitor against the cost baseline.
- Analyze cost variances and take corrective actions.
- Implement change control when there are scope or cost deviations.

**Outputs:**

- Work performance information
- Cost forecasts
- Change requests
- Updated project documents

**4.5.4 Project Cost Estimation Methods**

Starting with the concept to commissioning of projects, we may need different types of cost estimates and its methods. It depends on the level or degree of accuracy. These are discussed below:

**A. Order-of-Magnitude Cost Estimates**

This type of cost estimate is made without any detailed engineering data. This cost estimate may be accurate  $\pm 25\%$  within the scope of the project. It may be based on past experience in India or abroad with foreign principals or it he based on capacity estimates. Companies operating in international project business. use quite a great of information from their home projects and use broad ‘scaling factors’ to obtain the cost in the currency of the customer country.

Another broad parameter used is in terms of rupee crores per megawatt of electricity generation for power plants, per kilometer railway track in plains or per kilometer of railway electrification for single, double, triple or quadruple tracts or per kilometer of road (to a known specification) to be constructed. These order-of-magnitude cost estimates are useful for preliminary discussions and project formulation.

**B. Approximate Cost Estimate (PFR Estimates)**

Also called top-down estimate, it is done without detailed engineering data and may be accurate

+15%. This type of estimate is undertaken at the time of Preliminary Feasibility Report (PER) stage. Here various techniques of costing like pro rata estimate from experience of doing similar projects in the past and updating for inflation are used. It may also be described as estimating by analogy or rule of thumb estimates. Similar activities are extensively used as indexing costs.

#### **C. Economic Feasibility Cost Estimate (TEFR Estimates)**

The Economic Feasibility Cost Estimate is used for working out the product cost and pricing and consequently the profitability analysis of the project depends on this cost estimate. This is based on a reasonable degree of detailed engineering data and should be accurate + 10% for Techno Economic Feasibility Report (TEFR) stage.

#### **D. Detailed Project Cost Estimate (DPR Estimates)**

During the project formulation, a number of aspects get defined. Some preliminary drawings like layouts, process flow diagrams, piping and instruments (also called engineering line) diagrams are prepared and company firms up its action plan by preparing a detailed project cost estimate - corresponding to Detailed Project Report (DPR) stage and is expected to be accurate to + 5%. At this state, costing exercise is very detailed and costs of all major plant items are supported by proper price quotations from the intended suppliers. Even at this stage, cost of construction and erection labour and cost of overheads are estimated factorial. Control Cost Estimates after making some progress on the basic design viz. drawing up of detailed scheme, flow diagrams and layouts, a very detailed exercise on cost-estimates is undertaken.

#### **4.5.4 Determination of the Project Cost (Manufacturing Plant)**

The different heads under which investments are to be made for a manufacturing plant may be presented as under:

Statement of Estimated Project Cost

| <b>S. No</b> | <b>Particulars of assets</b>   | <b>Cost already incurred</b> | <b>To be incurred</b> | <b>Total Cost</b> |
|--------------|--|------------------------------|-----------------------|-------------------|
| 1            | Land   |                              |                       |                   |
| 2            | Site Development   |                              |                       |                   |
| 3            | Civil Construction Work (Factory, Office and other civil structure) including building electrification)    |                              |                       |                   |
| 4            | (Giving break up for indigenous and imported separately)   |                              |                       |                   |
| 5            | Plant Erection and installation expenses   |                              |                       |                   |
| 6            | Plant Electrification including cost of captive power plant  |                              |                       |                   |
| 7            | Other manufacturing assets like dies, moulds, materials handling equipment, Effluent Treatment Plant, etc. |                              |                       |                   |

|    |  |  |  |  |
|----|--|--|--|--|
| 8  | Technical Know-how fees, if any  |  |  |  |
| 9  | Deposits   |  |  |  |
| 10 | Other assets like furniture, office equipment, computers, vehicles, etc. |  |  |  |
| 11 | Preliminary Expenses   |  |  |  |
| 12 | Preoperative Expenses  |  |  |  |
| 13 | Contingencies  |  |  |  |
|    | Total Capital Cost   |  |  |  |
| 14 | Margin money for Working Capital   |  |  |  |
|    | Total Project Cost   |  |  |  |

### MCQs

- The key features of project finance that distinguishes it from other forms of financing:
  - Short-term financing, minimal risk, high liquidity
  - Long-term financing, limited recourse, asset-based financing
  - High interest rates, low leverage, government subsidies
  - Variable interest rates, high leverage, no collateral

**Answer: (b)**

- Which of the following is not a stakeholder in a project finance transaction?
  - Project Sponsors
  - Lenders
  - Host Government
  - Competitors in the same industry

**Answer: (d)**

- The primary source of debt repayment in a typical project finance structure is:
  - The sponsor's retained earnings.
  - The cash flows generated by the project itself.
  - Proceeds from the sale of the sponsor's other assets.
  - Government subsidies provided to the sponsors.

**Answer: (b)**

- The term "non-recourse" or "limited-recourse" financing primarily refer to:
  - Lenders have no recourse to the project assets in case of default.

- (b) Lenders' recourse to the sponsors is limited to their equity investment.
- (c) The project company has no recourse to external funding if cost overruns occur.
- (d) The host government provides a guarantee against all project risks.

**Answer: (b)**

5. Why would businesses consider the use of project finance in a proposed project by availing the best alternative?
- (a) To access long-term funding, alternatives include corporate financing and government grants
  - (b) To minimize risk, alternatives include equity financing and venture capital
  - (c) To maximize control, alternatives include debt financing and angel investors
  - (d) To reduce complexity, alternatives include mezzanine financing and private placements

**Answer: (a)**

6. Would a listed companies share price go if it announces it will use project finance for a proposed new project?
- (a) Increase, as project finance is perceived as less risky
  - (b) Decrease, as project finance may indicate higher leverage and limited recourse
  - (c) Remain unchanged, as project finance has no impact on share price
  - (d) Fluctuate, depending on the specific terms of the project finance

**Answer: (b)**

7. A 'LOC' facility in project finance indicates:
- (a) A line of credit facility for project financing
  - (b) A facility for issuing letters of credit
  - (c) A loan origination center facility
  - (d) A lease origination center facility

**Answer: (a)**

8. Which of the following is a common type of risk mitigated through contractual arrangements in project finance?
- (a) Changes in global interest rates.
  - (b) Political instability in the host country.
  - (c) Natural disasters affecting the project site.
  - (d) Supply risk for key project inputs.

**Answer: (d)**

9. "Completion guarantee" in project finance implies:
- (a) A guarantee from the host government that the project will be completed on time.
  - (b) A guarantee from the lenders that sufficient funds will be available until project completion.
  - (c) A guarantee from the sponsors or a contractor that the project will be completed according to specifications and timelines.
  - (d) An insurance policy covering all risks until the project reaches commercial operation.

**Answer: (c)**

10. Which of the financial model is crucial for assessing the viability and bankability of a project finance transaction?
- (a) A simple payback period calculation.
  - (b) A discounted cash flow (DCF) model.
  - (c) A balance sheet projection for the sponsors.
  - (d) A stock valuation model for publicly listed sponsors.

**Answer: (b)**

11. Which of the following is an important phase in the lifecycle of a project finance transaction?
- (a) Liquidation of the Special Purpose Vehicle (SPV).
  - (b) Initial Public Offering (IPO) of the project company.
  - (c) Development and appraisal.
  - (d) Acquisition of a competing project.

**Answer: (c)**

12. The main rationale for using project finance, in the case of (i) Sponsors, (ii) Lenders
- (a) Sponsors: Minimize control, Lenders: Maximize risk
  - (b) Sponsors: Access long-term funding, Lenders: Limit recourse
  - (c) Sponsors: Maximize leverage, Lenders: Minimize returns
  - (d) Sponsors: Ensure liquidity, Lenders: Maximize control

**Answer: (b)**

13. Who are the main parties to project financing?
- (a) Sponsors, government, and shareholders
  - (b) Lenders, contractors, and regulatory authorities
  - (c) Sponsors, lenders, and off-takers
  - (d) Equity investors, financial advisors, and project managers

**Answer: (c)**

14. The role of an "off-taker" in a project finance deal, particularly in infrastructure projects like power plants indicates:
- (a) The company responsible for the construction of the project.
  - (b) The entity that agrees to purchase the output (e.g., electricity) generated by the project.
  - (c) The financial institution providing the majority of the debt financing.
  - (d) The government agency regulating the project's operations.

**Answer: (b)**

15. The characteristic of "mezzanine financing" in project finance indicates:
- (a) It is the most senior form of debt with the highest priority for repayment.
  - (b) It typically has a lower interest rate compared to senior debt.
  - (c) It is provided by government agencies at subsidized rates.
  - (d) It is a hybrid of debt and equity, often with equity conversion features.

**Answer: (d)**

16. \_\_\_\_ are those which are created by combining the features of equity with bond, preference, and equity.

- (a) Mixed instruments
- (b) Baby bond
- (c) Hybrid instruments
- (d) Hypothetical instruments

**Answer: (c)**

17. What is the purpose of a "reserve account" in a project finance structure?

- (a) To distribute excess cash flow to the sponsors.
- (b) To provide a buffer for unexpected expenses or shortfalls in revenue.
- (c) To pay down the principal amount of the debt at an accelerated pace.
- (d) To fund future expansion projects.

**Answer: (b)**

18. The term "equity bridge loan" in project finance describes:

- (a) A short-term loan used to finance the initial equity contributions of the sponsors.
- (b) A loan that bridges the gap between senior debt and mezzanine financing.
- (c) A loan provided by the host government to support equity investors.
- (d) A long-term loan that converts into equity after a certain period.

**Answer: (a)**

19. What is the "base case" scenario in a project finance financial model?

- (a) The most optimistic set of assumptions for the project's performance.
- (b) The most conservative set of assumptions for the project's performance.
- (c) The scenario that reflects the most likely or expected outcome for the project.
- (d) A scenario that assumes zero debt financing for the project.

**Answer: (c)**

20. External sources of finance do not include:

- (a) Leasing
- (b) Debentures
- (c) Retained earnings
- (d) Overdrafts

**Answer: (b)**

21. HP LTD. expects a minimum yield of 10% on its investment in the leasing business. It proposes to lease a machine costing ₹ 5,00,000 for ten years. Yearly lease payments are received in advance. What is the lease rental to be charged by the company for lease? [Given, Annuity Factor for 10% of 9 years is 5.759]

- (a) ₹ 71,372
- (b) ₹ 73,975
- (c) ₹ 74,370
- (d) ₹ 74,951

**Answer (b): ₹ 73,975**

Let, lease rental per annum be x

$$\begin{aligned}\text{₹ } 500000 &= x + x / (1+0.1) + x / (1+0.1)^2 + \dots + x / (1+0.1)^9 \\ &= x + 5.759 x = 6.759 x \text{ or, } x = \text{₹ } 5,00,000 / 6.759 = \text{₹ } 73,975.\end{aligned}$$

22. Which of the following is NOT a component of a project's total cost?

- (a) Direct labor costs
- (b) Indirect labor costs
- (c) Material costs
- (d) Taxes on the project's profit

**Answer: (d)**

23. Which of the following is NOT a factor in project cost estimation?

- (a) Project scope
- (b) Resource availability
- (c) Project duration
- (d) Market price for raw materials

**Answer: (b)**

24. Costs associated with the design, planning, installation and commissioning of a project are:

- (a) Variable costs
- (b) Capital costs
- (c) Salvage value
- (d) Interest costs

**Answer (b)**

25. What is the term for the process of identifying and managing potential cost overruns during a project?

- (a) Cost estimation
- (b) Cost control
- (c) Cost planning
- (d) Cost analysis

**Answer (b)**

26. What is the term for the difference between the estimated project cost and the actual project cost?

- (a) Cost variance
- (b) Budget variance
- (c) Cost overruns
- (d) Cost savings

**Answer: (a)**

## Unit 5

### Risk Factors, Project Planning & Scheduling including PERT & CPM

#### Contents

- Project related Risks
- Project Planning
- Project Scheduling
  - PERT
  - CPM

#### 5.0 Introduction

Risk is inherent in almost every business decision. More so in capital budgeting decisions as they involve costs and benefits extending over a long. Time during which many things can change in unanticipated ways. Project risk analysis is a structured process where project teams identify, assess, and plan for potential threats and opportunities that could impact project objectives. It involves defining risks, evaluating their likelihood and impact, and developing strategies to mitigate or avoid them. Project scheduling uses techniques like PERT (Program Evaluation and Review Technique) to plan and control projects, especially those with uncertain task durations.

##### 5.1.1 Sources of Risk

There are several sources of risk in a project. These are:

- (i) **Project specific risk:** The earnings and cash flows of the project may be lower than expected because of estimation error or due to some other factors specificity to the project like the quality of management.
- (ii) **Competitive risk:** The earnings at cash flows up the project may be affected by on anticipated actions of the competitors.
- (iii) **Industry specific risk:** Unexpected technological developments and regulatory changes that are specific the industry to which the project belongs, will have an impact on the earnings and cash flows of the project as well.
- (iv) **Market risk:** Unanticipated changes in macroeconomic factors like the GDP growth rate interest rate and inflation have been impact on all the projects.
- (v) **International risk:** In case of a foreign project the earnings and cash flows may be different than expected due to the exchange rate risk or political risk.

##### 5.1.2 Different Types of Risks associated with Projects

The lenders will identify the various risks associated with the project and look at the quality of assessment on the same and strategies followed to mitigate them. Following are the risks associated with projects.

- (1) **Completion risk:** Completion risk in project finance refers to the potential failure of a project to be completed on time and within budget. The completion risk means that project may not be



completed within time and cost framework. Further, the project may turn out to be technically not feasible and environmental unfriendly. The lenders will be the most sufferers, if the project does not get completed.

- (2) **Technological risk:** A project's use of complex or untested technology may lead to cost and time overrun. Even if the proposed technology may be the state-of-the-art technology but the industry may be such which is fast evolving. Further the project may not meet the desired quality specifications, at the projected capacity utilization level.
- (3) **Raw material supply risk:** The quality and quantity of resource (natural resource, material, parts supply) availability is critical to the project success. The quantity of resource availability must support the planned life of the project. The quality of resource availability has to ensure smooth operation of the technology
- (4) **Operation and maintenance risk:** The ability of the management of the Special Purpose Vehicle (SPV) to successfully operate and maintain the plant after its implementation is important for the project to be successful. For this purpose, the SPV may enter into an agreement with the specialized agency against a minimum level of fixed fee and a variable fee linked with its operating profits.
- (5) **Economic risk:** The economic risks pertain to market demand for the project output, and its market price. The demand for the product may not be sufficient to service the debt and to provide adequate returns to the sponsors. Further the prices may be very competitive, making the project margins very low for sustaining such a huge debt. The off-take agreement with the customers over the life of the project for its entire output and low-cost operation & maintenance agreement with the specialized agency will make lenders feel comfortable.
- (6) **Financial risk:** There is a generally very high debt ratio in case of project finance. If most of the debt is floating-rate, there is a possibility that rising interest rates may impair the ability of the firm to service the debt. It is termed as interest rate risk. The SPV may hedge the interest rate risk either by entering interest rate cap contract or interest rate swap agreement.
- (7) **Currency risk:** The currency risk arises when the project cost and revenue flows are in different currency say cost flows in US\$ and revenues flows are in home currency. In such a situation, a change in exchange rate will impact the project profitability & cash flows and its ability to service the debt.
- (8) **Political risk:** The domestic government due to political and social pressure may seize the MNC's project assets (known as direct expropriation), seize project cash flows (diversion) or change tax rates & royalty rates (creeping expropriation) and thus affect the project cash flows and returns to lenders and sponsors.
- (9) **Environmental risk:** The environmental risk is present when the environmental impact of the project causes a delay in project completion or necessitates an expensive project redesign. The case of Konkan Railway Corporation highlights various environmental, political as well as religious controversies in the choice of alignment in Goa faced by the SPV. The case argues for integration of environmental assessment in project formulation.

### 5.1.3 Project Risk Management

Project risk management typically involves five key phases: identification, analysis, evaluation, treatment, and monitoring. These phases help organizations proactively manage potential issues and ensure projects stay on track.

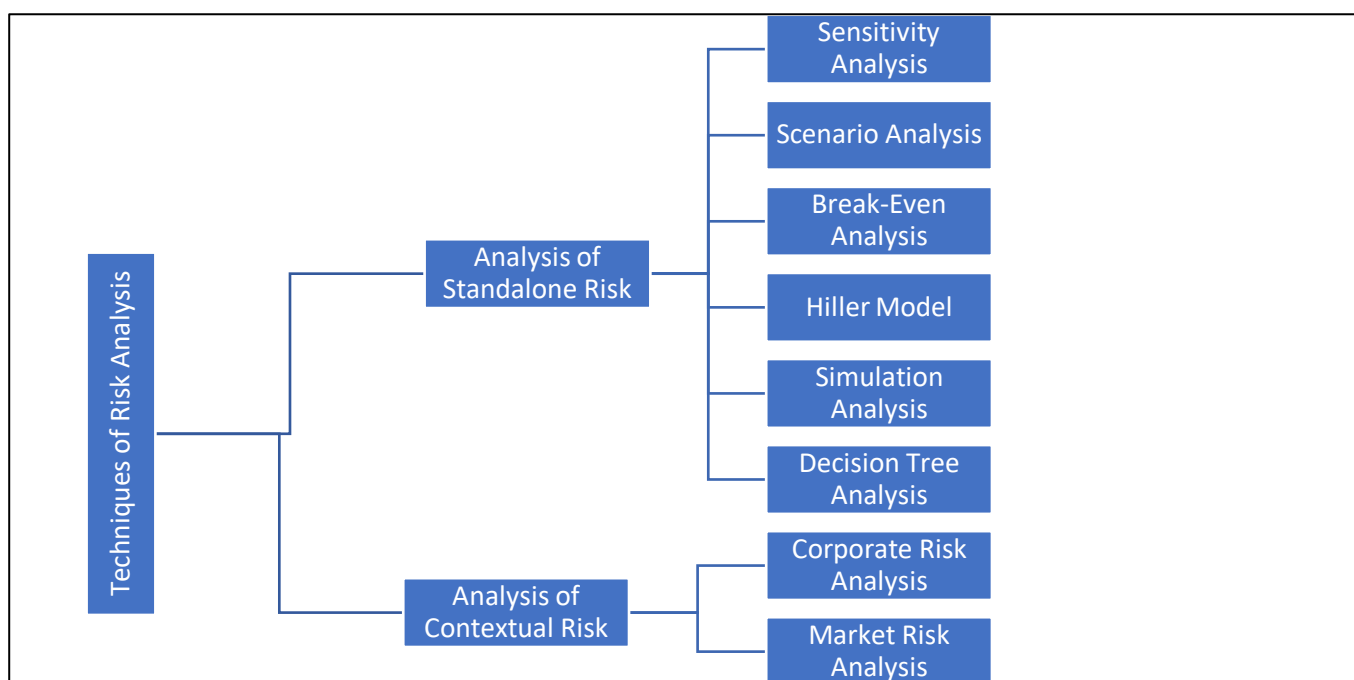
These are as follows:

- (1) **Identification:** This phase involves identifying all potential risks that could impact the project. This includes threats, opportunities, and any uncertainties that could affect the project's objectives.
- (2) **Analysis:** Once risks are identified, they need to be analyzed to understand their potential impact and likelihood of occurrence. This might involve using tools like probability and impact analysis to assess the severity of each risk.
- (3) **Evaluation:** This phase involves evaluating the identified risks and prioritizing them based on their severity and likelihood of occurrence. This helps determine which risks require immediate attention and which can be monitored.
- (4) **Treatment:** This phase focuses on developing and implementing strategies to address the identified risks. This can involve avoiding the risk, transferring it to a third party, reducing its impact, or accepting the risk.
- (5) **Monitoring and Review:** After implementing treatment plans, it's crucial to continuously monitor the risks and review the effectiveness of the implemented strategies. This helps ensure that the project stays on track and that risks are managed effectively throughout the project lifecycle.

### 5.1.4 Techniques of Risk Analysis in Project

Risk analysis is the most complex aspects of capital budgeting. Many different techniques have been suggested and no single technique can be deemed as based in all situations. Variety of techniques suggested to handle risk in capital budgeting fall into two broad categories:

- (i) Techniques that consider the standalone risk of a project.
- (ii) Techniques that consider the risk of a project in the context of the firm or in the context of the market.



### 1. Sensitivity Analysis:

Since the future is uncertain you may like to know what will happen to the viability of the project when some variables like sales or investment deviates from its expected value you may want to do what if analysis or sensitivity analysis. Sensitivity analysis provides different cash flow estimates under three assumptions: (i) the worst (i.e. the most pessimistic), (ii) the expected (i.e. the most likely), and (iii) the best (i.e. the most optimistic) outcomes associated with the project.

#### Example 1

From the undermentioned facts, compute the net present values (NPVs) of the two projects for each of the possible cash flows, using sensitivity analysis.

| Particulars                        | Project X (Rs) | Project Y (Rs) |
|------------------------------------|----------------|----------------|
| Initial cash outlays (t = 0)       | Rs.40,000      | Rs.40,000      |
| Cash inflow estimates (t = 1 – 15) |                |                |
| Worst                              | 6,000          | 0              |
| Most-likely                        | 8,000          | 8,000          |
| Best                               | 10,000         | 16,000         |
| Required rate of return            | 10%            | 10%            |
| Economic life (years)              | 15             | 15             |

The NPV of each project, assuming a 10 per cent required rate of return, can be calculated for each of the possible cash flows. Table below indicates that the present value interest factor annuity (PVIFA) of Re 1 for 15 years at 10% discount is 7.606. Multiplying each possible cash flow by PVIFA, we get:

| Expected Cash Inflows | Project X |                       | Project Y |                       |
|-----------------------|-----------|-----------------------|-----------|-----------------------|
|                       | PV        | NPV (Initial Cost-PV) | PV        | NPV (Initial Cost-PV) |
| Worst                 | Rs.45,636 | Rs.5,636              | Nil       | (Rs.40,000)           |

|             |           |           |             |            |
|-------------|-----------|-----------|-------------|------------|
|             |           |           |             |            |
| Most likely | Rs.60,848 | Rs.20,848 | Rs 60,848   | Rs. 20,848 |
| Best        | Rs.76,060 | Rs.36,060 | Rs.1,21,696 | Rs.81,696  |

The above Table demonstrates that sensitivity analysis can produce some very useful information about projects that appear equally desirable on the basis of the most likely estimates of their cash flows.

Project X is less risky than Project Y. The actual selection of the project (assuming that the projects are mutually exclusive) will depend on the decision maker's attitude towards risk.

If the decision maker is conservative, he will select Project X as there is no possibility of suffering losses. On the other hand, if he is willing to take risks, he will choose Project Y as it has the possibility of paying a very high return as compared to project X. Sensitivity analysis, in spite of being crude, does provide the decision maker with more than one estimate of the project's outcome and, thus, an insight into the variability of the returns.

## 2. Scenario analysis

Scenario analysis in project management involves evaluating potential project outcomes under different assumptions and uncertainties to identify risks and opportunities.

### Example 2

Spark Ltd. is a company that specializes in building tracks for high-speed trains. The company is the process of bidding for a new interstate train project. The chief bidding engineer has come up with a net present value estimate of Rs.814.5 Crore. His inputs include the company's weighted average cost of capital of 8%, cash inflows of Rs.2,000 crore which are expected at the end of 3rd year, annual expenditures for year 1, 2 and 3 of Rs.300 crore per year.

As the chief investment officer, you have made the following predictions:

For the best-case scenario, you predicted a WACC of 6.5%, cash inflows of Rs.2,100 crore at the end of 2nd year and cash outflows of Rs.400 crore at the end of 1st year and Rs.500 crore at the end of second year. For the worst-case scenario, you predicted a WACC of 9%, cash inflows of Rs.1,200 crore at the end of 4th year and cash outflows of Rs.200 crore at the end of each year for 4 years. The initial investment is 0 in all scenarios.

Find the best-case scenario and worst-case scenario.

### Answer

The summary of different scenarios are as follows:

| Particulars  | Base-Case  | Best Case  | Worst Case  |
|--------------|--|--|---|
| WACC         | 8%   | 6.5%   | 9%  |
| Cash Inflow  | Rs.2000 crore at the end of 3 <sup>rd</sup> year | Rs.2100 crore at the end of 2 <sup>nd</sup> year | Rs.1,200 crore at the end of 4 <sup>th</sup> year |
| Cash Outflow | Rs.300 crore per year for                        | Rs.400 crore at the end of 1st year and          | Rs.200 crore at the end of each year for          |

|  |               |                                     |         |
|--|---------------|-------------------------------------|---------|
|  | first 3 years | Rs.500 crore at the end of 2nd year | 4 years |
|--|---------------|-------------------------------------|---------|

NPV with the most likely figure (base-case) = Rs.814.5 Crore (given)

$$\text{NPV under best-case scenario} = \frac{-400}{(1+6.5\%)^1} + \frac{200-500}{(1+6.5\%)^2} - 0 = \text{Rs. 1,035 crore}$$

$$\text{NPV under worst-case scenario} = -200 \times PVIFA(9\%, 4) + \left(\frac{1200}{(1+9\%)^4} - 0\right) = \text{Rs. 202 crore}$$

From this scenario analysis, we find that the net present value of the project is expected to be between Rs.202 crore and Rs.1,035 crore with the most likely figure to be Rs.814.5 crore.

Thus, NPV is likely to vary within the range Rs.202 crores to Rs.1,035 crore.

### 3. Break-even Analysis

In project management, break-even analysis determines the point at which a project's total revenue equals its total costs, meaning it's neither profitable nor incurring a loss. This analysis helps project managers assess the financial viability of a project and identify the minimum output or revenue needed to cover costs.

Break Even Point (BEP) signifies the level of activity at which there is neither profit nor loss. It is the point where 'Total Revenues' equals 'Total Costs'. It is also the level of activity where Contribution equals the Fixed costs. Impliedly, BEP also signifies that Contribution is just sufficient to meet the Fixed Costs. Performance above the breakeven level reflects profit. Sales above the breakeven level reflect the Margin of Safety. Performance below the breakeven level reflects loss. BEP Sales in value can be ascertained by dividing the Fixed Costs with PV Ratio. Taking forward the illustration introduced in the preceding paragraphs, the BEP Sales of 'Model T' can be calculated as demonstrated in the following table followed by a graph:

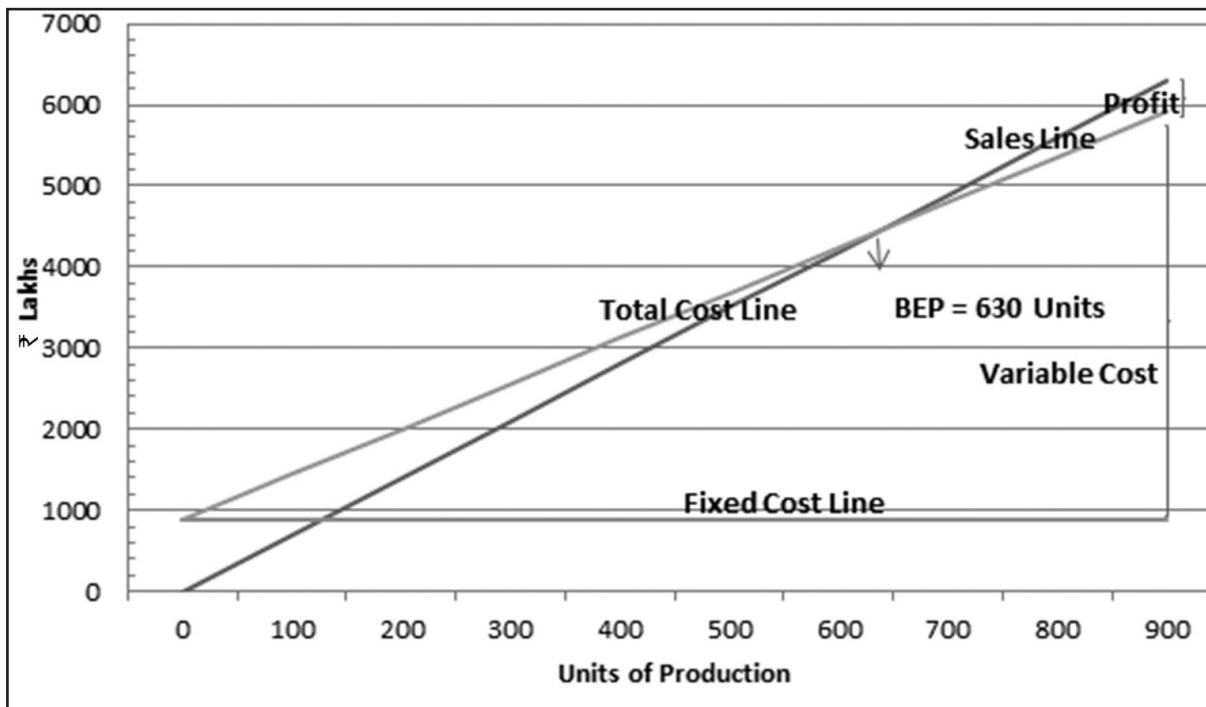
#### Example of BEP

ABL: BEP Analysis of 'Model T' for the month of

| Serial | Particulars   | Data    |
|--------|---|---------|
| 1      | Sales (Rs. Lakhs)                                     | 6300.00 |
| 2      | Contribution (Rs. Lakhs)                              | 1260.00 |
| 3      | Profit Volume Ratio (%)                               | 20.00   |
| 4      | Fixed Costs (Rs. Lakhs)                               | 882.00  |
| 5      | BEP Sales (Rs. Lakhs) (4/3)                           | 4410.00 |
| 6      | BEP Sales (Number/units) (4410.00 lakhs / 7.00 lakhs) | 630.00  |

The workings in the table show that ABL breaks even at a sale level of Rs. 4,410 lakhs. The BEP Sales computes to 630 in numbers and works out to 70.00%  $((630/900) \times 100)$  of the total sales. At this level, a contribution of Rs. 882.00 lakhs  $(630 \times 1,40,000)$  is generated which is equivalent of the Fixed Costs. Fixed costs having already been covered by the breakeven sales, the contribution accruing from margin of safety equals to the profit which in the instant case works out Rs. 378 lakhs being 20% of Rs.1890 lakhs (i.e.,  $6,300 \times 4,410$ ).

A higher margin of safety indicates better financial strength whereas a lower margin of safety throws up financial concerns.



We, thus, derive:

Break Even Point = Fixed Costs ÷ Profit Volume Ratio Margin of Safety

= Total Sales – Breakeven Sales

Profit = Margin of Safety × Profit Volume Ratio

Break-even pricing is a pricing methodology in which the price is set at a point where the product will earn zero profit. Break-even pricing is a common tool used by many an organisation to set the pricing strategy of their portfolio of products. The methodology helps the entity in setting up the lowest acceptable price. The main motive, in such instances, would be to increase the market share rather than earning profits. Numerous managerial decisions can be taken with the help of marginal costing, some of which are discussed in the following paragraphs.

### Example 3

PQR Ltd. sold 2,75,000 units of its product at Rs 37.50 per unit. Variable costs are Rs.17.50 per unit (manufacturing costs of Rs.14 and selling cost Rs.3.50 per unit). Fixed costs are incurred uniformly throughout the year and amounting to Rs.35,00,000 (including depreciation of Rs.15,00,000). There is no beginning or ending inventories.

You are required to compute breakeven sales level quantity and cash breakeven sales level quantity.

**Answer:**

$$\text{Break even Sales Quantity} = \frac{\text{Fixed Cost}}{\text{Contribution Margin per unit}} = \frac{\text{Rs.35,00,000}}{\text{Rs.37.50} - \text{Rs.17.50 i.e. Rs.20}} = 1,75,000 \text{ units}$$

$$\text{Cash Break-even Sales Quantity} = \frac{\text{Fixed Cost} - \text{Depreciation}}{\text{Contribution Margin per unit}} = \frac{\text{Rs.20,00,000}}{\text{Rs.20}} = 1,00,000 \text{ units}$$

#### 4. Hiller Model

The Hillier model, developed by F.S. Hillier, is a risk analysis tool used in project management to assess the uncertainty of project cash flows. It focuses on the standard deviation of expected cash flows to gauge the level of risk associated with a project. The model is particularly useful for projects with either continuous or discontinuous probabilistic events, but not for non-probabilistic events.

#### 5. Simulation analysis

Simulation analysis in project management involves using models and software to analyze potential project outcomes and their probabilities, helping to mitigate risks and make informed decisions. It allows project managers to explore various scenarios, understand potential impacts of different variables, and optimize project plans.

A simulation model is akin to sensitivity analysis as it attempts to answer ‘what if’ questions. However, the advantage of simulation is that it is more comprehensive than sensitivity analysis. To be effective, simulation requires a sophisticated computing package as it then enables to try out a large number of outcomes with much ease.

The first step in any simulation exercise is to develop the precise model of the investment project to be used by the computer. Once the model is developed, the computer calculates a random value of project returns (say, in terms of NPV) for each variable identified for the model. From each set/iteration/run of random values (consisting of all the variables listed in the model), a new series of cash flows (cash inflows and cash outflows) is generated and so also of NPV. The important variables in any typical capital budgeting project (most often used in the model) are market size and its growth rate, market share the proposed project is likely to capture, sales price, unit variable cost, total fixed costs, salvage value of the asset, economic useful life span of the project, cost of capital, working capital requirement, tax rate and so on.

This process of generating a random set of values is repeated numerous times (perhaps as many as a thousand times or even more for very large and complex investment projects). This iteration exercise enables the decision maker to develop a probability distribution of the net present value of the proposed investment project; this probability distribution is then used to compute the project’s expected mean value of NPV and its standard deviation. The value of standard deviation ‘then’ can be used to assess the level of risk associated with the project.

It is evident from the above that the probability distribution so developed (through the simulation process) is not only more credible, but it also enables the decision maker/finance manager to view a continuum of possible outcomes rather than a single point estimate.

#### Example 4

X Ltd. is evaluating an investment proposal which has uncertainty associated with all three major factors: the initial investment or original cost, the useful life and the annual cash flows. The probability distribution of the three variables are as follows:

|               |             |                   |
|---------------|-------------|-------------------|
| Original cost | Useful life | Annual cash flows |
|---------------|-------------|-------------------|

| Value<br>(Rs. lakh) | Probability | Value<br>(years) | Probability | Value<br>(Rs. Lakh) | Probability |
|---------------------|-------------|------------------|-------------|---------------------|-------------|
| 9.00                | 0.10        | 7.00             | 0.20        | 2.00                | 0.20        |
| 7.00                | 0.60        | 6.00             | 0.40        | 2.50                | 0.40        |
| 6.00                | 0.30        | 5.00             | 0.40        | 1.50                | 0.10        |
|                     |             |                  |             | 1.00                | 0.30        |

The firm's cost of capital is 15% and the risk-free rate of return is 12%. Suppose the finance manager feels that these two values are likely to remain unchanged during the life of the project.

Conduct simulation trials and determine the NPV. Advice on the acceptability of the project.

The random numbers are:

|                 |    |    |    |    |    |    |    |    |    |    |
|-----------------|----|----|----|----|----|----|----|----|----|----|
| Original Cost   | 52 | 37 | 82 | 69 | 98 | 96 | 33 | 50 | 88 | 90 |
| Useful Life     | 6  | 63 | 57 | 2  | 94 | 52 | 69 | 33 | 32 | 30 |
| Annual Cashflow | 50 | 28 | 68 | 36 | 90 | 62 | 27 | 50 | 18 | 36 |

**Answer:**

Calculation of cumulative Probability

| Original cost          |             |                           | Useful life      |             |                           | Annual cash flows      |             |                           |
|------------------------|-------------|---------------------------|------------------|-------------|---------------------------|------------------------|-------------|---------------------------|
| Value<br>(Rs.<br>lakh) | Probability | Cumulative<br>Probability | Value<br>(years) | Probability | Cumulative<br>Probability | Value<br>(Rs.<br>Lakh) | Probability | Cumulative<br>Probability |
| 9.00                   | 0.10        | 0.10                      | 7.00             | 0.20        | 0.20                      | 2.00                   | 0.20        | 0.20                      |
| 7.00                   | 0.60        | 0.70                      | 6.00             | 0.40        | 0.60                      | 2.50                   | 0.40        | 0.60                      |
| 6.00                   | 0.30        | 1.00                      | 5.00             | 0.40        | 1.00                      | 1.50                   | 0.10        | 0.70                      |
|                        |             |                           |                  |             |                           | 1.00                   | 0.30        | 1.00                      |

Calculation of random number intervals

| Original cost |                           |               | Useful life      |                           |               | Annual cash flows      |                           |               |
|---------------|---------------------------|---------------|------------------|---------------------------|---------------|------------------------|---------------------------|---------------|
|               | Cumulative<br>Probability | Random<br>No. | Value<br>(years) | Cumulative<br>Probability | Random<br>No. | Value<br>(Rs.<br>lakh) | Cumulative<br>Probability | Random<br>No. |
| 9.00          | 0.10                      | 0-9           | 7.00             | 0.20                      | 0-19          | 2.00                   | 0.20                      | 0-19          |
| 7.00          | 0.70                      | 10-69         | 6.00             | 0.60                      | 20-59         | 2.50                   | 0.60                      | 20-59         |
| 6.00          | 1.00                      | 70-99         | 5.00             | 1.00                      | 60-99         | 1.50                   | 0.70                      | 60-69         |
|               |                           |               |                  |                           |               | 1.00                   | 1.00                      | 70-99         |

Simulation Trials

| Run | Original cost (Rs.) |       | Useful life (Years) |       | Annual Cashflow (Rs.) |       | NPV<br>(Rs.) |
|-----|---------------------|-------|---------------------|-------|-----------------------|-------|--------------|
|     | Random<br>No.       | Value | Random<br>No.       | Value | Random<br>No.         | Value |              |
| 1   | 52                  | 7     | 6                   | 7     | 50                    | 2.5   | 4.41         |
| 2   | 37                  | 7     | 63                  | 5     | 28                    | 2.5   | 2.01         |



|              |    |   |    |   |    |     |       |
|--------------|----|---|----|---|----|-----|-------|
| 3            | 82 | 6 | 57 | 6 | 68 | 1.5 | 0.17  |
| 4            | 69 | 7 | 2  | 7 | 36 | 2.5 | 4.41  |
| 5            | 98 | 6 | 94 | 5 | 90 | 1.0 | -2.4  |
| 6            | 96 | 6 | 52 | 6 | 62 | 1.5 | 0.17  |
| 7            | 33 | 7 | 69 | 5 | 27 | 2.5 | 2.01  |
| 8            | 50 | 7 | 33 | 6 | 50 | 2.5 | 3.28  |
| 9            | 88 | 6 | 32 | 6 | 18 | 2.0 | 2.22  |
| 10           | 90 | 6 | 30 | 6 | 36 | 2.5 | 4.28  |
| Expected NPV |    |   |    |   |    |     | 20.56 |

Here, NPV is calculated by the formula,

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

Where,  $CF_t$  = Expected Cash flow in year t

n = useful life of the project

I = Original Cost (i.e., Initial investment)

k = Cost of capital

As the NPV is positive, the firm may accept the investment proposal.

## 6. Decision Tree Analysis

Decision tree analysis in project management is a technique that visually outlines potential project outcomes, costs, and consequences to aid in decision-making under uncertainty. It helps project managers evaluate different options and choose the most effective course of action by considering various scenarios and their potential impacts.

The decision-tree method analyses investment opportunities involving a sequence of decisions over time. Various decision points are defined in relation to subsequent chance events. The Expected NPV for each decision point is computed based on the series of NPVs and their probabilities that branch out or follow the decision point in question. In other words, once the range of possible decisions and chance events are laid out in tree-diagram form, the NPVs associated with each decision are computed by working backwards on the diagram from the expected cash flows defined for each path on the diagram. The optimal decision path is chosen by selecting the highest expected NPV.

## 5.2 Project Planning

Project planning is a structured approach to determining the specific steps needed to successfully complete a project. It involves defining project goals, scope, tasks, timelines, resources, and risks. Project planning creates a roadmap for the project, guiding the team from initiation to closure.

Project planning is at the heart of the project life cycle, and tells everyone involved where you are going and how you are going to get there. The planning phase is when the project plans are documented, the project deliverables and requirements are defined, and the project schedule is created. It involves creating a set of plans to help guide your team through the implementation and closure phases of the project. The plans created during this phase will help you manage time, cost, quality, changes, risk, and related issues. They will also help you control staff and external suppliers to ensure that you deliver the project on time, within budget, and within schedule.

The purpose of the project planning phase is to:

- (a) Establish business requirements
- (b) Establish cost, schedule, list of deliverables, and delivery dates
- (c) Establish resources plans
- (d) Obtain management approval and proceed to the next phase

The basic processes of project planning are:

- (i) Scope planning — specifying the in-scope requirements for the project to facilitate creating the work breakdown structure
- (ii) Preparation of the work breakdown structure — spelling out the breakdown of the project into tasks and sub-tasks
- (iii) Project schedule development — listing the entire schedule of the activities and detailing their sequence of implementation
- (iv) Resource planning — indicating who will do what work, at which time, and if any special skills are needed to accomplish the project tasks
- (v) Budget planning — specifying the budgeted cost to be incurred at the completion of the project
- (vi) Procurement planning — focusing on vendors outside your company and subcontracting
- (vii) Risk management — planning for possible risks and considering optional contingency plans and mitigation strategies
- (viii) Quality planning — assessing quality criteria to be used for the project Communication planning — designing the communication strategy with all project stakeholders.

(Source: Project Management, The Open University of Hong Kong, pp 92-94)

### **Phases of Project Planning**

Project planning generally involves five key phases: initiation, planning, execution, monitoring and control, and closure. These phases are essential for a project's success, guiding it from conception to completion. These are discussed below:

- (1) **Initiation:** This is the starting point where the project idea is evaluated, the project scope is defined, and key stakeholders are identified. It involves determining the project's objectives, scope, feasibility, and initial budget.
- (2) **Planning:** This phase involves developing a detailed project plan, including timelines, resources,

budget, and risk management strategies. A work breakdown structure (WBS) is often used to break down the project into manageable tasks.

- (3) **Execution:** This is where the actual work of the project takes place, with teams implementing the plan and completing tasks according to the schedule.
- (4) **Monitoring and Control:** This phase focuses on tracking the project's progress, identifying potential issues, and making necessary adjustments to keep the project on track. Project management tools and key performance indicators (KPIs) are used to monitor progress and ensure the project stays on budget and within scope.
- (5) **Closure:** This final phase involves wrapping up the project, documenting lessons learned, and ensuring all deliverables are complete and accepted. It also includes closing out contracts, releasing resources, and archiving project documentation.

### 5.3 Project Scheduling including PERT and CPM

Project scheduling is a process required to ensure the timely completion of a project. A real-life project involves hundreds of activities for which it is important to evaluate early and late times at which the activities start and finish. In addition, identifying the group of critical activities so that they can be focused to reduce the cause for delay. All these can be done by scheduling a project, which basically adds a time dimension to the planning process. Project scheduling includes all the tools require to ensure timely completion of the project. The project scheduling is sued for;

- (i) Knowing the activities timing and the project completion time.
- (ii) Having resources available on site in the current time.
- (iii) Making corrective actions if schedule shows that the plan will result in late completion.
- (iv) Assessing the value of penalties on project late completion.
- (v) Determining the project cash flow.
- (vi) Evaluating the effect of change orders on the project completion time.
- (vii) Determining the value of project delay and the parties responsible for the same.

#### 5.3.1 Project Scheduling Techniques

Project scheduling involves planning and controlling the timing of activities to achieve project goals on time and within budget. Several techniques, including Critical Path Method (CPM), Gantt charts, and Program Evaluation and Review Technique (PERT), are used to manage project timelines effectively. Other techniques include fast-tracking, crashing, resource leveling, and simulation. Few are discussed below:

##### A. Bar Charts

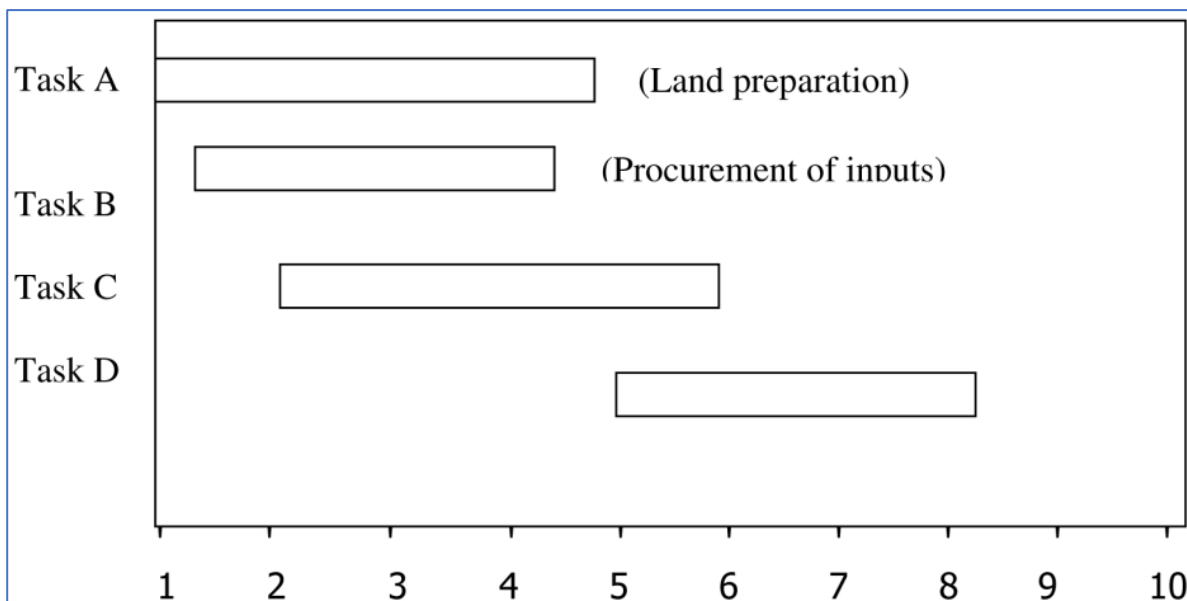
Bar charts are the pictorial representation of various tasks required to be performed for accomplishment of the project objectives. These charts have formed the basis of development of

many other project management techniques.

## B. Gantt Chart

Henry L Gantt (1861 – 1919) around 1917 developed a system of bar charts for scheduling and reporting progress of a project. These charts latter were known as **Gantt Charts**. It is a pictorial representation specifying the start and finish time for various tasks to be performed in a project on a horizontal time-scale. Each project is broken down to physically identifiable and controllable units, called the Tasks. These tasks are indicated by means of a bar, preferably at equi-distance in the vertical axis and time is plotted in the horizontal axis (Figure 1). In this figure “Task A” is land preparation, “Task B” is procurement of inputs etc. Land preparation (Task A) takes five days starting from day one. However, in practice the time scale is superimposed on a calendar i.e., if land preparation starts on 1st June it would be completed by 5th June. Length of the bar indicates required time for the task whereas the width has no significance. Though the bar chart is comprehensive, convenient, and very effective, it has the following limitations:

- Like many other graphical techniques are often difficult to handle large number of tasks in other words a complex project.
- Does not indicate the inter relationship between the tasks i.e., if one activity overruns time what would be the impact on project completion.



## C. Milestone Chart

Milestone chart is an improvement over the bar chart (Gantt chart) by introducing the concept of milestone. The milestone, represented by a circle over a task in the bar chart indicates completion of a specific phase of the task (Figure 2). For example, land preparation (Task A) includes ploughing

and leveling. From the simple bar chart, it is difficult to monitor progress of the ploughing. Introduction of a milestone on day 3 would specify that the ploughing would be completed by day 3 of the project i.e. 3rd June. In a milestone chart a task is broken down in to specific phases (activities) and after accomplishment of each of the specific activity a milestone is reached or in other words an event occurs. The chart also shows the sequential relationship among the milestones or events within the same task but not the relationship among milestones contained in different tasks. For example, in figure 2, the milestone 2 of task A cannot be reached until the milestone 1 is crossed and the activity between milestone 1 and 2 is over. Similarly, in task B the milestone 4 can begin only after completion of milestone 3. But the relationship between the milestone of task A and task B is not indicated in the milestone chart. Other weaknesses of this chart are as follows:

- Does not show interdependence between tasks.
- Does not indicate critical activities.
- Does not consider the concept of uncertainty in accomplishing the task.
- Very cumbersome to draw the chart for large projects.

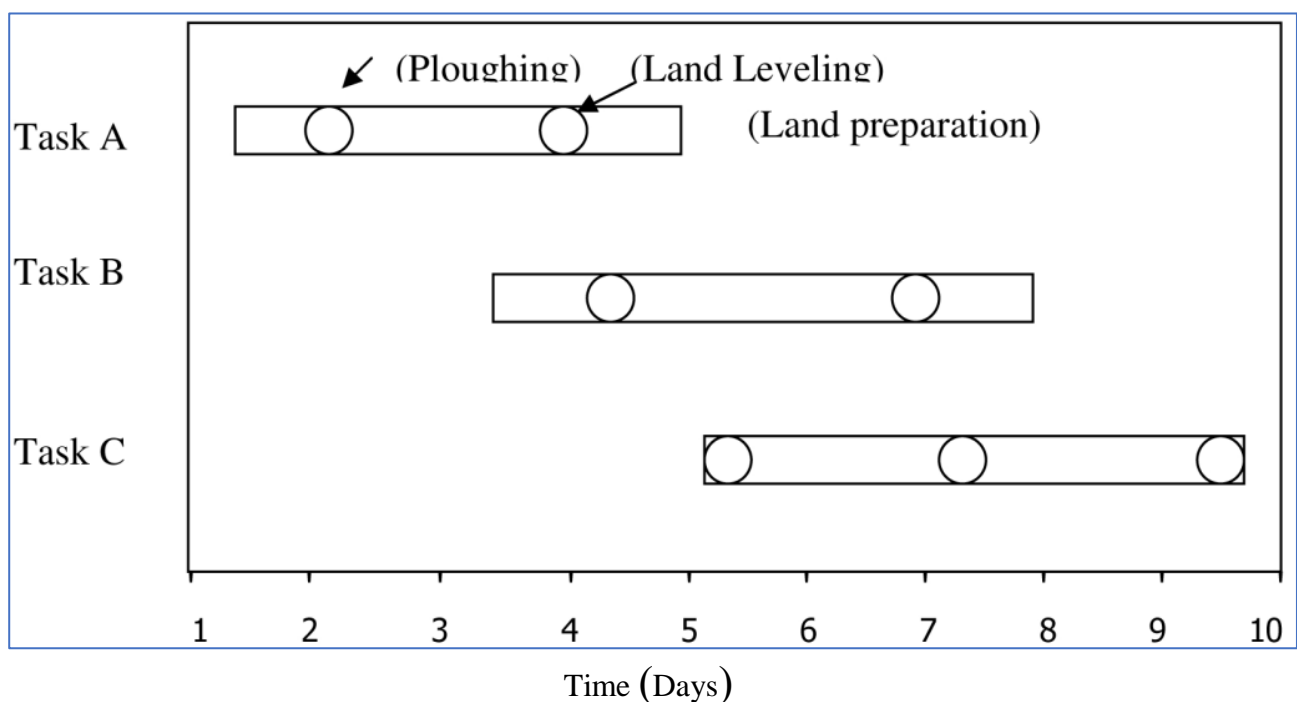


Figure 2: Milestone Chart

#### D. Networks

The network is a logical extension of Gantt's milestone chart incorporating the modifications so as to illustrate interrelationship between and among all the milestones in an entire project. The two best-known techniques for network analysis are Programme Evaluation and review Technique (PERT) and Critical Path Method (CPM). These two techniques were developed almost simultaneously

during 1956-1958. PERT was developed for US navy for scheduling the research and development activities for Polaris missiles programme.

CPM was developed by E.I. du Pont de Nemours & Company as an application to construction project. Though these two methods were developed simultaneously they have striking similarity and the significant difference is that the time estimates for activities is assumed deterministic in CPM and probabilistic in PERT. There is also little distinction in terms of application of these concepts. PERT is used where emphasis is on scheduling and monitoring the project and CPM is used where emphasis is on optimizing resource allocation. However, now-a-days the two techniques are used synonymously in network analysis and the differences are considered to be historical.

Both CPM and PERT describe the work plan of project where arrows and circles respectively indicate the activities and events in the project. This arrow or network diagram includes all the activities and events that should be completed to reach the project objectives. The activities and events are laid in a planned sequence of their accomplishments. However, there are two types of notations used in the network diagram. They are as under,

1. Activity-on-Arrow (AOA), and
2. Activity-on-Node (AON).

In AOA notation, the arrow represents the work to be done and the circle represents an event - either the beginning of another activity or completion of previous one. This is shown in figure 3.

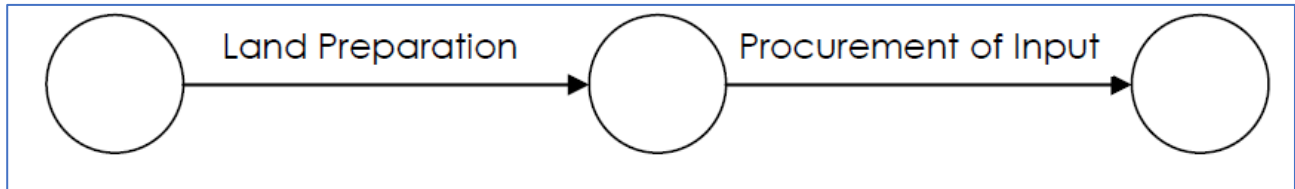


Figure 3. Activity on Arrow

For AON notation, a box (or node) is used to show the task itself and the arrow simply show the sequence in which work is done. This is shown in figure 4.



Figure 4. AON Diagram

Most project management software usually uses AON diagram. AOA network diagram are usually associated with the PERT diagram. This would be used in the following sections.

### 5.3.2 PERT (Programme Evaluation and Review Technique) and Critical Path Method (CPM)

Network analysis enables us to take a systematic quantitative structural approach to the problem of

managing a project through to successful completion. Also, since it has a graphical representation, it can be easily understood and used by those with a less technical background.

Network is a graphical representation of all the Activities and Events arranged in a logical and sequential order. Network analysis plays an important role in project management. A project is a combination of interrelated activities all of which must be executed in a certain order for its completion.

Activity is the actual performance of the job. This consumes resources (Time, human resources, money, and material). An event refers to start or completion of a job. This does not consume any resources.

### **Applications:**

- ◉ Construction of a Residential complex
- ◉ Commercial complex
- ◉ Petro-chemical complex
- ◉ Ship building, Aircraft Manufacturing
- ◉ Satellite mission development
- ◉ Installation of a pipe line project etc.

### **The procedure of drawing a network is:**

1. **Specify the Individual Activities:** From the work breakdown structure, a listing can be made of all the activities in the project. This listing can be used as the basis for adding sequence and duration information in later steps.
2. **Determine the Sequence of the Activities:** Some activities are dependent on the completion of others. A listing of the immediate predecessors of each activity is useful for constructing the CPM network diagram.
3. **Draw the Network Diagram:** Once the activities and their sequencing have been defined, the CPM diagram can be drawn. CPM originally was developed as an activity on node (AON) network, but some project planners prefer to specify the activities on the arcs.
4. **Estimate Activity Completion Time:** The time required to complete each activity can be estimated using past experience or the estimates of knowledgeable persons. CPM is a deterministic model that does not take into account variation in the completion time, so only one number is used for an activity's time estimate.
5. **Identify the Critical Path:** The critical path is the longest-duration path through the network. The significance of the critical path is that the activities that lie on it cannot be delayed without delaying the project. Because of its impact on the entire project, critical path analysis is an important aspect of project planning.

### **Rules for drawing the network diagrams**

In a network diagram, arrows represent the activities and circles represent the events.

- ◉ The tail of an arrow represents the start of an activity and the head represent the completion of the activity.
- ◉ The event numbered 1 denotes the start of the project and is called initial event.
- ◉ Event carrying the highest number in the network denotes the completion of the project and is called terminal event.



- ⊙ Each defined activity is represented by one and only arrow in the network.
- ⊙ Determine which operation must be completed immediately before other can start.
- ⊙ Determine which other operation must follow the other given operation.
- ⊙ The network should be developed on the basis of logical, analytical and technical dependencies between various activities of the project.

## **PERT and CPM**

Two different techniques for network analysis namely the PERT – Program Evaluation and Review Technique and CPM – Critical Path Method.

### **PERT (Programme Evaluation and Review Technique)**

PERT is a time-event network analysis technique designed to watch how the parts of a programme fit together during the passage of time and events. This technique was developed by the special project office of the U.S. Navy in 1958. It involves the application of network theory to scheduling, problems. In PERT we assume that the expected time of any operation can never be determined exactly.

PERT has the ability to cope with uncertainty in activity completion times while CPM emphasized on the trade- off between cost of the project and its overall completion time.

The CPM has the advantage of decreasing completion times by probably spending more money.

**Critical Path Method (CPM):** The critical path analysis is an important tool in production planning and scheduling. Gantt charts are also one of the tools of scheduling but they have one disadvantage for which they are found to be unsuitable. The problem with Gantt Chart is that the sequence of operations of a project or the earliest possible date for the completion of the project as a whole cannot be ascertained. This problem is overcome by this method of Critical Path Analysis.

CPM is used for scheduling special projects where the relationship between the different parts of projects is more complicated than that of a simple chain of task to be completed one after the other. This method (CPM) can be used at one extreme for the very simple job and at other extreme for the most complicated tasks.

One of the purposes of critical path analysis is to find the sequence of activities with the largest sum of duration times, and thus find the minimum time necessary to complete the project. The path of the Network with the critical series of activities is known as the ‘Critical Path’.

Under CPM, the project is analysed into different operations or activities and their relationship are determined and shown on the network diagram. So, first of all a network diagram is drawn. After this the required time or some other measure of performance is posted above and to the left of each operation circle. These times are then combined to develop a schedule which minimises or maximises the measure of performance for each operation. Thus, CPM marks critical activities in a project and concentrates on them.

## **Activities**

A project consists of tasks with definite starting and ultimate ending points and hence a project manager is saddled with the responsibilities of getting job done on schedule within allowable cost and time constraint specified by the management. Typically, all projects can be broken into:

**Separate activities** – where each activity has an associated completion time (time from the start of the activity to its finish).

**Precedence relationships** – which govern order in which we may perform the activities.



**Predecessor Activity** means the Activity that must be completed prior to the start of an Activity.

**Successor Activity** cannot be started until one or more of the other activities are completed but immediately succeed them.

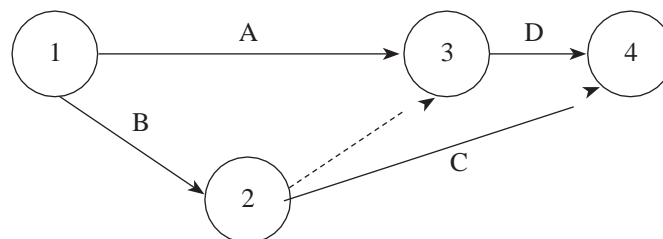
**Concurrent Activities** means the Activities which can occur simultaneously.

**Dummy Activity** — Activities occurring simultaneously, is a very common feature in a project. Also, it can so happen that two Activities are having same Start and End Events. To resolve such situations, Dummy Activities are introduced. Hence as a rule there is only one Activity between two Events.

With the use of Dummy Activity, other activities can be identified by unique end events. Dummy Activities consume no time or resource. In Network diagrams these are represented by dashed arrows (----->) and is inserted in the Network to clarify activity pattern in the following situations

- (i) to make activities with common start and end Events distinguishable
- (ii) to identify and maintain the proper precedence relationship between activities that are not connected by events.

For the situation where A & B are concurrent activities, C is dependent on B and D is dependent on



both A & B we have no other option but to introduce a Dummy Activity (Shown in the diagram) to clearly represent the precedence relationship of the Activities.

## Event

An Event represents a specific accomplishment in the project and takes place at a particular instant of time and does not, therefore consume time or resources. It can be considered as a time-oriented reference point that signifies the end of an activity and start of another. Events are represented by circles (○) in a Network diagram, Events are also known as Nodes.

**Merge Event** is that event where more than one Activity ends.

**Burst Event** is that Event from where more than one Activity starts.

**Merge and Burst Events** are those Events where more than one Activity ends and from where more than one Activity starts. In other words, these are the combination of both Merge and Burst Events.

## Float of an Activity

**Float of an Activity** – There can be three types of Floats for an Activity which are as follows –

**Total Float** – It is defined as the amount of time by which completion of an activity can be delayed beyond the earliest expected completion time without affecting the project duration. In other words the Total Float of an Activity (i, j) is the difference between the Latest Start and Earliest Start of that activity. Thus Total Float ( $TF_{ij}$ ) =  $LS_{ij} - ES_{ij} = (L_j - E_i) - t_{ij}$

The value of Total Float for any Activity can help in making conclusion as follows –

Total Float < 0 or Negative Total Float indicates that the resources are not adequate which might cause delay in finishing the activity. Thus, induction of extra resources becomes necessary to avoid delay in activity completion.

Total Float = 0 means **resources are just sufficient to complete the activity on time**. In other words, any slackness in arranging the resources for the activity will lead to delay in its completion.

Total Float > 0 or Positive Total Float indicates *that the resources are extra*. Thus, one has the freedom to reallocate the resources.

An Activity with **Zero Total Float** is known as **Critical Activity**.

**Free Float** – This is concerned with commencement of subsequent activity. It is defined as the time by which an activity can be delayed beyond the earliest finish time without affecting the earliest start of a subsequent activity. For the activity (i, j) it is given by, Free Float (FF<sub>ij</sub>) = (E<sub>j</sub> – E<sub>i</sub>) – t<sub>ij</sub>

This can also be expressed as Free Float = (E<sub>j</sub> – E<sub>i</sub>) – t<sub>ij</sub> + L<sub>j</sub> – L<sub>j</sub> = [(L<sub>j</sub> – E<sub>i</sub>) – t<sub>ij</sub>] – (L<sub>j</sub> – E<sub>j</sub>)

Or, Free Float = Total Float – Head Slack

**Independent Float** – This is concerned with prior and subsequent activities. It is defined as the amount of time by which the start of an activity can be delayed without affecting the earliest start time of any immediately following activity, assuming that the preceding activity has finished at its latest time. For the activity (i, j) it is given by, Independent Float (IF<sub>ij</sub>) = (E<sub>j</sub> – L<sub>i</sub>) – t<sub>ij</sub>

This can also be expressed as **Independent Float = Free Float – Tail Slack**

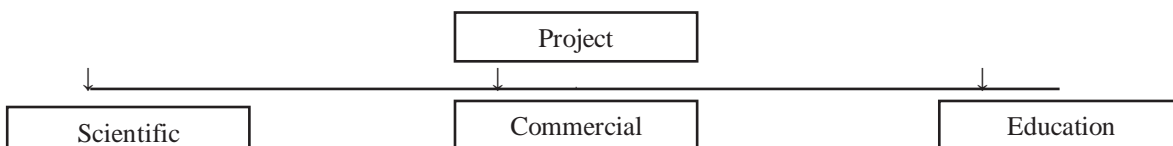
### Major Features of PERT or Procedure or Requirement for PERT:

The following are the main features of PERT:

- All individual tasks should be shown in a network. Events are shown by circles. Each circle represents an event—a subsidiary plan whose completion can be measured at a given time.
- Each arrow represents an activity—the time - consuming elements of a programme, the effort that must be made between events.
- Activity time is the elapsed time required to accomplish an event. In the original PERT, three-time values are used as follows:
  - t<sub>1</sub> (Optimistic time):** It is the best estimate of time if everything goes exceptionally well.
  - t<sub>2</sub> (Most likely time):** It is an estimated time what the project engineer believes necessary to do the job or it is the time which most often is required if the activity is repeated a number of times.
  - t<sub>3</sub> (Pessimistic time):** It is also an estimate of time of an activity under adverse conditions. It is the longest time and rather is more difficult to ascertain.

### PERT-CPM

- ⊙ CPM – Critical Path Method
- ⊙ PERT – Program Evaluation Review Techniques



- ⊙ Any project is composed of related activities.
- ⊙ Activities are composed of related events.
- ⊙ Each activity is divided into three parts:

- I. Independent Activity
- II. Dependent Activity
- III. Dummy Activity
- ⊙ For completion of each activity except dummy, time is required.
- ⊙ Time taken for completion of the activity divided into two parts:
  - I. Deterministic time
  - II. Probabilistic time
- ⊙ Probabilistic time is divided into three parts:
  - I. Optimistic time ( $t_o$ )
  - II. Most likely time( $t_m$ )
  - III. Pessimistic time( $t_p$ )

$$t_e = \frac{t_o + 4t_m + t_p}{6}$$

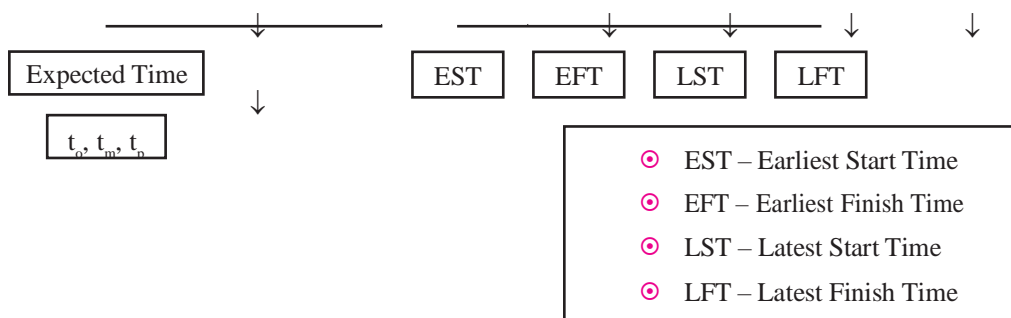
$$\sigma^2 = \frac{(t_p - t_o)^2}{36}$$

$\sigma^2$  = variance

$t_o$  = optimistic time

$t_p$  = pessimistic time

- ⊙ For calculation of expected time & Variance we apply Beta Distribution.
- ⊙ Time calculated based on activities as well as events.



- ⊙ EST and EFT are forward process.
- ⊙ LST and LFT are backward process.

### Steps to be followed for solving PERT/CPM problem:

Step 1: Draw the network diagram.

Diagrammatic presentation of the project which composed of:

- ⊙ Dependent activity
- ⊙ Independent activity
- ⊙ Dummy activity

Step 2: Calculate (expected time/duration) for each activity from the problem given.

Step 3: Calculate EST, EFT, LFT & LST for the problem.

Step 4: Calculate Total Float (TF)

Where,  $TF = LFT - EFT$ , for checking the Critical Path.

- Critical Path is the path which contains maximum activity with maximum duration.

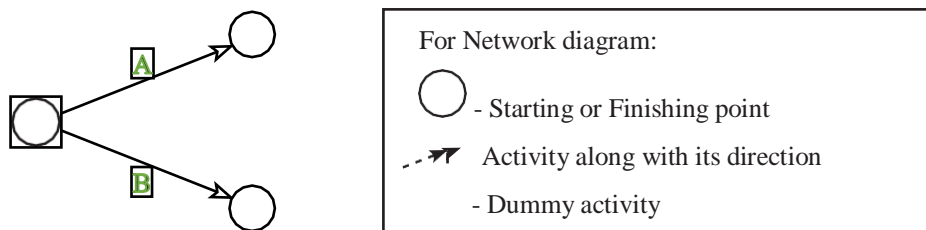
Step 5: After calculating Critical Path, calculate Critical Path Duration (CPD) and Variance for each activity.

Step 6: At last, we calculate total time (approx.) taken for the completion of the project using Normal Distribution.

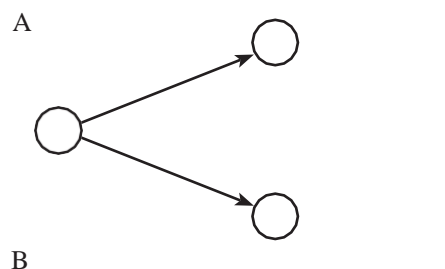
There are some basic differences between PERT and CPM

| PERT   | CPM   |
|--|---|
| 1. Time estimate is probabilistic with uncertainty in time duration. Three-time estimates. | 1. Time estimate is deterministic with known time durations. Single time estimate |
| 2. Event oriented  | 2. Activity oriented  |
| 3. Focused on time   | 3. Focused on time-cost trade off   |
| 4. More suitable for new projects  | 4. More suited for repetitive projects  |

**Network Diagram:**



- ⊙ As A and B are independent activities of the process so their starting point is also same but since they are different activities their directions are different.
- ⊙ Now from where the activity C will be starting – from the end of A or from the end of B? This remains a question to complete the Network Diagram. Here we need to add a Dummy Activity after the end of A & B.



- ⊙ Now the Dummy Activity is added but the direction is still not clear so that we can start C.
- ⊙ The duration of the activity or the Time taken by the independent activities will decide the direction the Dummy activity to maintain the sequence of the project and go further in the process.

### Illustration 1

Let the time taken for each activity be:

| Activity                                      | Time Taken(max) |
|---|-----------------|
| A – Independent Activity                      | 3               |
| B – Independent activity                      | 4               |
| C – Dependent activity (Dependent on A and B) | 5               |
| D – Dependent Activity (dependent on C)       | 6               |

For A – 3 days is needed at max.

B – 4 days is needed at max.

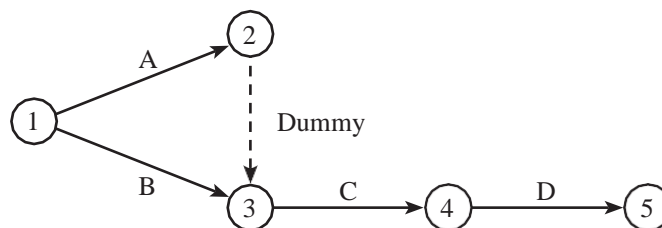
- Then the direction of the dummy activity (in this case) will be from A to B since A will finish before B anyhow.

For a Dummy Activity:

- The starting point of the dummy activity will be the end point of the activity which ends first.
- If both the independent activities finish at the same point then the direction can be in any way.
- Dummy Activity is required to maintain the sequence of the project. Therefore, it has no time to complete.

**i.e., For the dummy activity the time taken is 0 units always.**

- Now we can complete the Network Diagram as below.
- For understanding the Network Diagram, we need some numbering techniques:
  - Assigning numbers to starting and finishing points in a particular order.



- After the numbers are added it becomes easier to denote the activities according the path they follow.
  - A (1-2) – A starts at 1 and finishes at 2
  - B (1-3) – B starts at 1 and finishes at 3
  - Dummy (2-3) – Dummy starts at 2 and finishes at 3
  - C (3-4) – C starts at 3 and finishes at 4
  - D (4-5) – D starts at 4 and finishes at 5
- There is a Source and a Destination for every project. In our case Source is 1 and Destination is 5.
- Every project aims at starting from the Source and reach the Destination through a certain path.
- In our case, we have the Network Diagram above with the path defined from 1 to 5 as follows:
  - Path I: 1 – 2 – 3 – 4 – 5
  - Path II: 1 – 3 – 4 – 5
- Calculating the path duration of each path:
  - Path I: 3 days (1 – 2) + 0 days (2 – 3) + 5 days (3 – 4) + 6 days (4 – 5) = 14 days
  - Path II: 4 days (1 – 3) + 5 days (3 – 4) + 6 days (4 – 5) = 15 days
- Path II takes maximum time to reach the destination from source or to complete the project.

Therefore, it is the Critical Path.

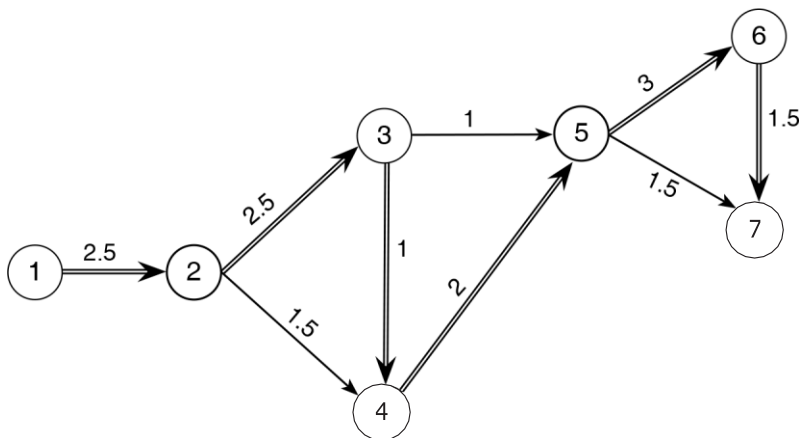
- Critical Path (CP)  $\rightarrow 1 - 3 - 4 - 5$
- Critical Path Duration (CPD) = 15 days
- Critical Path Activities (CPA)  $\rightarrow B (1 - 3), C (3 - 4), D (4 - 5)$

### Example 5

Draw the network for the following activities and find critical path and total duration of project.

| Activity | Duration (months) | Activity | Duration (months) |
|----------|-------------------|----------|-------------------|
| 1-2      | 2.5               | 4-5      | 2.0               |
| 2-3      | 2.5               | 5-6      | 3.0               |
| 2-4      | 1.5               | 6-7      | 1.5               |
| 3-4      | 1.0               | 5-7      | 1.5               |
| 3-5      | 1.0               |          |                   |

**Answer:**



| Paths         | Duration                                   |
|---------------|--|
| 1-2-3-5-6-7   | $2.5+2.5+1+3+1.5 = 10.5$                   |
| 1-2-3-5-7     | $2.5+2.5+1+1.5 = 7.50$                     |
| 1-2-3-4-5-6-7 | $2.5+2.5+1+2+3+1.5 = 12.5$ (Critical path) |
| 1-2-3-4-5-7   | $2.5+2.5+1+2+1.5 = 9.5$                    |
| 1-2-4-5-7     | $2.5+1.5+2+1.5 = 7.5$                      |
| 1-2-4-5-6-7   | $2.5+1.5+2+3+1.5 = 10.5$                   |

### Example 6

A project has the following time schedule

| Activity      | 1-2 | 1-3 | 1-4 | 2-5 | 3-6 | 3-7 | 4-6 | 5-8 | 6-9 | 7-8 | 8-9 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Time (months) | 2   | 2   | 1   | 4   | 8   | 5   | 3   | 1   | 5   | 4   | 3   |

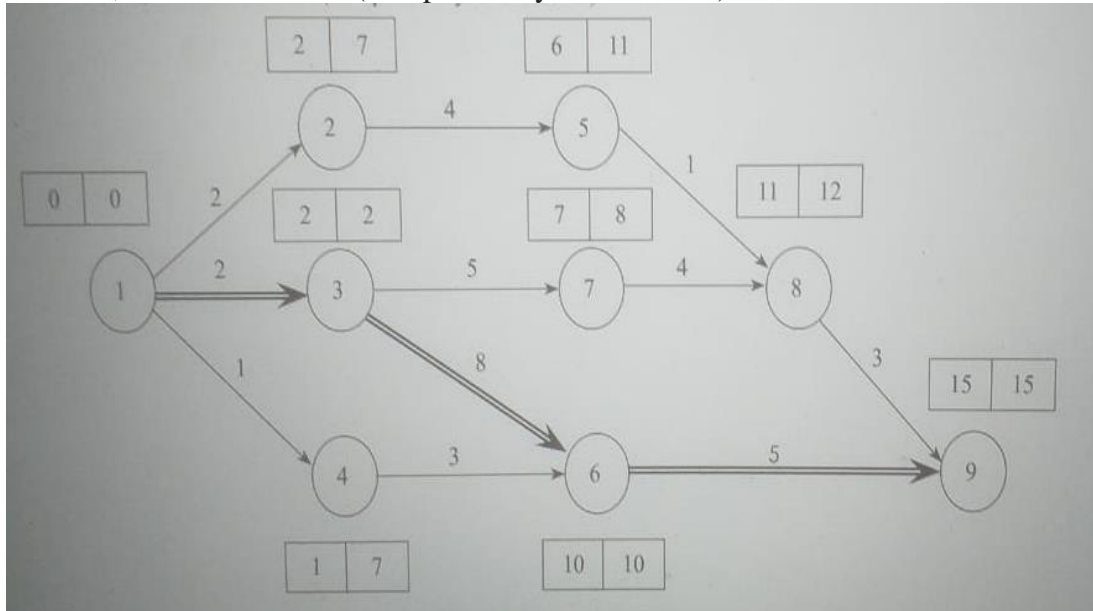
Construct a PERT network and compute

- ◉ Critical path and its duration
- ◉ Total float for each activity

**Solution:**

**Steps:**

1. Moving forward, find EF times (choosing the Maximum at activity intersection)
2. Maximum EF = LF = Critical Path Time.
3. Return path find LF (Choosing the Minimum at activity intersection)
4. Note LF, EF from network (except activity intersections)



**Table: Activity Relationship**

| Activity | Duration Months ( $t_{ij}$ ) | Earliest Start ( $ES_{ij}$ ) | Earliest Finish ( $EF_{ij} = ES_{ij} + t_{ij}$ ) | Latest Start ( $LS_{ij} = LF_{ij} - t_{ij}$ ) | Latest Finish ( $LF_{ij}$ ) | Total Float ( $TF_{ij} = LS_{ij} + ES_{ij} - LE_{ij} - EF_{ij}$ ) |
|----------|------------------------------|------------------------------|--|---|-----------------------------|---|
| 1-2      | 2                            | 0                            | 2  | 5   | 7                           | 5   |
| 1-3      | 2                            | 0                            | 2  | 0   | 2                           | 0   |
| 1-4      | 1                            | 0                            | 1  | 6   | 7                           | 6   |
| 2-5      | 4                            | 2                            | 6  | 7   | 11                          | 5   |
| 3-6      | 8                            | 2                            | 10   | 2   | 10                          | 0   |
| 3-7      | 5                            | 2                            | 7  | 3   | 8                           | 1   |
| 4-6      | 3                            | 1                            | 4  | 7   | 10                          | 6   |
| 5-8      | 1                            | 6                            | 7  | 11  | 12                          | 5   |
| 6-9      | 5                            | 10                           | 15   | 10  | 15                          | 0   |
| 7-8      | 4                            | 7                            | 11   | 8   | 12                          | 1   |
| 8-9      | 3                            | 11                           | 14   | 12  | 15                          | 1   |

Critical path is 1-3-6-9 with duration 15 months

**Example 7**

From the following table calculate estimate time:

| Activity | Optimistic | Most likely | Pessimistic | Estimate Time |
|----------|------------|-------------|-------------|---------------|
| 1-2      | 9          | 12          | 21          | 13            |
| 1-3      | 6          | 12          | 18          | 12            |
| 2-4      | 1          | 1.5         | 5           | 2             |
| 3-4      | 4          | 8.5         | 10          | 8             |
| 2-5      | 10         | 14          | 24          | 15            |
| 4-5      | 1          | 2           | 3           | 2             |

We are using the following formula to calculate estimate time.

$$t_e = \frac{t_o + 4t_m + t_p}{6}$$

## MCQs

1. "Political risk" in the context of project finance defines:

- (a) The risk of changes in government policies or actions that negatively impact the project.
- (b) The risk of default by one of the project sponsors.
- (c) The risk of fluctuations in the global stock markets.
- (d) The risk of disagreements among the project lenders.

**Answer: (a)**

2. "Operating risk" in project finance includes:

- (a) The risk of fluctuations in interest rates during the operational phase.
- (b) The risk of unexpected costs or disruptions during the project's operational life.
- (c) The risk that the project company will not be able to secure further financing for expansion.
- (d) The risk of changes in tax laws affecting the project's profitability.

**Answer: (b)**

3. The project planning activities and goals include defining:

- 1. The specific work to be performed and goals that define and bind the project.
- 2. Estimates to be documented for planning, tracking, and controlling the project.
- 3. Commitments that are planned, documented, and agreed to by affected groups.
- 4. Project alternatives, assumptions, and constraints.

Select the correct answer from the options given below.

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

**Answer: (a)**

4. Activity in a Network diagram is represented by –



- (a) Circle
- (b) Rectangle
- (c) Square
- (d) Arrow

**Answer (d)**

5. The particular task performance in CPM is known as –

- (a) Event
- (b) Activity
- (c) Dummy
- (d) Contract

**Answer (b)**

6. Sensitivity analysis is an assessment of \_\_\_\_\_

- (a) Profits
- (b) Risk
- (c) Losses
- (d) All of the above

**Answer (b)**

7. In which of the following project phases is the project schedule developed?

- (a) Conceptual
- (b) Planning
- (c) Implementation
- (d) Design

**Answer (b)**

8. Critical Activities have

- (a) Maximum float
- (b) Minimum float
- (c) Zero float
- (d) Negative float

**Answer: (c)**

9. To crash a schedule, you should:

- (a) Increase the time allowed on those tasks that have float.
- (b) Try to increase expenditures of time only those tasks that are behind schedule.
- (c) Replace those workers that are not performing up to par with the busy.
- (d) Increase work efforts on those tasks that are on the critical path

**Answer (d)**

10. In PERT Chart, the Activity time distribution is -

- (a) Normal
- (b) Binomial
- (c) Poisson
- (d) Beta

**Answer: (d)**

11. The time by which the activity completion time can be delayed without affecting the start of the succeeding activities is known as –
- (a) Total float
  - (b) Free float
  - (c) Independent float
  - (d) Head slack

**Answer: (b)**

12. Which of the following statement is not true?
- (a) PERT is deterministic in nature.
  - (b) CPM is probabilistic in nature.
  - (c) PERT Network can be crashed.
  - (d) All of the above.

**Answer: (d)**

13. Following data refers to a project Network. What will be the Critical Path?

|          |        |       |        |        |        |        |        |
|----------|--------|-------|--------|--------|--------|--------|--------|
| Activity | 1 – 2  | 2 – 3 | 3 – 4  | 1 – 4  | 2 – 5  | 3 – 5  | 4 – 5  |
| Duration | 2 Days | 1 Day | 3 Days | 3 Days | 3 Days | 2 Days | 4 Days |

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

**Answer: (d)**

14. In a project planning, Free float can affect which of the following?
- (a) Succeeding activity
  - (b) Only that activity
  - (c) Preceding activity
  - (d) All of the above

**Answer: (c)**

15. Which of the following is incorrect?
- (a) PERT is suitable for projects having probabilistic time estimates.
  - (b) CPM is suitable for projects having deterministic activities.
  - (c) Both PERT and CPM are event oriented.
  - (d) PERT is event oriented while CPM is activity oriented.

**Answer: (c)**

16. The activity that must be completed prior to the start of an activity is called –
- (a) Dummy activity
  - (b) Successor activity
  - (c) Concurrent activity
  - (d) Predecessor activity

**Answer: (d)**

17. Critical Path Method is good for –
- (a) Small projects only
  - (b) Large projects only
  - (c) Both small and large projects equally
  - (d) Neither small nor large projects

**Answer: (b)**

18. Activity in a Network diagram is represented by –
- (a) Circle
  - (b) Rectangle
  - (c) Square
  - (d) Arrow

**Answer: (d)**

19. The particular task performance in CPM is known as –
- (a) Event
  - (b) Activity
  - (c) Dummy
  - (d) Contract

**Answer: (b)**

20. Which of the following statements is true?
- (a) PERT is considered as a deterministic approach and CPM is a probabilistic technique.
  - (b) PERT is considered as a probabilistic technique and CPM is considered as a deterministic approach.
  - (c) PERT and CPM are both probabilistic techniques.
  - (d) PERT and CPM are both considered as deterministic approaches

**Answer (b)**

21. Activities A, D and F merges at the event 6. If the earliest finish times of A, D and F are respectively 13, 17 and 8 then the earliest time of Event 6 is –
- (a) 8
  - (b) 13
  - (c) 17
  - (d) Cannot be determined from the given information.

**Answer (c)**

22. Activities P, Q and R are the immediate successors of the activity N. If their current starting times are 10, 11 and 17 respectively then what is the latest finishing time of the activity N?
- (a) 10
  - (b) 11
  - (c) 17
  - (d) None of the above

**Answer (a)**

23. Among the following, critical path and slack time analysis mostly help

- (a) Managers define the project activities
- (b) Highlight relationships among project activities.
- (c) Point out who is responsible for various activities
- (d) Pinpoint activities that need to be closely watched.

**Answer (d)**

## **Unit 6**

# **Project Cost Control, Project Review & Appraisal**

### **Contents**

- Project Cost Control
  - Importance of Project Cost Control
- Project Review
- Project Appraisal
  - Technical
  - Financial
  - Social

### **6.0 Introduction**

Planning and control become closely intervened in an integrated managerial process of a project. Project control involves a regular comparison of performance against targets, a search for the causes of deviation and a commitment to cheque adverse variances. It serves two major functions: (i) it ensures regular monitoring performance and (ii) it motivates project personnel to strive for achieving project objectives. Effective control is critical for the realisation of projects objectives. Most of the projects are large, complex undertaking and involving many organisations and people. Project control, in essence, is the systematic monitoring and evaluation of a project to ensure it stays on track, within budget, and meets the defined scope and quality standards. Project cost control involves monitoring actual costs, comparing them to budgets, and taking corrective actions when deviations are identified.

Project review involves comparing actual performance against planned benchmarks and taking corrective actions when deviations are identified. Further, project appraisal is a process that evaluates the feasibility, viability, and potential of a proposed project before committing resources. The above three issues are discussed in this unit.

### **6.1 Project Cost Control**

Project cost control is the process of monitoring and managing project expenses to ensure they stay within the allocated budget. It involves tracking actual costs against the baseline, identifying variances, and taking corrective actions to prevent overruns. This includes comparing actual costs to estimates, reviewing project plans, and making adjustments as

needed.

### **6.1.1 Importance of Project Cost Control:**

- (i) **Accurate Estimation:** Creating detailed and realistic cost estimates for all project activities is crucial.
- (ii) **Baseline Budget:** Establishing a clear budget based on the estimated costs serves as a benchmark for comparison.
- (iii) **Cost Tracking:** Regularly tracking actual project costs against the baseline budget is essential for identifying variances.
- (iv) **Variance Analysis:** Analyzing the differences between actual and budgeted costs helps pinpoint areas of potential overspending.
- (v) **Corrective Actions:** Taking proactive steps to address cost overruns, such as adjusting the project plan, reducing scope, or renegotiating contracts.
- (vi) **Communication:** Keeping stakeholders informed about cost performance and any changes to the budget is crucial for transparency and collaboration.

### **6.1.2 Tools and Techniques for Cost Control:**

- (i) **Project Management Software:** Utilizing project management tools can streamline cost tracking, reporting, and communication.
- (ii) **Reporting Tools:** Employing reporting tools to generate regular cost reports can provide valuable insights into project performance.
- (iii) **Earned Value Management (EVM):** This technique can be used to track the value of work completed against the planned cost and schedule.
- (iv) **Change Control Systems:** Implementing a change control system can help manage scope changes and their impact on the budget.

### **6.1.3 The Reasons for Poor Project Control**

Project leaders most frequently blame the following reasons as being responsible for poor project performance:

- (i) Customer and Management Changes
- (ii) Technical Complexities
- (iii) Unrealistic Project Plans
- (iv) Staffing Problems
- (v) Inability to Detect Problems Early

*Senior management* ranks these reasons somewhat differently:

- (i) Insufficient Front-End Planning
- (ii) Unrealistic Project Plans
- (iii) Underestimated Project Scope
- (iv) Customer and Management Changes
- (v) Insufficient Contingency Planning

(Source: Jack R. Meredith, and Samuel J. Mantel, Jr., PROJECT MANAGEMENT A Managerial Approach, , John Wiley & Sons, Inc. Page 517)

#### **6.1.4 Steps for Project Cost Control**

Following are the steps of project cost control

**Step 1: Define Project Scope and Objectives:** Clearly define what the project will deliver and ensure all stakeholders understand the boundaries of the project to prevent scope creep, which can lead to increased costs.

**Step 2: Create a Detailed Budget:** Develop a comprehensive budget that includes all potential costs, including labor, materials, equipment, and contingency reserves for unexpected expenses.

**Step 3: Monitor and Track Costs:** Regularly track actual costs against the budget using project management software or other tools to identify variances early on.

**Step 4: Analyze Variance:** Compare actual costs to the baseline budget and identify any discrepancies. Analyze the reasons behind these variances to determine the cause.

**Step 5: Take Corrective Actions:** Develop and implement corrective actions to address identified variances, such as renegotiating contracts, improving efficiency, or adjusting the project plan.

**Step 6: Use Earned Value Management (EVM):** EVM helps measure project performance by comparing the value of work completed (earned value) to the planned budget and actual cost.

**Step 7: Implement Resource Planning:** Identify and plan for all resources needed for the project, including labor, materials, equipment, and tools, to ensure efficient utilization and cost control.

**Step 8: Foster a Culture of Cost Awareness:** Promote cost awareness and responsibility among all team members to encourage cost-effective decision-making.

**Step 9: Conduct Post-Project Reviews:** Evaluate the cost control process after project completion to identify lessons learned and areas for improvement.

**Step 10: Utilize Cost Management Tools:** Leverage project management software and other tools to automate cost control processes, track spending, and generate reports

### 6.1.5 Approaches of Project Cost Control

Two basic approaches are used in project cost control.

#### A. Variance Analysis Approach

The traditional approach to project control involves a comparison of the actual cost with a budgeted cost to determine the variance an example of variance analysis follows:

| Particulars                          | Activity X | Activity Y |
|--------------------------------------|------------|------------|
| 1. Budgeted Cost in the period (Rs.) | 1,00,000   | 60,000     |
| 2. Cumulative Budget to date (Rs.)   | 4,00,000   | 1,50,000   |
| 3. Actual cost to date               | 1,10,000   | 56,000     |
| 4. Cumulative actual cost to date    | 4,80,000   | 1,60,000   |
| 5. Variance for the period (1-3)     | (10,000)   | 4,000      |
| 6. Cumulative variance to date (2-4) | (80,000)   | (10,000)   |

The important drawbacks of this approach are:

- (i) It is backward looking rather than forward looking.
- (ii) It does not use the data effectively to provide integrated control.

#### B. Performance Analysis

Effective control over a project requires systemic performance analysis. For small and simple projects, the project manager would do performance analysis for the project as a whole or for its major components. As the project becomes larger and more complex, performance analysis needs to be done for individual segments of the projects which are referred to as cost accounts. For analysis the performance at cost account and higher levels of the work breakdown structure, project manager measured the actual progress against the predetermined schedule and the cost against the budget estimate. It is not to the project manager to know systematically whether the expenditure incurred was commensurate with progress. So, performance analysis seeks to remove the subjectivity by employing an analytical framework based on the following terms:

- Budgeted cost for scheduled which represents the total of three components: (i)



budgets for all work packages, scheduled to be completed (ii) budgets for the portion of in process work, scheduled to accomplished and (iii) budgets for the overheads for the period.

- Budgeted cost for work performed is the sum of three components: (i) budgets for all work packages, actually completed (ii) budgets applicable to the completed in-process work and (iii) Overhead budgets.
- Actual cost of work performed represents the actual cost incurred for accomplishing the work performed during a particular time.
- Budgeted cost for total work is simply the total budget cost for the entire project work.

## **6.2 Project Review**

A project review is a systematic assessment of a project's progress, performance and adherence to standards. It is a critical part of project management, used to evaluate the project's current status, identify potential issues, and ensure alignment with goals and expectations. Project reviews can happen at various stages of a project, including during milestones, at the end of a phase, or at project completion.

### **6.2.1 Objectives of Project Review:**

Following are the objectives of project review:

- (i) **Performance Assessment:** Evaluating how well the project is meeting its objectives, budget, and schedule.
- (ii) **Risk Assessment:** Identifying and assessing potential risks and developing mitigation strategies.
- (iii) **Lessons Learned:** Analyzing what went well and what could be improved for future projects.
- (iv) **Decision-Making:** Determining whether the project should proceed, be adjusted, or terminated.
- (v) **Stakeholder Communication:** Providing updates to stakeholders and ensuring alignment.

### 6.2.2 Types of Project Reviews

The analyst can review of the following ways:

- (i) **Health Checks:** Regular assessments to monitor the project's overall health and identify potential problems.
- (ii) **Risk Reviews:** Focused on identifying and managing project risks.
- (iii) **Quality Reviews:** Evaluating the quality of project deliverables.
- (iv) **Post-Project Reviews:** Comprehensive reviews at the end of a project to assess its overall success and identify lessons learned.
- (v) **Phase Gate Reviews:** Assessments at the end of each phase to decide whether the project can proceed to the next phase.

### 6.2.3 Benefits of Project Reviews

- (i) **Improved Decision-Making:** Reviews provide a platform for informed decision-making by gathering data and perspectives.
- (ii) **Proactive Risk Management:** Identifying and addressing potential risks early on can prevent costly issues.
- (iii) **Continuous Improvement:** Learning from past projects can lead to better processes and outcomes in future endeavors.
- (iv) **Increased Project Success:** By identifying and addressing issues early, project reviews can increase the likelihood of project success.

## 6.3 Project Appraisal

Project appraisal is a process that evaluates the viability and feasibility of a proposed project before resources are invested. It involves a thorough analysis of various aspects, including economic, financial, technical, social, management, and environmental factors. The goal is to determine if the project is likely to meet its objectives, be sustainable, and provide the expected returns. Project appraisal involves evaluating a proposed project's viability by analyzing its costs and benefits, helping ensure efficient resource allocation.

### 6.3.1 Steps of Project Appraisal Process

The process of appraisal usually starts from the initial phase of the project. If the process of appraisal begins from an early stage, then the company will be in a better position to take a calculated decision regarding spending of capital on the project. It will help to take decision on the expenditure of a project or whether to continue the project with respect to its economic

viability.

Project Appraisal can be divided into two stages-

- (i) **Identification of the cost and benefits of the project:** In this process, the analyst has to identify both economic and non-economic (social) impacts of the project which includes short term as well as long term impacts.
- (ii) **Valuation of these impacts:** Depending upon sources and reliability of the information and the goal of the organisation/society, the valuation of all possible effects of the project needs to be calculated. Also, whether a particular effect is calculated as cost or benefit depends upon the goals pursued by the society or the organisation e.g. production of alcohol or cigarette may be a benefit on the economic front but a cost on the society (social aspect). Overall, the process of project appraisal can be generalised into consisting of the following essential steps before a project is finally implemented and resources are committed towards it.

The process of project appraisal is a multi-step procedure which are discussed below:

### **1. Selection of an Idea:**

The first step is the identification of various ideas and selecting the most suitable idea. The entrepreneur may have shortlisted various ideas based on different parameters. However, one needs to zero in, on a particular idea based on an informal screening process. Informal screening may give weightage to competency of the individual members of the team, availability of competitive products/services, capital expenditure involved, gestation period etc.

### **2. Market analysis and Demand Analysis:**

Market and demand analysis is a critical step in project appraisal, helping determine the feasibility of a proposed project by assessing the market's capacity and the project's potential to meet that demand. This analysis involves estimating the overall market size, predicting future demand, and evaluating the project's ability to capture a significant share of the market.

Key aspects of market and demand analysis:

- (i) **Market Size and Share:** Determining the potential size of the market for the proposed product or service is crucial. The analysis also considers the project's likely share of that market.
- (ii) **Demand Forecasting:** Predicting future demand involves understanding factors like consumption patterns, income and price elasticity, competition, and availability of substitutes.

- (iii) **Competitive Analysis:** Evaluating the competitive landscape helps identify potential challenges and opportunities for the project.
- (iv) **Distribution Channels:** Assessing the project's access to and effectiveness of distribution networks is important for reaching the target market.
- (v) **Feasibility Assessment:** Market and demand analysis helps determine if the project is technically feasible and if there's a viable basis for estimating project costs.

#### **Steps in market and demand analysis:**

- (i) **Situational Analysis:** Understanding the current market conditions, including customer preferences, competitor strategies, and industry trends.
- (ii) **Secondary Data Collection:** Gathering existing information from reports, publications, and other sources to establish a baseline understanding of the market.
- (iii) **Market Survey:** Collecting primary data through surveys and interviews to gain insights into customer behavior and market preferences.
- (iv) **Demand Forecasting:** Estimating future demand using various methods, such as time series analysis, expert opinion, or causal models.
- (v) **Market Planning:** Developing strategies for reaching the target market, including marketing plans and budget allocation.

### **3. Technical Appraisal:**

Technical analysis in project appraisal involves evaluating the technical feasibility, efficiency, and viability of a proposed project. It examines factors like material inputs, manufacturing processes, plant capacity, location, and machinery to ensure the project can be successfully executed and meet its objectives.

The technical appraisal of the project examines the location and site of the project thus assessing the vulnerability of the area to natural calamities (past record of earthquakes, floods, cyclones etc.), evaluation of the locational advantages from raw material/end product market viewpoint, availability of infrastructural facilities like roads, power, water hospitals, schools etc., availability of skilled/unskilled labour, proximity to airport, railway station, highways etc. is assessed under technical appraisal. At times firms also hire consultants to test the type of soil, water or availability of bandwidth to take desired load (depending on the type of project), along with technical and commercial evaluation of the major/critical equipment. Appropriateness of the technology used in the project is necessary. The technology adopted should be suitable to the project in terms of availability of technical staff, financial means etc. Adaptation and management of new technology should be properly dealt. Once a project is found to be technically feasible, only then financial analysis is performed or else the project

idea may be dropped at this stage itself.

**Key Aspects of Technical Appraisal:**

- (i) **Technical Feasibility:** This involves evaluating whether the project's technical requirements can be met with available resources and technologies.
- (ii) **Technology Assessment:** This includes evaluating the suitability of the chosen technology, considering factors like its reliability, efficiency, and cost-effectiveness.
- (iii) **Resource Availability:** This involves assessing the availability of raw materials, machinery, skilled labor, and other essential resources.
- (iv) **Infrastructure:** This involves evaluating the availability and adequacy of infrastructure like transportation, power, and utilities.
- (v) **Site Selection:** This involves assessing the suitability of the proposed project location, considering factors like accessibility, environmental impact, and cost.
- (vi) **Environmental Impact:** This involves assessing the potential environmental impact of the project and ensuring that it complies with environmental regulations.

**4. Financial Appraisal:**

Financial Appraisal involves verification of estimates of different elements of project cost and projected workings to ascertain whether the project meets critical industry benchmarks in terms of important financial ratios. The first step in the process would be to examine the cost of the project followed by an analysis of the project's means of finance. The projected cash flow and balance sheet must be based on appropriate assumptions. A careful analysis of these projections followed by sensitivity analysis would help the firm/promoter take an informed decision regarding the financial viability of the project. One may work out the Break Even Point (BEP) capacity utilisation so as to determine the lowest production and sales levels at which project will cover all its costs. Other important ratios like Debt Service Coverage ratio, DER, ROCE, EPS must be calculated and compared with the prevailing industry performance. A positive financial viability would imply that the project can go ahead or else it must be dropped at this stage.

**Key aspects of financial appraisal include:**

- (i) **Cash Flow Analysis:** Estimating the project's projected cash inflows (revenues) and outflows (costs) over its lifespan.
- (ii) **Cost Estimation:** Identifying and quantifying all project costs, including capital expenditures, operating expenses, and working capital requirements.
- (iii) **Revenue Forecasting:** Predicting the project's revenue streams and sales volumes.
- (iv) **Investment Criteria:** Using financial metrics like Net Present Value (NPV), Internal Rate

of Return (IRR), and Payback Period to assess the project's viability and profitability.

- (v) **Risk Assessment:** Evaluating potential risks and uncertainties associated with the project and their impact on financial outcomes.
- (vi) **Funding Sources:** Determining the appropriate financing mix, including debt and equity, and evaluating the feasibility of obtaining funding.

Financial appraisal involves a careful checking of the basic data, assumptions and methodology used in project preparation, an in-depth review of the work plan, cost estimates and proposed financing, an assessment of the project's organizational and management aspects, and finally the viability of project.

The financial appraisal criteria can be divided under two heads:

#### **A. Non-Discounting Technique**

- Payback Period
- Accounting Rate of Return
- Debt Service Coverage Ratio (DSCR)

#### **B. Discounting Criteria Technique**

- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Benefit Cost Ratio (BCR)

[Discussed in detail in Unit 2]

### **5. Institutional Appraisal:**

The institutional aspect of a project appraisal deals with the framework within which the project will have to operate. A complete knowledge of the institutional aspect helps identifying the components of institutional framework that will have a bearing on the project. Some of the elements that constitute the institutional framework include government institutions, project authority, corporate bodies, land systems, banking and credit institutions, religious customs, practices and social mores. There is a need to understand the administrative system of the region where the project has to be undertaken.

#### **Key aspects of institutional appraisal:**

- (i) **Assess Implementing Agencies:** Determining the ability of implementing agencies to effectively manage the project, including their managerial skills, integrity, and knowledge of the project.
- (ii) **Capacity Building:** Identifying any capacity gaps within the implementing agencies and suggesting training or resource support to address them.

- (iii) **Stakeholder Analysis:** Examining the roles and responsibilities of all relevant stakeholders, including government institutions, project authorities, and other relevant bodies.
- (iv) **Regulatory Framework:** Understanding the legal and administrative framework within which the project will operate.
- (v) **Coordination:** Evaluating the ability of different institutions to work together effectively.
- (vi) **Monitoring and Evaluation:** Assessing the capacity of institutions to monitor the project's progress and conduct evaluation.
- (vii) **Sustainability:** Evaluating the long-term sustainability of the project in relation to the institutional arrangements.

## **6. Socio-Economic Impact Assessment (SEIA):**

It is the assessment of the potential socio-economic-environmental-cultural impacts of the proposed developmental projects. It includes the identification of the direct and indirect impacts of the proposed industrial activity. The main purpose of performing the SEIA is to minimise the adverse impact and enhancing the beneficial impact of the proposed project and also to find out the mitigation available to manage, reduce or eliminate the adverse impacts. SEIA should also focus on reconstruction of livelihoods. The improvement of social well-being of the wider community should be explicitly recognised as an objective of planned interventions and should be an indicator for any form of assessment. However, awareness of the differential distribution of impacts among different groups in society and particularly the impact burden experienced by vulnerable groups in the community should always be of prime concern.

### **Key aspects of a SEIA:**

- (i) **Systematic Analysis:** SEIA involves a structured approach to assess the potential social and economic consequences of a project.
- (ii) **Impact Identification:** It identifies potential impacts on individuals, families, and communities, including changes in livelihoods, social structures, and economic well-being.
- (iii) **Impact Evaluation:** SEIA assesses the magnitude and duration of identified impacts, as well as their direct and indirect effects.
- (iv) **Mitigation and Management:** The analysis informs strategies to reduce or prevent adverse impacts, and to maximize beneficial impacts.
- (v) **Integration with EIA:** SEIA is a component of the broader EIA process, considering the social and economic context of a project alongside its environmental effects.

**Examples of SEIA considerations:**

- (i) **Job creation and economic opportunities:** A new industrial project might provide employment and income for local residents, but it could also lead to increased competition for jobs or displacement of existing businesses.
- (ii) **Changes in community structures and social dynamics:** Infrastructure projects could alter settlement patterns, access to resources, or cultural practices.
- (iii) **Health impacts:** Projects like mines or factories could lead to pollution or noise, affecting the health of nearby residents.
- (iv) **Changes in livelihoods:** New agricultural practices could disrupt traditional farming methods or displace communities reliant on land.

**Process of Conducting a SEIA:**

- (i) **Scope of analysis:** Defining the scope of the SEIA, including the geographical area, affected populations, and relevant social and economic issues.
- (ii) **Data Collection:** Gathering both primary (e.g., surveys, interviews) and secondary (e.g., census data, existing studies) data to understand the baseline social and economic conditions.
- (iii) **Impact Prediction:** Using various methods to forecast potential impacts, considering different scenarios and levels of development.
- (iv) **Mitigation Planning:** Developing strategies to address potential adverse impacts, such as compensation for displaced residents or community development programs.
- (v) **Monitoring and Evaluation:** Regularly assessing the actual impacts of the project and evaluating the effectiveness of mitigation measures.

**Benefits of conducting SEIA:**

- (i) **Promotes sustainable development:** By considering social and economic factors alongside environmental impacts, SEIA contributes to a more balanced approach to development.
- (ii) **Improves community well-being:** SEIA helps to identify and address social and economic issues that may negatively impact communities, such as poverty, inequality, or displacement.
- (iii) **Reduces conflicts:** By involving stakeholders in the SEIA process, it can help to prevent or resolve conflicts related to land use, resources, or social changes.
- (iv) **Enhances project legitimacy:** A robust SEIA can demonstrate that a project has



considered the social and economic consequences and is committed to responsible development

## **7. Implementation & Monitoring:**

The project implementation phase is the part of the project lifecycle where the tasks that build the deliverables are executed. The project implementation phase begins when the project plan is approved and the resources necessary for executing the starting task are assembled. Project execution should be in accordance with the approved project plan. Project implementation consists of processes like execution, measuring project progress, reporting project status, and exercising management controls and user acceptance. The project team executes the tasks as mapped out in the project plan.

Implementation stage involves the execution of project as planned while carefully monitoring the progress and managing changes. The main issues are technology selection risk, timely availability of capital, implementation of different contracts and sub-contracts etc. This is followed by the application of different monitoring techniques (CPM, PERT and Gantt Charts).

### **Process of project Implementation**

- (i) Executing the Project:** This is the act of carrying out planned activities. The execution of the project plan is simply the act of performing task and activities that result in the production of the project deliverables. Task and activities performed must be completed effectively and efficiently. The project plan serves as a road map and a common frame of reference for all members of the project team. The project plan is therefore, the foundation for successful delivery of projects. In a perfect world, plans are executed precisely as written.
- (ii) Measuring the Project progress:** It can provide assurance that the project is progressing as planned or reveal the need to intervene and take action to ensure the achievement of the desired business objectives. Performance measuring involves the collecting, analyzing, and reporting project performance information to provide the project team and stakeholders with information on the status of project execution. Common areas to monitor typically include:
  - Project schedule: - include all tasks and estimated work hours for the entire project.
  - Work effort: - is essential for evaluating whether the project is executing within budget or not.
  - Costs: - use budget plan developed during planning represents the basis for measurement of deviation during execution. Measuring cost requires the support of

the financial and procurement support business units.

- Issues resolution: - deals with number of open issues and their impact on the project.
- Changes to the project: - There will always be changes to a project. The challenge is to identify and manage them.

**(iii) Reporting project status:** A standard requirement of all projects is to provide information to both executive management and the project team members on the status of the project. Although the frequency of the reports may sometimes vary, the frequency should correspond with information requirements identified in the project Communications Plan. Often status reports are prepared for executive or team meetings. The project status report is a means of communicating regularly the ongoing progress and status of a project. The overall project status is communicated to all team members using the project status report.

**(iv) Modify Project (Apply Management Control):** No matter how well-defined projects are, situations will arise that require changes to be made to the project plans. They may be imposed by senior management, by changes in the business environment, or the changing preferences of a client.

**(v) User Acceptance:** Acceptance criteria for project deliverables establishes in advance an agreed upon standard of performance or capability that the user will accept in a specific deliverable. The Performance Plan developed in the Project Planning Phase articulates the project deliverables and acceptance criteria. Acceptance criteria then become the fundamental guideline for the design team to build a solution that the user will find acceptable. The execution phase ends when the user has agreed to accept the deliverable (s) in the state that they exist. The acceptance criterion is the standard that the user uses to judge if each deliverable is satisfactory. In some cases, the deliverable may not meet all acceptance criteria but, from an overall view, the deliverable will meet the requirements of the user.

## **8. Sustainability Analysis**

Donor agencies are emphasising on the sustainability of the project after the intervention is withdrawn from the project area. While appraising the project proposal the reviewer must see that adequate attention has been given to the sustainability of the project by enquiring several questions i.e How will the project to be sustained after the project activities are withdrawn? Who will sustain it, both financially and technically? and What endeavour has been made by the proposer while proposing the project? and so on.

### 6.3.2 Social Cost and Benefit Analysis (SCBA) of Project

Social Cost-Benefit Analysis (SCBA) in project management is a method that evaluates the broader impacts of a project, including both financial and non-financial effects, to ensure projects contribute positively to society and align with sustainable development goals. It goes beyond traditional financial analysis by considering the social, environmental, and economic consequences of a project.

SCBA comprises not just the financial effects (investment costs, direct benefits like tax and fees, etc.), but all the social effects, like: pollution, safety, indirect (labour) market, legal aspects, etc.

The main aim of a social cost-benefit analysis is to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these prices reflect the value a society attaches to the caused effects, enabling the decision maker to form a statement about the net social welfare effects of a project.

Major advantages of a social cost-benefit analysis are that it enables investors to systematically and cohesively compare different project alternatives. Hence, these alternatives will not just be compared intrinsically, but will also be set against the “null alternative hypothesis”. This hypothesis describes “the most likely” scenario development in case a project will not be executed. Put differently, investments on a smaller scale will be included in the null alternative hypothesis in order to make a realistic comparison in a situation without “huge” investments. The social cost-benefit analysis calculates the direct (primary), indirect (secondary) and external effects:

- (a) Direct effects are the costs and benefits that can be directly linked to the owners/users of the project properties (e.g., the users and the owner of a building or highway).
- (b) Indirect effects are the costs and benefits that are passed on to the producers and consumers outside the market with which the project is involved (e.g., the owner of a bakery nearby the new building, or a business company located near the newly planned highway).
- (c) External effects are the costs and benefits that cannot be passed on to any existing markets because they relate to issues like the environment (noise, emission of CO<sub>2</sub>, etc.), safety (traffic, external security) and nature (biodiversity, dehydration, etc.).

#### Impact of SCBA

- (i) **An integrated way of comparing the different effects:** All relevant costs and benefits of the different project implementations (alternatives) are identified and monetized as far as possible. Effects that cannot be monetized are described and quantified as much as possible.

- (ii) **Attention for the distribution of costs and benefits:** The benefits of a project do not always get to the groups bearing the costs. A social cost-benefit analysis gives insight in who bears the costs and who derives the benefits.
- (iii) **Comparison of the project alternatives:** A social cost-benefit analysis is a good method to show the differences between project alternatives and provides information to make a well-informed decision.
- (iv) **Presentation of the uncertainties and risks:** A social cost-benefit analysis has several methods to take economic risks and uncertainties into account. The policy decision should be based on calculated risk.

### **Approaches of SCBA**

Two approaches for SCBA:

- (i) **UNIDO Approach:** This approach is mainly based on publication of UNIDO (United Nation Industrial Development Organisations) named Guide to Practical Project Appraisal in 1978.
- (ii) **L-M Approach:** IMD Little and J.A. Mireless approach for analysis of Social Cost Benefit in Manual of Industrial Project “ Analysis in Developing countries and project Appraisal and planning for Developing Countries.

### **6.3.3 Project Audit**

The project audit is a thorough examination of the management of a project, its methodology and procedures, its records, its properties, its budgets and expenditures, and its degree of completion. It may deal with the project as a whole, or only with a part of the project. The formal report may be presented in various formats, but should, at a minimum, contain comments on the following points:

- (i) Current status of the project: Does the work actually completed match the planned level of completion?
- (ii) Future status: Are significant schedule changes likely? If so, indicate the nature of the changes.
- (iii) Status of crucial tasks: What progress has been made on tasks that could decide the success or failure of the project?
- (iv) Risk assessment: What is the potential for project failure or monetary loss?
- (v) Information pertinent to other projects: What lessons learned from the project being audited

can be applied to other projects being undertaken by the organization?

- (vi) Limitations of the audit: What assumptions or limitations affect the data in the audit?

### MCQs

1. According to the Project Management Institute (PMI), the Five phases of C project management include initiation planning-----, performance, monitoring and project clause.
- (a) Execution
  - (b) Mining
  - (c) Plotting
  - (d) Solution

Answer: (a)

2. Which of the following is a work breakdown structure
- (a) A Gantt Chart
  - (b) A list of the activities making up the higher levels of the project
  - (c) An ordered list of project task sap tasks and work packages
  - (d) Activity chart

Answer (c)

3. Which of the following is the first step in project appraisal?
- (a) Project implementation
  - (b) Project identification
  - (c) Project monitoring
  - (d) Project evaluation

Answer:(b)

4. Which financial metric assesses a project's profitability over its lifespan?
- (a) Net Present Value (NPV)
  - (b) Return on Investment (ROI)
  - (c) Internal Rate of Return (IRR)
  - (d) Payback Period

Answer: (a)

5. Project appraisal by financial institution takes into consideration:
- (a) Promoter's capacity and competence
  - (b) Project
  - (c) Economic Aspects
  - (d) All of above

**Answer: (d)**

6. A project would normally be undertaken if its net present value is:
- (a) Negative

- (b) Exactly the same as the NPV of existing projects
- (c) Positive
- (d) Zero

**Answer: (c)**

7. Technical feasibility implies to mean\_\_\_\_\_
- (a) Appraisal of the project by a team of experts drawn from different disciplines.
  - (b) The adequacy of the proposed plant and equipment to produce the product within the prescribed norms.
  - (c) Working plan for implementation of project proposal after investment decision by a company has been taken.
  - (d) To ensure before taking in hand a project whether or not the proposed project is viable.

**Answer: (b)**

8. Financial aspects of the project are judged with reference to\_\_\_\_\_
- (a) Availability of land and site.
  - (b) Availability of servicing facilities like machine shops, electric repair shops, etc.
  - (c) NPV, Benefit-Cost Ratio, Internal Rate of Return, Sensitivity & Risk Analysis
  - (d) Availability of workforce as per required skill and arrangements proposed for training-in-plant and outside.

**Answer: (c)**

9. The objective of economic appraisal is to:
- (a) Examine the project from the entire economy's point of view
  - (b) Determine whether the project will improve the economic welfare of the country
  - (c) Both (A) and (B)
  - (d) Neither (A) nor (B)

**Answer: (c)**

10. The social analysis consists of –
- (a) Measurement of the distribution of the income due to the project.
  - (b) Identification of the impact on the objectives of the basic needs of the society.
  - (c) Both (A) and (B)
  - (d) Neither (A) nor (B)

**Answer: (c)**

11. The UNIDO guidelines provide a comprehensive framework for –
- (a) Appraisal of projects and examine their desirability and merit by using different yardsticks in a step-wise manner
  - (b) Appraisal of the project regarding the chance of getting government subsidy.
  - (c) Adequacy of the proposed plant and equipment to produce the product within the prescribed norms.
  - (d) All of the above

**Answer: (a)**

12. What is the main purpose of Social Cost-Benefit Analysis (SCBA)?

- (a) To evaluate costs and benefits of projects only.
- (b) To support decision-making at all levels of government. (correct)
- (c) To determine economic benefits of private investments.
- (d) To maximize net social benefit of projects.

**Answer (b)**

13. What is the main purpose of Social Cost-Benefit Analysis (SCBA)?

- (a) To evaluate costs and benefits of projects only.
- (b) To support decision-making at all levels of government. (correct)
- (c) To determine economic benefits of private investments.
- (d) To maximize net social benefit of projects.

**Answer: (b)**

14. What is the primary purpose of financial appraisal in project management?

- (a) To determine the project's scope and timeline.
- (b) To assess the project's potential profitability and feasibility.
- (c) To manage project risks and uncertainties.
- (d) To allocate resources effectively.

**Answer: (b)**

15. Which financial appraisal method is used to determine if a project's benefits exceed its costs?

- (a) Payback period
- (b) Net Present Value (NPV)
- (c) Internal Rate of Return (IRR)
- (d) Sensitivity analysis

**Answer: (b)**

16. What does Payback Period calculation consider?

- (a) The time it takes for a project to generate enough revenue to cover its initial investment.
- (b) The rate of return on the project investment.
- (c) The project's profitability over its entire life cycle.
- (d) The risk involved in the project.

**Answer (a)**

17. What is the purpose of Sensitivity Analysis in financial appraisal?

- (a) To determine the optimal project timeline.
- (b) To assess how changes in key assumptions affect the project's financial viability.
- (c) To identify the highest and lowest possible project costs.

(d) To calculate the project's internal rate of return.

**Answer: (b)**

18. Which of the following is NOT a key element of Institutional Appraisal?

- (a) Organizational structure and culture.
- (b) Stakeholder analysis and management.
- (c) Project schedule and budget.
- (d) Legal and regulatory compliance.

**Answer: (c)**

19. What is the primary focus of Institutional Appraisal during the project planning phase?

- (a) Risk assessment and mitigation.
- (b) Resource allocation and budgeting.
- (c) Identifying potential barriers to project success.
- (d) Ensuring the project aligns with organizational goals and values.

**Answer: (d)**

20. How does Institutional Appraisal help in project risk management?

- (a) By providing a framework for identifying and mitigating risks related to organizational structure and culture.
- (b) By ensuring that the project team has sufficient resources and expertise.
- (c) By streamlining project execution and reducing delays.
- (d) By directly influencing the project budget and scope.

**Answer: (a)**



## Unit 7

### Computer Aided Project Management

#### Contents

- Computer aided Project Management
  - Features of Computer-aided Project Management
  - Benefits of Computer-aided Project Management
- Microsoft Project
  -

#### 7.0 Introduction

Computer-aided project management (CAPM) refers to the use of computer software and digital tools to manage and execute projects. It involves using various software applications to aid in areas like planning, scheduling, resource allocation, communication, and progress tracking. CAPM aims to streamline project processes, improve efficiency, and enhance collaboration. In this unit, we shall discuss different aspects of MS Project.

#### 7.1 Features of Computer-aided Project Management

- (i) **Planning:** Using software to create project plans, define tasks, allocate resources, and estimate costs.
- (ii) **Scheduling:** Utilizing tools for scheduling project activities, tracking progress, and identifying potential delays.
- (iii) **Resource Management:** Managing project resources, including personnel, equipment, and materials, to ensure they are allocated effectively.
- (iv) **Communication:** Facilitating communication and collaboration among team members and stakeholders through software platforms.
- (v) **Tracking and Reporting:** Monitoring project progress, tracking key metrics, and generating reports to assess project performance.

#### 7.2 Benefits of Computer-aided Project Management

**Increased Efficiency:** Automation and software tools can streamline project processes and reduce time spent on manual tasks.

- (i) **Improved Communication:** Software platforms can facilitate real-time communication and collaboration, ensuring everyone is on the same page.
- (ii) **Better Control:** CAPM tools enable project managers to monitor project progress, identify potential risks, and make necessary adjustments.
- (iii) **Enhanced Accuracy:** Software can help ensure accurate estimates, schedules, and resource

allocations.

- (iv) **Remote Access:** Many CAPM tools offer remote access, allowing project managers and team members to work from anywhere.

#### **Examples of CAPM tools:**

- **Project Management Software:** Platforms like Asana, Trello, Jira.
- **Collaboration Software:** Tools like Microsoft Teams and Slack.
- **Task Management Software:** Software that allows for task creation, assignment, and progress tracking.
- **Scheduling Software:** Tools like Gantt charts or Primavera P6.
- **Collaboration and Communication Tools:** Software like Microsoft Teams and Slack.

### **7.3 Microsoft (MS) Project Management**

Microsoft Project is a project management software program developed and sold by Microsoft, designed to assist a project manager in developing a schedule, assigning resources to tasks, tracking progress, managing the budget, and analysing workloads.

Microsoft Project creates budgets based on assignment work and resource rates. As resources are assigned to tasks and assignment work estimated, the program calculates the cost, equal to the work times the rate, which rolls up to the task level and then to any summary task, and finally to the project level. Each resource can have its own calendar, which defines what days and shifts a resource is available. Microsoft Project is not suitable for solving problems of available materials (resources) constrained production. Additional software is necessary to manage a complex facility that produces physical goods.

A lot of project managers get confused between a schedule and a plan. MS Project can help you in creating a Schedule for the project even with the provided constraints. It cannot Plan for you. As a project manager you should be able to answer the following specific questions as part of the planning process to develop a schedule.

MS Project cannot answer these for you.

- ❖ What tasks need to be performed to create the deliverables of the project and in what order? This relates to the scope of the project.
- ❖ What are the time constraints and deadlines if any, for different tasks and for the project as a whole? This relates to the schedule of the project.
- ❖ What kind of resources (man/machine/material) are needed to perform each task?
- ❖ How much will each task cost to accomplish? This would relate to the cost of the project.
- ❖ What kind of risk do we have associated with a particular schedule for the project? This might affect the scope, cost and time constraints of your project.

From the perspective of Project Management Methodology, a Plan and Schedule are not the same. A plan is a detailed action-oriented, experience and knowledge-based exercise which considers all elements of strategy, scope, cost, time, resources, quality and risk for the project.

### **7.3.1 Scheduling**

Scheduling is the science of using mathematical calculations and logic to generate time effective sequence of task considering any resource and cost constraints. Schedule is part of the Plan. In Project Management Methodology, schedule would only mean listing of a project's milestones, tasks/activities, and deliverables, with start and finish dates. The schedule is linked with resources, budgets and dependencies.

However, in MS Project (and in all available help for MS Project) the word 'Plan' is used as a 'Schedule' being created in MS Project. This is because of two reasons.

One, MS Project does more than just create a schedule it can establish dependencies among tasks, it can create constraints, it can resolve resource conflicts, and it can also help in reviewing cost and schedule performance over the duration of the project. So, it does help in more than just creating a Schedule. Thus, it makes sense for Microsoft to market MS Project as a Plan Creator rather than oversimplifying it as just a Schedule Creator.

A project manager should also be able to answer other project-related questions as well.

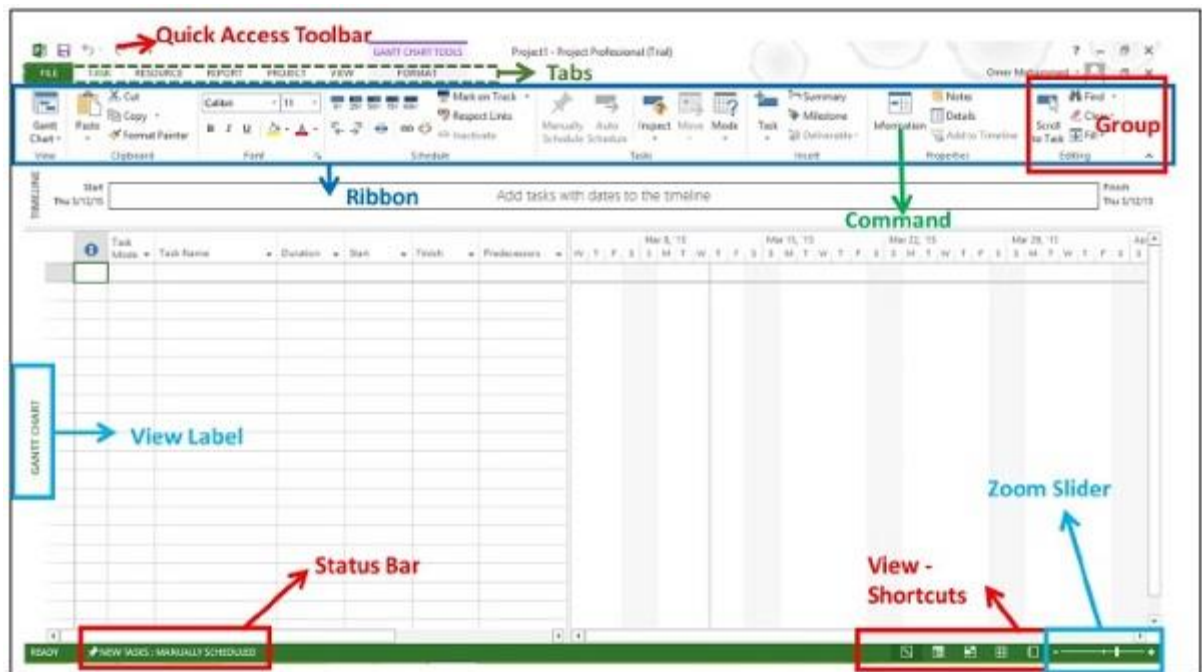
For example –

- ❖ Why this project needs to be run by the organization?
- ❖ What's the best way to communicate project details to the stakeholders?
- ❖ What is the risk management plan?
- ❖ How the vendors are going to be managed?
- ❖ How the project is tracked and monitored?
- ❖ How the quality is measured and qualified?

MS Project can help you –

- ❖ Visualize your project plan in standard defined formats.
- ❖ Schedule tasks and resources consistently and effectively.
- ❖ Track information about the work, duration, and resource requirements for your project.
- ❖ Generate reports to share in progress meetings

### **MS Project - The Screen**

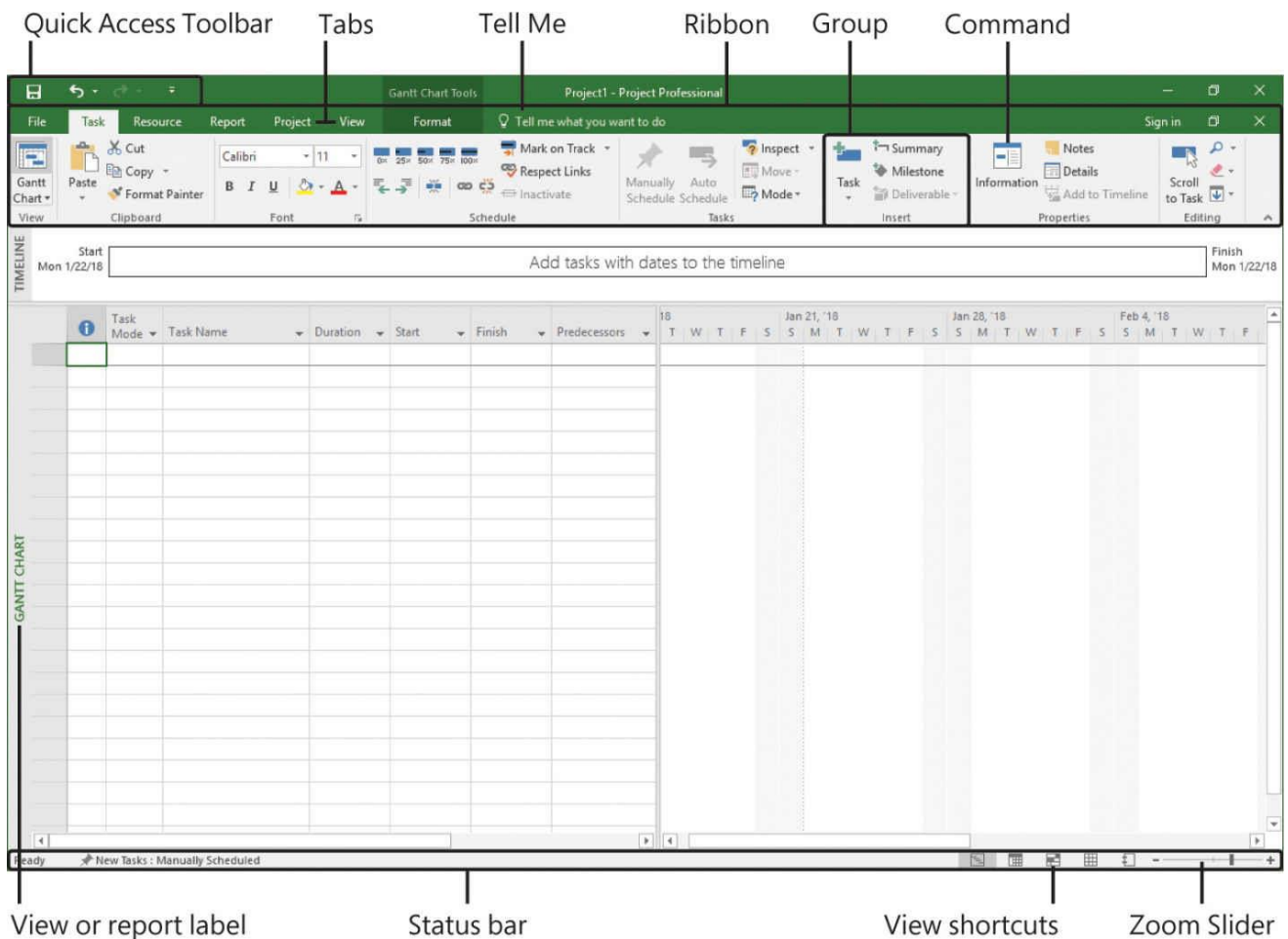
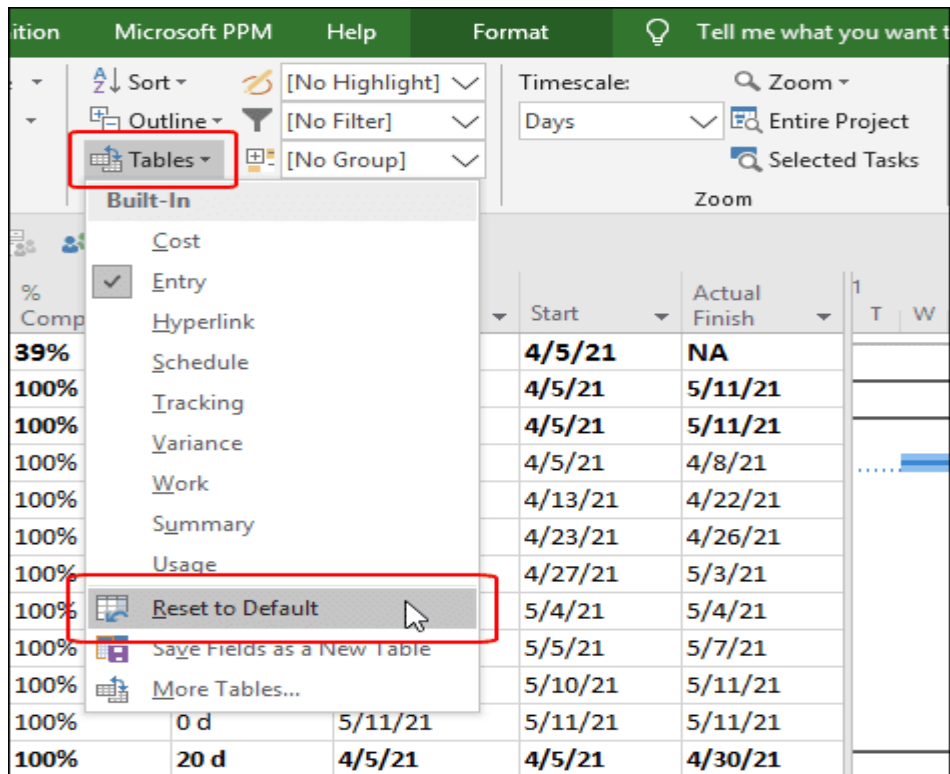


*The Project Start screen includes options for creating a new plan or opening a plan*

|               |  |
|---------------|--|
| The Menus:    | Always displayed, some options depend on the selected view.                          |
| Tool Bars:    | Buttons provide quick access to the most common commands; The bars can be customized |
| Task Pane     | With options to help when 'Getting Started'. Other task panes are available.         |
| Entry Bar:    | The entry point for text with outlining buttons.                                     |
| Status Bar:   | At the bottom of the screen showing the current status.                              |
| Scroll Bars:  | When using a mouse to scroll the views and to move the boundary between two views.   |
| Working Area: | The area for 1 or 2 views, the size of each can be adjusted.                         |

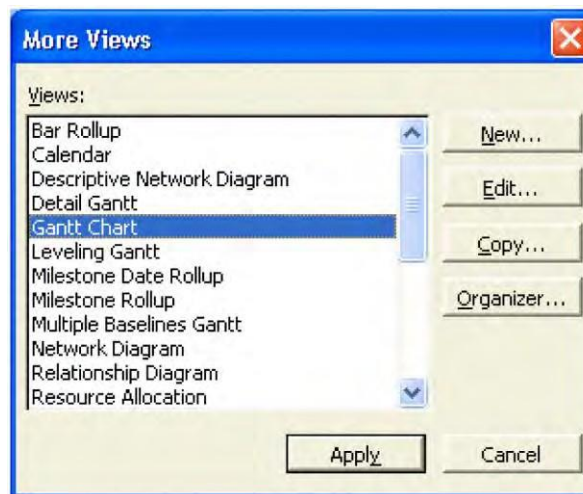
### 7.3.2 Elements of the Default View

- ❖ The default Project view is the Gantt Chart view, as displayed below. This view is used extensively in Microsoft Project. The Gantt Chart consists of a Gantt table and a Gantt bar chart. The divider bar separates the two and can be repositioned to display more of the table or more of the chart. The Gantt table consists of rows and columns. Just like on a spreadsheet, the intersection of a row and a column is called a cell. The Gantt bar chart graphically displays your schedule on a time line.
- ❖ The status bar displays the current mode of operation and warning messages and indicates when special key control modes, such as Num Lock mode, are on. The entry bar contains an Entry box where all information is input. The default toolbars are the Standard toolbar, Formatting toolbar and the Project Guide. Other toolbars can be displayed by choosing Toolbars from the View menu.



## Views and Tables

- ❖ A view is the format of the way that project data is displayed on the screen and there are a considerable number of different permutations that can be used.
- ❖ The View Menu is the first place where the view that is required is selected. The basic selection is between a Chart, a Form, or a Sheet. Some of the options in this menu can provide a split view to show two different displays for the same Task or Resource.
- ❖ You can also use the View bar, located vertically on the left of the default view (if it is active). To activate/deactivate the View Bar, select View, View Bar.
- ❖ As well as the standard views achieved with the View menu or View bar, you can select More Views to see more detailed and complex views and forms.



The table below describes some of the main views in Project.

|                        |   |
|------------------------|---|
| Calendar:              | Shows the view in the form of a calendar.   |
| Gantt Chart:           | A diagrammatic view of the Tasks and their time scale. This chart can also show the relationship between Tasks and the Critical Path. It usually shows the task entry form alongside the Gantt chart.   |
| Network Diagram Chart: | Network Diagram is an acronym for Programme Evaluation Review Technique. This view represents each Task as a box with relevant information within it. The layout of the boxes on the chart and the lines that link the boxes represent the structure of the project.  |
| Task Usage:            | The Task Usage view displays project tasks with their assigned resources grouped underneath them.   |
| Tracking Gantt:        | The Tracking Gantt view displays two task bars, one on top of the other, for each task. The lower bar shows baseline start and finish dates, and the upper bar shows scheduled start and finish dates (or if the task has already started, meaning that the percentage complete is greater than zero, the upper bar shows the actual start and finish dates). |
| Resource               | A graphical representation of a single resource and its utilisation.  |

|                 |  |
|-----------------|--|
| Graph:          |  |
| Resource Sheet: | A list of all the resources for the project.                                 |
| Resource Usage: | This is a view that shows the use in hours per day for each resource.        |
| More Views:     | Allows the showing of combination views as well as details of a single Task  |
| Table:(Entry):  | Changes the form alongside the Gantt chart.                                  |
| Reports:        | Takes you into Report Wizard.  |
| Toolbars:       | Allows you to change the Toolbar display.                                    |
| View Bar:       | Activates the View bar, located vertically on the left of the screen.        |
| Zoom:           | Changes the amount of information you can see on screen, from days to years. |

A blank project file can be daunting, especially if you are new to project management. But with a few clicks, you can tap the power of Project to convert your to-do list into a full-fledged project for you to manage and share with your team and stakeholders.

### 7.3.3 Starting Points

**Here are a few starting points:**

- ⦿ Add tasks
- ⦿ Outline tasks
- ⦿ Link tasks
- ⦿ Change your view
- ⦿ Print your project

#### (a) Add tasks

1. Click View > Gantt Chart.
2. Type a name in the first empty Task Name field at the bottom of the task list, and press Enter.

**Want more?** If adding tasks one at a time starts to take too long, you can also:

- ⦿ Add multiple tasks at once.
- ⦿ Cut and paste a list from another program.
- ⦿ Import a tasks list from a SharePoint site.

#### (b) Outline tasks

Indent and outdent tasks to show hierarchy — that is, to turn your task list into an outline of your project. An indented task becomes a subtask of the task above it, which becomes a summary task.

1. Click View > Gantt Chart.
2. In the Task Name column, click the task you want to indent.

3. Click Task > Indent Task  The task becomes a subtask.

4. Click **Outdent Task** to move the task back to the level of the task above it. It's no longer a subtask.

**Want more?** Use subtasks and summary tasks to show phases, easily navigate through a large project, and more. Link tasks

You can link any two tasks in a project to show their relationship (also called a task dependency). Dependencies drive the project schedule — once you link the tasks, every change you make to one affects the other, which affects the next one, and so on.

1. Click **View > Gantt Chart**.

2. Hold down Ctrl and click the two tasks you want to link (in the **Task Name** column).

3. Click **Task > Link the Selected Tasks** : 

**Want more?** Project supports four kinds of task links to show different relationships. Want to change the link type or remove the link completely?

### 7.3.4 Change your view

Project starts you off with the tried-and-true Gantt Chart, but you have dozens of other options for viewing your tasks and resources and how they're all connected. You can change any view to meet your specific needs.

1. Click the **View** tab.

2. In the **Task Views** group or **Resource Views** group, click the view that you want to use.

3. To see all the available views, click **Gantt Chart > More Views**, and then choose from the options in the **More Views** dialog box.

**Want more?** There's a lot more to learn here! Need some help choosing the right view of your project?

### Print your project

Printing a view or report in Project is similar to printing in other Office programs:

Click **File > Print > Print**.

**Want more?** Getting *only* the specific project information you want to share with your stakeholders into your printout can involve some prep work before you hit the print button:

- ⦿ Prepare a view for printing
- ⦿ Prepare a report for printing

### 7.3.5 Critical Path in MS Project

Every task is important, but only some of them are critical. The critical path is a chain of linked tasks that directly affects the project finish date. If any task on the critical path is late, the whole project is late.

The critical path is a series of tasks (or sometimes only a single task) that controls the calculated start or finish date of the project. The tasks that make up the critical path are typically interrelated by task



dependencies. There are likely to be many such networks of tasks throughout your project plan. When the last task in the critical path is complete, the project is also complete.

### **Show the critical path in the Gantt Chart view**

The Gantt Chart view will likely be your most used view for showing the critical path.

1. Choose View > Gantt Chart.
2. Choose Format, and then select the Critical Tasks check box.

Tasks on the critical path now have red Gantt bars.

### **Show the critical path in other task views**

You can see the critical path in any task view by highlighting it.

1. On the View tab, pick a view from the Task Views group.
2. Staying on the View tab, select Critical from the Highlight list. The critical path shows up in yellow.
3. To see only the tasks on the critical path, choose the Filter arrow, then pick Critical.

### **View the critical path in a master project**

When you are managing a master project, whole subprojects can be on the critical path. You can see if this is true by telling Project to treat the subprojects like they are summary tasks.

1. Choose **File > Options**.
2. Choose **Schedule**, and then scroll down to the **Calculation options** for this project area.
3. Make sure the Inserted projects are **calculated like summary** tasks box is selected

### **Change what tasks show up on the critical path**

Typically, critical tasks have no slack. But you can tell Project to include tasks with one or more days of slack on the critical path so you can see potential problems coming from farther away.

1. Choose **File > Options**.
2. Choose **Advanced**, and then scroll down to the Calculation options for this project area.
3. Add a number to the **Tasks are critical if slack is less than or equal to** box.

### **Show multiple critical paths**

You can set up your project schedule to display as many critical paths as you need to keep tabs on your project.

1. Choose **File > Options**.
2. Choose **Advanced**, scroll down to the bottom, and then select Calculate multiple critical paths.
3. Choose **View > Gantt Chart**.
4. Choose **Format**, and then select **Critical tasks**.

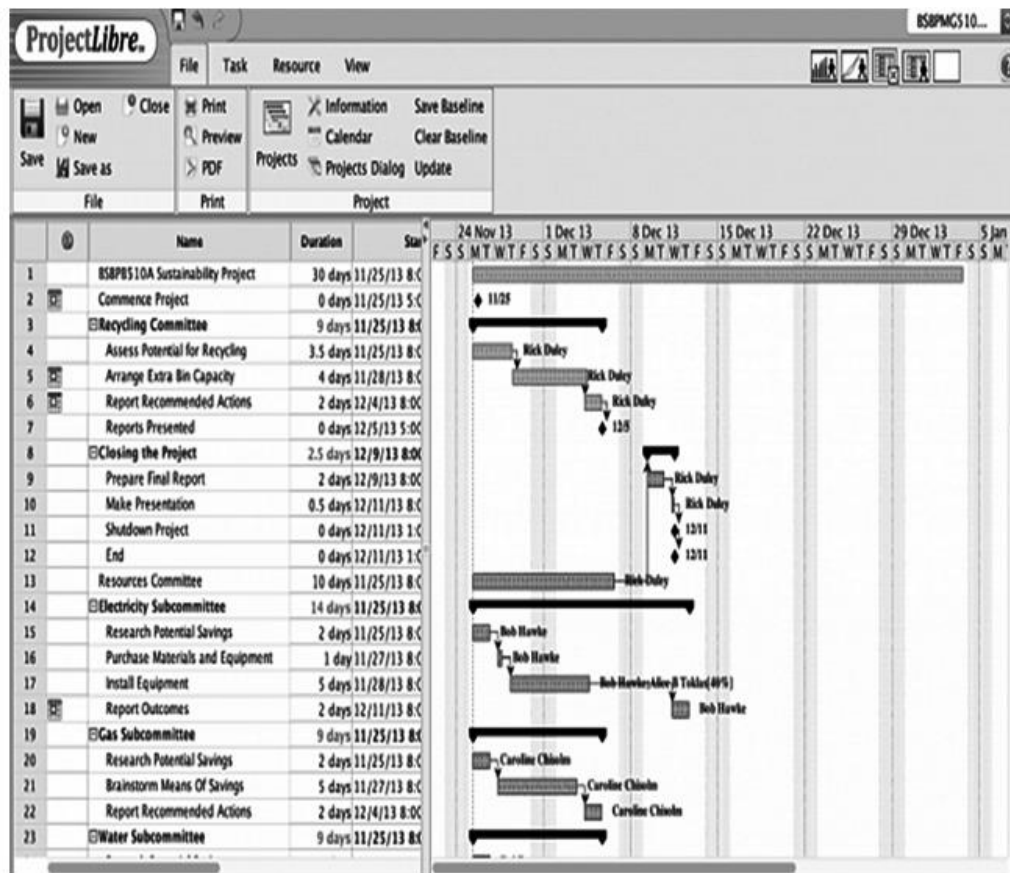


Figure 1: MS Project 1

### 7.3.5 How to Create a Timeline in Microsoft Project Tutorial

1. **Create a Task List** You'll need to build a list of required tasks. To get started, open Microsoft Project, click Blank Project, and type each task into a cell under Task Name.

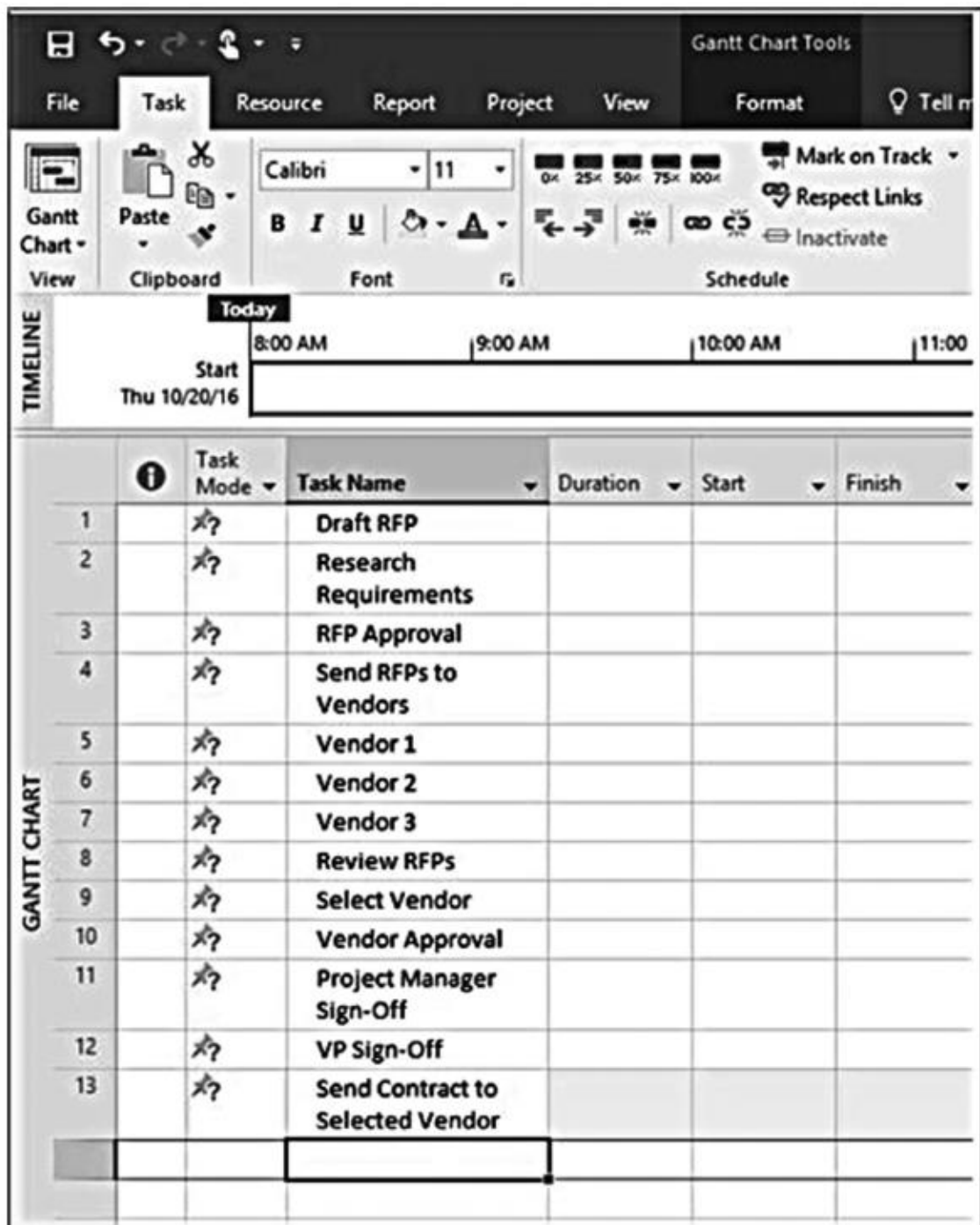


Figure 2: MS Project 2

- 2. Add Start and Finish Dates to Each Task** To enter start and end dates, click the Start cell that corresponds to the first task and enter a date (if you click the down arrow in the cell, a calendar will appear and you can use that to select a date). Then tab over to the Finish row and enter an end date. Microsoft will automatically enter the amount of time it will take to complete the task in the Duration row. You'll notice that as you add the dates, bar charts will be added to the timeline in the right-hand pane.

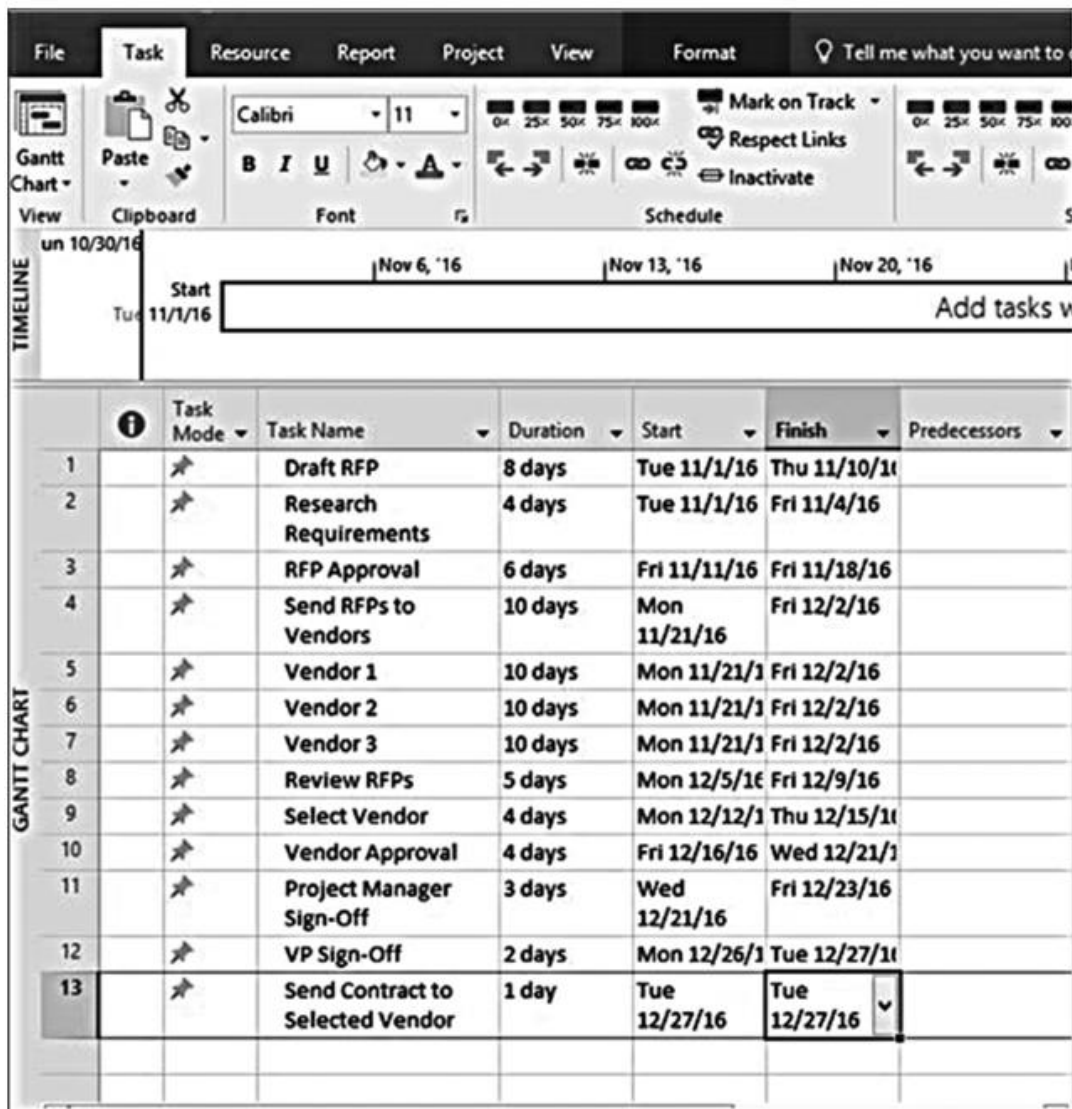


Figure 3: MS Project - 3

**3. Add Tasks to the Timeline** To add tasks to the Timeline, click the View tab and click the *Timeline* bar that appears above the task list. Then right-click on a Task cell and choose Add to *Timeline* from the list and click it to add the task to the timeline

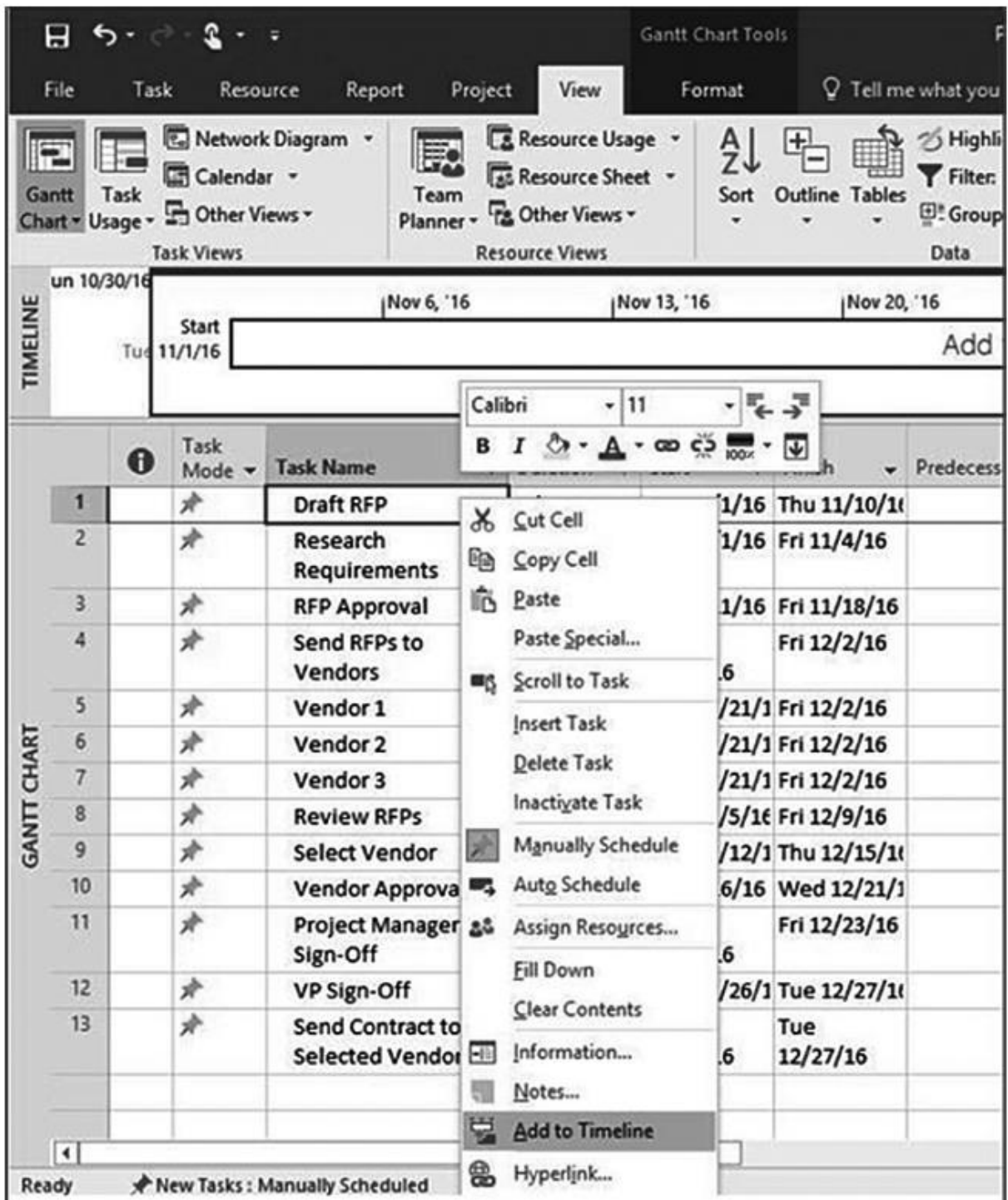
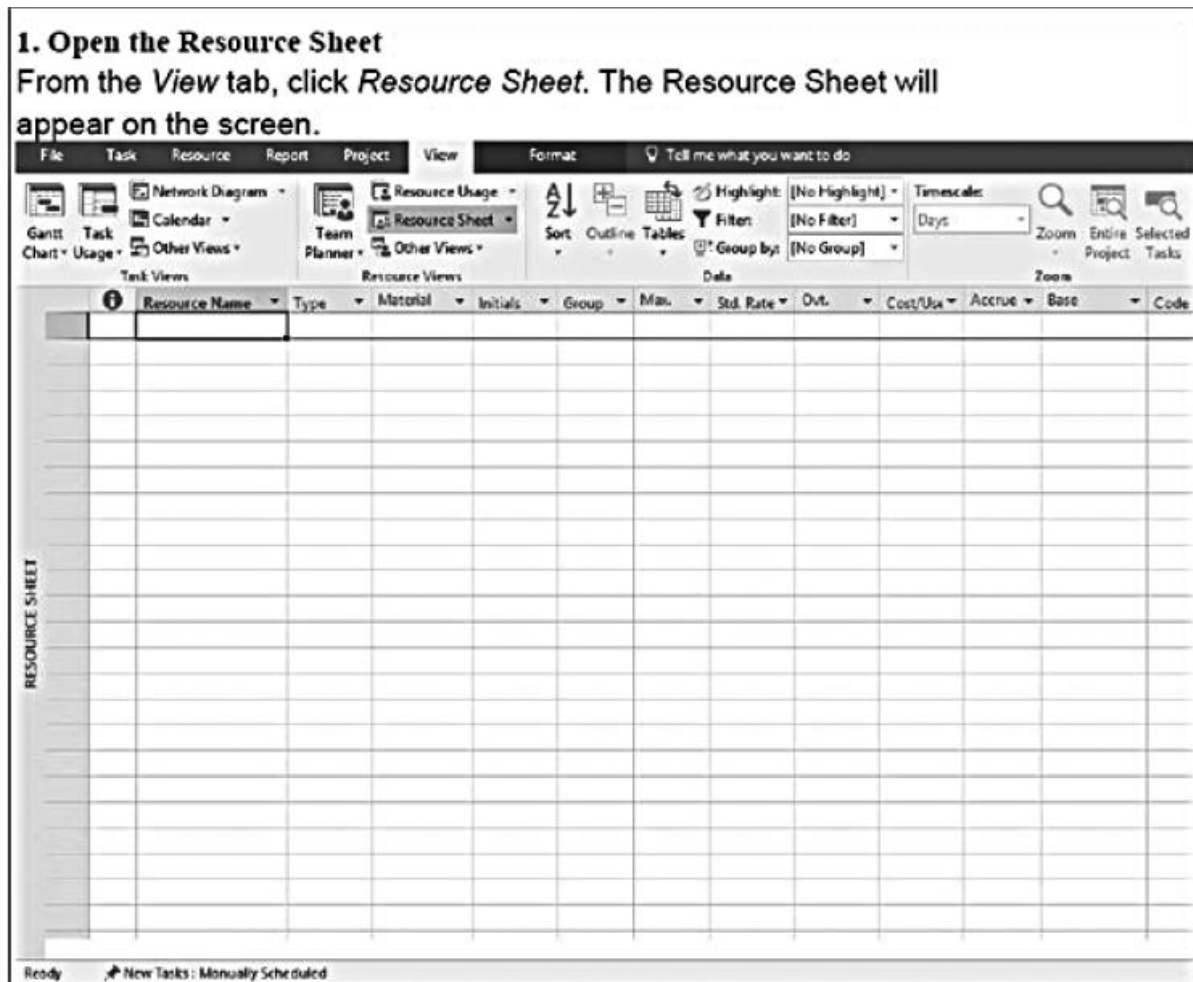


Figure 4: MS Project - 4

### 7.3.6 How to Set Up Resources in Microsoft Project

The term “resources” typically refers to people, but can also mean documentation or a certain type of work that will be needed to complete the project. Resources include the people, equipment, and material needed to complete the work of a project. Effective resource management is one of the most significant advantages of using Project 2016 rather than task-focused planning tools such as issue-ticketing systems.



**Figure 5: MS Project - 5**

**Add Resources** Type the name of the resource needed in the Resource Name field and complete the remainder of the information: Type, Material (if it's a material), Initials, Max (max amount of time), Standard Rate, Overtime, Cost/Use, Accrue, Base, and Code.

The screenshot displays the 'Resource Management' view in Microsoft Project, split into two panes. The top pane, labeled 'RESOURCE SHEET', shows a table of resources. The bottom pane, labeled 'RESOURCE FORM', provides detailed information for the selected resource, Sharon Salavaria.

| Type | Resource Name    | Type | Material | Initials | Group | Max. | Std. Rate  | Ovt.       | Cost/Use | Accrue   |
|------|------------------|------|----------|----------|-------|------|------------|------------|----------|----------|
| 1    | Jun Cao          | Work |          | J        |       | 100% | \$42.00/hr | \$63.00/hr | \$0.00   | Prorated |
| 2    | Sharon Salavaria | Work |          | S        |       | 50%  | 100.00/wk  | \$0.00/hr  | \$0.00   | Prorated |
| 3    | Toby Nixon       | Work |          | T        |       | 100% | 700.00/wk  | \$0.00/hr  | \$0.00   | Prorated |
| 4    | Toni Poe         | Work |          | T        |       | 100% | \$0.00/hr  | \$0.00/hr  | \$0.00   | Prorated |
| 5    | Zac Woodall      | Work |          | Z        |       | 100% | \$55.00/hr | \$0.00/hr  | \$0.00   | Prorated |
| 6    | Copyeditors      | Work |          | C        |       | 400% | \$45.00/hr | \$0.00/hr  | \$0.00   | Prorated |
| 7    | Travel           | Cost |          | T        |       |      |            |            |          | Prorated |

The 'RESOURCE FORM' for Sharon Salavaria shows the following details:

- Name: Sharon Salavaria
- Initials: S
- Max units: 50%
- Base cal: Standard
- Std rate: \$1,100.00/w
- Per use: \$0.00
- Ovt rate: \$0.00/h
- Accrue at: Prorated
- Group:
- Code:

Sharon's standard pay rate is adjusted for her half-time work schedule.

**Figure 6: MS Project -6**

*This is a great split view for quickly adding, editing, or reviewing resource details like notes*

Once your resources are added to the project, you can easily view who is available to take on the task based on their workload, and manage how much time each team member will spend on tasks in the **Resource Management** view.

### 7.3.7 How to Assign Tasks in MS Project

Once you have a list of resources for your project, you will want to assign tasks. This will help you better manage the project and get work done in a specific time period. One of the benefits of MS Project is that it can calculate how long it will take a person to complete the task based on their availability. If it's a particularly important part of the project that needs to be done quickly, you can assign multiple people to it and Microsoft Project will decrease the time it takes to complete the task based on how many resources are assigned. This also lets the people assigned to the project know how much time is required of them.

1. **Switch to the Gantt chart:** To assign tasks, you'll need to switch to the Gantt chart. Click the Gantt chart icon in top left corner of the window
2. **Open the Task Form** You should still be in the View tab. Click the Details box in the ribbon.

The Task Form should appear on the lower half of the screen. If it doesn't appear, click the down arrow in the Details box and select Task Form.

The screenshot displays the Microsoft Project Professional interface. The top ribbon shows the 'View' tab selected. The 'Task Views' group includes 'Network Diagram', 'Calendar', and 'Other Views'. The 'Resource Views' group includes 'Resource Usage', 'Resource Sheet', and 'Other Views'. The 'Data' group includes 'Sort', 'Outline', 'Tables', 'Highlight', 'Filter', and 'Group by'. The 'Timescale' is set to 'Days'.

The 'GANTT CHART' view is active, showing a list of tasks with their durations and dates. The task 'Research Requirements' is selected, and its details are shown in the 'TASK FORM' view below.

| ID | Task Name             | Duration | Start        | Finish       | Predecessors |
|----|-----------------------|----------|--------------|--------------|--------------|
| 1  | Draft RFP             | 8 days   | Tue 11/1/16  | Thu 11/10/16 |              |
| 2  | Research Requirements | 4 days   | Tue 11/1/16  | Fri 11/4/16  |              |
| 3  | RFP Approval          | 6 days   | Fri 11/11/16 | Fri 11/18/16 |              |
| 4  | Send RFPs to Vendors  | 10 days  | Mon 11/21/16 | Fri 12/2/16  |              |
| 5  | Vendor 1              | 10 days  | Mon 11/21/16 | Fri 12/2/16  |              |
| 6  | Vendor 2              | 10 days  | Mon 11/21/16 | Fri 12/2/16  |              |
| 7  | Vendor 3              | 10 days  | Mon 11/21/16 | Fri 12/2/16  |              |
| 8  | Review RFPs           | 5 days   | Mon 12/5/16  | Fri 12/9/16  |              |

The 'TASK FORM' view for 'Research Requirements' shows the following details:

- Name: Research Requirements
- Duration: 4 days
- Start: Tue 11/1/16
- Finish: Fri 11/4/16
- Task type: Fixed Units
- % Complete: 0%
- Effort driven: ☐
- Manually Scheduled: ☒

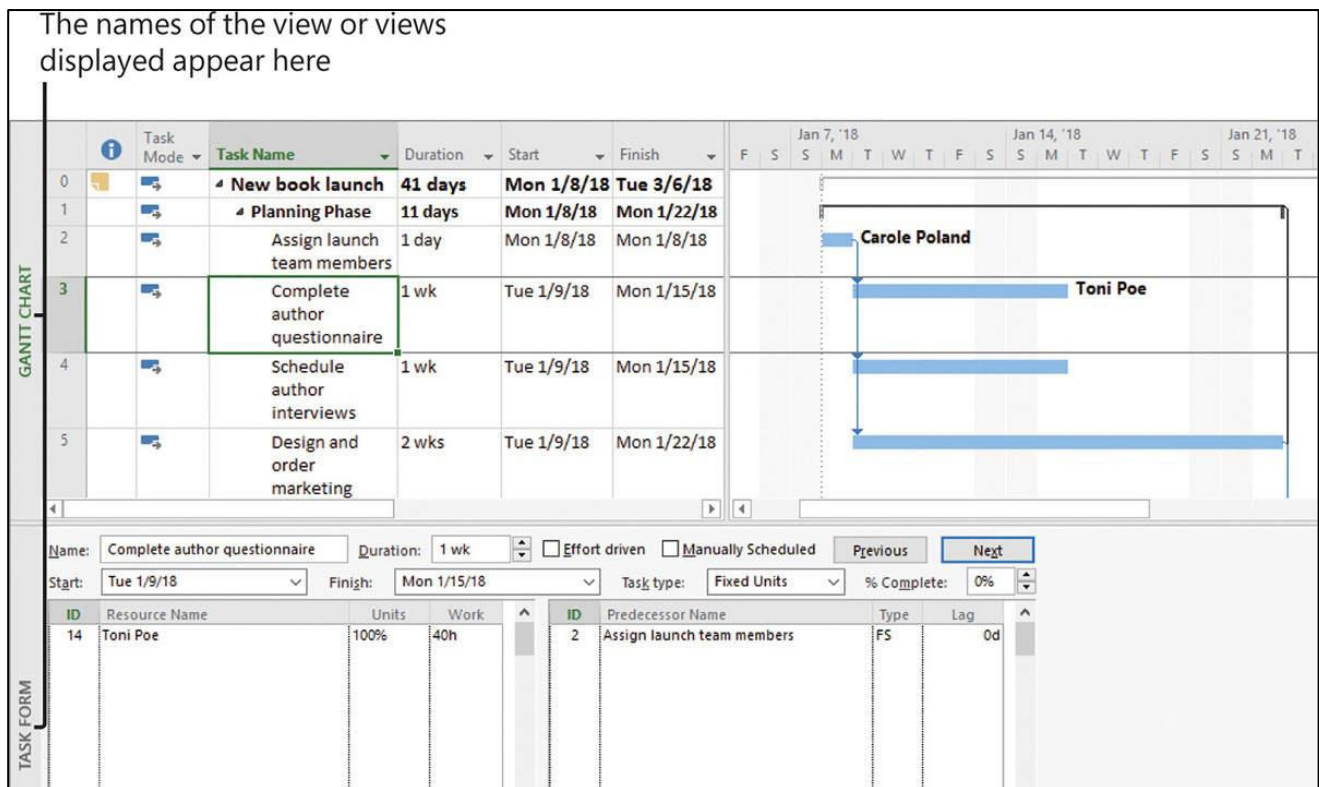
The 'TASK FORM' view also includes a table for resources and predecessors.

| ID | Resource Name | Units | Work |
|----|---------------|-------|------|
|    |               |       |      |

| ID | Predecessor Name | Type | Lag |
|----|------------------|------|-----|
|    |                  |      |     |

The status bar at the bottom indicates 'Ready' and 'New Tasks : Manually Scheduled'.





**Figure 7: MS Project – 7**

*In this split view, the Gantt Chart view appears in the upper pane, and below it is the Task Form*

**3. Select a Task to Assign** Click a task in the Gantt chart view and it will appear in the Name section of the Task Form. Click the box under Resource Name and choose a resource from the drop-down menu. Then click OK

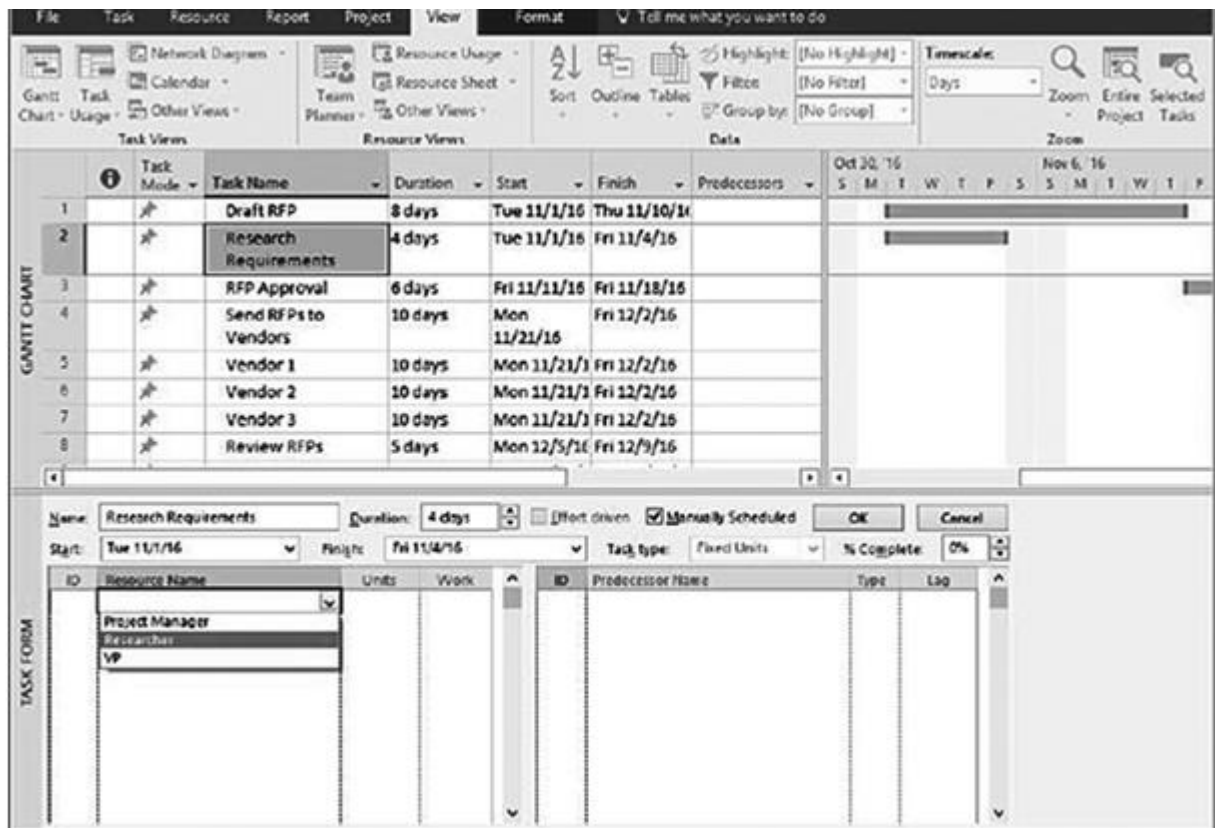


Figure 8: MS Project - 8

You can add another person to the same task by clicking the area under *Resource Name* and choosing the name you want. Click *OK*. As you assign tasks, the amount of time will be added to the Gantt chart.

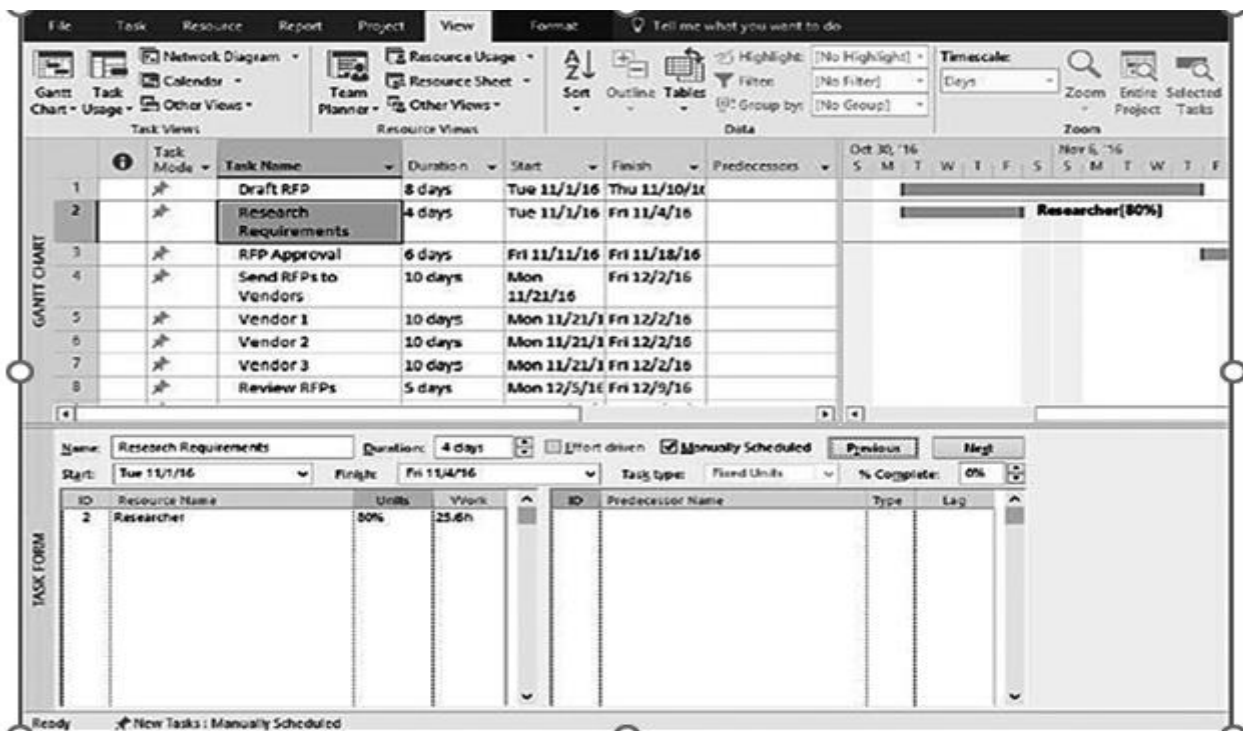


Figure 9: MS Project 9

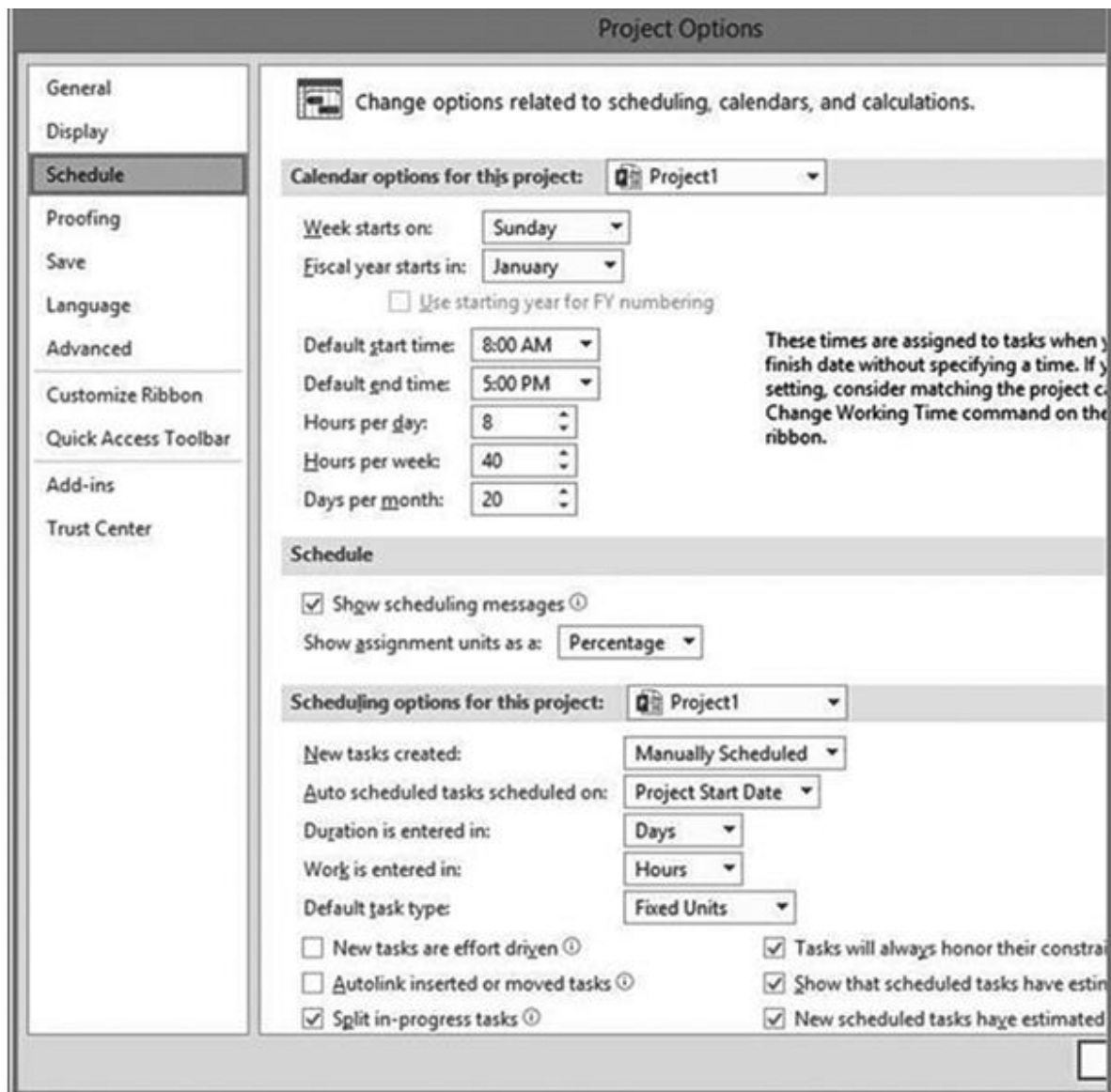
### 7.3.8 How to Schedule Tasks Automatically or Manually

With Microsoft Project 2016 you can schedule tasks manually or automatically. When you opt to manually schedule tasks it's up to you schedule all new tasks and track them to ensure they are being completed on time. If you choose Automatic scheduling, Project will schedule tasks based on dependencies, calendars, and constraints among other things. The default option when creating tasks is to schedule them manually, here it is mentioned how to change the setting to automatic.



Figure 10: MS Project 10

**3. Change Schedule Options** When the Project Options form appears on the screen, click *Schedule* in the left column.



**Figure 11: MS Project (Schedule Option)**

Next, under Scheduling Options for this Project section, click the drop-down menu for New Tasks Created. The default is set to Manually Scheduled. Select and click Auto Scheduled and click the OK button.

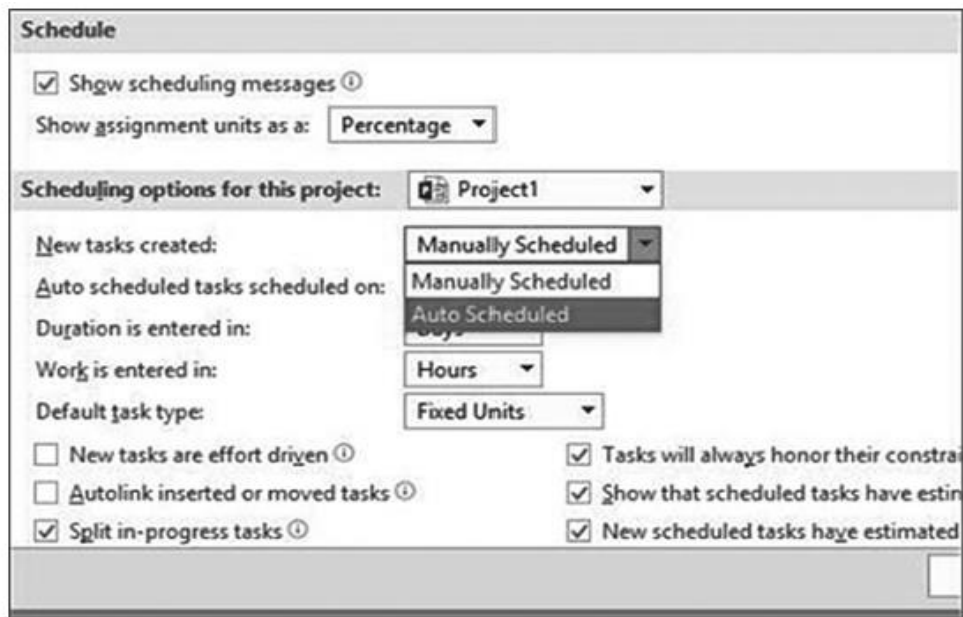
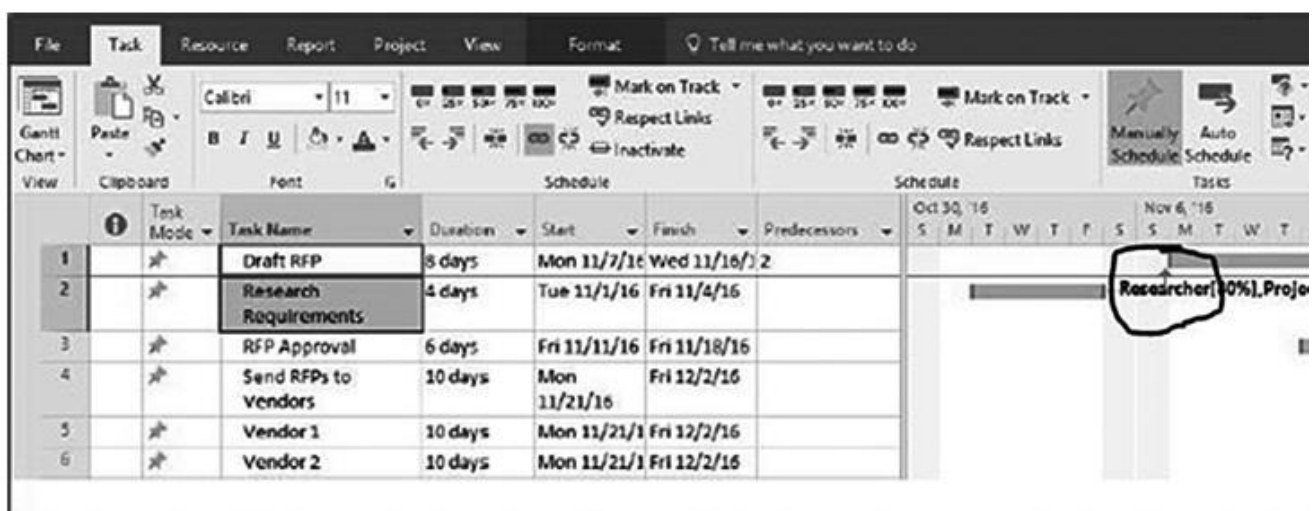


Figure 12: MS Project 12

### 7.3.9 How to Create Task Dependencies

Dependencies occur when one task can't move on to the next phase until a particular task is completed before it. Creating dependencies involves linking tasks in the Gantt chart view. In Microsoft Project, you can link any two tasks. Once tasks are linked, every change made to the predecessor affects the successor.

- 1. Switch to Gantt Chart View** You should still be in the Gantt chart view. If you're not, click the Gantt chart icon in top left corner of the window.
- 2. Select Tasks to Link** Click the *Task* tab in the menu bar. Identify the two tasks in the list that you want to link. Click the first task and press and hold the Ctrl key and select the second task. Click the chain icon in the ribbon to link the tasks. You'll see an arrow appear on the Gantt chart that connects the items.

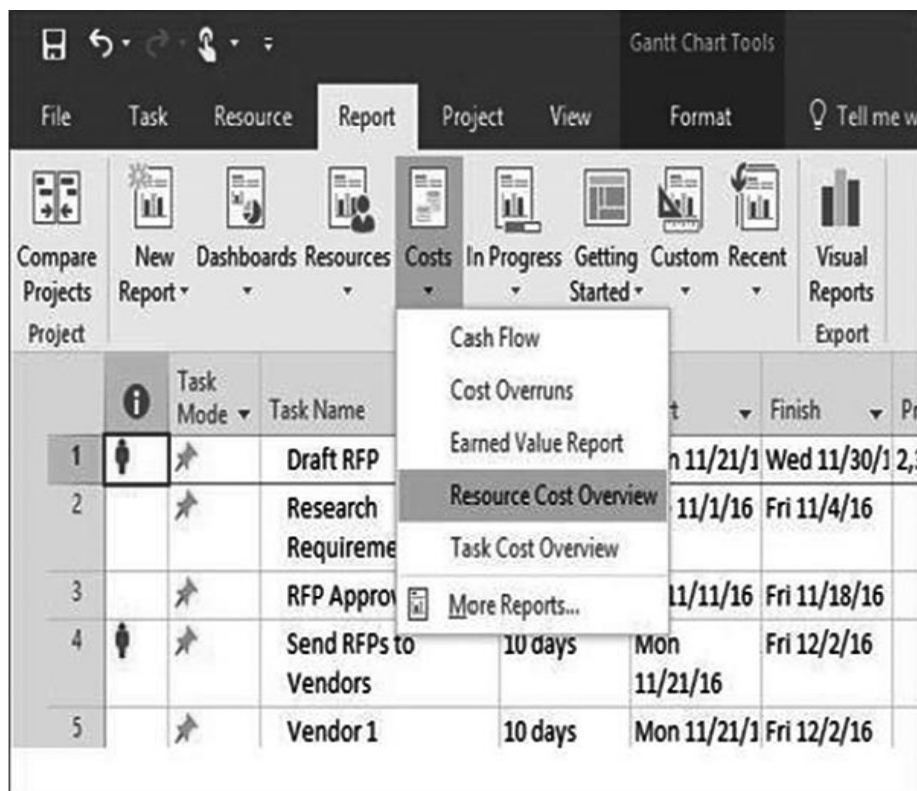


**Figure 13: MS Project 13**

### 7.3.10 Generate a Cost Report in Microsoft Project 2016

Once you have entered time and resources information to the best of your ability, you can use Project to run a Cost Overview report. Here's how to create a Resource Cost Overview report:

- 1. Select the Report Tab** Click the *Report* tab to get a quick overview of the reports you can run.
- 2. Choose a Cost Report to Run** Click the arrow below *Costs* in the ribbon and click *Resource Cost Overview*.



**Figure 14: MS Project 14**

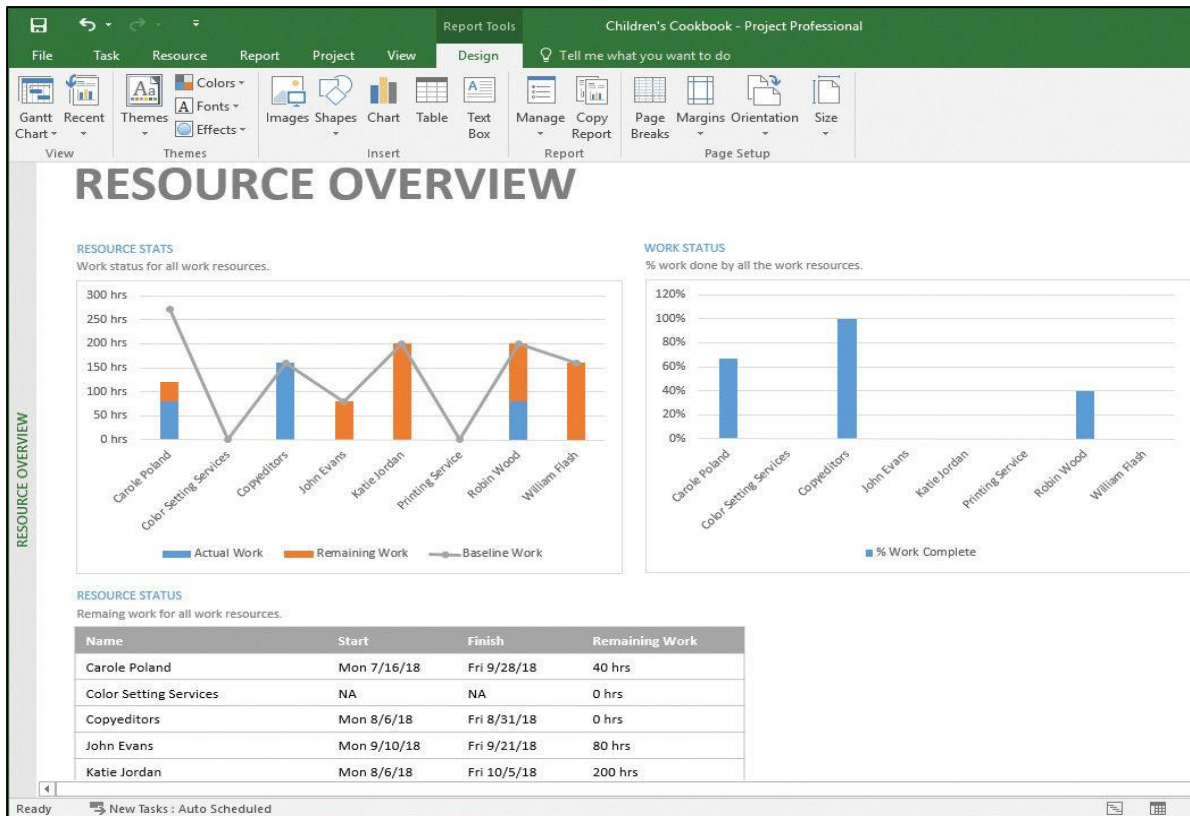


Figure 15: MS Project 15

#### 7.4. 9 Track the Progress of Your MS Project

With Microsoft Project, you can keep an eye on tasks to see if things are running on time or behind schedule. This will be easy to view as long as you keep the status of tasks updated during the length of your project.

- 1. Mark Tasks That Are on Track** Click the Task tab in the menu bar to see all the task options. Click a task that you want to update. If the task is on track, click the Mark on Track button in the ribbon.



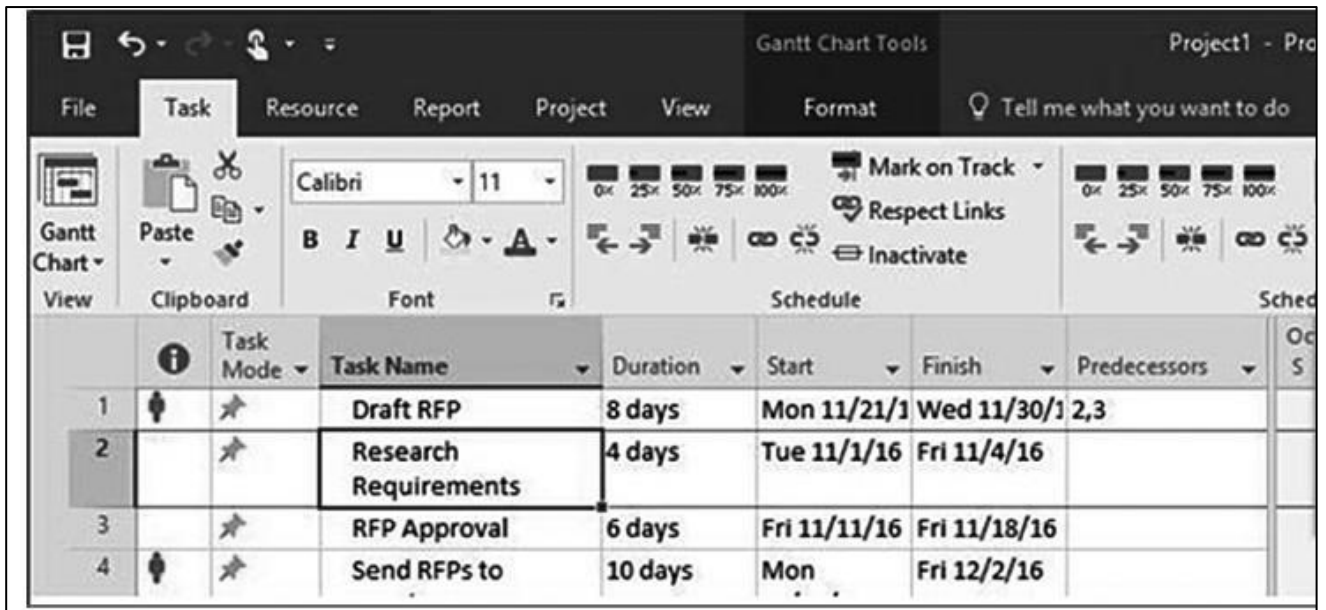


Figure 16: MS Project 16

## 2. Use Predetermined Percentages to Track Tasks

To the left of the Mark on Track option, there are percentages that you can use to denote the progress of a task. Click a task to update and click 0%, 25%, 50%, 75%, or 100%. You'll see a line drawn through the corresponding bar on the Gantt chart that signifies how much of the task is complete.

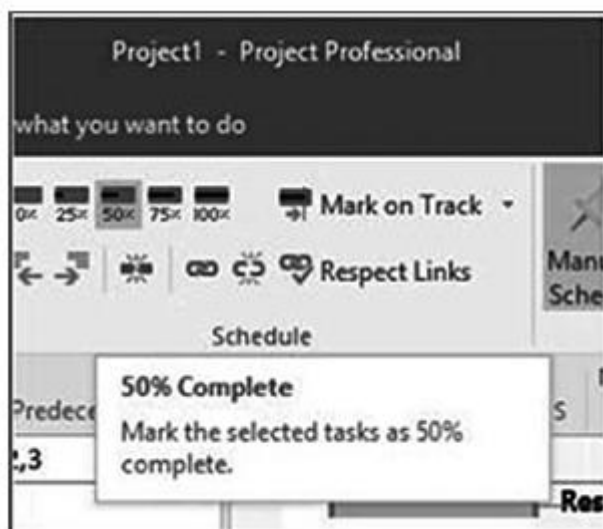


Figure 17: MS Project 17

## 3. Update Tasks

Sometimes tasks fall behind or get accomplished ahead of schedule. You can use the Update Task option to update the status. Click the down arrow next to Mark on Track and click Update Tasks.



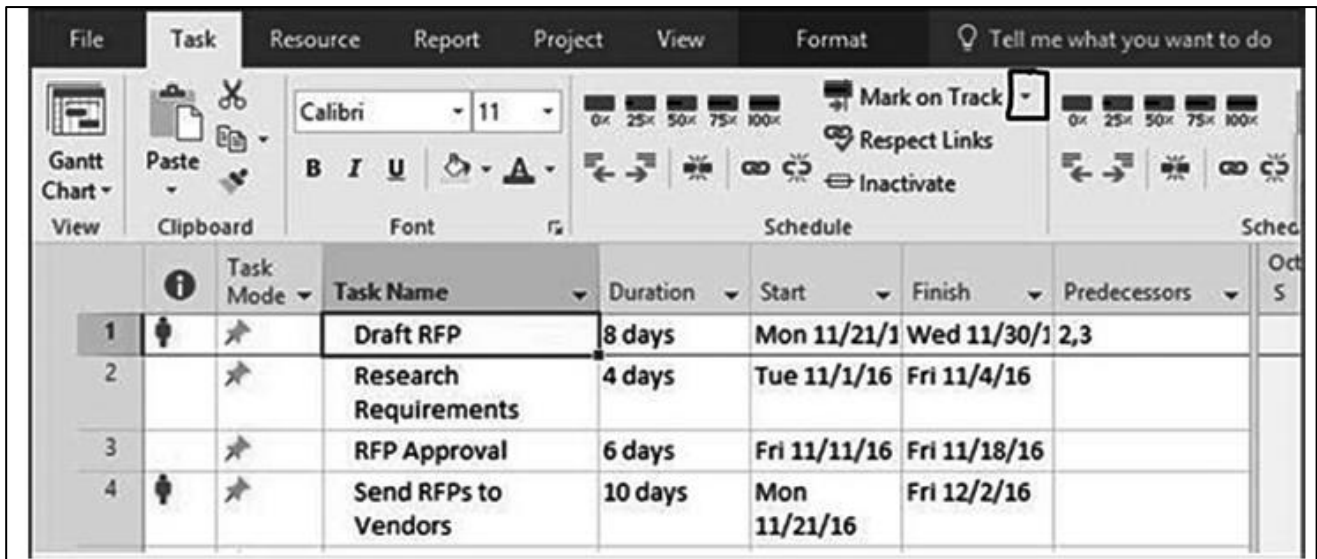


Figure 18: MS Project 18

A dialogue box will appear where you can update status and change start and end dates. Make any changes and click OK.

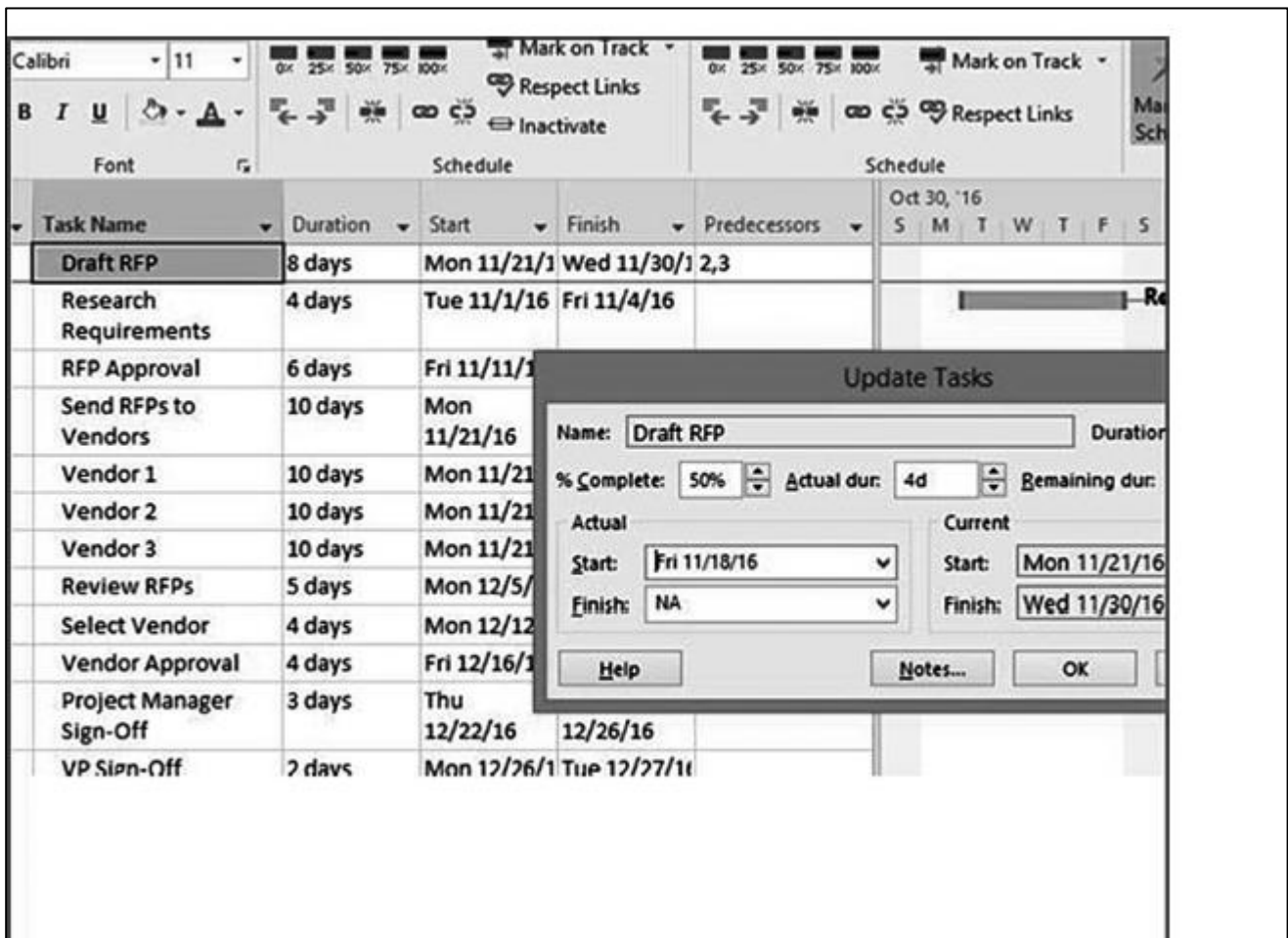


Figure 19: MS Project 19

These are all the steps you need to get started and create a project, assign and manage tasks, and run

reports in Microsoft Project 2016.

### **MCQs**

1. In a Computer Aided Project Management (CAPM) environment, which tool is most effective for tracking resource utilization and allocation?
  - (a) Spreadsheets
  - (b) Word processors
  - (c) Project management software
  - (d) All of the above

**Answer: (c)**

2. Which of the following is a Gantt chart in Microsoft Project?
  - (a) A chart that displays task dependencies
  - (b) A chart that displays resource allocation
  - (c) A chart that displays project milestones
  - (d) A chart that displays the project schedule

**Answer: (d)**

3. The purpose of the Critical Path Method (CPM) in Microsoft Project indicates:
  - (a) To determine the shortest possible duration for a project
  - (b) To determine the longest possible duration for a project
  - (c) To determine the amount of resources needed for a project
  - (d) To determine the most efficient sequence of tasks for a project

**Answer: (a)**

4. Microsoft Project describe as:
  - (a) A word-processing software
  - (b) A project management software
  - (c) A graphics design software
  - (d) A spreadsheet software

**Answer: (b)**

5. The term 'milestone' in project management indicates:
  - (a) A major event in the project
  - (b) A task that can be completed quickly
  - (c) A constraint that limits the start or end of a task
  - (d) A summary of the project's progress

**Answer: (a)**

6. Which feature in MS Project allows you to track changes made to the project plan?

- (a) Baseline tracking
- (b) Critical path analysis
- (c) Resource leveling
- (d) Variance analysis

**Answer: (d)**

7. The main purpose of the "Team Planner" view is:

- (a) To assign team members to specific tasks.
- (b) To visualize and manage resource assignments and workload over time.
- (c) To track the communication between team members.
- (d) To generate performance reports for individual team members.

**Answer: (b)**

8. Which of the following is used to adjust resource assignments in Microsoft Project?

- (a) Resource Sheet
- (b) Cost Table
- (c) Resource Usage View
- (d) Task Usage View

**Answer: (c)**

9. The function of "Assign Resources" dialog box in MS Project is:

- (a) To define the cost rates for different resources.
- (b) To link tasks together based on resource availability.
- (c) To allocate work resources (people or equipment) to specific tasks.
- (d) To track the overallocation of resources across the project.

**Answer: (c)**

10. Which of the following is used to define project constraints in Microsoft Project?

- (a) Constraint Form
- (b) Gantt Chart View
- (c) Task Usage View
- (d) Task Form

**Answer: (d)**

11. The 'baseline' in Microsoft Project implies:

- (a) The original project plan
- (b) The current status of the project

- (c) The expected final outcome of the project
- (d) The resources assigned to the project

**Answer: (a)**

12. A Finish-to-Start (FS) task dependency in Microsoft Project describe by:

- (a) The successor task cannot start until the predecessor task is completed
- (b) The successor task cannot finish until the predecessor task is completed
- (c) The predecessor task cannot start until the successor task is completed
- (d) The predecessor task cannot finish until the successor task is completed

**Answer: (a)**

13. Which of the following is not a valid link type between tasks in MS Project?

- (a) Finish-to-Start (FS)
- (b) Start-to-Start (SS)
- (c) Finish-to-Finish (FF)
- (d) Cost-to-Cost (CC)

**Answer: (d)**

14. The term "lag" in the context of task dependencies refer to:

- (a) The duration of the predecessor task.
- (b) The amount of overlap or delay between linked tasks.
- (c) The total slack of the successor task.
- (d) The difference between the planned start and actual start dates.

**Answer: (b)**

15. The basis of "Team Planner" view in MS Project indicates:

- (a) To assign team members to specific tasks.
- (b) To visualize and manage resource assignments and workload over time.
- (c) To track the communication between team members.
- (d) To generate performance reports for individual team members.

**Answer: (b)**

16. Which of the following is used to create project baselines in Microsoft Project?

- (a) Baseline Wizard
- (b) Gantt Chart View
- (c) Task Usage View
- (d) Resource Sheet

**Answer: (b)**

17. The process of creation of a recurring task in MS Project (e.g., a weekly status meeting) involves:

- (a) manually entering the task multiple times.
- (b) using the "Recurring Task" feature under the Task tab.
- (c) linking the task to a repeating event in Outlook Calendar.
- (d) recurring tasks cannot be created in MS Project.

**Answer: (b)**

18. The effect of setting a constraint like "Start No Earlier Than" (SNET) on a task shows:

- (a) It forces the task to start on a specific date, regardless of predecessor dependencies.
- (b) It allows the task to start as early as its predecessors allow, but not before the specified date.
- (c) It delays the start of the task by a fixed duration after its predecessors are complete.
- (d) It prevents the task from starting until all other tasks in the project have started.

**Answer: (b)**

19. Which of the following is a 'resource' in Microsoft Project?

- (a) An activity that must be completed to accomplish a project
- (b) A constraint that limits the start or end of a task
- (c) A summary of the project's progress
- (d) A person, equipment, or material that is assigned to a project

**Answer: (d)**

20. The main aim of Earned Value Analysis (EVA) in Microsoft Project is:

- (a) To measure project progress and performance
- (b) To measure resource allocation and usage
- (c) To measure task dependencies and sequencing
- (d) To measure project risks and uncertainties

**Answer: (a)**