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Subject: Management

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ज्ञान-विज्ञान विमुक्तये

Paper: 09, Entrepreneurship Development & Project Management

Module: 27, An Introduction to Project Management

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	An Introduction to Project Management
Module Id	Module no-27
Pre- Requisites	Basic knowledge about Project Management
Objectives	To study the meaning and concept of Project Management, its characteristics and Life cycle of a project
Keywords	Project, Project Management, Capital Investment

QUADRANT-I

Module 1: An introduction to Project Management
1. Learning Outcome
2. Introduction
3. Meaning and definition of a Project Management
4. Tools and Techniques of Project Management
5. The Project Manager
6. Roles and Responsibilities of Project Manager
7. Importance of Project Management
8. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of a Project Management
ii. Understand the tools and techniques of project management
iii. Know about the Project Manager
iv. Understand the responsibilities of Project Manager
v. Understand the importance of Project Management

2. Introduction

Project management is a special branch of management which is different from others based on a variety of factors which include the organisation structure, the process of planning and control, human relations etc. It is basically aimed at producing an end-product that will result some change for the benefit of an enterprise. It is the initiation, planning and control of host of activities required to deliver this end product which could be a physical product or new software or a new way of working etc. Every project requires a special approach to ensure the success of a project. This special approach can be termed as project management. The success of a project means that the project must be completed within budget, within allocated time and must perform to satisfaction. Project management fulfills these demands. There is a difference between project management and simple management. A key factor that differentiates project management from just management is that it has to deliver within a finite time span whereas management is an ongoing process. Therefore, a project manager needs a special kind of skills to handle and tackle various problems like technical skills, interpersonal skills and good business awareness.

3. Meaning and Definition of Project Management: Project management is the planning, consistent monitoring and control of all aspects of the project to achieve the organizational objective within a definite time span and to the specified cost, quality and performance. Project Management is the art of managing all the aspects of a project from start to finish using a scientific and structured methodology. It is the application of knowledge, skills, tools, and techniques to all activities of the project to meet the project requirements. According to *PMBOK® Guide (Project Management Body of Knowledge)* project management processes fall into five groups:

- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

Project Management is a unique discipline where different people work in a group with helping hands for the attainment of a common goal, keeping the total perspective in focus all the time. Project management is based on the holistic approach and focuses on results. Project management approach should have some special features like flexibility, free communication, regular feedback and adaptation to changing requirements of work and environment. This approach helps to improve production standards and delivers goods better than others even in complex and technical projects.

An ideal project is one which is carefully selected and prepared, thoroughly appraised/analyzed, closely supervised and systematically evaluated. Project Management deals with project identification, formulation and appraisal. These three aspects formulate the basic foundation for the success of projects.

The concept of term ‘Project Management’ can be defined with the help of following definitions:

- The planning and organization of an organization's resources in order to move a specific task, event or duty toward completion. Project management typically involves a one-time project rather than an ongoing activity, and resources managed include both human and financial capital.

  -Dictionary of Investopedia

- Project Management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

  -Project Management Institute (PMI)

- Project Management is the complete set of tasks, techniques, tolls applied during project execution.

  - DIN 69901 (Deutsches Institute for Normung-German Organisation for Standardisation)

4. Tools and Techniques of Project Management: There are several techniques contributing towards effective project management. These are grouped under the following heads:

I. **Project Selection Techniques:**
   - Cost Benefit Analysis and
   - Risk and Sensitivity Analysis

II. **Project Execution Planning Techniques**
   - Work Breakdown Structure (WBS)
   - Project Execution Plan (PEP)
   - Project Responsibility Matrix

III. **Project Scheduling and Co-ordinating Techniques**
   - Bar Chart
   - Life Cycle Curves
   - Line of Balance and
   - Networking Techniques (PERT/CPM)

IV. **Project Monitoring and Progressing Techniques**
   - Progress Measurement Technique (PROMPT)
   - Performance Monitoring Techniques (PERMIT)

V. **Project Cost and Productivity Control Techniques**
   - Productivity Budgeting Technique
   - Value Engineering

VI. **Project Communication and Clean-up Techniques**
   - Control Room
   - Computerized Information System

5. The Project Manager: In order to make the project successful it must be managed by a competent project manager. He takes the responsibility for planning, implementing, and completing the project. The project

manager strives to maintain the progress and productive interaction with various parties in such a way that overall risk of failure is reduced. He is in direct touch with clients and has to determine and implement the strategies to meet the requirements of the clients. He is instrumental in ensuring the satisfaction of clients. The basic job of the project manager is to visualize the entire project from inception to closure and to have the ability to ensure that this vision is realized.

There are certain issues regarding the qualification, experience and practical knowledge of project manager. Most of the project managers including the successful ones come from leading business schools. But some succeeded and others not. The project managers who succeeded are very few in percentage because in Indian only a handful of projects are completed timely, within budget and also performed according to expectations. Although the failure of these projects has been analyzed in various seminars, conferences and workshops but still the role of project manager could not form the subject of serious discussions.

6. Roles and Responsibilities of Project Manager: Managing projects requires application of knowledge, skills, tools and techniques to project activities in order to meet the project objectives. The project manager does this by performing some tasks at various stages of the project. Each aspect of a project is managed by using the corresponding knowledge area. These knowledge areas are discussed in detail as follows:

1) **Integrating and Managing Project Activities:** The project is initiated, planned and executed in parts. There is need to coordinate different activities of the project. Project manager is required to introduce integration management system so that all these activities should be properly managed. He is concerned with identifying and defining the work of the project and then combining and integrating with the appropriate processes. For integrating the different activities, a proper integration management is required to introduce which may include the following activities:
    - Developing the project charter.
    - Developing the project management plan.
    - Directing and managing project execution.
    - Monitoring and controlling project work.
    - Performing integrated change control.
    - Closing the project or phase of a project.

    Thus, while managing all the aspects of the project, the project manager needs to coordinate different activities and groups.

2) **Defining the Scope of the Project:** The main objective of the project management is the successful implementation of the project. Therefore project manager has to ensure accomplishment of the project by defining and controlling various activities of the project. For completing this task he has to define the scope of the project, which may include the following:
    - Collect the requirements of the project from the clients and determine the project scope accordingly.
    - Develop the description for the project and its products.
    - Decompose the project deliverables into smaller but more manageable work components.

- Plan how the completed deliverable of the project will be accepted.
- Control the activities which may change the scope of the project.

So, a project manager defines the work required to complete the project. He is also responsible for the timely completion of the project. Therefore, he has to manage the resources as well.

3) **Project Time Management:** The primary motive of the project manager is to develop and control the project schedule. Every project has a timeline by which it is expected to be completed. It is the responsibility of the project manager to complete the project within a scheduled timeline. For achieving this objective he has to perform various functions which are given as under:
   - Identify all the work activities that need to be scheduled to produce the project deliverables.
   - Estimate the types of resources needed for each schedule activity.
   - Estimate the time needed to complete each scheduled activity.
   - Develop the schedule
   - Control changes to the project schedule.

   Although project manager takes care of all requisite parameters to manage the timeliness of the project effectively but in reality it is found that he finds it difficult to get the project completed on time. This usually happens due to many factors. So an efficient manager should ensure that the project will be completed on time.

4) **Estimating and Controlling Cost:** It is the duty of the project manager to estimate the project cost and complete it within the approved budget. It is an important task of project manager because if the actual expenditure would increase the budgeted figures, he is answerable to the top management. Therefore for implementing effective cost management system, a project manager has to take care the following components:
   - Estimating the cost of the project.
   - Aggregate the cost of individual activities.
   - Comparing the actual cost with the budgeted.
   - Monitoring and controlling the cost variance in the project execution and take the corrective action in case of adverse variance.

   Generally value engineering and life-cycle costing is used to determine options and optimise the process.

5) **Ensuring Project Quality:** A project manager has to ensure project quality. Project quality is defined as the degree and standard to which a project satisfies its objectives and requirements i.e. it must be completed on time and with all the work in the project scope completed within the planned budget. While managing the quality the following activities should be done:
   - Determine the quality requirements and standards that are relevant to the project.
   - Ensure the planned quality requirements and standards are applied.
   - Monitor the quality activities and record the results of these activities in order to assess performance and make necessary recommendations for corrective actions and changes.

6) **Managing Human Resources:** Human resource management involves planning, organising and controlling the procurement, development, compensation, maintenance and integration of human resources of an organisation. The primary task of the project manager is to obtain, develop and manage the project team that will perform the actual project work. He has to ensure that following activities under this:
   - Identify the roles and responsibilities at every stage of the project.
   - Assign duties and delegate the authority for reporting.
   - Manpower planning: he has to decide before hand as to what type of persons they are to be recruited and in what numbers, they are required.
   - Obtain the human resources needed to work on the project.
   - Develop interpersonal skills and team spirit among the team members.
   - Track the performance of team members, get the feedback and resolve the issues and conflicts. While solving the issues, he should not be biased.

7) **Procuring Raw Materials:** Project procurement is used when it is necessary to purchase or acquire products, services, or results needed from outsiders. Generally the project team is working on behalf of the customer, and suppliers are responsible for the creation of the project deliverables or products. There can be both internal and external suppliers. A project manager has to perform the following activities for procurement:
   - Identify purchasing needs, specify the procurement approach, and identify potential sellers.
   - Obtain the responses from the interested sellers, select the sellers and issue them contracts.
   - Establish relationship with potential sellers, monitor the procurement performance and also control changes in procurement.
   - Complete the procurement process by accepting the product and closing the contracts.

8) **Communicating Information to interested Parties:** A project manager needs to communicate all important information to the interested parties or its major stakeholders. For the success of the project such information should be generated and distributed timely to all the stakeholders involved. Communication is the most important aspect of a project and the most important skill of a project manager. In the absence of a proper communication system, a project cannot be completed successfully. Communication management includes the following:
   - Identify all potential individuals, groups, and organisations that will be interested in the project and also find relevant information about them.
   - Determine the information and communication needs of the project. Also decide which communication approach should be used.
   - Make the required information available to the project stakeholders in a timely fashion.
   - Communicate and work with the stakeholders, meet their needs, solve the issues and manage the expectations within the scope of the project.
   - Communicate performance information to the stakeholders.

9) **Managing Project Risk:** Every project has some uncertainties that give rise to project risks, which need to be managed. A project risk has direct relationship with the project objectives whether it occurs positively or negatively. The primary duty of the project manager is to identify the risks involved in the project and respond to them when they occur. A project manager has to perform various activities to minimise the project risks which are given as follows:
    - Plan how to determine and execute the risk management tasks.
    - Identify the risks relevant to the project and determine its characteristics.
    - Assess the probability of occurrence and the impact for each risk.
    - Estimate the effects of identified risks on project objectives.
    - Develop action plan to maximise opportunities and minimising threats from the identified risks.
    - Regular monitoring of risks, implement risk response plans and evaluate the effectiveness of risk management system.

    Thus, it is the duty of the project manager to implement proper risk management system to meet the project objectives.

7. Importance of Project Management: The growth of project management is increasing rapidly around the globe which makes project management important. The following are major reasons why project management is important to modern businesses:

1) **Unique Venture:** A project is a temporary and unique venture which is required to be completed within a scheduled time. It is aimed at producing a unique product/service or process. Therefore a project manager, without having any blueprints to develop the end product, with his ability, skill, knowledge and expertise develop the plans and execute it for the successful completion of the project.

2) **Specific Skills:** The success of the project depends upon many integrated and coordinated activities of various departments or aspects of the project. For the successful implementation of the project, a project manager has to arrange various resources. Therefore he must be a skilful person who is acquainted with the knowledge of management techniques specific to dealing with one time projects. The enterprises that use project management to monitor and control processes and schedules can more effectively complete their projects on time and within budget.

3) **Scheduled Completion:** Every project has a timeline by which it is expected to be completed. An efficient manager should ensure that the project will be completed on time. Creating a project timeline requires coordinating project activities in conjunction with the ongoing business activities. The whole project is divided into different stages/phases and each phase is required to be completed on time.

4) **Scope of the Project:** The main objective of the project management is the successful implementation of the project. The primary purpose of project management is to ensure that all the required work is performed to complete the project successfully. This is accomplished by defining and controlling what is included in the project and what is not.

5) **Project Budget:** A budget is an estimation of income and expenditure for a given period of time. Project management helps in keeping projects on budget. A good project management identifies anticipated costs early on to develop a realistic budget. Budget needs coordinated efforts of various departments to reduce overall cost of the project.

6) **Target Oriented Human Resources:** Project management ensures the accomplishment of the objectives of an enterprise. Project based enterprises focus on goals and outcomes rather than working according to the clock. Therefore, working in those organisations stimulates human resources to work more hard with their creative and innovative ideas.

8. Summary: Project management is the planning, consistent monitoring and control of all aspects of the project to achieve the organizational objective within a definite time span and to the specified cost, quality and performance. Project Management is the art of managing all the aspects of a project from start to finish using a scientific and structured methodology. It is the application of knowledge, skills, tools, and techniques to all activities of the project to meet the project requirements. The success of a project means that the project must be completed within budget, within allocated time and must perform to satisfaction. An ideal project is one which is carefully selected and prepared, thoroughly appraised/analyzed, closely supervised and systematically evaluated. Project Management deals with *project identification, formulation and appraisal*. These three aspects formulate the basic foundation for the success of projects. In order to make the project successful it must be managed by a competent project manager. He takes the responsibility for planning, implementing, and completing the project. The project manager strives to maintain the progress and productive interaction with various parties in such a way that overall risk of failure is reduced. I have also discussed the role and responsibilities of the project manager. Managing projects requires application of knowledge, skills, tools and techniques to project activities in order to meet the project objectives. The project manager does this by performing some tasks at various stages of the project.

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Module: 28, Project Identification

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Project Identification
Module Id	Module no-28
Pre- Requisites	Basic knowledge about project identification
Objectives	▪ To study the meaning and related concepts of project identification.
Keywords	Project Identification, Project Control, Project ideas

QUADRANT-I

Module : Project Implementation
1. Learning Outcome
2. Introduction and Concept of Project Identification
3. Sources of Project Ideas
4. Stages/Steps of project identification
5. Dimensions of a project
6. Need of project identification
7. Process of project identification
8. Problems faced by entrepreneur in Project Identification
9. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of Project Identification
ii. Understand the sources of project ideas
iii. Know about the stages of Project Identification
iv. Understand the dimensions of a project
v. Know the need and process of project identification

PROJECT IDENTIFICATION

2. Introduction and Concept of Project Identification: Project identification is the first step in setting up an enterprise. Identification of a suitable project is very crucial decision as the ultimate success of an entrepreneur depends upon the right selection of the right project. Project identification is concerned with the collection of data, compilation and analysis of economic data for the eventual purpose of locating possible opportunities for investment and development. So project identification is finding out business opportunities which are feasible and promising.

In the words of Albert Einstein "Everything that can be counted does not necessarily count, everything that counts cannot necessarily be counted"

According to Thomas J.Watson "Opportunity never knocks on the door. You have to knock on opportunity's door and they are all around"

A lot of opportunities exist in the environment; the only thing we have to do is to grab them. First of all, environment is to be analyzed for perceiving the opportunities available and after that proper identification of opportunities, it has to be done in the given environment. The next step is to select the best from the available. Now the question arises 'Why it is necessary to identify and select an opportunity'? The simplest way to answer this question is to appreciate the need for project identification.

According to Peter F. Drucker "opportunities are of three types: additive, complementary and break-through". These are explained below:

(A) **Additive opportunities** are those opportunities which make it able to the decision maker to better utilize the existing resources without involving a change in any character of business.

(B) **Complementary opportunities** involve the introduction of new ideas and as such lead to changes in the existing structure up to some extent.

(C) **Break through opportunities** involve a fundamental change both in the nature and character of business. So in the case of additive opportunities least amount of risk is involved as it involves least amount of changes in the existing state of affairs. But the element of risk is more in the other two types i.e. complementary and breaks through opportunities, as they involve changes in existing structure as well as nature and character of business.

3. Sources of Project Ideas: As Prasanna Chandra stated in his book "Projects- Planning, Analysis, Selection, Financing, Implementation, and Review" are the keys to success. So a wide variety of sources should be tapped to identify them. Identifying a new project is not an easy job because the success of a project depends upon the idea of a project. There are different sources and methods which help to develop a wide range of ideas such as performance of existing industries, price trends, availability of raw material and skilled labour , government policies and guidelines, new technological developments, trade fairs, unfilled psychological needs etc.

- **Study the performance of existing industries:** A study of existing industries provides information about the opportunities available in that field. An analysis of the profitability and break-even point of different industries will offer sufficient information about the financial position of different industrial sector. So

entrepreneur can easily find out the capacity utilization and profitability and future demand of those industries.

- **Export/Import agencies:** Export /Import agencies' statistical data also provide information about the trends of export/Import of various goods. Five to seven years study of data is helpful in drawing a conclusion. If study shows higher proportion of import of a particular product and shows increasing trend of that product then it means import substitution can be produced. If study shows increasing trend in an export of product then it indicates high export potential for that product.
- **Availability of Raw material and skilled labour:** Availability of raw material and skilled labour at competitive prices required for various industries may throw up project ideas.
- **Government policies and rules regulations:** In any country government plays a very important role. Government plans of expenditure in different sectors provide useful information about possible investment opportunities. The department of industrial development and government of India, publishes guidelines on industries which is an important source of information to identify the scope for new investments.
- **Study of economic, social and price trends:** A study of the price, economic and social trends of the economy is also very helpful in projecting the demand for various goods and services. Greater the demand of the product, greater is the scope of its expansion.
- **Trade fairs**: for the purpose of knowing about new products and developments, National and International trade fairs are the important source for the entrepreneurs to identify latest projects.
- **New Technological developments**: The main cause of commercial exploitation is setting up research laboratories that are engaged in identifying new products or processes which in turn provide avenues for doing so.
- **Possibility of revival of sick units:** There are number of industrial units in India which has been recognized as sick industrial units. If internal factors involved behind the sickness/ weakness of industrial units and that unit still have the capacity to become a financially sound then a capable entrepreneur can take over that sick unit, survive it and convert into financially sound unit with their entrepreneurial skills.
- **Draw clues from consumption abroad:** entrepreneur may identify the project which are new to domestic market but extensively used abroad, if he is ready to take higher risk. Entertainment parks, fast food restaurants, big malls are few examples coming under this category.
- **Identified unfilled psychological needs:** For some of well established branded products, there may be unsatisfied psychological needs. New products of a branded group being introduced and accepted by consumers show that unfilled psychological needs to the customers.
- **Various government and non-government sources:** Various publications of Government, research organization, consultancy organizations, banks, export import promotion councils, and international agencies contain data which may indicate prospective ventures. An analysis of balance sheet and working results of existed companies will be useful in knowing the industrial sectors that are performing well.

4. Stages/Steps of project identification: Project identification involve following stages/steps, such as:

1. Environmental scanning
2. Generation of ideas
3. SWOT Analysis
4. Preliminary evaluation
5. Corporate appraisal
6. Profit potential of different projects
7. Project selection
8. Project objectives

1. **Environmental scanning:** The environmental scanning covers both scanning of external environment as well as internal environment. The scanning of external environment includes identification of the opportunities and threats to the organizations whereas internal environment include the study of strengths and weaknesses of the organizations. So environment is an aggregate of all conditions whether external or internal that surrounds and affects business. While scanning of business environment, an entrepreneur should take into consideration the different types of environment such as Economic environment, Technological environment, Competitive environment, Socio-demographic environment and Governmental environment.
2. **Generation of ideas:** It is primarily concerned with the germination of project idea. Entrepreneur may develop few ideas which he/she may think, suit to the existing environment. The project idea may be discovered from both internal and external resources.
3. **SWOT Analysis:** SWOT Analysis means Strengths, Weaknesses, Opportunities, and Threats. It is a method which enables the organization to identify opportunities that can be profitably exploited by it. SWOT analysis helps the entrepreneur in stimulating the flow of ideas.
4. **Preliminary evaluation:** An entrepreneur may have many project ideas. So some sort of preliminary evaluation is required to eliminate those project ideas which are not feasible:
    - The project idea should confirm to the government regulatory framework. It should be compatible with the national goals, priorities and policies of the government.
    - There must be a sizeable market available to consume the product made from the new project.
    - The idea must be compatible with the interest, personality and resources of the entrepreneur. In simple words it should be compatible with men, money, material and market at the disposal of entrepreneur. In the words of Murphy "A real opportunity has three characteristics: (a) It fits the personality of the entrepreneur-it squares with his abilities, training, and proclivities, (b) It is accessible to him and (c) It offers him the prospect of rapid growth and high return on invested capital".
    - The material needed for the project must be easily and economically available. Because success of the project depends upon availability of resources.

- Cost factor should be taken into consideration. The entrepreneur must be in a position to realize an acceptable profit level.
- Indian economy from the view point of entrepreneur is still underdeveloped. It can absorb a lot more entrepreneurs. So entering an already stagnant market will not be a very good idea. So entrepreneur must analyze the risk factor before entering into a market.
- Inherent risk in the project such as changes in demand, technological changes, variation in business cycle, entry of substitutes, and competition from imports should be properly examined before starting a project.

5. **Corporate appraisal:** After preliminary evaluation, corporate appraisal of project should be conducted in order to make sure the availability of raw material, equipment, selling and distribution costs and customer behavior in relation to that project. The important aspect to be considered in this respect are as follows:

   (a) **Raw material availability:** The entrepreneur should ensure the availability of raw material. For this he should investigate the sources of raw material, various suppliers of raw material, inviting price quotation from suppliers, credit period allowed by suppliers and terms and conditions of supply of raw materials.

   (b) **Production, operations and equipment availability:** Before implementing the project, the entrepreneur should investigate the availability of plant and equipment which is required for the production of that product. To achieve this he must study the comparative features of various manufacturers in terms of price, Guarantees and Warranties after sale service, Technical and skilled staff requirement, operative capacity, location and layout, cost structure, repair and maintenance of equipment and condition of plant and machinery.

   (c) **Marketing and Research and Development:** In this segment the entrepreneur has to study the market share, product line, distribution network, marketing and distribution cost, advertising and publicity programme for the product, market practices such as credit policy, product positioning, laboratories and testing facilities available, co-ordination between research and operations.

   (d) **Financial and Human resources:** They include financial leverage, cost of capital, cash flows and liquidity, tax situation, corporate stage, competence and loyalty of employees, state of industrial relations and relation with shareholders and creditors.

   (e) **Consumer and Consumer behavior:** The entrepreneur should analyze the categories of consumers such as industrial, foreign and retailer, comparative qualities of own product with competitive products, purchasing power of consumer, consumption pattern, consumer priorities and identification of customers' needs.

6. **Profit potential and prioritize project list:** Before entering a new venture a person must look into the profit potential of that project and compare it with the other identified projects. So in this step he needs to prioritize the list of projects, taking some things kept into mind such as:

   - Competition among existing firms
   - Bargaining power of buyers and suppliers
   - Existence of substitute products
   - Threat of new entrants

- Divisional key performance indicators
- Time and ease to complete each projects
- Resources required for each project and
- Five year corporate plans and goals

7. **Project selection:** After studying profit potential of each project and preparing prioritization list, entrepreneur will come to know the overall rating of the different project ideas. The project with maximum rating will be the most feasible in comparison to other projects. The process involved in selecting a project out of some prospects is also described as "Zeroing in process". While selecting a project, the entrepreneur should keep in mind about the Location, Technology, Size of investment, Equipment, and Marketing of project.
8. **Project objectives:** project objective starts where project identification ends. Objectives are the foundations on which the project design is built. Project objectives are concerned with defining in a precise manner what the project is expected to achieve and to provide a measure of performance for the project. The essential requirements of project objectives are:

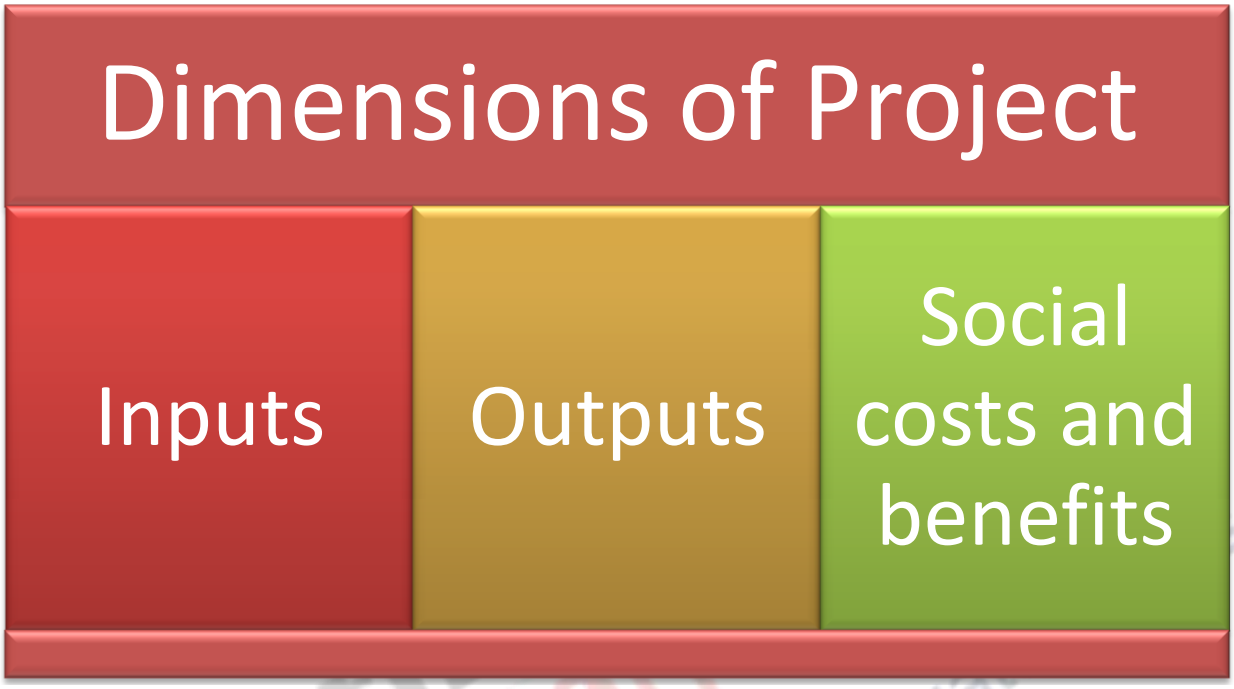
    - It should be simple.
    - It should be realistic and attainable.
    - It should be specific.
    - I t should be consistent with available resources.
    - It should be consistent with organizational plan, policies and procedures.
    - It should be measurable, tangible and verifiable.

So above are the various stages/steps in project identification which can surely help an entrepreneur in identifying and selecting a right project suitable to his/her capabilities and shills, resources and market needs.

5. Dimensions of project: Project identification cannot be complete without identifying its characteristics. Every project has three basic dimensions: (a) inputs (b) outputs (c) social costs and benefits.

(a) Inputs: This characteristic of a project define what the project will consume in terms of raw material, energy, manpower, finance and organizational set up.
(b) Outputs: This characteristic of project define what the project will generate in the form of goods and services, employment, revenue etc.
(c) Social costs and benefits: Every project has an impact on the society. So it is essential to evaluate carefully the sacrifice which the society will be required to make and the benefits that will accrue to the society from a given project.

The inputs to set up a project can come from different sources such as governmental agencies, credit and financial institutions and non-governmental organizations such as chambers of commerce and industry, inter-institutional groups, technical consultancy organizations and international collaborations.



6. Need of project identification: Project identification is very important .We needed project identification due to following reasons.

(a) Identified projects become the accelerator agents of economic development.

(b) These initiate the development of basic infrastructure and environment.

(c) They have long term beneficial consequences.

(d) Projects provide guidelines for future pattern of activities and services to be undertaken by an enterprise.

(e) In the course of time, identified projects bring necessary changes in the society.

(f) Project commitments are normally not revised.

(g) Projects also lead to socio-cultural development of the people.

7. Process of project Identification: Project Identification involves the assessment and evaluation of a number of characteristics of project such as input, output, social cost and benefits, location and consultancy services etc. Now we will discuss these one by one:

1) **Inputs:** In the process of identification of suitable project, first of all SWOT analysis are to be done in respect of the resources available at the disposal of entrepreneur. The various input resources refer to raw materials, energy, manpower, finance and organizational structure.

2) **Outputs:** The study of output characteristics helps in determining as to what the project will generate in the form of goods and services, employment, revenues etc. The quantity and quality of all these outputs should be clearly analysed before the proposed project is undertaken.

3) **Social costs and benefits:** Every project has an impact on the society. So it is essential to evaluate carefully the sacrifice which the society will be required to make and the benefits that will accrue to the society if the proposed projects are undertaken.

4) **Location:** It is also essential to take into account the tentative choice of the location where the project proposed to be set up. In case of medium and large scale projects, the location is normally decided on the basis of project requirements. The selection of the project should be made in the basis of promoter's background and inclination.

5) **Counseling services:** For selecting a suitable project, different sources like government agencies i.e Entrepreneurship development centers, Small industries service institute, Technical consultancy organizations. Credit and financial institutions, Non government agencies i.e Chamber of Commerce and industry, Inter-institutional groups, Technical consultancy organizations and International collaborations are providing very useful counseling services to the entrepreneurs.

8. Problems faced by entrepreneur in Project Identification: While identifying the project, an entrepreneur has faced many problems. These can be classifying into two categories as internal and external problems.

1. **Internal problems:** Internal problems arise due to the restrictions or management system which will ultimately be responsible for the implementation of a project. These are as follows:

   (a) **Trusting on outside consultants:** In order to prepare feasibility report in the formulation of their projects, an entrepreneur has to trust outside consultants. Inability in the form of preparing feasibility report is a major problem in the early implementation of project.

   (b) **Project goals and objectives**: Generally objectives of the project are decided by top management personnel and management team is not much involved with the determination of project objectives. So this is another major problem for the project team to achieve the unrealistic objective which is formulated by the top management.

   (c) **Cost constraints:** Every entrepreneur cannot develop project management systems, organization structure, network analysis and other elements within the budgeted cost and time schedule for early implementation of project.

   (d) **Resources constraints:** Availability of resources that is both physical and non-physical resources is the major problems for the entrepreneurs when the project is in progress. Physical resources include finance, manpower, facilities and inventories and the non-physical resources include patents, secret processes, unique experience and skills.

2. **External problems:** External problems include project environment comprising things, people and situation outside a project. It also include the size, nature, location, extent of the project constitute the environment of the project, government policies and the state of capital market.

(a) **Non-compliance to the socio-economic objectives**: Factors like size, nature, location and the extent of the project shall create a problem for the entrepreneurs when the project does not comply with the socio-economic objectives of the economy.

(b) **Troublesome procedure of finance:** Financial institution and banks are the major important external source to the entrepreneurs for financing their projects. Complicated procedures and documentation system of financial institutions and banks make delay in getting financial sanctioning for their projects. Scarcity of funds is the main problem for the entrepreneurs while implementing the projects timely.

(c) **Government policies and regulations:** While implementing the projects, government policies and rules-regulations are another major hurdle for the entrepreneurs. Delay is taking place in getting approval for licence, foreign collaboration, Control of Capital Issues clearance, environmental clearance, foreign exchange permit, capital goods approval and import goods clearance.

9. Summary: Project identification is concerned with the collection of data, compilation and analysis of economic data for the eventual purpose of locating possible opportunities for investment and development. So project identification is finding out business opportunities which are feasible and promising. In order to grab the opportunities, first of all, environment is to be analyzed for perceiving the opportunities available and after that proper identification of opportunities, it has to be done in the given environment. The next step is to select the best from the available. A wide variety of sources should be tapped to identify best opportunities. Identifying a new project is not an easy job because the success of a project depends upon the idea of a project. There are different sources and methods which help to develop a wide range of ideas such as performance of existing industries, price trends, availability of raw material and skilled labour, government policies and guidelines, new technological developments, trade fairs, unfilled psychological needs etc. While identifying the project, an entrepreneur faces many problems. These problems may be internal problems like trusting on outside consultants, project goals and objectives, cost constraints, resources constraints etc. and external problems like troublesome procedure of finance, government policies and regulations etc.

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Paper: 09, Entrepreneurship Development & Project Management

Module: 31, Project Budgeting/Capital Budgeting

ज्ञान-विज्ञान विमुक्तये

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Project Budgeting/Capital Budgeting
Module Id	Module no-31
Pre- Requisites	Basic knowledge about Project Budgeting
Objectives	▪ To study the meaning and concept of Project/Capital Budgeting ▪ To study the features, need and importance of capital budgeting. ▪ Factors affecting capital investment decisions.
Keywords	Project Budgeting, Capital Budgeting, Capital Budgeting Techniques

QUADRANT-I

Module : Project Budgeting/Capital Budgeting
1. Learning Outcome
2. Introduction
3. Meaning and Definition of Project/Capital Budgeting
4. Features of Capital Budgeting
5. Importance and Need of Capital Budgeting
6. Types of Capital Expenditure
7. Factors Affecting Capital Investment Decisions
8. Summary

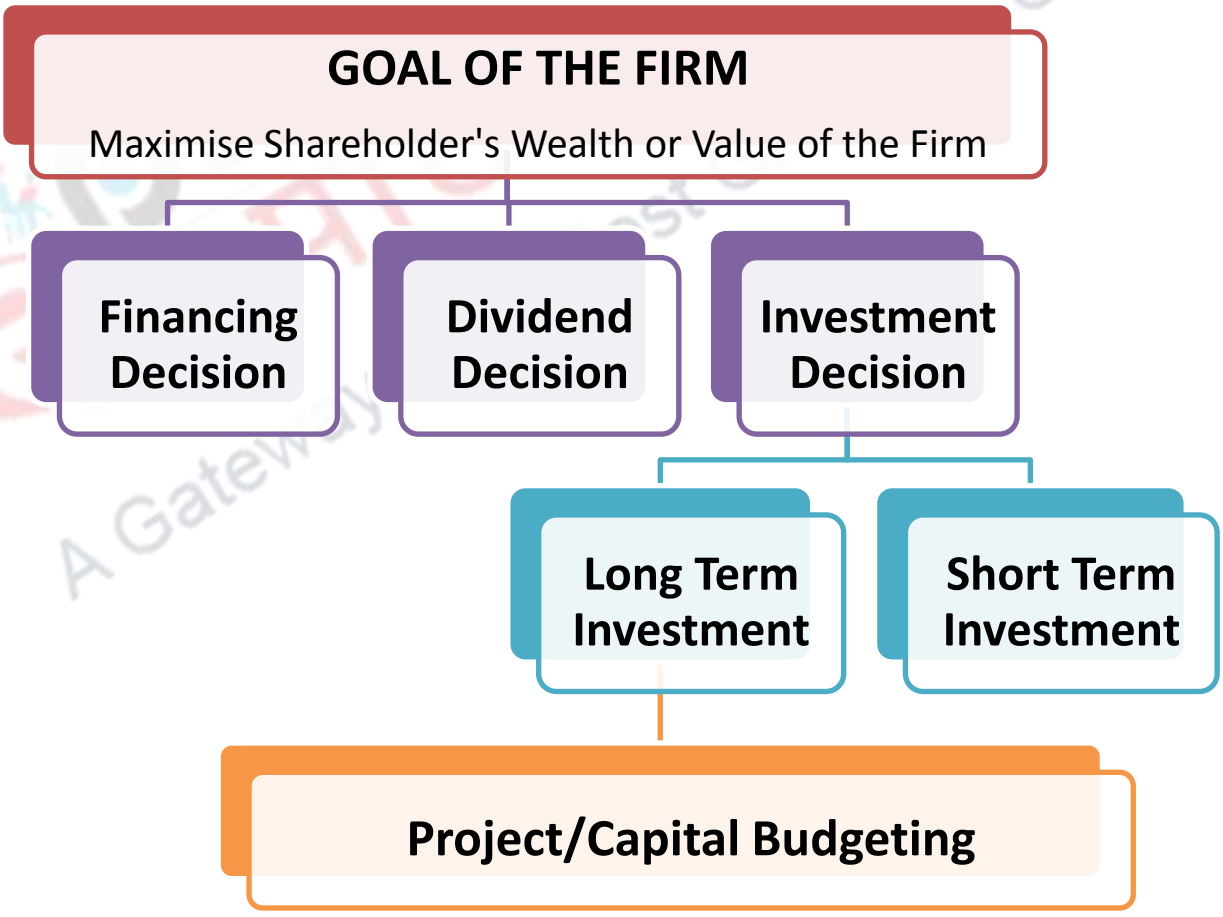
1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of a Project Budgeting/Capital Budgeting
ii. Understand the importance and need of capital budgeting
iii. Know about the types of capital expenditure
iv. Understand the factors affecting capital investment decisions

2. Introduction

In the present scenario the efficient allocation of capital resources is a most important function of project management. This function involves firm's decision to invest its funds in long-term assets like plant, machinery land, building, equipments etc. These assets are extremely important to the firm because the organizational profits are derived from the use of its capital investment in assets which represent a long term commitment of funds. The future development of an enterprise depends on the capital investment projects. These projects may be the replacement of existing capital assets which turns out to be less attractive to the firm or expansion of business for implementing new ideas and planning. Thus long term investment decisions of an enterprise fall within the definition of project budgeting or capital expenditure decisions. These decisions are concerned with the acquisition of assets in which funds will be invested by an enterprise. The assets of business include long term assets and short term assets. Long term assets will yield a return over a period of time whereas short term assets are those assets which are easily convertible into cash within one accounting period, normally a year. The long term investment decision is known as project budgeting/capital budgeting and the short term investment decision are identified as working capital management.



3. Meaning and Definition of Project/Capital Budgeting: ***'Capital Budgeting'*** consists of two important terms, Capital and Budgeting. The concept of capital budgeting gets much clarified if these terms are properly understood***. Capital*** refers to the total resources, other than human, which a business enterprise procures and utilises for productive or profit-earning purposes. Capital is relatively scarce and has many uses to which it can be put. Here, as a matter of fact, capital indicates capital expenditure or investments in fixed assets. Fixed assets are acquired to give service over a number of years. 'Fixed assets are those that will provide service over a period of time. They are a deferred expense and determine the production capacity of a firm. A cash outlay is made at one point of time but the benefits accrue over a period of time.

Budgeting means the planning made before the actual expenditure is incurred. It prepares the blue print both in quantity and monetary terms and reflects the objectives of the firm. It involves collection of relevant data, analysis of the information available, preparation of various alternative plans and selection of the most profitable one.

Thus, the term ***Project Budgeting/Capital Budgeting*** refers to long term planning for proposed capital expenditure and their financing. It includes both raising of long-term funds as well as their utilization. It is defined as a firm's formal process of investment in capital assets. Project budgeting is the decision making process by which a firm evaluates the acquisition of its major long term/fixed assets. It involves an enterprise's decision to invest its current resources for addition, disposition, modification and replacement of fixed assets.

Project budgeting is a multifaceted activity. It contains searching for new and more profitable project proposals, investigating, engineering and marketing conditions to predict the consequences of accepting the project and making economic analysis to determine the profit potential of project proposal. Thus, Project Budgeting consists in planning the deployment of available capital for the purpose of maximising the long term profitability of an enterprise.

Some definitions of capital budgeting as given by certain eminent thinkers are reproduced below:

- Capital budgeting is long term planning for making and financing proposed capital outlays. It is concerned with allocation of the firm's scarce financial resources among the available market opportunities. The consideration of investment opportunities involves the comparison of the expected future streams of earnings from a project with immediate and subsequent streams of expenditure for it.

  - T.Horngreen

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

  - R.M. Lynch

- Capital budgeting involves a current investment in which the benefits are expected to be received beyond one year in the future.

  - James C.Van Horne

- The capital budgeting decision, therefore, involves a current outlay or series of outlays of cash resources in return for an anticipated flow of future benefits.

  - G.D. Quirin

- Capital budgeting refers to the total process of generating, evaluation, selecting and following up on capital expenditure alternatives.

  - Lawrence J.Gitman

4. Features of Capital Budgeting: Capital budgeting is said to be "budgeting with a difference "since it deals with unique problems-problems of capital investment. The other budgets do not have such a long range of futuristic view. They do not involve such huge investments of capital and they do not involve such an extent of risk as capital budgeting involves. Capital budgeting, thus, has certain basic feature or salient characteristics of its own. These are enumerated below:

1) Capital budgeting entails heavy investment of funds. It may run into lakhs and crores of rupees.

2) The effect of capital budgeting decisions-judicious or faulty goes to many years subsequent to the year of expenditure. A capital budget, thus, looks too much longer-range future than other budgets do.

3) There is greater uncertainty of the results. No doubt, every decision has an element of uncertainty but the element of uncertainty is much more potent here, since capital budgeting concerns distant future.

4) There is the anticipation of large benefits spread over quite a long period. Investment in fixed assets widens the base of activity and increases the profit-earning capacity of the concern.

5) Since a huge outlay is involved and outcome is shrouded in a high degree of uncertainty, the decisions of capital investments are taken over at the executive level i e. at a higher level of management. It requires all the business expertise, keen sense of judgment and analytical mind to arrive at judicious decisions about capital expenditure.

5. Importance and Need of Capital Budgeting: Capital budgeting, or in other words, making decisions regarding heavy investment in fixed assets sunk for a long time, is of utmost significance. Closely allied to a sound capital investment policy is the very success and standing of the business in time to come. A keen watchfulness and a positive awareness of capital expenditure needs: states J. Batty, 'is essential at all times. The progressive business grows: it expands its fixed assets and other means of increasing the volume and improving the quality of the products made. Investment in fixed assets both for replacements and new projects goes hand-in-hand with progress.

The importance, near indispensability and necessity of having a systematic budgeting for capital expenditure is on account of the following factors:

1) **Huge Investment of Funds':** Capital expenditure involves heavy investment. Acquisition of Land, construction of factory and administrative building, purchase of plant and machinery, office equipment, furniture & fixtures and other assets take away a major portion of the monetary resources mobilized by the business both externally and internally. A judiciously planned expenditure is thus imperative.

2) **Reversal Causes Huge Losses:** Before arriving at a decision on capital expenditure, all the pros and cons of such a step must be carefully analyzed. Any hasty purchase of a fixed asset may bring about sizable loss if that asset is resold in the market. There may be no demand for, say, a second hand plant or factory building. Moreover, the cost of installation and later on dismantling of the machines will be totally unrealizable. Capital budgeting, thus, becomes significant since budgeting always implies well thought out and properly planned course of action.

3) **Factor of Obsolescence:** While deciding to acquire a fixed asset, the likely time of its becoming obsolete must be taken into account. Technology is making rapid advances and more economical, speedier, less energy consuming and technically superior models are coming up- soon. An asset may otherwise be serviceable for another span of time, but continued use of the same in the face of latest and advanced equipment used by the competitors may put the business to a disadvantageous position. Moreover the possibility of the products becoming out style or out of fashion cannot be ruled out. Capital assets installed to manufacture such products obviously become obsolete, unless and until these very assets have multiplicity of uses.

4) **Loss of Flexibility:** Capital expenditure not only entails heavy investment but also makes the concern inflexible in its activities or at least less flexible than otherwise. Once the funds are committed to long term assets a particular line of products or a particular production technique has to be adopted. A change will be very difficult to make. So, advance planning is indispensable.

5) **Essentials for Various Decisions and Forecasts:** The necessity of well-designed system of capital budgeting is strongly felt for various and important decisions and forecasts, some of which are given below:
   i. Formulation of Sound depreciation policy and the policy relating to replacement of assets.
   ii. Preparation of cash forecasts, i.e. the likely amounts of cash required in different years.
   iii. Decisions on replacing manual work by machines.
   iv. Introduction of automation in industry.
   v. Formulation of Labour Welfare Policy- provisions of facility of housing, improvement of sanitation and working conditions, medical dispensary/hospital facilities, building of educational institution for worker's children, etc.

6) **Impact on Future Cost Structure:** Capital expenditures have chain of subsidiary cost, called fixed expenses. Installation of major plant, for example, necessitates the incurring of certain expenses which are more or less fixed in nature. E.g. rent of the factory in which plant has been installed, technical staff expenses, insurance, etc. In case the acquisition has been done without judicious capital budgeting and the venture turns out to be flop, the concern will have to bear quite good amount of fixed expenses. Capital budgeting, thus, has importance, of its own and places a significant role in determining the future destiny of the business enterprise. Successive wrong decision on capital expenditure surely leads towards liquidation of the company.

6. Types of Capital Expenditure: Capital expenditure includes investment of funds in various fixed assets and different projects for development and expansion. Such expenditure is of long duration involving a number of years and commits the business concern to a particular pattern of activity.
There can be various types of capital investment, which are stated below:

1) **Expenditure on General Improvement:** Any expenditure which brings about the general improvement of the factory or establishment as a unit comes under this category, as, improving roads, laying severage

lines, broadening parking space, providing rail sidings, making communication equipment more effective etc.

2) **Replacement of existing Assets:** Worn out and depreciated assts need replacement. Keeping and using a plant, for example, for a period more than its effective life entails excessive expenditure on repairs and maintenance. In such cases, the return is less than the expenditure. It is always advisable to replace such assets well in time so that the facilities should remain at their original state.

3) **Addition in Capacity:** The concern may like to add to the existing capacity of production due to increase in demand or due to the fact that the concern has captured some foreign market. Additions to existing plant, equipment, store house, sales counters or show rooms may be made entailing a sizable amount of capital.

4) **Purchase of New Equipment:** Sometimes, a manufacturing unit enters into the production of a new item, not hitherto produced. Altogether different plant and equipment may have to be acquired. New type of factory may have to be constructed. For example, production of wheat flour and allied products requires a vertical type of structure, while many of the production lines require horizontal structures.

5) **Cost Reduction and Quality Improvement:** Some expenditure may have to be incurred for acquisition of certain accessories or apparatus for checking wastage, defective production and improvement of quality.

6) **Better Working Conditions:** Long term investment of funds is also made in such equipment or projects which ensure better working conditions, more safety to the workers, fire fighting and control, and hygienic atmosphere. Provisions of the Factories Act, 1948 are to complied with in this respect. Provision of the relaxation rooms and creches for the babies of women workers is also made for the convenience of the workers.

7) **Goodwill Projects:** To win the goodwill of the public at large, certain projects are undertaken to provide amenities to the general public. Beautiful public parks, charitable hospitals, colleges, public libraries, temples, and community halls are some of the examples of these projects. These are sometimes called 'Prestige value projects'.

7. Factors Affecting Capital Investment Decisions: Before making any capital investment, the management has to consider various alternate proposals thoroughly before taking such investment decisions. No doubt profitability and expected rate of return are the major considerations for the choice of the projects. However, there are other factors which the management cannot ignore. These have to be given due consideration before making a final decision on long term commitment of funds in a particular project. Sometimes the future rate of return on the investment made in these factors over rule the major consideration or rate of return on profitability. These factors are discusses as follows:

1. **Urgency:** Situation may arise when the acquisition of a fixed asset is urgently needed, otherwise there is going to be a great loss or damage. Installation of power generators, for example, may have to be

undertaken at a short notice due to prolonged shedding of hydel power. Such decisions need not clear the rigours of profitability tests.

2. **Technical Feasibility:** Due consideration is to be given to the advice of the experts regarding the soundness of the project. The volume of production required for economic utilisation of the plant, power-consumption , overhead costs, running life, cost repairs and maintenance, availability of spare parts and availability of technical personnel-all these factors have to be carefully gone into to assess the technical worth of the project.

3. **Amount and Availability of Capital:** Most of the capital projects involve huge funds which have to be committed for a long term. It has to be ascertained what portion of funds would be available from internal resources and what portion is to be financed by borrowed funds. The rate of interest on such borrowings is also to be taken into account. A rate of interest higher than the rate of return from the proposed project would be a discouraging factor.
   Moreover, cash required at the various stages of the construction or installation of the capital asset also needs consideration. The amount of working capital to be required to commission the asset and to keep it going also has to be determined. Non-availability of such capital may check the operation of the asset later as well.

4. **Risk of Obsolescence:** With rapid advancement in technology, the risk of a capital assets particularly plant and equipment going out of date too soon is always present. There may appear improved versions or innovations which would replace the existing equipment, though otherwise serviceable. Managements would, therefore, prefer such projects which would pay back the investment in a lesser number of years.

5. **Cost of Production:** Alternate projects may result in different costs of production, *e.g.* on cost of materials, productive wages, supervision, factory overheads, repairs and renewals, storage and cost of power.

6. **Multiple uses of Assets:** It should be seen whether a particular asset has more uses than one. It may be that the original plan of product lines falls through and if the asset purchased is suitable for only that product, there would be much loss on its sale in the second hand market. But if it has other uses as well, it can be profitably used.

7. **Opportunity Costs:** Opportunity costs refer to the loss of alternative income on account of a particular capital investment decision. Since the resources are limited, a choice out of alternatives is to be made. The comparison of the alternative yields has to be taken into account. The return which is likely to be received by the investment under consideration should be compared with return from an alternative project of the same cost.

8. **Element of Interest:** There is a lack of unanimity among the accountants whether interest should be taken as one of the costs, while calculating the cost of a unit of product. But, so far as the decisions of long-term investment in capital assets are concerned, the question of interest is very important. Since the

funds invested are of a massive size, the amount of interest is also quite large. Ignoring interest will bring in an error of judgment.

9. **Depreciation:** While making a decision on a capital investment, a judicious view of depreciation is to be taken. The treatment here should differ from the cost accountancy procedure. To decide about the desirability of the replacement of a particular asset, the written down book value of the existing asset which is to be replaced, is not relevant. The existing asset is to be replaced because of the competitive conditions and the present book value, less realizable value, obviously is not recoverable. Rather the realizable (sale) value of the existing asset should reduce the cash outlay of the new asset. If the unrealized portion is added to the cost of the new asset, it would hamper the decision for replacement.

10. **Other Considerations:** Financial considerations are not the only considerations which influence the capital expenditure decisions. There are non- financial reasons which prompt the management to incur capital expenditure. There are certain prestige projects or goodwill projects which are undertaken to win the goodwill of the community, the government or the industry as a whole. Public parks, charitable hospitals, research institutes, community balls, educational institution, temples and other such projects are of this type.

8. Summary: The future development of an enterprise depends on the capital investment projects. These projects may be the replacement of existing capital assets which turns out to be less attractive to the firm or expansion of business for implementing new ideas and planning. Thus, long term investment decisions of an enterprise fall within the definition of project budgeting or capital expenditure decisions. These decisions are concerned with the acquisition of assets in which funds will be invested by an enterprise. The term Project Budgeting/Capital Budgeting refers to long term planning for proposed capital expenditure and their financing. It includes both raising of long-term funds as well as their utilization. Project budgeting is the decision making process by which a firm evaluates the acquisition of its major long term/fixed assets. It involves an enterprise's decision to invest its current resources for addition, disposition, modification and replacement of fixed assets. Project budgeting is very important for an enterprise due to huge amount of investment, irreversible in nature, lack of flexibility, its impact on future cost structure etc. Before making any capital investment, the management has to consider various alternate proposals thoroughly before taking such investment decisions. No doubt profitability and expected rate of return are the major considerations for the choice of the projects. However, there are other factors which the management cannot ignore like urgency, availability of capital, risk of obsolescence, cost of production, opportunity cost etc.

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Module: 32, Capital Budgeting Techniques

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Capital Budgeting Techniques
Module Id	Module no-32
Pre- Requisites	Basic knowledge about Capital Budgeting Techniques
Objectives	▪ To study the financial analysis of the project through capital budgeting techniques
Keywords	Capital Budgeting, Capital Budgeting Techniques, Trading Methods of Capital Budgeting, Discounted Cash Flow Methods

QUADRANT-I

Module : Project Budgeting/Capital Budgeting
1. Learning Outcome
2. Introduction
3. Capital Budgeting Techniques
4. Traditional Methods
5. Discounted Cash Flow Methods
6. Summary

1. Learning Outcome

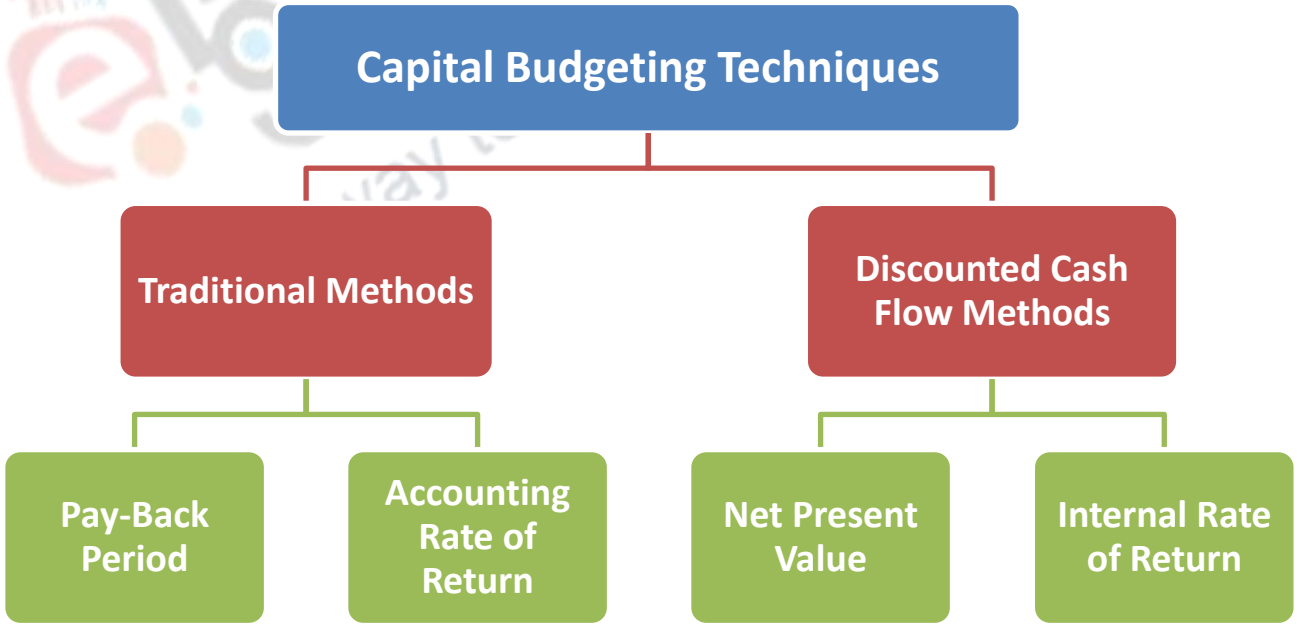
After completing this module students will be able to:

i. Understand the financial analysis of the project
ii. Understand Capital Budgeting Techniques
iii. Know the merits and limitations of Capital Budgeting Techniques

2. Introduction

One of the aspects of project management is taking right decision in respect of investment of funds. The success of any business depends upon the investment of funds in such a way as to yield maximum rate of return from an investment. An investment is the employment of funds with the aim of achieving additional income or growth in value over a period of time. An appraisal of any investment proposal is necessary to ensure that the investment of resources will yield desired benefits in future. If the financial resources are in abundance, it would be possible to accept several investment proposals, which satisfy the norms of approval or acceptability. Since the financial resources are limited, therefore an entrepreneur has to choose the best proposal out of the various investment proposals by evaluating their comparative merits. It helps him to identify relatively superior proposals keeping in mind the limited available resources. He has to follow some techniques for making appraisal of investment proposals. So in this module we shall describe the various appraisal methods and acquaint you with their relative merits so that you could identify the best method for appraising investment proposals in different situations.

3. Capital Budgeting Techniques: At each point of time a project manager will have a number of investment proposals regarding various projects in which he can invest money. In such situations he has to compare and evaluate all these projects and decide which one to take up and which one to reject. In order to maximise the value of the firm, it is imperative that the best or most profitable investment projects are selected. There are a number of techniques available for appraisal of investment proposals and can be classified as below:



4. Traditional Methods:

1. **Pay-Back Period Method:** Pay-back period method also known as pay-off or pay-out method is the most popular and widely accepted traditional method of evaluating capital investment proposals. Pay-Back period is the period in which the total investment in permanent assets pays itself back. It is based on the principle that every capital investment pays itself back over a period of time from the additional earnings of the project itself. It means where the total earnings from investment equals the total outlay, that period is the pay-back period. Suppose, a fixed asset costs Rs1,00,000 and the additional earnings from this asset over the first five years are Rs24,000, Rs36,000, Rs40,000, Rs40,000 and Rs32,000 respectively. The payback period in this case would be three years because the total investment gets fully recovered by the earnings of the first three years i.e. Rs24000 + Rs36,000 +Rs 40,000 = Rs1,00,000. For this purpose, net cash inflow shall be calculated first in the following manner:-

Cash inflow from sales revenue ……..	×
Less: Operating expenses including depreciation ……..	×
Net income (before tax) ……	×
Less-Income tax ……...	×
Net income (after tax) ……..	×
Add depreciation ……	×
Net cash inflows ……	×

Note:- Since depreciation does not affect the cash inflow therefore it has not be taken into consideration in calculating net cash inflow. But it is allowed as an admissible deduction under income tax act.

Computation of Pay-back Period Method

$$\textbf{Pay-back period} = \frac{\textbf{Original Investment}}{\textbf{Annual Cash}-\textbf{inflow}}$$

Merits of Pay-back Period Method

Pay-back period method is strongly recommended for evaluating the capital investment proposals. The merits of this method are as follows:

1) Easy to calculate and simple to understand. It is a good indicator of how quickly the amount invested is going to be recovered.
2) It provides a convenient measure of the profitability of alternative projects and aids in making the choice.
3) Useful where the firm is suffering from cash deficiency.
4) Liquidity requirement requires earlier cash flows. Hence, firms having high liquidity requirement prefer this tool because it involves minimal waiting time for recovery of cash outflows.
5) Business enterprises facing uncertainty - both of product and technology, prefer this method due to technological obsolescence and product obsolescence.
6) It is a handy tool for evaluating investment proposals where accuracy in estimates of profitability is not vital.

Limitations of Pay-back Period Method

The pay-back method suffers from the following limitations:

1) This method ignores the post pay back annual cash inflows.
2) This method ignores time value of money. Sums to be received in future should be discounted to current values.
3) It overlooks the cost of capital
4) The method is not flexible. A small change in cost of production will affect the cash inflows and as such it will also affect pay-back period.
5) It over-emphasizes the importance of liquidity as a goal of capital investment decisions.

2. **Accounting Rate of Return:** A reasonable rate of return on investment is desired by every business house. So this method takes into account the earnings expected on investment over their whole life. Where the decision is to be taken for the purpose of evaluating capital investment proposals, earnings from the capital investment is being calculated. It is the minimum rate of return (called as cut-off rate) below which the firm may decide that they will not undertake any project. The rate of return is to be decided by the management. Under this method, profits are taken on the basis of accounting concept i.e. profits after depreciation and tax. Out of the various alternative capital projects, the one that gives the highest rate of return, in general, would be more acceptable than others. Profitability, thus, becomes the basis of capital expenditure decision. Average Rate of Return (or Accounting Rate of Return) method calculates the profitability of the different proposals in the following manner:

What is Rate of Return?

'Rate of Return' is the ratio of earnings to investment. There are, however, two principal variations in this approach,

1) $$\frac{\textbf{Average Annual Earnings from the project}}{\textbf{Original Investment in the project}} \times 100$$

2) $$\frac{\textbf{Average Annual Earnings from the project}}{\textbf{Average Investment in the project}} \times 100$$

- **Average Annual Earnings**

  These are computed by totaling the expected annual profits (after taxes) of all the years during the life term of the project and dividing the total y the number of years.
  Average Annual Earnings may be expressed in three ways:
  a) Earnings before depreciation and taxes.
  b) Earnings before depreciation but after taxes.
  c) Earnings after depreciation and taxes.
  The management should, obviously, use the similar connotation for all capital decisions.

- **Original Investment**
  It refers to the Total Cost of Project till its commissioning **minus** any Salvage value.

- **Average Investment**

  It means the **original cost divided by 2** and where there is some salvaged value recoverable at the end of the life of the asset, it would be:

  = ½(Original Cost-Salvaged Value) + Salvaged Value.

  The average investment approach is more realistic than the original investment approach, since, the investment gradually decreases over the number of years. It is assumed that the value of the asset at the end of its life is reduced to zero or its Salvaged value is based on the straight line method of depreciation.

  Most Popular Formulation

  Out of the variations of Average Annual Earnings given above, the most widely adopted variation is, ***Earnings After Depreciation and Taxes***, hence, the most popular formulation for **Average Rate of Return** is as below:

$$\frac{\textbf{Average Annual Earnings after depreciation and taxes}}{\textbf{Average Investment}} \times \mathbf{100}$$

  Merits of Average Rate of Return Method
  1. The main advantage is that it is simple and easy to calculate.
  2. Easy to understand as it provides a accurate estimate of the time needed for the organization to recoup the cash invested.

3. The concept of accounting rate of return is a familiar concept to calculate ROI. The profits are calculated on the basis of accounting concept. i.e Profit after depreciation and taxes.
4. It provides sound yardsticks for comparing the profitability of different projects.
5. ARR considers all net incomes over the entire life of the project and provides a measure of the investment's profitability.

Limitations:

1. ARR method also ignores the time value of money and considers the value of all cash flows to be equal.
2. This technique uses accounting numbers that are dependent on the organization's choice of accounting procedures and practices.
3. The method uses net income rather than cash flows. While net income is a useful measure of profitability, the net cash flow is a better measure of an investment's performance.
4. Ascertainment of fair rate of return on capital invested is quite difficult.

5. Discounted Cash Flow Methods

Discounted cash flow methods sometimes also called as Time-adjusted techniques, are an important tool in the hands of the management to evaluate the profitability of the capital expenditure. The basic characteristic of these techniques is the concept of *Cash Flow*. The cash flows are discounted to the present value because the value of a rupee today cannot be equivalent to the value of a rupee after two years. So time value of money is considered both for amount invested and cash flows generated from that investment.

Discounted cash flow techniques, thus, overcome the shortcoming of the Pay-back Period method by taking into account the entire period of use. These techniques are mainly of two types:

1. Net Present Value Method (NPV Method)
2. Internal Rate of Return Method (Time Adjusted Rate of Return/IRR Method)

1. Net Present Value Method

Net Present Value (NPV) is considered as the most suitable technique of evaluating the capital investment proposals. It takes into account the time value of money. An investment has cash flows throughout its life, and it is assumed that a rupee of cash flow in the early years of an investment is worth more than a rupee of cash flow in a later year.

Where the decision is to be taken for evaluating the capital investment proposals cash inflows and cash outflows associated with a particular project are firstly be worked out. Then present value of cash inflows and present value of cash outflows are calculated at the rate of return which is acceptable to the management. This rate of return is considered as the "Cut off rate" and is generally determined on the basis of cost of capital suitably adjusted to allow for risk element involved in the project. Cash outflows represent the investment and commitment of cash at different point of time and Cash inflows represent the profits before depreciation and after tax. Net present value (NPV) is the difference between the present value of the future cash inflows from an investment and the present value of cash outflows. Present value of the expected cash inflows is computed by discounting them at the required rate of return.

The following are the steps to calculate net present value:-

1. Determine the net cash inflows in each year of the investment
2. Select the desired rate of return
3. Find the discount factor for each year based on the desired rate of return selected
4. Determine the present values of the net cash inflows by multiplying the cash inflows by the discount factors.
5. Total the amounts of cash inflows discounted at the cut off rate for all years in the life of the project
6. Lastly subtract the present value of initial capital investment.

Accept or Reject Criteria:

If	**NPV≥Zero**	**Accept the proposal**
If	**NPV<Zero**	**Reject the Proposal**

Symbolically it is written as:

$$\mathbf{NPV} = \frac{C}{(1+r)^n}$$

Where, Net Present value of (NPV) of the future sum (C) to be received after a period 'n' for which discounting is done at an interest rate of 'r'.

Merits of Net Present Value Method

Present Value Method is a definite improvement upon the traditional methods. So many good points have been attributed to it:

1) While assessing the profitability of a project, it takes into account the total working life of the asset.
2) It is more objective in its approach, since subjective decisions like depreciation do not have any effect upon it.
3) Discounting of the cash inflows arising in future allows a proper appreciation of the soundness of the project or otherwise. It is suitable for long term investment decision.
4) This method has the unique characteristic of matching of cost of borrowing money for investment into fixed assets with the expected return on such investment. This comparison is made valid by calculating the present values of amounts receivable in the time to come.
5) By taking time factor into consideration, possible risk and uncertainly of a project are dully recognised.

Limitations of NPV Method

The pay-back approach suffers from the following limitations

1) Forecasting of sales and costs to determine future inflows of cash is a difficult task. Errors in such forecasting may lead to serious mistakes at decision-making.

2) What is the appropriate rate of interest? To answer this question it is not easy. Various rates of interest can be considered. A discount (or interest) rate appropriate at present may be totally irrelevant in a future period.
3) It involves too many calculations. When alternative projects are considered, the task of finding out cash inflows and determining their present values requires time, labour and energy.

The criticisms are more apparent than real. As Anthony and Reece put it, "Those managers who do use one of the discounting methods argue that the extra work involved is small, and that the results, although admittedly rough, are nevertheless better than the results of calculation that do not take into account the time value of money.

2. Internal Rate of Return (IRR) Method

IRR method which is sometime called as Time-adjusted rate of return method, Project rate of return of method, Yield method, Trial and Error Yield method, is also a modern technique for evaluating the capital investment proposals which discounts the cash flows according to time involved. Under present value method a discount rate was used to calculate the present values of cash inflows. And while evaluating the project, the project which has the highest Net Present Value was ranked at the top.

Under the Internal Rate of Return (IRR) method, no rate of interest is given, rather the rate of interest is to be found out which makes the present values of cash inflows exactly equal to the amount invested in the project. The Internal Rate of Return of a project is thus that discount rate which equates the total present value of the cash inflows (net) with the total initial cost. In other words, it is a rate at which the net present value becomes Zero.

Internal Rate of Return:

Discounted sum of Inflows = Discounted sum of Outflows

How to find out the Internal Rate of Return?

The following steps may be taken to calculate IRR:

Scenario 1: For an investment with uniform cash flows over its life, the following equation is used:

Step 1: Calculate the Present Value Factor by dividing the cost of investment by annual cash flow i.e.

$$\text{Present Value Factor} = \frac{Cost\ of\ \ Investment}{Annual\ \ \ Cash\ Flow}$$

Step 2: Once the Present Value Factor has been calculated, compare the Present Value Factor with the number of years equal to the life of the asset with the help of Present Value Annuity Tables. The rate of discount at which Present Value of an Annuity for estimated life of the project equates the Present Value Factor, will be the Internal Rate of Return of the project.

Scenario 2: When the net cash flows are not uniform over the life of the investment, the determination of the discount rate can involve trial and error and interpolation between interest rates. The following steps should be followed:

i. Assume the rate of discount at which Present Values of Cash Inflows should be factored.

ii. Calculate the present value of cash inflows by using the assumed discount rate.

iii. Compare the total present value of cash inflows with the cost of the project.

iv. If the total present value is more than the capital cost, then assume the higher rate of discount at which the present values should be factored.

v. If the total present value is less than the capital cost, then assume the lower rate of discount at which the present values should be factored.

vi. Repeat the procedure until the present value of cash inflows equals to the cost of the project.

Merits of Internal Rate of Return Method

Time adjusted calculations are definitely better to use than unadjusted amounts. This method has also the same advantages as the Net present Value method claims as is given below:

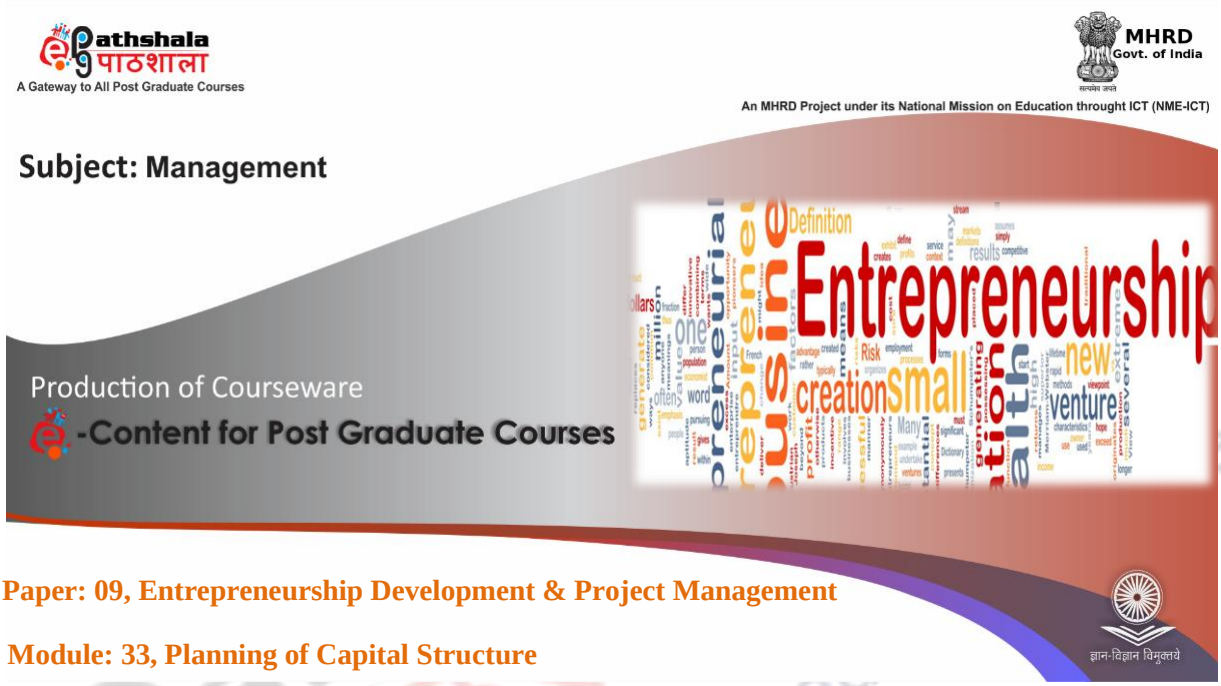
1. It takes into account the full span of the working of an asset.
2. It is more objective since subjective considerations like depreciation etc. to not prejudice it.
3. Money has a time value. This method recognizes the importance of this in its analysis.
4. Ranking of the projects becomes purposeful as this method matches the present value of cash outlay and cash inflows.
5. Comparison becomes valid only when the earnings are discounted to present values, since different investments have different earnings patterns.
6. Due recognition is given to risk and uncertainty in future.

Limitations of Internal Rate of Return Method

IRR method, no doubt, considers the time value of money but still this method bears certain limitations which are discussed as follows:

1. Tedious calculation process if there are more than one cash outflows.
2. This approach creates a special situation if we compare two projects with different inflow/outflow patterns.
3. Under this method it is assumed that all the future cash inflows of a proposal are reinvested at a rate equal to the IRR. It is difficult to imagine that the same firm has an ability to reinvest the cash flows at a rate equal to IRR.
4. If an investment is to be made in two mutually exclusive projects which have considerably different cash outlays. A project with a larger commitment of funds but lower IRR contributes more in terms of absolute NPV and increases the shareholders' wealth. In such situation decisions taken only on the basis of IRR criterion may not be correct.

6. Summary: The success of any business depends upon the investment of funds in such a way as to yield maximum rate of return from an investment. An investment is the employment of funds with the aim of achieving additional income or growth in value over a period of time. An appraisal of any investment proposal is necessary to ensure that the investment of resources will yield desired benefits in future. Since the financial resources are limited, therefore an entrepreneur has to choose the best proposal out of the various investment proposals by evaluating their comparative merits. He has to follow some techniques for making appraisal of investment proposals. At each point of time a project manager will have a number of investment proposals regarding various projects in which he can invest money. In such situations he has to compare and evaluate all these projects and decide which one to take up and which one to reject. Capital budgeting techniques help him to identify relatively superior proposals keeping in mind the limited available resources. The techniques of capital budgeting are broadly discussed in two categories i.e. traditional techniques and discounted cash flow techniques. Traditional techniques are Pay-back period and Accounting Rate of Return and Modern techniques or Discounted Cash Flow techniques are Net Present Value and Internal Rate of Return.



Paper: 09, Entrepreneurship Development & Project Management

Module: 33, Planning of Capital Structure

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Planning of Capital Structure
Module Id	Module no-33
Pre- Requisites	Basic knowledge about the capital structure of an enterprise
Objectives	▪ To study the concept of capital structure and factors affecting capital structure of an enterprise
Keywords	Capital Structure, Optimal Capital Structure, Factors affecting capital structure

QUADRANT-I

Module : Planning of Capital Structure
1. Learning Outcome
2. Introduction
3. Meaning of capital structure
4. Capital Gearing
5. Planning of Capital Structure
6. Optimal Capital Structure
7. Determinants of Capital Structure
8. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the meaning of Capital Structure
ii. Know about the Optimal Capital Structure
iii. Understand the planning of Capital Structure
iv. Know the concept of Capital Gearing
v. Understand the determinant of Capital Structure

PLANNING OF CAPITAL STRUCTURE

2. Introduction

Every entrepreneur needs finance to carry out business activities smoothly and to achieve his targets. It is an important input for any type of business, whether big, medium or small and is needed for working capital as well as investment in permanent assets. Funds invested in a business are obtained from various sources. The capital invested in a business may be owners' capital or borrowed capital or both. While some of the funds are held in business on permanent basis such as share capital and reserves, some others are held for a long term basis such as debentures, bonds, public deposits etc. and still some other funds are in the nature of short-term borrowings. The entire composition of these funds constitutes the overall financial structure of an enterprise. The short term funds keep on shifting quite often. Therefore the proportion of various sources for short-term funds cannot rigidly be laid down. An entrepreneur has to follow a flexible approach. A policy has to be laid down for the composition of long-term funds, known as capital structure**.** The most important aspects of the policy are the debt equity ratio and the dividend decision. Dividend decisions affect the building up of retained earnings, which is an important component of owned capital. The long-term funds occupy a large portion of total funds and involve long-term policy decision about the proportion of various kinds of securities which is often used to mean the capital structure of the firm.

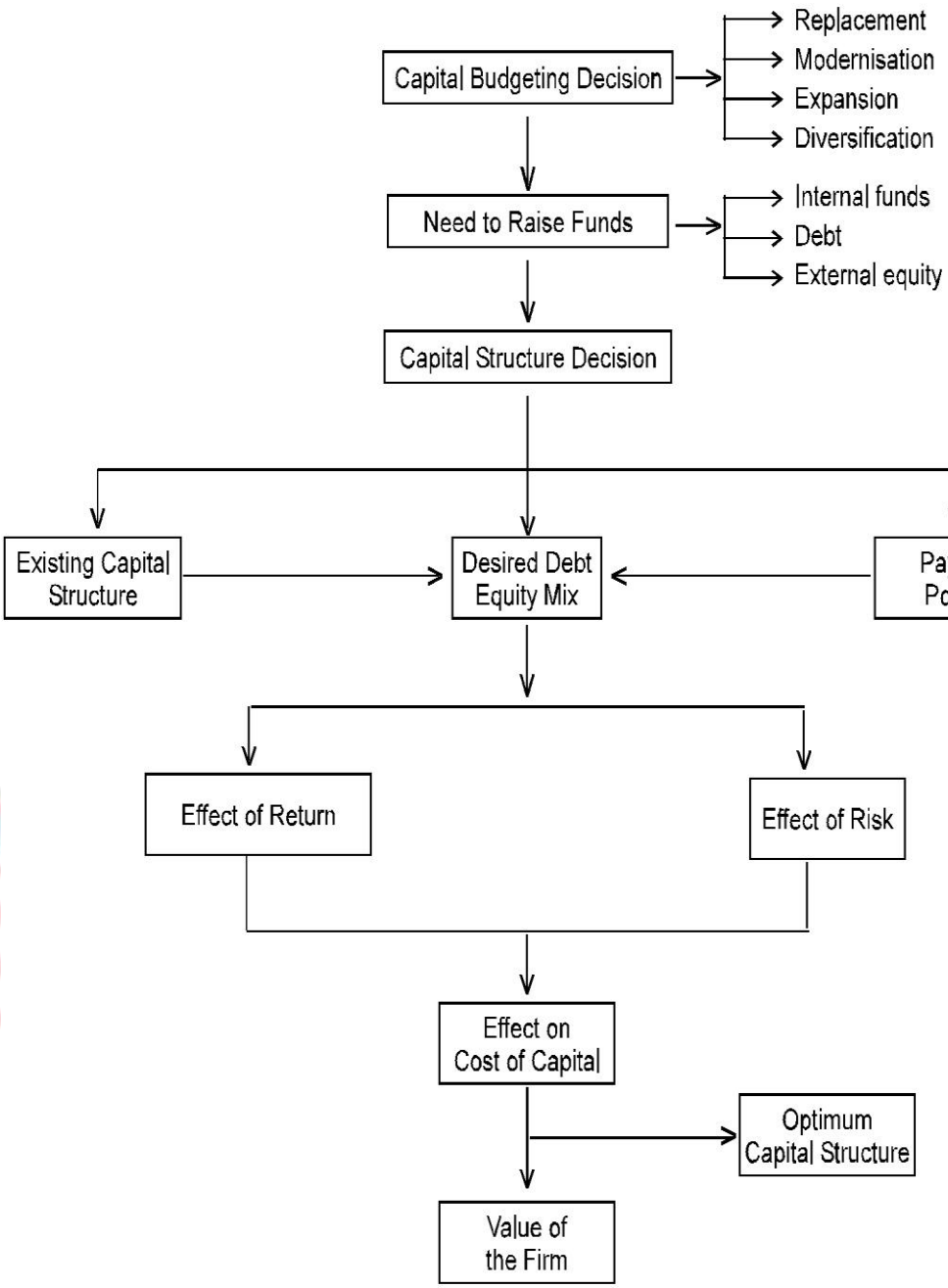
3. Meaning of Capital Structure: The term capital structure refers to the relationship between various forms of financing such as equity share capital, preference share capital and debentures. It is the decision making process which determines the proportion among various types of securities to total capitalisation. Gerstenberg defines *Capital Structure as the types of securities issued by a company and the proportionate amount that make up capitalisation*. In other words, it refers to the composition or make up or mix of capital i.e. in what proportion equity capital, preference share capital, debentures etc. have been issued. But the question arises how this proportion is to be determined.

Gerstenberg has laid down the following two general principles:

1. The greater the stability of earnings, the higher may be the ratio of bonds to stock in the capital structure.

2. The capital structure should be balanced with a sufficient equity cushion to absorb the shocks of business cycle and to afford flexibility.

A capital structure decision refers to deciding the forms of financing i.e. which sources to be tapped, their actual requirement and the relative proportion in total capitalisation. Thus, whenever funds are to be raised for long term perspective to finance investment, capital structure decision is involved. The form or quality of financing in capital structure depends upon the nature of requirement of finance. The process of financing or capital structure decision is shown in the figure below:



So, every capital structure decision affects the value of the firm and the optimal capital structure is one which increases the value of the firm and decreases its cost of capital. As shown in the figure every capital expenditure requires a huge amount of funds which can be raised through debt capital or equity capital. Both the modes of financing have their own features and limitations but generally a finance manager prefers to raise the funds by using appropriate ratio of debt equity mix to yield a maximum return and minimize the cost of capital.

4. Capital Gearing: The concept of Capital Gearing is closely related to the pattern of the capital structure of a company. It refers to the ratio between various types of securities of a company. That is the ratio between equity capital, preference capital plus debentures. It can be written as:

Capital Gearing = Equity Capital : [Preference Share Capital + Debentures]

- A company is said to be highly geared if the proportion of preference shares and debentures is higher than equity share capital (including reserves and surpluses belonging to equity share holders)
- A company is said to be low geared if the proportion of preference shares and debentures is low as compared to equity share capital.

5. Planning of Capital Structure: Planning the capital structure of a company has a great importance because of its prospective impact on profitability and solvency. Small organisations often do not plan their capital structure rather allowed to develop it without any formal planning. They may do well in the short run, however, sooner or later they face considerable difficulties. Without proper planning of capital structure, an economical use of funds for the company is not possible. An enterprise should therefore plan its capital structure in such a way that it derives maximum benefits out of it and is able to adjust it with the change in economic conditions.

Theoretically, optimum capital structure should be planned by the company in such a way that the market value of its shares is maximum. The value of the firm will be maximized when the marginal real cost of each source of funds is the same. The discussion on the issue of optimum capital structure is highly theoretical. But in order to determine an optimum capital structure we have to go beyond the theory. That is why capital structure is found different from company to company even within the same industry. A number of factors influence the capital structure decision of a company. Finance manager plays a crucial role in making the capital structure of a company. Two similar companies can have different capital structures if the decision makers differ in their approach. There are many factors affecting the role of decision maker. These factors are qualitative, complex and highly psychological and do not always follow the accepted theory. Security markets are not always perfect and the decision has to be taken with imperfect knowledge and consequent risk.

6. Optimal Capital Structure: Optimal capital structure is one that maximizes value of business, minimizes overall cost of capital i.e. flexible, simple and futuristic that ensures adequate control on affairs of the business by the owners and so on. Capital structure is usually planned keeping in view the interests of the ordinary shareholders. The ordinary shareholders are the ultimate owners of the company and have the right to elect the directors. While developing an optimal capital structure for the company, the financial manager should aim at maximizing the long-term market price of equity shares. The optimum capital structure may be defined as "that capital structure or a debt-equity mix that leads to the maximise value of the firm". It maximizes the value of the company and hence the wealth of its owners and minimises the company's cost of capital. Thus, every business enterprise should aim at achieving the optimal capital structure and also tries to maintain it. The following considerations should be kept in mind while maximising the value of the firm:

- The capital structure of the firm should be simple. Simplicity means that minimum number of securities should be used in the capital structure. If capital structure becomes complicated in the beginning, it can be difficult to maintain it in future.
- The capital structure should bear the minimum cost of capital. The cost of capital takes the form of interest or dividend. Different sources have different costs. Certain securities have lower cost as compared to others. By obtaining funds at less costs, a company can avail the new opportunities of

investment in future. Therefore it should determine a capital structure in which weighted average cost of capital is minimum.

- An enterprise should not use financial leverage beyond a certain limit because it will increase financial risk. If the shareholders perceive high risk in using further debt capital, it will negatively affect the market price of the shares.
- Capital structure of the firm affects the level of risk also. The use of borrowed funds in capitalisation increases the level of risk because interest on such funds has to be paid before paying the claims of shareholders. Greater use of borrowed funds can result in availability of future funds at high cost. Therefore, while determining capital structure, efforts should be made to minimise the risk.
- The capital structure of the firm should be flexible so that it can be easily altered at the time of need. Whenever there is increase in the size of the business, new sources of capital could be added to it and at the time of reduction of the size, surplus sources could be repaid easily.

7. Determinants of Capital Structure: Capital structure plan is to be prepared very carefully, initially at the time of promotion of company. First of all, the objective of the capital structure should be determined and then the financing decisions should be taken accordingly. Company has to arrange funds for its business activities continuously. Every time when the funds are to be procured, project manager has to choose the most profitable source of finance after considering the merits and limitations of different sources of finance. Therefore, capital structure decisions have to be taken on continuous basis. Generally, the factors to be considered whenever a capital structure decision is taken are:

1. **Trading on Equity/Financial Leverage:** Trading on equity is an arrangement under which an enterprise uses long term debts carrying a fixed rate of interest in such a manner so as to increase the rate of return on equity shares. It refers to the additional profit that equity shares earn because of issuing other type of securities such as preference share capital, debentures, bonds etc. It is based on the theory that if the rate of interest on debentures and rate of dividend on preference shares, which is fixed, is lower than the general rate of company's earnings, equity shareholders will get the advantage of higher dividend per share. While planning the capital structure of a company, financial leverage is considered as one of the important considerations due to its effect on the earnings per share. The greater the Earnings Per Share (EPS), more profitable it will be for the ordinary shareholders.

2. **Cost of Capital:** The cost of a source of finance is the minimum rate of return expected by its suppliers. The expected rate will depend upon the risk borne by the investors. Ordinary shareholders bear the maximum risk because no rate of dividend is fixed for them and the dividend is paid after the payment of interest and preference dividend. The payment of interest on debentures is a statutory liability of the company whether the company earns profits or not. Therefore, debt is cheaper as compared to ordinary share capital. Cost of debt becomes lesser because interest on debt is a charge against the taxable income. But debt is cheaper only upto a particular point and the company cannot always decrease the overall cost of capital by using debt. Later, debt can be costly because use of more debt raises the risk for both the creditors and the shareholders.

3. **Regular & Stable Cash Flows:** The sale and stability of cash flows affect the quantum of leverage. The companies which have stability in income and sales, can use more amount of debt in their capital structure. They can easily pay their fixed financing charges. The industries producing consumer goods face more fluctuations in their sales and, therefore, use lesser amount of debt. On the other hand, income and sales of public utility institutions are more stable and therefore, they can use more debts in financing their assets. Expected increase in sales also affects the amount of leverage. This is the reason that developing companies

use more debt in their capital structure. The companies, whose sales are decreasing, should not use debt or preference share capital because they can face difficulty in the payment of interest and preference dividend, as result of which the company could be liquidated.

4. **Control:** In present times, management wants to maintain its existence continuously and does not want any outside interference. Ordinary shareholders have got legal right to appoint directors. If the company is paying interest and instalment of loan in time, the creditors of company can't interfere in managerial decisions. Similarly, preference shareholders do not have voting rights. But in case the company is unable to pay dividend to the preference shareholders for certain period of time, the preference shareholders get a right to participate in the meetings of the company. Thus, in most of the circumstances, ordinary shareholders get a right to appoint directors. If the main objective of the management is to keep control in the existing hands, it will raise additional finance from debt and preference shares because it will not adversely affect its control.

5. **Flexibility:** Flexibility means the firm's ability to make adjustment in the sources of finance at the time of change in needs of funds. Capital structure of a company is called flexible when it does not face any difficulty to change its capitalisation or the sources of finance. Therefore, the management should take into account the future effects on the present capital structure. Whenever a company needs finance for profitable investment, it must be able to raise necessary funds without delay and at reasonable cost. If less amount of funds is required, company must be in a position to redeem the debentures and preference share capital. Flexibility in the capital structure depends on flexibility in fixed expenses, restrictive conditions in the debt agreement, terms of redemption and debt capacity.

6. **Size of the Business:** Small businesses have to face great difficulty in raising long-term finance. For procuring long term loan, it has to accept unreasonable conditions and high rate of interest. Such restrictive conditions make the capital structure inflexible for small companies and management cannot freely run the business. Therefore, small businesses rely on share capital and retained earnings to meet their requirement of long-term funds. Small companies have to bear greater cost of raising long term funds as compared to large companies. Moreover small companies do not allow expanding their business much and managing their funds out of retained earnings. Large companies are able to raise their long term loans comparatively at flexible terms and can issue ordinary shares and preference shares to the public. Therefore, while preparing capital structure plan, company should make proper use of its size.

7. **Floatation Costs:** Floatation costs are incurred at the time of issue of securities. These costs include commission, brokerage, stationery and other expenses. Normally the cost of debt is less than cost of issuing shares. Therefore, the company can be attracted towards the loan funds. In case of retained earnings, no such issue expenses need to be incurred. But flotation costs are not the most important factor in capital structure decisions. If the amount of issue is increased, the percentage of floatation costs can decrease.

8. **Capital Market Conditions:** While taking decision on the capital structure, tendencies of the capital market should be taken into account because these affect the cost of capital and availability of funds from different sources. Sometimes, company wants to issue ordinary shares but the investors do not want to invest in that company due to high risk. In such a situation, company should not issue shares and necessary funds should be raised from other sources. Therefore, timing of the issuance of securities to the public is an important factor affecting the capital structure of a company.

9. **Gestation Period:** Gestation period refers the period between starting of project construction and first commercial operation of the project. If the gestation period is longer, more equity financing will be advised as there will not be need for servicing of capital in the initial times.

10. **Forms of Business Organisations:** Control is much significant in case of private companies, sole traders and partnership firms because in such businesses, ownership is limited to a few hands. In public limited companies, ownership is widely spread. Therefore, control can't be restricted.

11. **General Economic Conditions:** If an economy is recovering from depression, the business activities in the country will expand. The possibilities of development of business will increase due to it. As a result, company may require additional funds in the future. In such cases, management should give more importance to the flexibility of capital structure so that it may be able to raise funds from alternate sources to meet its need. The company, in such situation, should issue ordinary share capital rather than debt.

12. **Statutory Restrictions:** Capital structure decisions of the company are also affected by the government regulations. The statutory restrictions prescribed by the Government and various statutes are required to be taken into consideration before the capital structure is planned.

13. **Corporate Taxation:** Due to current provisions of tax, the use of debt in the capital structure is cheaper as compared to the ordinary share capital or preference share capital. Interest is chargeable expense from the taxable income, whereas dividend is paid out of earnings available after tax. Hence, level of tax affects the cost of capital. Therefore, to take the advantages of trading on equity, management uses more debt capital in the capital structure which helps in increasing the income of the shareholders.

8. Summary: At the time of preparing financial plan for the business, not only the capitalisation is determined but the form of financing or type of capital is also decided. In the capital structure decisions, it is determined from which sources and how much finance should be raised. Thus, under the capital structure, we determine the proportion in which capital should be raised from different securities. In this way, capital structure decisions are related to the mutual proportion of the long term sources of capital. In the long term sources, we include the owned funds and borrowed funds. Owned funds include share capital and reserve and surplus, whereas in the borrowed funds we include debentures and long term loans from financial institutions. While determining the capital structure, management should use proper proportion of borrowed funds and owned funds because it affects the cost of capital and total value of firm. Management also has to consider a number of factors. Capital structure should be determined in such a manner in which cost of capital of the firm is minimum and the value of the firm for shareholders is maximum.

Paper: 09, Entrepreneurship Development & Project Management

Module: 34, Project Financing

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Project Financing
Module Id	Module no-34
Pre- Requisites	Basic knowledge about sources of project financing
Objectives	▪ To study various sources of the project financing
Keywords	Project Financing, Sources of Finance, Long term and Short term Sources of Finance

QUADRANT-I

Module : Project Financing
1. Learning Outcome
2. Introduction
3. Sources of Finance
4. Sources of Long-term & Medium-term Finance
5. Short term sources of Finance
6. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of Project Financing
ii. Understand various Sources of Finance
iii. Know Long term & Medium term Sources of Finance
iv. Know Short term Sources of Finance

2. Introduction

Finance is the life blood and nerve centre of a business irrespective of its size, kind or nature. Just as circulation of blood is essential in the human body for maintaining life, finance is very essential for smooth running of the business. A project manager has to acquire funds from different sources to meet the financial requirements of business. Adequate finance is necessary for the efficient operation of business. Neither any business can be established nor its development and expansion is possible without adequate finance. On the basis of time, financial requirements of a business can be divided into three parts:

- Long-term requirements of funds
- Medium-term requirements of funds and
- Short-term requirements of funds.

Long-term requirements of Funds: The requirements of funds for more than five or seven years are called long term requirements of funds. Long term requirements of funds should be met from long term sources. Long term funds are required for the purchase of fixed assets, arrangement of permanent working capital and payment of preliminary expenses. Fixed assets include land, building, plant & machinery, furniture & fitting, patents, goodwill, livestock etc. Fixed assets are used in the business for a long period to earn profits. Preliminary expenses are incurred by the promoters at the time of promotion of company. Similarly working capital is also needed for the business.

Medium-term requirements of Funds: Medium term requirement of funds occurs for a period of one to five or seven years. Such funds are required for the projects which are neither of a fixed nature nor of current nature. These funds are needed for the replacement of machinery and equipments or heavy improvements in them, for research and development and heavy expenditure on advertisements etc.

Short-term requirements of Funds: Short term funds are needed for a period of less than one year. Short term funds are needed for expenses of routine nature like purchase of goods, payment of salary, wages, rent etc. Therefore, arrangement of adequate working capital has to be made under short term financing. Short term financial requirements should be met from short term sources.

3. Sources of Finance: It is worth noting that long term financial requirements should be met from the long term sources, medium term requirements from the medium term sources and short term requirements from the short term sources. Therefore, a project manager must maintain proper balance in the long term, medium term and short term sources of funds. Sometimes, it is difficult to differentiate in the long term and medium term sources. Certain businesses use the funds acquired from the short term sources for the purchase of fixed assets. But it is not considered proper as per the principles of project management because it decreases the liquidity of business and the problem of prompt payment may arise. Similarly, if the funds acquired from the long term sources are used for fulfilling short term requirements, it will be misutilisation of funds as the funds of business will remain unutilized which will reduce profitability. Project manager should also maintain proper balance in owned capital and borrowed capital. If all the requirements of business can be met out of equity capital and reserves and surplus, it will be deprived of the benefits of trading on equity. On the other hand, if all financial needs are met by borrowed capital, there would be fixed burden of interest on business. Therefore, it can be said that, through

financial planning, proper balance between owned capital and borrowed capital and among long term, medium term and short term sources should be established.

The sources of finance-long term, medium term and short term are different for business. Different sources of finance can be outlined as under:

Sources of Long-term Finance: Sources of long term finance can be divided into two parts: i) Owned Capital and ii) Borrowed Capital

Owned Capital is provided by the owners of business and includes ordinary shares, preference shares and reserves. On the other hand, ***Borrowed Capital*** is raised as long term loan from the borrowers. Main sources of borrowed capital include debentures, bonds, lease financing and long term loans. In India, specialized financial institutions have been established for providing long term loans.

Sources of Medium term Loans: Medium term loans can be made available from various sources. Medium term sources include loans from financial institutions, redeemable preference shares, redeemable debentures, public deposits, purchases under Hire Purchase System and accumulated profits.

Sources of Short-term Loans: Sources of short term funds include bank loans, public deposits, advances from customers, provision for taxes and credit purchases, commercial papers etc.

4. Sources of Long-term & Medium-term Finance

- **Equity Shares:** Equity shares have an important place in the capital structure of a company. Ordinary share capital is the base debt and preference share capital. Ordinary shareholders are the actual owners of the company and have full voting rights. They take part in the management of the company through the appointment of directors. They have unlimited interest in the incomes and assets of the company. The main objective of the company is to maximise the value of shares held by shareholders. Ordinary shareholders bear all the risk. There is no predetermined rate of dividend for them. Ordinary shareholders have the right on that income which is left after payment of interest and preference dividend. Similarly, on liquidation, they have the right on those assets which are left after payment of all liabilities and preference share capital. Therefore, following are the main characteristics of equity shares:

  i) **Maturity:** From the ordinary shares, company gets fixed capital for which the company is not bound to pay during its life time. The shareholders can demand their capital only at the time of liquidation. At the time of liquidation, they will get their capital back only if, there is any balance left after pay-off other liabilities. Company cannot bind its shareholders to sell their holdings.

  ii) **Claims on Income:** Equity shareholders of the company are residual owners of income of the company. Their right on income arises only when there is any income left after payment of interest and preference dividend. Even if the company has profits, shareholders can't force the company to pay dividend to them/. Whole of the profits can be ploughed back for expansion, development and strengthening the financial position of the company. In actual practice, the company pays dividend at a reasonable rate in

the event of adequate earnings so that shareholders may have faith in the company. No rate of dividend is fixed. It depends on the policy of the management and quantum of profits.

iii) **Claims on Assets:** Being the residual owners, the ordinary shareholders have last claim on the assets of the company. At the time of liquidation, the assets of company are sold and first of all the claims of creditors and preference shareholders are settled without making any payment to the ordinary shareholders. Whatever the balance is left, ordinary shareholders have full right on it and it is distributed among them in proportion to their holdings. Ordinary share capital provides safety to the interests of creditors.

iv) **Control:** Ordinary shareholders have full right of management and control of the company. Each shareholder has voting right in the meetings of the company in proportion to his holdings in the company. For the operation and control of the company, they appoint directors who act as their representatives. They have right to remove the directors also. If a shareholder can't present himself in the meetings of the company, he can use proxy.

v) **Right of Pre-emption:** Although the ordinary shareholders can't force the company to distribute dividend, yet they have been given right to have proportionate interest in the assets, income and control of the company. For this purpose, they have got preferential right to purchase the new shares issued by the company. It is the statutory obligation of the company that it should present new shares to the existing shareholders first. This right of the ordinary shareholders is called right of pre-emption. Each shareholder can exercise this right in proportion to the shares held by him. For example, if a shareholder has 200 shares and company has total issued capital of 2,000 shares, he will have right to purchase 10% of the new shares of the company.

- **Preference Shares**: Preference share capital is another source of providing long term finance. Preference shares are those shares which have preferential rights regarding the payment of dividend and repayment of capital over the equity shareholders. Equity shareholders can't be paid any dividend unless dividend at a fixed rate is paid to preference shareholders. In other words, they are paid the dividend out of the earnings after interest and taxes but before any dividend to equity shareholders. Similarly, at the time of liquidation repayment of capital to the preference shareholders is made after settling the claims of creditors and debentures but before making any payment to equity shareholders. Due to these two preferential rights, these shares are called Preference Shares. The main characteristics of preference shares are outlined below:

  i) **Maturity:** The Company gets fixed capital from the preference shares like the equity shares and it is not bound to repay it. But many times the companies issue redeemable preference shares and fix the time of their redemption under the terms of issue. Such shares are called Redeemable Preference Shares. Redeemable preference shares are redeemed at the option of the company but according to the terms of issue. Sometimes, the companies issue convertible preference shares also. As a result, the preference shareholders have the option to convert their shares in the equity shares of the company. The ratio in which these shares can be converted into equity shares is explained by the articles of the company. The

main objective of issuing convertible or redeemable preference shares is to make the capital structure of company more flexible.

ii) **Claims on Income:** Preference shareholders have the preference in relation to dividend over the equity shareholders. They are paid a fixed rate of dividend on the basis of predetermined terms. Equity shareholders can't be paid any dividend before making any payment to preference shareholders. But it does not mean that it is statutory obligation to pay dividend to the preference shareholders. Even in case of income, they can't legally compel the company to pay them the dividend. The distribution of dividend depends upon the decision of the Board of Directors. But if the decision for distribution of dividend has been taken, dividend the preference shareholders will have to be paid dividend prior to equity shareholders.

Sometimes, the preference shareholders are offered to participate in the additional income of the company, over and above their fixed rate of dividend. Such shares are called **Participating Preference Shares**. As already said that in case there are inadequate profits or the company suffers losses, it is possible that no dividend is paid on preference shares. But many companies arrange for paying the amount of dividend of such years in the coming years. Such shares are called **Cumulative Preference Shares.** If at the time of issue of the shares, it is not cleared whether these shares are cumulative or non-cumulative and no provision has been made in the Articles, these shares will be considered as Cumulative Preference Shares. The main objective of the Cumulative Preference Shares is to attract the investors to invest in the company.

iii) **Claims on Assets:** Although assets of the company are not kept as security with the preference shareholders, yet their claims on assets are better to the equity share-holders. At the time of liquidation of the company, the capital of preference shareholders will be paid back to them before making payment to equity shareholders.

- **Ploughing Back of Profits**: We have already discussed Equity Shares and Preference Shares as long term sources of finance. Besides, ploughing back of profits is considered as an important internal source of finance. When a company does not distribute whole of its profits and wishes to reinvest a part of if, it is called ploughing back of Profits or retention of earnings. Because ploughing back of profits generates financial sources, it is called self financing or internal financing. Retention of earnings is made in the form of various reserves and funds, such as General Reserve, Dividend Equalization Fund etc. Therefore, every year after payment of tax on the income and distribution of a part of it as dividend, the balance is retained in business. Retained earnings can be used to meet both long term and short term requirements of capital. It is an easy and economical source of finance which can be used for the expansion and modernization of business. These accumulated profits can be used to issue bonus shares. The increase in these accumulated profits increases book value of shares. Besides, a company can follow stable dividend policy due to these accumulated profits and business can save itself from business fluctuations. Debts can be paid easily and the efficiency of company increases. However, retention of profits depends upon the total earnings, dividend policy, tax policy

of the government, need for growth, availability of other sources of finance, nature of business of company and the attitude of management etc.

- **Debentures:** Debentures are an important source of long term finance for a company. With the help of this source, company arranges for finance for meeting the requirements of development and modernization after its establishment. The funds acquired by issuing debentures are in the form of loans and its holders are the creditors of company.

  In general sense, debenture is a written certificate issued by the company, for the acceptance of the debt, under its seal. The Companies Act, 1956 does not explain clearly the meaning of the term debenture. It only states that "Debenture includes debenture stock, bonds and any other securities of a company, whether constituting a charge on the assets of a company or not". Section 2 (12), Indian Companies Act, 1956.

  In debentures, the amount of debt, rate of interest and other conditions are mentioned on the basis of which they have been issued and they have to be redeemed. Here, it is essential to explain the difference between debenture and bond. In America, the term bond is meant to indicate a document which creates charge on the assets of the company. There debentures are 'meant as unsecured bond which does not create any charge on the assets of the company. At the time of liquidation, debenture holder is treated as general creditor. But in India, there is no difference in debenture and bond. Both are used as synonyms. Recently several financial institutions such as IDBI, IFCI, ICICI and infrastructural companies have issued bonds which are unsecured. But debentures are secured.

  Characteristics of Debentures

  i) **Maturity:** Debentures have a maturity date. Date of maturity means the date of repayment of debentures. As per the terms of issue of debentures, the debentures should be redeemed after a fixed period of time or on a certain date. When the debentures will be redeemed it depends on a number of factors including the condition of capital and money market at the time of issue of debentures, current rate of interest and goodwill of company. Debenture holders do not want that the company may continue to use their funds for a fairly long period. Rather they want the liquidity and security of their money. If there is great risk, the debenture holders will wish an early payment. The debentures can be redeemable as well as irredeemable. The debentures, for the redemption of which, no date is fixed and are redeemed at the option of the company are irredeemable debentures. In India such debentures are not prevalent.

  ii) **Claims of Income:** The debenture holders have preferential rights on the income of the company. Firstly, the shareholders can't be paid any dividend without payment of interest to debenture holders. Secondly, the income from interest on debentures to the debenture holders is fixed and has to be paid essentially, whether the income of company is more or less than it. If company fails to pay them regular interest, the debenture holders can initiate legal action for liquidation of company.

  iii) **Claims on Assets:** Debenture holders have preferential claim on the assets of the company also as compared to shareholders. Such situation arises in case of liquidation or reorganization of company. In

case of liquidation of the company, the debenture holders get their principal and accrued interest before any payment to the shareholders. Normally, the debenture holders have charge against the special assets so that their interests are secured. Such debentures are called secured debentures.

iv) **Controlling Power:** Debenture holders are the creditors of the company. They do not have any voting rights in the meetings of the company. They cannot participate in the appointment of Board of Directors. But indirectly, they can influence important managerial decisions. For example, they can put a condition to maintain a minimum liquidity ratio or to accumulate fix amount of reserves on the basis of their agreement with the company. But in case the company is paying them interest and principal in time as per contract, they cannot interfere in routine matters of the company.

- **Loans from Financial Institutions:** Generally, the companies raise a large portion of their funds by issuing equity shares, preference shares and debentures for the achievement of their objectives including project expansion, modernization, diversification etc. But due to increase in the cost of projects, the industrial units have to depend on medium term and long term loans. For the fulfillment of their requirements for medium term and long term loans a number of financial institutions have been established at the state level, national and international levels. In India, the financial institutions established at the national level include Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI), Industrial Credit and Investment Corporation of India (ICICI), Industrial Reconstruction Corporation of India, (IRCI), Life Insurance Corporation of India (LIC), General Insurance Corporation (GIC), Unit trust of India (UTI). Besides, at the state level State Financial Corporations (SFCs) and State Industrial Development Corporation (SIDC) have been established. For example, in Haryana, HFC and HSIDC have been established. All these institutions not only provide long term and medium term loans but also provide technical assistance. Before providing financial assistance, technical, financial and economic aspects of the industrial units are evaluated with the help of experts. The financial institutions provide assistance in the following manner.
  1) To provide long term and medium term loans to the industrial units.
  2) To assist in management at the time of their promotion for expansion and development.
  3) To provide them technical and financial consultancy at the time of need.
  4) To subscribe for the shares and debentures issued by the industrial units.
  5) To take part in underwriting shares and debentures issued to the public.
  6) To guarantee the loans given by scheduled banks.
  7) To provide refinancing facility for the loans given by scheduled banks and co-operative societies to the industrial units.
  8) To guarantee the deferred payments.

- **Public Deposits:** Public deposits are an important source of medium term and short term finance of a company. In India, this is a traditional source of finance. After the third five year plan, there has been tremendous increase in the public deposits. In India, normally public deposits are accepted for a period of 3 years. From 1-4-87, the maximum rate of interest on public deposits can be 14%. The private sector companies cannot accept a deposit of more than 35% of their paid up capital and free reserves in which share

of public can be 25% (maximum) and the balance 10% can be accepted from the shareholders. The public sector companies can get all 35% deposits from the public.

There are many reasons for attraction of companies towards public deposits. The cost of these deposits is less than the rate of interest offered by banks. There is no need to mortgage the assets for public deposits. Moreover, public deposits are available for a longer period than bank loans. For investors also these deposits can be quite useful because the rate of interest offered on these deposits is higher than the bank rate.

- **Lease Financing:** Initially, the concept of lease was limited to land only but for the past few years, lease financing is becoming operational in the industrial arena. Lease is a long term source of business finance. Companies can take necessary business assets on lease rather than buying them. If they purchase these fixed assets, they have to pay in full- Contrarily, under lease agreement company gets the right to use the asset after making part payment for it. Under this arrangement, the owner of the asset (lessor) surrenders the right to use the asset in favour of other person (lessee) in consideration of pre-determined rent. After the lease period, whether the asset will be returned to the lessor or it will be retained by the lessee, depends on the terms of lease. Thus, the ownership and the use of assets, in case of lease, lie in different hands. In industrial era, the use of lease financing started after 1980. During this period, the financial needs of the industrial units also increased due to the rise in price level. Banks and other financial institutions were unable to meet these requirements. Banks were overburdened with the credit to the priority sector. With effect from 1987-88, the Government withdrew the investment allowance. Which made the acquisition of equipments on lease to be more useful rather than purchasing them.

5. Short Term Sources of Finance: The short term sources of finance can be divided into two parts.

(A) Banking Sources: The banking sources of short term finance include:

1) **Line of Credit:** Under this source, bank determines the maximum limit of credit for their customers. Customer can withdraw money from bank within the limit. The maximum amount of credit is determined on the basis of goodwill of customer, his size of business, financial position and allied factors. Interest has to be paid on the amount actually withdrawn.

2) **Overdraft:** In this facility, bank allows the customer to withdraw more amount than his actual deposit in his current account. The excess amount withdrawn is called overdraft. The amount of overdraft is also determined on the basis of financial position of business. The quantum of overdraft is generally less than the line of credit. Bank honours the cheques of customers within a pre-determined time frame. Interest is charged on the actual amount withdrawn.

3) **Secured Loan:** Bank generally grants credit on the basis of security of the current assets like inventory. The assets held as security remain in control of bank. As soon as loan is paid by customer, he is allowed to remove goods from the godown. Under this source, bank grants loan after reserving a fair margin. The amount of loan is transferred to the account of the customer. Interest is charged on the whole amount of loan rather than the actual amount withdrawn.

4) **Discounting of Bills:** Customers can discount the bills due on the future date from the bank. The amount of bill after charging discount is transferred to the account of customer. On the date of maturity, branch collects money from the drawee of the bill.

(B) **Non-Banking Sources**: The non-bank sources of short term finance are:

1) **Public Deposits:** Public deposits for a period of one year are short term source of finance. The public deposits for more than one year are included in medium term sources of finance.

2) **Short-term Loans:** Short term loans, secured or unsecured can be taken from other parties excepting banks including merchant bankers, finance companies, co-operative societies, relatives etc.

3) **Trade Credit:** When the goods are purchased and they are not paid immediately, it acts as short term source of finance. This period of credit is short and after sometime, we have to pay for it. Trader has the benefit of not getting loan from any other source during this period.

4) **Advances from Customers:** The manufactures whose products are in great demand, call for a fixed percentage of the value of order to cash as advance from their customers. Goods are actually delivered after sometime. No interest is paid on this advance.

5) **Outstanding Liability:** Sometimes the expenses of business are not paid immediately. The amount is used in business after delaying the payment of these expenses such as taxes, wages, rent etc.

7. Summary: In our present day economy, finance is defined as the provision of money at the time when it is required. Every enterprise, whether big, medium or small, needs finance to carry on its operations and to achieve its targets. In fact, finance is so indispensable today that it is rightly said that it is the life blood of an enterprise. Without adequate finances, no enterprise can possibly accomplish its objectives. Adequate finance is necessary for the efficient operation of business. Neither any business can be established nor its development and expansion is possible without adequate finance. It is required to meet both fixed as well as working capital needs. The various sources of raising long term funds include issue of shares, debentures, ploughing back of profits and loans from financial institutions etc. The short term requirements of funds can be met from commercial banks, trade credit, instalment credit, advances, outstanding expenses etc.

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Project Implementation
Module Id	Module no-35
Pre- Requisites	Basic knowledge about project implementation
Objectives	▪ To study the meaning and concept of project implementation
Keywords	Project Implementation, Project Control, Approaches to project implementation

QUADRANT-I

Module : Project Implementation
1. Learning Outcome
2. Introduction
3. Meaning and concept of Project Implementation
4. Approaches of Project Implementation
5. Steps/Stages of Project Implementation
6. Factors affecting project implementation
7. Problems in project implementation
8. Suggestions for effective project implementation
9. Evaluation of Projects
10. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of Project Implementation
ii. Understand various approaches of Project Implementation
iii. Know about the stages of Project Implementation
iv. Understand the factors affecting project implementation
v. Know the suggestions for effective project implementation

2. Introduction

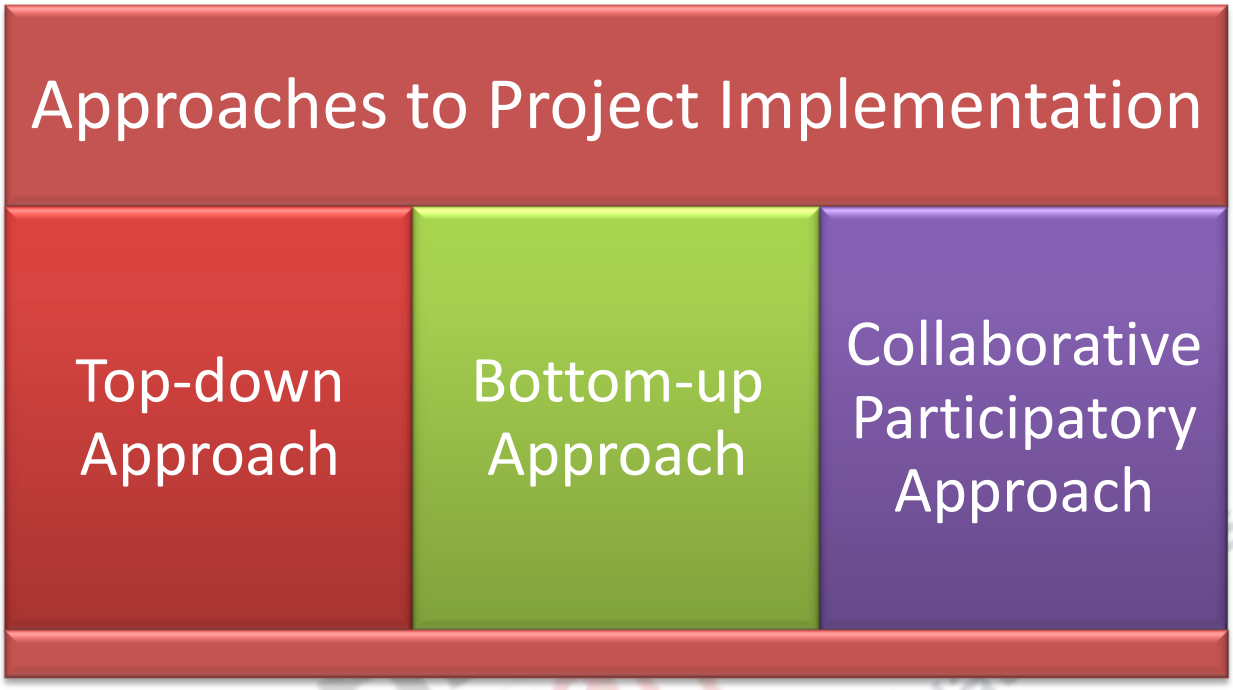
After the selection of a project, the next task of a project manager is to implement it so that a project on paper can be converted into reality. Project implementation can be explained as a process where project inputs are converted into project outputs as set out in the project framework. The process of implementation involves combination of various activities such as planning, scheduling and controlling with the utilization of resources like men, material, machine, technology, money and time which need to be supervised or monitored so that project can be completed within time limits and cost. Project implementation can be explained as that phase of the project where visions and plans are turned into reality. This is the logical conclusion, which is deciding after evaluating the project thoroughly.

3. Meaning and concept of Project Implementation: Project implementation refers to the execution of the project i.e. converting the inputs into outputs. It involves a series of activities which need to be planned, operated and controlled for the utilisation of resources. Project implementation is generally done by the implementing agency. Implementing agency is that institution that initially prepared the project and received funding for it. A project implementation unit set up by implementing agency to carry out the implementation of project on behalf of the implementing agency. If any other institution that participate in the implementation of the project by way of working collaborative relationship, extending some technical collaboration, or involving their staff to assist the project are called as co-operating agency.

Project implementation has two essential elements i.e. project activation and project operation. Project activation is the foundation stage of project implementation and it involves all activities which make the project operational such as establishing project implementation unit, procurement of raw material and equipments, training and development of manpower, recruitment of project manager and other required staff etc. Project operation is the actual management of a project in practical terms. It is related with the development and normal life period of the project. In this process inputs are transformed into outputs following the activities which are laid down in work plan.

4. Approaches to project Implementation:

- **Top-down approach:** In this approach project implementation done by the outside agencies with minimum involvement of the beneficiaries. All staff members and workers belong to that agency only. They may include Government departments, international development agencies etc. This approach is very helpful for that projects which require quick results.
- **Bottom-up approach:** In this approach project implementation done by the beneficiaries. However the financial resources and technical assistance can be provided by the outside agencies.
- **Collaborative participatory approach**: In this approach both top to down and bottom-up approaches to project implementation are applied collectively in the implementation process



5. Steps/Stages of Project Implementation: It is now clear that project implementation is a process that occurs in noticeable stages and there are common elements of successfully implementation programs. The basic steps/ stages of project implementation from which each project have gone through are:

1. Project initiation
2. Project blueprint
3. Authority and responsibility
4. Estimating and arrangement of resources
5. Directing and controlling
6. Establishment of proper control system
7. Directing and controlling
8. Go, live and support

1. **Project initiation:** It is a first stage of every project. In this stage initial planning and preparation for project has to be done. The purpose of this stage is providing help in the approval for the project proposal, appointment of staff and project manager, and estimation of budget etc.
2. **Project blueprint:** The purpose of this stage is to achieve a common understanding of how the organization intends to run its project within the system. Generally it involves projecting the details of the work and decisions are taken about the tasks to be done and by whom and when they are to be done.
3. **Authority and responsibility:** The next step of project implementation is to provide the authority so that responsibility can be assigned. Taking decision as to who is responsible for ensuring that the work gets

done, distributing decision making authority among the project team and the existing organizational units and establishing formal lines of communication are some of the key points in this regard.

4. **Estimating and arrangement of resources:** This step involves estimation and arrangement of various resources such as manpower, machines, materials, money and time for performing the project activities.
5. **Directing and controlling**: This stage involve the activities like motivating the project staff, execution of project activities, and taking corrective measures if there are any difference between set standards and actual performance.
6. **Establishment of proper control system**: Establishment of control system involves determining what information is required for the project control, identifying sources of such information and setting up reporting system for the project.
7. **Go, live and support:** It is a last stage of the project implementation. It is also called termination of the project. In this stage project manager will hand over the responsibility to the existing staff and prepare the final report. It is a time to move from a project-oriented, pre production environment to live production operation.

6. Factors affecting project implementation: There are numerous factors which affect the implementation of project. Some factors are responsible for the success of project whereas some are responsible for its failure. Factors that lead to the success of projects include its preparation, design, management and government commitment. Factors that lead to failure of projects include financial constraints, technical constraints, institutional constraints and political constraints. Now we will discuss these factors one by one:

- **Factors that lead to success of projects**
  1. **Proper planning and preparation:** Successful project implementation greatly depends upon its proper and careful planning and preparation. Projects need to be implemented after they have been carefully prepared.
  2. **Simplicity of design**: Projects that have well defined objectives and which are simple to understand along with appropriate technologies have better chances of being implemented successfully.
  3. **Efficient management**: The success of implementation of project lies in the hands of efficient managers and as such sound project management is a key to project success. Project performance is greatly influenced by quality of management. A competent manger always looks at difficulties as stepping stones and with his capable qualities turns them into opportunities.
  4. **Government commitment**: Government and government policies play a crucial role for the success of any project. So for the successful implementation of project government commitment is a pre-requisite. Government commitment is the resuming interest and active support of those agencies as well as individuals to attain the project's objectives. This can be done through the allocation of financial and human resources or through the working of the administrative and political set-up.

- **Factors that lead to failure of project**

  There are some factors that may lead to failure of the project. These are:
  1. **Financial constraints:** Finance plays a major role in the success of projects. So before implementation of project, manager has to assure ample resources for generating the funds. Financial constraints include

increasing cost due to increase in prices of raw material and wage level, increasing rate of interest on capital, increase in foreign exchange rates etc.

2. **Technical constraints:** Technical constraints include lack of technology, low quality material and machinery, technical defects in installation of machines and other equipments, lack of specialized technical advice or consultants etc.
3. **Institutional constraints:** These are the main cause of implementation delays and cost overruns of projects. Institutional or Management constraints include inadequate management information system, interference of bureaucracy in project administration, lack of training and development facilities, high personnel turnovers, incompetent manager etc.
4. **Political/Government constraints:** As we all know, for implementation of project, government commitment is a pre-requisite. When government not supports the project or commitment of the government is weak, project implementation almost difficult or impossible.

   In addition to these constraints, some other constraints should keep in mind such as delay in allocation of funds for the project, lack of the responsibility and transparency by the project manager, natural calamities, lack of team work etc.

7. Problems in project implementation: There are number of problems which are faced by the project manager for implementation of the project. Some of the main problems are discussed as follows:

1. **Undefined project objectives:** Generally there are segregation between the personnel responsible for the formulation and personnel responsible for the implementation of projects. Often a person who implement the project are not clear about the project objectives because of lack of identity, they develop low morale resulting into poor management. Thus, there is a great need of the involvement of the persons associated with the implementation of the projects at same stage of the formulation and appraise them of full implications of the project.
2. **More emphasis on technology**: Planning team primarily consists of the technical staff. Technical staff emphasis on technical aspect and ignores managerial aspect. So it creates a big problem in project implementation. Further planning team always concentrate to deal with short-term issues, and ignore long-term management issues.
3. **Scarcity of trained and skilled employees**: Sometimes people associated with the project simulation have neither the required skill nor the aptitude to formulate the project in consonance with the goals of the project. So it create hurdle in the implementation of projects.
4. **Ineffective monitoring system**: Weakness of controlling mechanism is also a problem in the way of project implementation. Often project are not completed within the budgeted resources and scheduled time. It is a normal feature to extend the life of the project resulting in the wastage of huge resources. Proper monitoring helps the managers to project implementation with in stipulated time.
5. **Inadequate supply:** It is the duty of the project manager to ensure the availability of required inputs for the production. It is observed that the project get delayed because of the timely availability of all the inputs.
6. **Faulty procedures:** Without developing proper procedures, most of the project personnel remains engaged in unnecessary reports. These procedures should be clearly understood in the initial stage of project so that no confusion arises later on.
7. **Faulty manpower planning**: The success of the project greatly depends upon the quality and quantity of the personnel associated with it. Lack of proper human resource planning is a major obstacle in the process of project implementation.

8. **Follow-up:** Lack of proper follow up of project is also big obstacle in the successful implementation of project.

8. Suggestions for effective project implementation: The following are the suggestions for effective project implementation:

1. **Well defined project objectives:** There is a great need of the involvement of the persons associated with the implementation of the projects and the persons associated with the formulation of the project for the successful implementation. Proper guidance may be provided to them about the project and project objectives. This will help in developing a good rapport between the formulators and implementers of the projects.
2. **Involvement of management:** For the successful implementation of project, management must play active role in project management than only providing money and other resources required for implementation. Further while forming planning team, members of the managerial team also makes a part of the team. Managerial part should not be ignored.
3. **Employ trained and skilled workers**: For the successful implementation of project, trained and skilled worker should be employed or before implementing the project it would be better to organize a workshop for providing training to the persons responsible for the project implementation.
4. **Effective monitoring system**: Proper monitoring should be done in project implementation. Monitoring if properly designed can help the managers keeping the process of implementation as scheduled. The project performance should be compared at different level of time with the controlled indicators.
5. **Adequate supply of inputs:** The project manager should begin the process of procuring the resources immediately after the formulation stage. Because shortage of resources would inflate the cost of project as the other resources would remain idle.
6. **Effective manpower planning and procedures for implementation:** Effective manpower planning is a key to success of the project. It is done through proper manpower planning that only needed people are appointed and that they are utilized to increase the overall productivity, efficiency and effectiveness. Further there are set standards of procedures that are to be followed in the project implementation. The procedures are the effective aid to help the efficient functioning of the project.
7. **Follow-up plans:** There is a great need to improve the capabilities, perception and attitude of the personnel so that they can take corrective decisions in the ultimate interests of the organization. Controlled management and continued support is necessary for the effective fulfillment of plans.

9. Evaluation of Projects: According to A.P. Barnabas "To be most effective, evaluation must not be made merely of physical achievements but also of the cost of such achievements". So careful evaluation is the backbone of all the projects. Evaluation would be futile unless it is carried out in a systematic and coordinated way with clearly defined objectives and consistent procedures applied by the competent valuators. Evaluation can be effective only if there is a well defined format to secure timely, regular and dependable information on the performance of projects. Effective evaluation would help to ensure that proper design procedure and policies carried out and cost saving would be realized by modifying systems through evaluation before, rather than after implementation. Evaluation would also help to ensure compliance with user community objectives before implementation and it would aid in project management and control throughout the life of the project.

Thus proper monitoring and controlling of project is compulsory for effective evaluation of project. Monitoring can help managers in keeping the process of implementation as scheduled. The project performance is compared at different intervals of time with the controlled indicators. Whenever deviations are indicated, causes of deviation are examined and solutions are found to correct the deviations. (Rosy Joshi: Project Management)

Case Study of Project Implementation in Public Sector

The study pertains to implementation of a project for manufacturing ceramic capacitors. To start with, the project was envisaged to be implemented in the joint sector. It entered into a foreign technical collaboration with one of the leading concerns. Later on, due to lukewarm attitude of co-partners, the organization was converted into a wholly owned subsidiary of the state enterprise. The project was formulated well from the angles of financial, commercial, technical, demand and supply consideration. Coming to the implement part, the company relied much on the network techniques and prepared schedules for the various key activities. It placed orders for imported machinery in May 1976 to be received in 8-10 months period. It acquired land on lease basis in October 1976. It also forwarded collaboration agreement for approval of Central Government in the same month. It recruited key staff in January, 1977. During the same period detailed project report and basic engineering work was also finalized. It applied for various licenses during March 1977. In the mean time, financing agencies were approached for the term loan during April to July 1977 and did not experience any difficulty in the process. In the meanwhile, it selected an architect in April with whose consultation. Tenders were floated, civil contractors selected and construction of building work started in May 1977. When the civil works were nearing completion, the company placed orders for balance Indian machinery and also applied to the Central Government for import of raw materials in July-August 1977. It also deputed its personnel in August to the premises of its collaborators for training. According to PERT Chart, installation of machinery was to be completed by March 1978 and the company expected to start commercial production by next month.

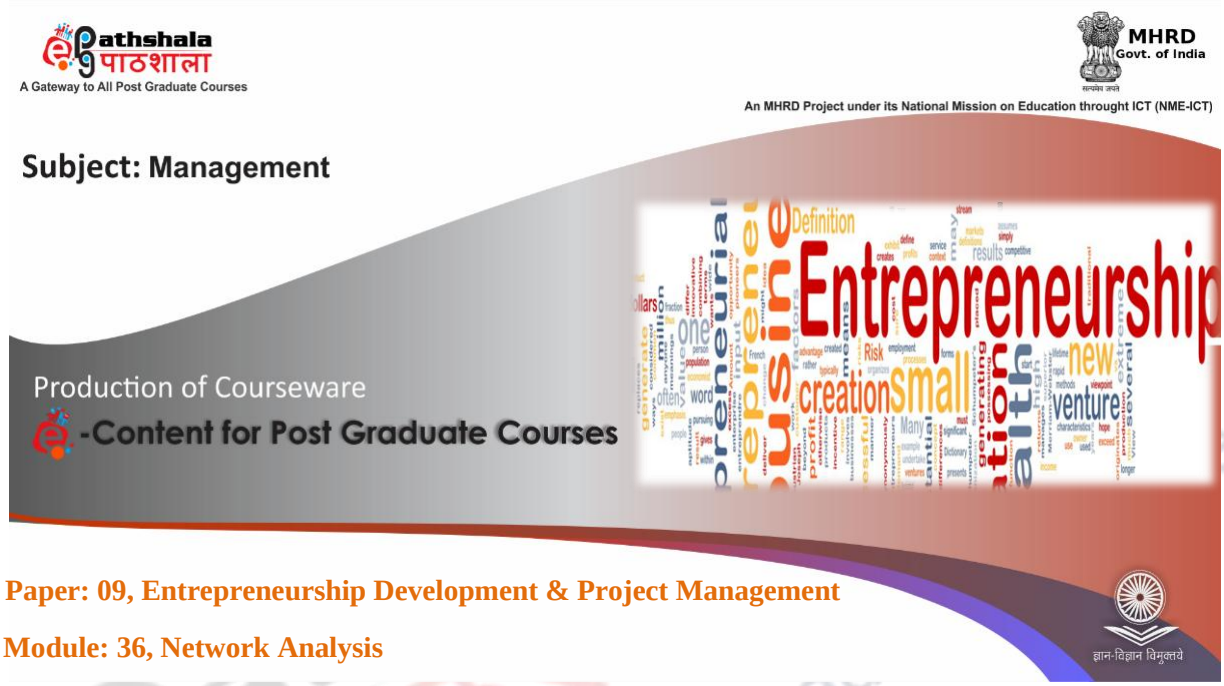
By the time in July 1978, the project was actually ready for commercial production, that is more or less in conformity with the project schedule. So far as project cost was concerned, it was Rs124 lakhs as against the estimated cost of Rs 167 lakhs. There was a reduction in the project cost because the company preferred to purchase some of the equipment locally which was originally proposed to be imported. The above study, thus amply reveals that at no point of time, the project authorities faced any difficulty in the efficient implementation of the project as per the stipulated cost and time.

(Source: B.B.Goel, Project Management)

10. Summary: Project implementation can be explained as a process where project inputs are converted to project outputs as out in the project framework. Project implementation can be explained as that phase of the project where visions and plans are turned into reality. This is the logical conclusion, which is deciding after evaluating the project thoroughly. All projects involve a series of activities such as communicating, training, organization, construction and management. The implementation of project activities converts input to outputs. Outputs are the basic goods and services that the project produces by carrying out the activities. These three levels- inputs, activities and output include resources and actions that a project takes in order to bring about desired change. The interventions that we design in projects are also composed of these three elements. That is to say, interventions are a strategic combination of inputs, activities and outputs. Outcomes, including effects

and impact, represent desired changes the project hopes to bring about. Each project is unique and is aimed at achieving a set of different outcomes.

The purpose of the implementation is to ensure that the project activities are completed as per schedule and within the budget and there are favorable conditions to maintain the desired changes generated by the project after the project as such is terminated. Project implementation steps are repetitive in nature and each project manager will have to adopt the procedures to his own situation depending upon the nature of the project and the organizational structures. There are numerous factors which affect the implementation of project. Some factors are responsible for the success of project whereas some are responsible for its failure. Factors that lead to the success of projects include its preparation, design, management and government commitment. Factors that lead to failure of projects include financial constraints, technical constraints, institutional constraints and political constraints. At last all the projects undertaken need to be evaluated for the results they have achieved or failed to achieve.



Paper: 09, Entrepreneurship Development & Project Management

Module: 36, Network Analysis

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Network Analysis
Module Id	Module no-36
Pre- Requisites	Basic knowledge about network techniques
Objectives	▪ To study the concepts of network analysis
Keywords	Network Analysis, PERT, CPM, Network Techniques

QUADRANT-I

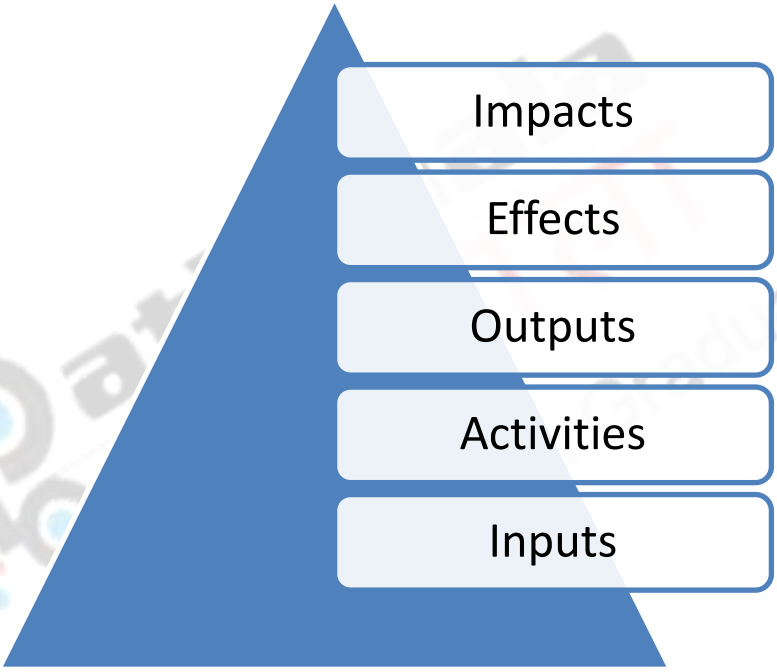
Module : Project Implementation
1. Learning Outcome
2. Meaning and Concept of Network Analysis
3. Importance of Network Analysis/Network technique
4. Classification of Network Techniques
5. Programme Evaluation and Review Technique (PERT)
6. CPM (Critical Path Method)
7. Identification of the Critical Path
8. Similarities between PERT and CPM
9. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of Network Analysis
ii. Understand the Importance of Network Analysis
iii. Know classification of Network Techniques
iv. Understand the concepts PERT and CPM
v. Know the similarities between PERT and CPM

2. Meaning and Concept of Network Analysis: Project formulation and Project implementations are two essential functions of project management. Project formulation ensures the scientific selection of a project whereas project implementation ensures an optimal allocation of time and resources to the project activities. All project design should have contain five elements it should systematically formulates and describe each of the basic elements i.e. inputs, activities, outputs, effects, and impact. Project design should start with defining the desired impact. So we work from the Top down i.e what effects are needed to achieve the desired impact? what outputs are needed to achieve the desired effects? and so on…



Projects should follow this hierarchy. The lowest level in the hierarchy is inputs like finances', raw material, human resources and time. All projects perform various activities like communication, training, organization, construction and management. These activities convert inputs into outputs and all the activities are carried out for the output of goods and services.

Project management is very tough as well as challenging task with many complex responsibilities. Luckily, many tools and techniques are available to support the tasks and performing the responsibilities efficiently. Some require computer knowledge, whereas others can be used manually. It is a duty of the project managers to choose a proper project management tool that best suits their management style. No one tool can serve all project management needs. Project design and network analysis are important tools for effective implementation of the project. They are very useful for development of a detailed work plan of the project and project time profile. A project consists of a numerous activities. It is examined in detail and details are utilized to compile the series wise explanation of the constituent activities of a project. The compilation is known as the project logic. When it is presented in the form of a graphical presentation, it is called the network.

3. Importance of Network Analysis/Network technique: A project has divided into many small activities and these activities can be analyzed with the help of network technique to achieve the objectives of the project.

- Network analysis helps management to minimize the total cost and total maintenance time. With the use of network analysis cost of production can be minimized through reducing the maintenance time.
- Network analysis ensures the effective utilization of limited resources. It also ensures the optimal use of resources and help to control the idle resources so that project can be effectively executed within the budgeted costs and scheduled time.
- Network analysis facilitates co-ordination among the activities as well the persons responsible for project.
- Time management plays a crucial role in every project. Sometimes available resources have to be arranged with a view to reduce the total time for the project rather than reducing the cost of the project. Network analysis helps the managers to manage activities without any delay.
- Network analysis is grea t tool which helps in planning, scheduling and controlling the activities of the project.
- Network analysis also creates inter-relationship as well as inter-dependence of various activities of project. It helps in integrating the project planning and this relationship assists in bringing out the technological inter-dependence of the various activities.
- Network analysis provides the project formulation team an apparent picture of the work elements and also sequential relationship of the project.

4. Classification of Network Techniques: There are number of network techniques which are used by the various people according to their purpose. The main techniques are given below:

1. **CPM:** It is popularly known as Critical Path Method. Critical path method is a project management tool used to formulate a time frame for a project in order to determine where potential delays are most likely to take place.
2. **PERT:** The Programme Evaluation and Review Technique is basically a scheduling technique. It helps project manager in planning, scheduling, monitoring, evaluating, and controlling large and complex projects. It is a probabilistic model and introduces uncertainties in project network.
3. **GERT:** The Graphical Evaluation and Review Technique is a new technique and superior over the above mentioned techniques. In this analysis only simulation can be used.
4. **LOB:** It is known as Line of Balance technique. Line of balance is a graphical technique to show the progress achieved during the project with the help of key events.
5. **PERT/Cost**: It is an extension of the PERT technique to cover the cost of project. It is not only helpful to plan the completion of project within a specific time but also within a specific cost.

6. **WASP:** It is known as Workshop Analysis Scheduling Programme. This method is propounded by The British Energy Authority.

Though there are several techniques but the most commonly used network techniques are PERT and CPM which will be discussed in detail.

5. Programme Evaluation and Review Technique (PERT): Project Programme Evaluation and Review Technique, which is generally popular as PERT, is a sophisticated and a fairly new tool used by the management for planning and control in the case of special project. It is primarily a scheduling technique. It shows any project or job as a set of processes of operations called activities which must take place in a certain sequence. It involves diagrammatic presentation of activities and events involved in a long term project. The diagrammatic presentation is known as Network Drawing/technique and these techniques are most commonly used in project management. PERT was developed in 1958 as a result of collaboration between the operational research division of the United States Navy and a team of management consultants known as Boose Allen and Hamilton. It was developed as a management tool to aid for completing Poloris Ballistic Missile Project which had 250 prime contractors and over 9000 sub contractors engaged in research, development, construction, testing and production of missiles, guidance system and maintenance system. Since then, it has been adopted by many enterprises in different industries. So PERT schedules the sequence of activities to be completed in order to accomplish the project within a short period of time.

Basic objective of PERT is to control time. The execution of project becomes very difficult where long times involved in the planning and scheduling of the project because it involved lot of complexities and inter related activities. So for the successful implementation of the project, project manager is to take some important decisions such as estimation of resource requirement, time for each activity, and maintaining inter-relationship amongst the activities. Thus each project involves various decisions about:

1. What is the expected completion time of project?
2. What will be the effect of any delay on the activity/ project?
3. What type of additional resources needed if project has to be completed before scheduled time?
4. What is the probability of completing the project in time?

PERT is helpful to the project manager for taking decisions about these questions. It is a technique which helps project manager in planning, scheduling, monitoring, evaluating and controlling large and difficult projects. In simple words we can say that projects whose time duration of activities is not exactly known, PERT is used. It depends upon three time estimates of activities.

In PERT below three estimates of time are used:

- **The most optimistic time (t o)**: The minimum time that would be required to perform the activity if everything goes extremely well, the chance of such an optimum activity actually takes place is one in hundred.
- **The most likely time (t m):** The length of time that will, in all probability, be required to perform the job under the given circumstances or normal circumstances.

- **The most pessimistic time (t p):** This is the longest or maximum probable time involved if everything that might logically go wrong does actually go wrong. It includes time for unusual days or unforeseen circumstances. The chance of its happening might also be one in hundred or very less.

With the help of these above mentioned time estimates i.e. optimistic time, most likely time, and pessimistic time, average expected time for each activity would be determined.

Average expected time of the activity**= to+4tm+tp/6**

Procedure followed in PERT

- First of all, the network of activities is drawn to indicate what activity follows what.
- Then estimation of time to complete each activity is noted on the network.
- Estimation of minimum time taken to complete the project.
- Identification of critical activities and allocation of resources so that project can be completed in time.
- Calculation of project variability duration and profitability of the project in given period.
- In order to complete project in time closer watch on critical and other activities.

Advantages of PERT

1. It is very helpful in determine the schedule for a project within time limit.
2. It helps the management to optimum allocation of resources for the project.
3. It helps in taking right decision for the projects at a right time.
4. It is very helpful in determine the expected duration of activities.
5. It helps the management in handling the uncertainties involved in the project.
6. It helps the management to reduce the risk element in the project.
7. It suggests area of increasing efficiency, decreasing cost and maximizing profits.
8. It helps in co-coordinating the various activities involved in a project.
9. It enables the use of statistical analysis.
10. It enables a manager to know in advance, where the trouble may occur, where more supervision needed, and where resources may be transferred to keep the project on schedule.

Limitations of PERT

Although PERT have many advantages, but it also suffers from certain limitations. These are:

1. PERT emphasis only on time. It ignores the cost of a project.
2. It cannot be useful for programmes that are indefinite and vague.
3. Assumption of normal probability distribution is not true.
4. It does not consider the matter of resources required for various types of activities of a project.
5. It seems to be simple but in reality its application is too complex.
6. It is not practicable for routine planning of recurring events.

6. CPM (Critical Path Method): Project Another important method of networking is Critical Path Method. Critical path method was developed in 1956-1957 at the E.I.Dupent Nemours and Co., USA in connection with the periodic overhauling and maintenance of a chemical plant. Critical Path Method basically is a special application of analysis for planning and scheduling. Critical path method was basically developed with the

objective of reducing duration and cost of the project. Critical path method is a special application of network analysis. It uses network analysis for scheduling production, construction projects as well as research and development activities. It is also useful in situations which require estimates of time and performance. Critical path method deals with repetitive type projects, such as overhaul of generating plant, which has to be carried repeatedly after set time intervals.

The critical path, is the overall time, it will take to complete the project. It is the longest path in time through the network. In other words, the longest path in the network is called critical path. Identifying the critical path is of great importance as it determines the duration of entire project. Critical path method differentiates between the planning and scheduling of the project.

A Critical path method is a very important project management tool used to formulate a time frame for a project in order to determine where potential delays are most likely to occur. The process includes a step by step process that provides the developer with a visual representation of potential bottleneck, throughout the course of the project.

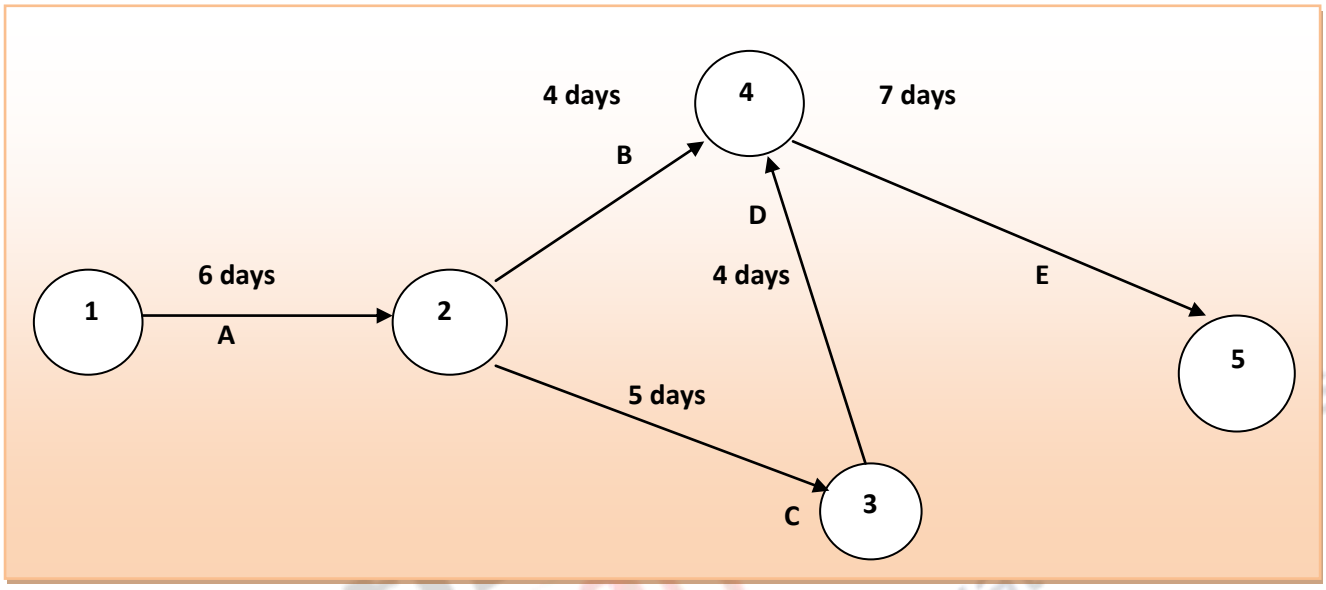
7. Identification of the Critical Path: Project CP is the longest time path through the network. The path can be identified by determining the following parameters for each activity:

- Earliest start time for activity (ES): It is the earliest possible time at which the activity should start if only the ongoing activities are first completed.
- Earliest finish time (EF): It is the earliest possible time to finish the activity. It is equal to the earliest start time for activity plus the time required completing the activity.
- Latest possible finish time for activity (LF): It is the latest time at which the activity can be completing without any postpone or within the time framework.
- Latest possible start time for activity (LS): it is the latest start time for an activity and equal to the latest finish time minus the time required to complete the activity.
- Slack time: Slack time is the difference between earliest start time for activity and latest start time for activity, or between earliest finish time for activity and latest finish time for activity.

Now we will understand it with the help of following example.
Here the information regards the jobs involved in the project with their time duration. Now we have to find out the earliest possible time for completing the project.

Job	**Activity**	**Time Duration**
A	1-2	6 days
B	2-4	4 days
C	2-3	5 days
D	3-4	4 days
E	4-5	7 days
	Total	26

From the given data, we can draw the following network diagram:



In this diagram, the jobs have been shown in the form of arrows leading from one circle to another. In simple words the arrow connecting circles 1 and 2 represents job A and so on. All the activities have been reduced to a network diagram together with the information as regard to time required for the completion of different jobs. In this diagram, there are two paths- the first connects circles 1, 2, 4, and 5 and takes 17 days. The second path connects circles 1, 2, 3, 4, and 5 and takes 22 days. The longest path, called the critical path takes 22 days and hence the minimum time required to complete the project will be 22 days.

So in order to complete the project within scheduled time, attention will have to be given to this path since any delay in time on any job or activity in this path will delay the completion of the project. In case the completion time is to be reduced, steps will have to be taken to reduce the time required for various activities of this path.

Advantages of Critical path method

The following are the advantages of CPM:

- It is very useful for scheduling and controlling of large projects.
- It is simple concept and not mathematically complex.
- It is very helpful in pinpoint activities that needed to be closely watched.
- In CPM, Project documentation and graphics point out who is responsible for various activities.
- It is applicable to a wide variety of projects.
- It is very useful in monitoring schedules and costs.
- It makes better and detailed planning possible.
- It is helpful at many stages of project management.
- It enables standard method for communicating project plans, schedules, time and cost performance.

- With the help of CPM most critical activities are identified and thus more attention can be paid to these activities for the successful completion of project.

Limitations of CPM

- It ignores to incorporate statistical analysis in determining the time estimates.
- It is presumed in CPM that there is a precise known time that each activity in the project will take. But in reality it is not happen.
- Basically it developed as a static planning model and not as a dynamic controlling device. So it cannot be used as a dynamic controlling device.

8. Similarities between PERT and CPM: PERT and CPM both are the networking techniques. Both are the important tools of project implementation. Below are the similarities between PERT and CPM:

- Both PERT and CPM have the same procedure and network diagrams are used in the both the techniques.
- Both PERT and CPM are used to determine the earliest/latest start and finish times for each activity.
- Both PERT and CPM techniques help management to plan, schedule and control the project.
- All significant task and activities are defined in the project by both the techniques.
- The networking principles used in both the techniques is more or less the same.

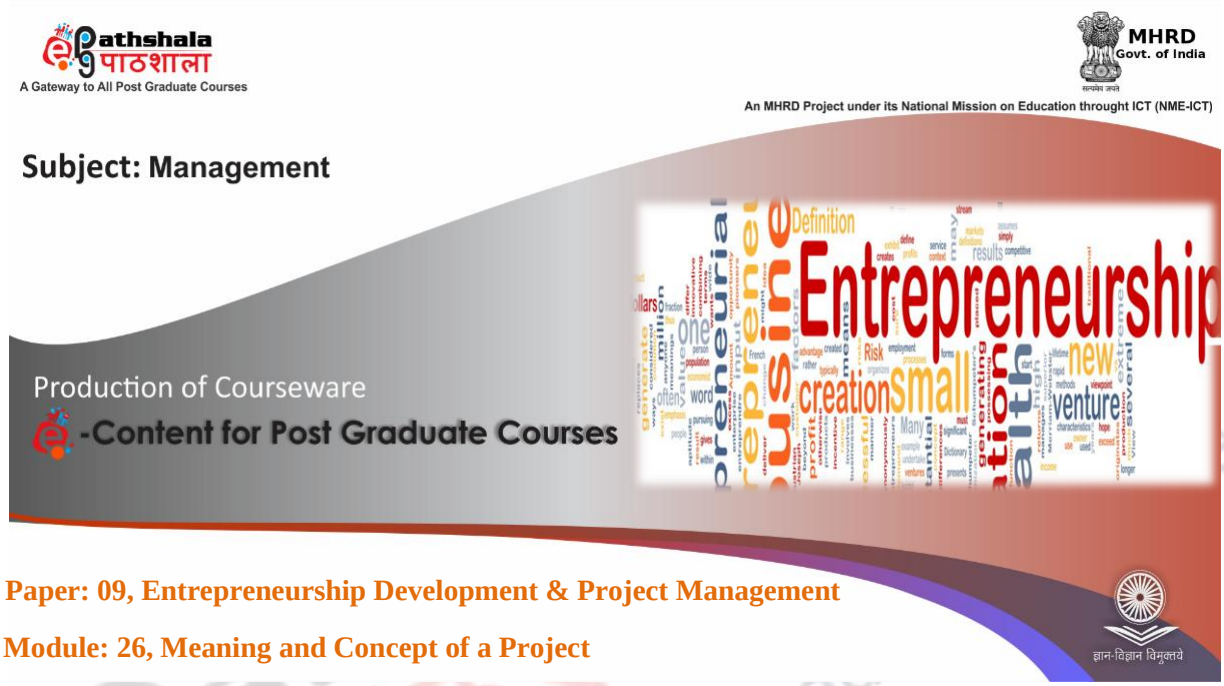
Comparison between PERT and CPM

Although both techniques share some common characteristics, yet there are some differences between them.

- **Origin:** the origin of PERT is military organization whereas origin of CPM is chemical plant (industry).
- **Uncertainty:** in PERT estimates are uncertain whereas in CPM does not allow any uncertainty.
- **Nature:** PERT is used for non-repetitive jobs whereas CPM is used for repetitive jobs.
- **Time/Cost:** PERT stresses on time based concept whereas CPM stresses on cost based concept.
- **Model:** PERT is a probabilistic model whereas CPM is a deterministic model.
- **Time estimates:** PERT has three time estimates whereas CPM has only one single estimate of time.
- **Critical activities/Dummy activities:** in PERT, Critical activities is not used whereas in CPM dummy activities is not used.
- **Suitability:** PERT is suitable where high precision is required in time estimates such as defence projects whereas CPM is suitable where reasonable precision is required such as civil construction.
- **Event /Activity:** PERT is an event oriented whereas CPM is an activity oriented.

9. Summary: Project formulation ensures the scientific selection of a project whereas project implementation ensures an optimal allocation of time and resources to the project activities. Project management is very tough as well as challenging task with many complex responsibilities. Many tools and techniques are available to support the tasks and performing the responsibilities efficiently. . Project design and network analysis are important tools for effective implementation of the project. They are very useful for development of a detailed work plan of the project and project time profile. A project consists of a numerous activities. It is examined in detail and

details are utilized to compile the series wise explanation of the constituent activities of a project. The compilation is known as the project logic. When it is presented in the form of a graphical presentation, it is called the network. Network analysis is a successful technique regularly used to plan, monitor and control the projects involving thousands of activities. There are basic two applications of network analysis that is PERT and CPM. PERT deals with the activities whose duration is not exactly known and CPM is the longest time path through the network.



Paper: 09, Entrepreneurship Development & Project Management

Module: 26, Meaning and Concept of a Project

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Meaning and Concept of Project
Module Id	Module no-26
Pre- Requisites	Basic knowledge about Project
Objectives	To study the meaning and concept of Project, its characteristics and Life cycle of a project
Keywords	Project, Project Management, Capital Investment

QUADRANT-I

Module 1: Meaning and Concept of Entrepreneur, Entrepreneurship & Entrepreneurship Development
1. Learning Outcome
2. Introduction
3. Meaning and definition of a project
4. Characteristics of a Project
5. Classification of a Project
6. Project Life Cycle and its Phases
7. Summary

1. Learning Outcome

After completing this module students will be able to:

i. Understand the concept of a project
ii. Understand the characteristics of a project
iii. Know the classification of a project
iv. Understand Project Life Cycle and its phases

2. Introduction

Effective management of projects is vital for the development of an economy because it is the result of a series of projects managed successfully. This makes project management an extremely important key area for a developing economy such as India. Project management is rapidly becoming an exciting new profession. It is a specialized branch of management which makes it different from others based on a variety of factors which include the organisation structure, planning process, quality of control, human relations etc. Every project requires a professional and peculiar approach to ensure the success of the project. This peculiar approach can be termed as project management. The success of the project depends upon timely completion of the project, within the framework of allocated budget and it must perform upto the desired satisfaction. An ideal project is one which is carefully selected and prepared, thoroughly appraised/analyzed, closely supervised and consistently evaluated. Project management deals with project identification, formulation and appraisal of the project. These three aspects formulate the basic foundation for the success of projects.

3. Meaning and Definition of a Project: The PMBOK (Project Management Body of Knowledge) has defined a project as "A temporary endeavour undertaken to create a unique product, service, or result". It is usually a one-time activity with a well defined set of desired end results. There is a rich variety of projects we used to hear like iron and steel projects, power projects, cement projects, refinery projects, fertilizers projects etc. where the term 'project' is common to all the plants. In each case, the 'project' is used for the plant but after becoming the plant operational, the project is said to be completed. In another case, say the project for methods of improvement. The project is deemed to be completed when methods of improvement has been achieved. Thus, it is not necessary that the term 'project' is always specifically used as project. Take the examples of Lok Sabha/Assembly or Panchayat elections.

A project is neither a physical objective nor an end result-but one which is to do with goings. It includes:

- any non repetitive activity;
- a low-volume, high variety activity;
- a temporary endeavour undertaken to create a unique product or service;
- any activity with a start and finish;
- A unique set of co-ordinated activities, with definite starting and finishing points, undertaken by an individual or organisation to meet specific performance objectives within schedule, cost and performance parameters.

To understand what a project is, let us study how a project is conceived. Project identification is the first stone to be laid down in setting up an enterprise. It is not possible for anyone to come up with an idea and at the very first time, convert it into a business opportunity and start a business on that basis. Persons who are interested to become entrepreneurs must have the ability to generate a large number of ideas so that at least one of the ideas has the potential of business opportunity and adopt a series of steps to finalize it into a profitable business. A project, in very simple words, is a plan or idea intended to be carried out. The success or failure of an enterprise depends on its identification of the project.

In today's competitive environment, every enterprise is looking for good business opportunities for expanding the existing business or setting up new conglomerates. Idea generation is the first step for the growth of

business. The idea must be technically, economically, politically and socially feasible. Once the idea passes these tests, an investment proposal is made. When the investment proposal is approved, the project commences. The concept of term 'Project' can be defined with the help of following definitions:

- Project is a one shot, time limited, goal oriented, major undertaking, requiring commitment of varied skills and resources, a combination of human and non-human resources pooled together in a temporary organisation to achieve a specific purpose.

  -Project Management Institute of America (PMIA)

- A project is whole complex of activities involved in using resources to gain benefits.

  -Gillinger

- A project is an organised unit dedicated to the attainment of a goal, the successful completion of a development project on time, within budget, in conformance with predetermined programme specifications.

  -Encyclopedia of Management

- An investment project is carried out according to a plan in order to achieve a definite objective within a certain time and which will cease when the objective is achieved.

  -Directory of Management

- A project can be defined as a non-routine, non-repetitive one-off undertaking normally with discrete time, financial and technical performance goals.

  -E.L.Hanson

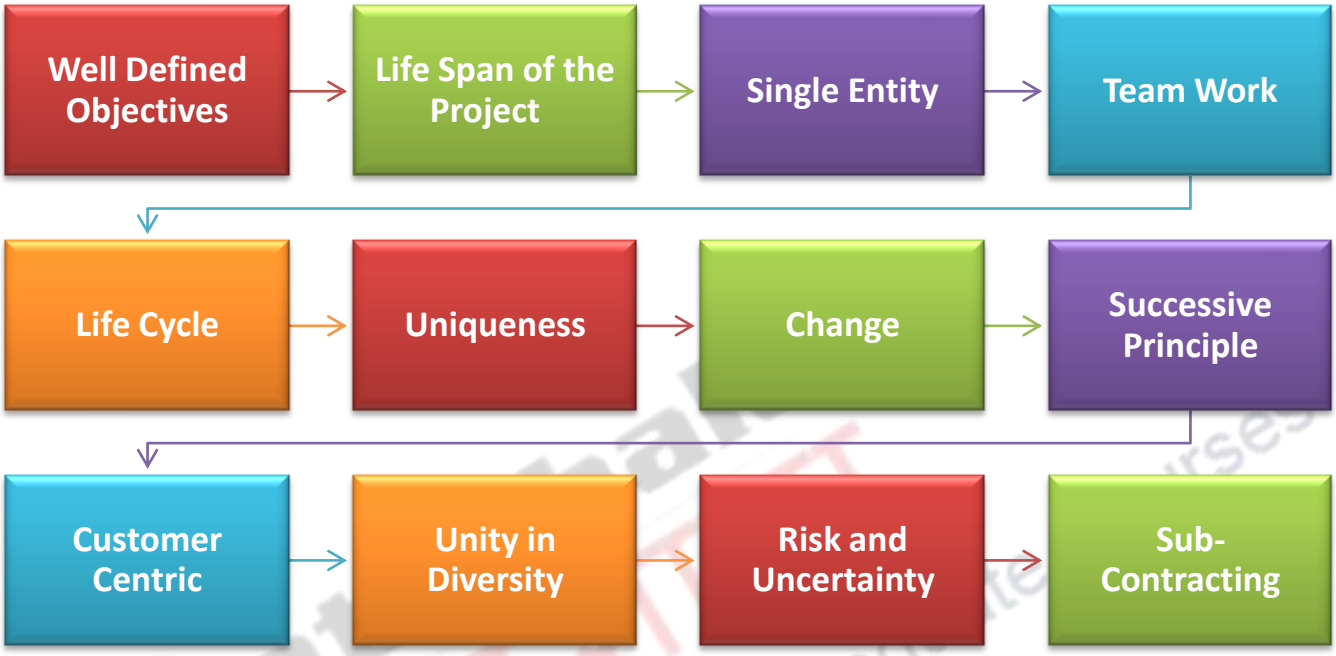
On the basis of above definitions, the following are basic attributes of a project:

- A course of action
- Specific Objectives
- Definite Time Perspective

4. Characteristics of a Project: A project is an economic activity with well defined objectives and having a specific beginning and an end. It can be defined as a scientifically evolved work plan devised to achieve a specific objective within a stipulated time. A project should be well defined and also includes the considerations of various alternative proposals, investigating, engineering and marketing considerations to predict the consequences of accepting the proposal and making economic analysis to determine the profit potential of investment proposal. A project is a big work, a one whole thing. Instead of contributions from many different people, it can still be regarded as one whole thing. The activities may be performed by different people, but all activities are interrelated and are being performed to serve a common purpose. The various characteristics of a project are discussed as under:

1) **Well defined objectives:** Every project must have well defined set of objectives. No project can be without set of objectives. Once these objectives are accomplished, the project ceases to exist. Needless to say that a project is deemed to be completed when the whole things are completed and performing satisfactorily.

Characteristics of a Project



2) **Life Span of the Project:** A project has a limited span of time. It cannot go on and forever. The life of the project may be a few days, a few months or a few years but it cannot continue endlessly. It has to come an end. Normally the accomplishment of given set of objectives represents the end of the project.

3) **Single Entity:** A project is generally treated as one single entity. Instead of contributions from many different people, it can still be regarded as one whole thing. The activities may be performed by different people, but all activities are interrelated and are being performed to serve a common purpose.

4) **Team Work:** A project is single entity and calls for team work. For the successful implementation of planning and strive towards achievement of common goal, the activities of different people are integrated and coordinated. Everyone should feel important and contribute towards the attainment of common goal. The spirit of oneness makes everyone feel important contributing to a big cause.

5) **Life Cycle:** Every project has its own life cycle which starts from growing stage, maturity stage and declining stage. All the stages are closely linked with each other and provide the logical reasoning for the beginning of next stage. The declining stage provides the basis for the renewal of the project. The principal stages of the cycle are the identification of a project, its design, preparation and appraisal, its implementation and its evaluation.

6) **Uniqueness:** Each project has its unique characteristics. It can be exactly similar with any other project even if the plants are exactly identical. The location of the project, its infrastructure, human resources and various other agencies make each project unique.

7) **Change:** A project keeps on changing throughout its life cycle i.e. at different stages of completion. Sometimes these changes are routine changes, while some changes may be major which are capable of changing the very nature or character of the project.

8) **Successive Principle:** There is a big gap between the dream and reality. Similarly what is going to happen in the next stage of the life cycle of the project is not known at any stage. Therefore, a project is successive in nature. Sometimes the practical challenges are known only when the project is implemented.

9) **Customer Centric:** A project should be customer centric. It is always made to the order of the customer. It is made to order because the requirements of each project are very much different. The customer puts their own conditions and stipulates various requirements in terms of time, cost and quality, within which the contract must be executed.

10) **Unity in Diversity:** A project is a unique and a complex set of incalculable varieties. These varieties may be in terms of technology, material, equipment, machinery, human resources, work culture and ethics etc. But in spite of diversities, all activities of the project are interrelated and coordinated in such a manner that it strives for the attainment of common goal of the project.

11) **Risk and Uncertainty:** A certain degree of risk and uncertainty associated with every project. The degree of risk and uncertainty depends on how a project has been passed through the various life cycle phases. A well defined project will have the least degree of risk and uncertainty.

12) **Sub-Contracting:** For the successful completion of the project, it requires the services of many specialised persons. A high percentage of work is done through sub contractors depending upon the complexity of a project.

5. Classification of Project: A project may be classified in different ways. The major categories are described as follows:

1) **Income Yielding Projects:** These are also called profit earning projects and refer to all those projects which enable the concern to earn profits. They lead to increase in sales volume and productivity and tend to reduce cost of production. Such projects may be sub classified as below:

   a) **Replacement Projects:** Which involve replacement of the existing fixed assets. Replacement has to be done because the assets being used have become depreciated, worn out and out dated. Usually replacement funds are created for timely replacement of such assets.

   b) **Expansion Projects:** Which increase the existing capacity or add a new product line. A careful estimate is to be made regarding expansion programmes.

   c) **Miscellaneous Projects:** Which include such items of capitals expenditure as research, development and innovation projects, cost control and cost reduction schemes etc.

2) **Non Profit Projects:** The need may arise to incur expenditure on some permanent items, the object of which is not to earn profit. This has to be done to comply with the instructions of the government, municipal committee, labour department and other law enforcing agencies. Provision of exits, exhaust fans, fire fighting equipment, an effluent clearing plant, safely helmets for workers etc. are some of the examples of such expenditure.

3) **Projects on which a Return is difficult to measure:** There are certain projects which certainly affect the profitability and productivity favourably but it is difficult to assess the income yielded by them. Brown and Haward have given the following list of such projects:

   a) **Mandatory projects:** The projects which are required to comply with some statutory requirements are called mandatory projects.

   b) **Service department projects:** The provision of buildings or equipment for non-manufacturing departments may be essential but the return cannot be evaluated.

   c) **Welfare projects:** Provisions of sports facilities for employees may contribute to raise employee morale, which cannot be evaluated financially.

   d) **Research and development (R & D) projects:** The projects which may be initiated to improve company's methods or products. It may prove unsuccessful or may show no measurable return for a considerable time.

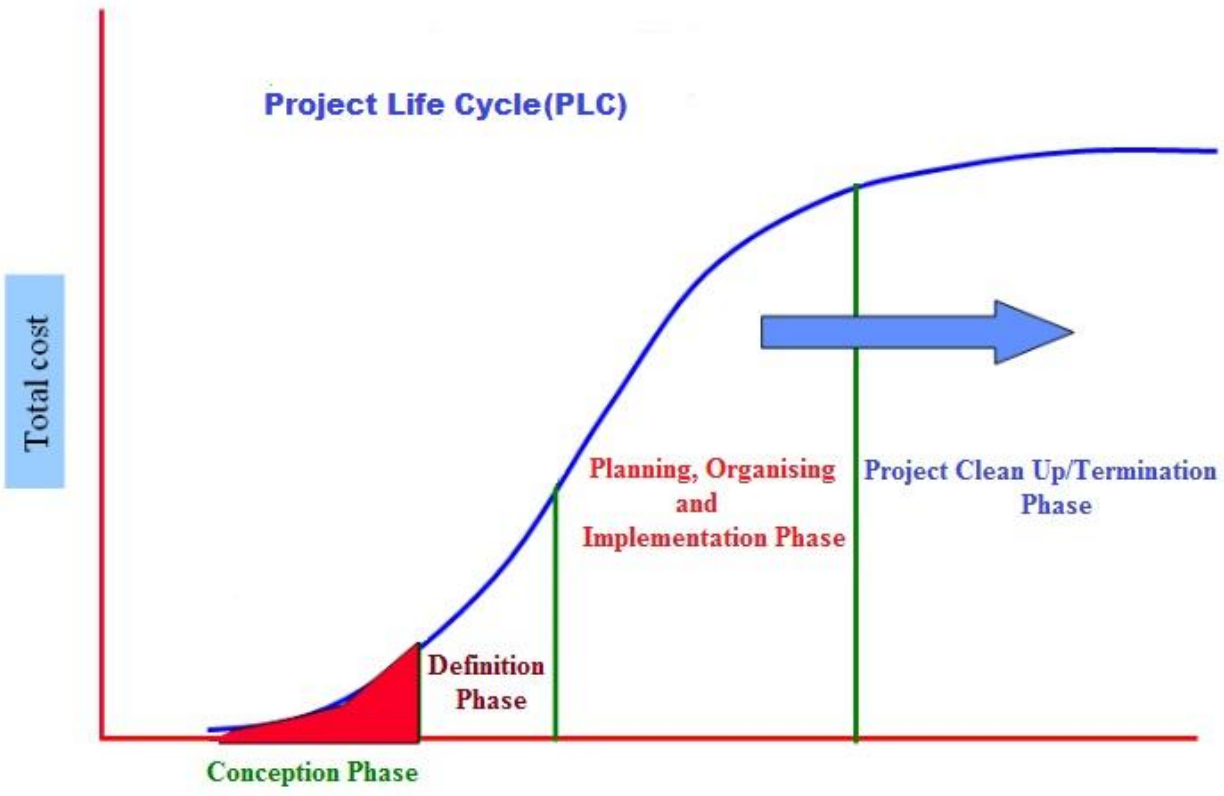
   e) **Educational projects:** Provision of a company training course may be instrumental in improving the efficiency of staff but here again results would be difficult to evaluate.

4) **Sectoral Projects:** According to Indian Planning Commission, these projects are sector specific projects and may fall in any one of the following categories:

- ❖ Agriculture and Allied Sector
- ❖ Irrigation and Power Sector
- ❖ Industry and Mining Sector
- ❖ Transport and Communication Sector
- ❖ Social Services Sector
- ❖ Miscellaneous Sector

6. Project Life Cycle and its Phases: Every project has a life span which may be divided into various broad phases. The attention that a particular project receives is not uniformly distributed throughout it life span, but varies from phase to phase. It is, therefore, necessary to study the various phases in the life of a project. Each project has five stages from start to end. These stages are:

1. Conception Phase
2. Definition Phase
3. Planning and Organising Phase
4. Implementation Phase
5. Project Clean-up/Termination Phase



Though all projects do not follow in reality this sequence and the span of each phase is not definite which is estimated by the experts. It depends upon various factors like the location of plant, the type of product/service, layout of the project, manpower needs, financial requirements etc. Let's discuss these phases one by one:

1. **Conception Phase:** This is the phase during which the project idea is conceived. The idea may be generated in the mind of entrepreneur while tackling and solving many problems of the business. These problems may be non-utilisation of available funds, plant capacity, technology, man power, expertise or expectations of the existing customers from the enterprise. Whatever the situation, the ideas must be put in writing and given some shape before these can be considered and compared with competitive ideas. The ideas have to be examined carefully in the light of objectives and constraints. The acceptable idea will form the basis of a future project. A well conceived project has a long life after it successful implementation.

   However the real life situations may be different as compared to what may have been assumed. Therefore, no original idea goes into operation in its original form. Conception is an important phase in the life cycle of a project. An entrepreneur has to analyse deeply all facts, objectives and constraints before starting of a project because an unsuccessful project may become a liability for the enterprise instead of being an asset.

2. **Definition Phase:** In the phase the idea generated during the conception phase is developed. Facts relating to the idea are collected and presented. A document is produced describing details of the project, necessary information relating to customers or financial institutions to make up their minds on the project idea. The following are the key areas to be examined during this phase:
   - Quality and quantity of raw materials
   - Calculations as to the size or capacity of plant
   - Location and the site of plant
   - The technology to be employed
   - Layout of project
   - Layout of plant and machinery
   - Civil engineering works
   - Manpower requirements
   - Financial requirements
   - Schedule of implementation

   Further indepth studies can also be asked for. If this phase is not properly done, it will increase the risk content of the project. And sometimes hasty decisions may prove disastrous for the project. Therefore, a project is brought into existence only when its idea has been properly conceived, analysed in the definition stage for its successful implementation.

3. **Planning and Organising Phase:** Although this phase starts after definition phase, but in practice it starts with the conception of an idea. Planning, as it is often defined, is making the decision in advance. If planning is not properly done, it may fatal the objective of starting a project. During this phase the firm deal

with the action steps to convert its ideas into reality. Some organisations also prepare 'Project Execution Plan' for the successful implementation of the project. The important aspects cover in the plan are:

- Project infrastructure and supporting services
- Scheduling and Budgeting
- Human Resource Planning
- Licensing and governmental clearances
- Financial Requirements
- Systems and procedure
- Identification of project manager
- Site preparation and investigation
- Construction resources and materials
- Work packaging

Generally this phase is taken as part of the implementation phase because this phase is not confined to documentation or merely paper work but lot of other activities which are important for the project are organised under this phase. Various aspects viz. marketing, technical, financial, economic and ecological are analysed in detail.

4. **Implementation Phase:** This is a very important phase of the project where the people actually see the project first time. Implementation phase for a project involves setting up of manufacturing facilities. It consists of various activities:
   - Project and engineering design
   - Negotiations and contracting
   - Ordering of equipments
   - Construction
   - Training
   - Plant Commissioning
   - Testing and checking

   Implementation phase is a very complex, time consuming and risky. It has a high need for coordination and control. All techniques of project management are applied for the successful implementation of the project.

5. **Project Clean-up/Termination Phase:** This is a transition phase in which projects actually starts working. This phase is considered as clean-up because the project personnel have to perform clean up task like drawings, documents, files, operation and maintenance manuals, catalogues are given to the clients or the owners of the project. To satisfy customers, clients and contractors, the experts are to undertake many test-runs. The most important task during this phase is to plan about retaining of certain employees involved in the execution of the project. All project personnel cannot be suddenly asked to go. The first among the employees to move are the design engineers. Most of them move to new project sites because the same people will never be required again at that site till a new project comes and rest are retained at field for residual engineering.

7. Summary: Project management is rapidly becoming an exciting new profession. It is a specialized branch of management which makes it different from others based on a variety of factors which include the organisation structure, planning process, quality of control, human relations etc. The success of the project depends upon timely completion of the project, within the framework of allocated budget and it must perform upto the desired satisfaction. An ideal project is one which is carefully selected and prepared, thoroughly appraised/analyzed, closely supervised and consistently evaluated. Project identification is the first stone to be laid down in setting up an enterprise. It is not possible for anyone to come up with an idea and at the very first time, convert it into a business opportunity and start a business on that basis. A project, in very simple words, is a plan or idea intended to be carried out. The success or failure of an enterprise depends on its identification of the project. A project is an economic activity with well defined objectives and having a specific beginning and an end. It can be defined as a scientifically evolved work plan devised to achieve a specific objective within a stipulated time. There are various types of projects, some are profitable and some are non-profitable projects. Every project has a life span which may be divided into various broad phases. These phases are Conception Phase, Definition Phase, Planning and Organising Phase, Implementation Phase & Project Clean-up/Termination Phase.

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Paper: 09, Entrepreneurship Development & Project Management

Module: 37, Project Control

ज्ञान-विज्ञान विमुक्तये

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Project Control
Module Id	Module no-37
Pre- Requisites	Basic knowledge about Project Control
Objectives	To study how the project should be controlled from different perspectives and its follow-up
Keywords	Project, Project Control, Project Follow-up

QUADRANT-I

Module 37: Project Control
1. Learning Outcome
2. Introduction
3. Scope of the Project Control
4. Summary

1. Learning Outcome

After completing this module, students will be able to:

i. Understand the concept of a project control
ii. Understand the scope of the project control
iii. Know the techniques of project control

PROJECT CONTROL

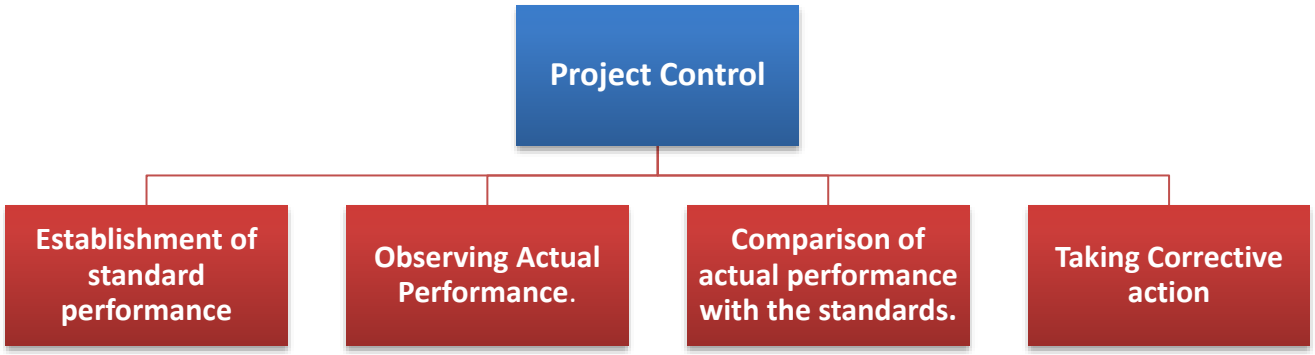
2. Introduction: Control is one of the most important functions of project management. It implies measurement of project performance against the standards and taking corrective actions for deviations to ensure achievement of project goals. The objective of project control is to ensure that everything occurs in conformities with the standards. An unexamined project is not worth for an entrepreneur. Therefore, he has to review the performance of the project time to time from different aspects. An efficient and effective control system enables the project manager to achieve the desired results and helps to predict deviations before they actually occur.
In the words of **Koontz & O'Donell** "Controlling is the measurement & correction of performance activities of subordinates in order to make sure that the enterprise objectives and plans desired to obtain them as being accomplished".

According to ***Theo Haimann,*** "Controlling is the process of checking whether or not proper progress is being made towards the objectives and goals and acting if necessary, to correct any deviation".

Thus, the control process has the following steps:

a. Establishment of standard performance.
b. Observing actual performance.
c. Comparison of actual performance with the standards.
d. Taking Corrective action.

Project control is the process of monitoring, evaluating and compared planned results with actual results to determine the progress toward the project cost, schedule and technical performance objectives, as well as the projects strategic fit with the objectives of the organization.



3. Scope of Project Control: After launching of the project, control becomes the dominant concern of the project manager. In the initiation stage a project manager has to establish the control which involves establishing organization, contracts, schedules budgets, systems and procedures etc and their proper implementation. During next stage, he has to control the ongoing activities of the project when it enters into the production phase. The primary objective of establishing control is the completion of the project and that too within time, cost and according to specifications. Project control has a direct correlation to project progress and stakeholders'

expectations. On the basis of the above discussions, the scope of the project can be discussed in the following parts:

a) **Progress Control**

b) **Quality Control**

c) **Schedule Control**

d) **Cost Control**

a) Progress Control

The primary objective of every project manager is to complete the project. The success of the project depends upon timely completion of the project, within the framework of allocated budget and it must perform up to the desired satisfaction. An ideal project is one which is carefully selected and prepared, thoroughly appraised/analyzed, closely supervised and consistently evaluated. The basis or progress control should be the control of the tasks which occur at the last level of the work breakdown structure. Completion of one task leads to next level of higher level of work and ultimately the whole project. At each stage the progress of the tasks is measured and controlled. The following are the instruments which are used to control the progress of the project:

- Preparation of Tasks List
- Measurement of Progress
- Follow up
- Controlling Overall Project Progress

1. **Preparation of Tasks List:** The first step in controlling the progress of the project is the preparation of a task list. Every employee involved in the project should be asked to prepare a list of tasks involved in their particular activity. Once the task list is prepared, it is very easy to estimate the total quantum of work and the efforts required to complete that work. The list can then be used for keeping track of what has been completed and what remains to be completed. The objective of preparing tasks list is also to functional control of the project i.e. those tasks which require time and do not have much value should be eliminated. It will reduce the work and cost of the project. A task list also specifies the scope of the work. It has to be approved before it is taken up for Implementation. An approved list becomes a work order. If any change is to be made in the work order, it will need the approval and a change order will be required for that. After finalizing the tasks list, it is implemented for progress measurement and control.

2. **Measurement of Progress:** Progress measurement is one of the crucial task of every project manager for the successful completion of the project. He has to measure the progress of the project at every stage to analyze and compare actual performance with the standard. Measurement of individual task is very simple but the problem arises when he has to measure the aggregate performance of the tasks which is full of complexities. Therefore, all tasks cannot be measured by the same unit and the different tasks do not have the same milestones. The overall progress of the project can be measured by assigning weightage to each level of task in proportion to its contribution towards the total installed cost. It can further be analyzed by giving

weightage in proportion to the efforts contributed for the completion of the task. Therefore, for each category of tasks, a list of milestones will be established before the task to measure the progress of the activity.

3. **Follow Up:** To ensure the successful implementation of the plans, proper monitoring and follow up of the project activities is required. It will not only expedite the functioning of the project rather help the organisation to make things move. Once the things start moving, they do not necessarily move in the planned way. So, for the timely completion of the project follow up is essential on day to day basis. Follow up can be done through proper information system, reporting, review of the progress and finding reasons for variance in actual and standard performance. It identifies the steps required to accelerate progress and fixes responsibility for taking these steps.

4. **Controlling Overall Project Progress:** There must be balanced progress in all stages of a project. There are different phases of the project and the progress of one phase must support the other so that there should be balance in each phase. In the initial stage the balance in progress does not become so obvious, but when the progress of the whole project is viewed, any imbalance in different phases of the project becomes the main issue. Moreover, at the lower level if there is a gap between the actual progress achieved and the progress committed, it can be reviewed and controlled but at higher levels it has no meaning because it becomes uncontrollable. Thus, for progress review at higher levels of management, it is necessary to know what progress is required in a particular phase of a project to keep the project moving at the desired rate of progress.

b) Quality Control

The Quality control is a process using which "an organization seeks to ensure that the product quality is maintained/improved and manufacturing defects/variations are reduced or eliminated". Quality control requires the companies to set up an environment in which both entrepreneur and employees put in the best efforts to achieve perfection. This can be done by providing training to employees, setting up benchmarks, testing/inspecting products to check for variations using statistical quality control tools. Quality control is setting up a framework of well-defined control limits. The control limits help in standardization of production and quality aspects. Quality control is "all about setting standards about how much variation is acceptable". For organizations that have adopted quality control as a continuous improvement process, Statistical Quality Control and Statistical Process Control are commonly used tools. "A quality control approach can be highly effective at preventing defective products from reaching the customer. But at the same time if the defect levels are very high, the company's profitability will suffer and this can only be handled if steps are taken to find out and eliminate the root causes of variations taking place". Quality control can be performed through three tools such as, inspection, quality assurance, and total quality management. These three tools are as follows:

- **Inspection:** Refers to the method that detects quality problems at the end of the production process before they reach the final customer. It emphasizes testing of products to uncover products that do not meet specifications. It is a traditional method that enterprises use to achieve the quality standard. In the enterprise, the inspectors of quality control department check the finished items and reject defective or substandard

products. Once the causes of problems are identified, the quality control department tries to change that aspect of production process and procedure to solve the quality problems that occur more often. This control technique has some drawbacks, such as inspection does not add any value to the finished products and services as it is done after the transformation process. Moreover, inspection is an expensive process, in terms of both tangible and intangible costs. For example, materials, labor, time, employee morale, and lost sales.

- **Quality Assurance:** It refers to the method that focuses the efforts on improving quality. It is guided by the belief that "quality comes from improvement of the process not from inspection." In detail, it attempts to improve and stabilize production, and associated processes, so that the issues related to the quality of the product are minimized. A quality assurance process may involve the following:
  - ⇨ Testing of previous articles
  - ⇨ Planning to improve
  - ⇨ Incorporating improvement
  - ⇨ Reviewing new item and improvements
  - ⇨ Testing of the new item

  One quality assurance process involves product evaluation and testing to determine whether they meet standards, such as performance measures. As a result, quality assurance can involve delays in production until all corrective steps have been undertaken. Inspection is treated as one aspect of the overall quality assurance process.

- **Total Quality Management (TQM):** Total Quality Management is an integrated approach adopted by the management with the objective to focus on quality and continuous improvement in all the functional and operational areas of the business. It has been observed that over the time period TQM has contributed substantially in improving the overall capability of the business and helped in sustaining the competitive advantage. TQM focuses on improvements from the very basic foundation of the business. It has also been opined that TQM is not an inclusive solution to all the problems of the business and it cannot solve managerial problems. Customer satisfaction is the key driving force of total quality management. TQM is said to be an enhancement of the conventional way of doing business. For better understanding of TQM, let us break it in following way:

  **Total* – Total means summation of the whole

  **Quality* – Quality is the degree of excellence

  **Management* – management is getting things done through others through planning, organizing, controlling, coordinating directing etc.

  Thus, it is clear that product is treated as quality product when it meets certain or all dimensions of the quality. But quality dimensions as applicable to manufacturing cannot not be applied to service sector. Since the products produced by manufacturing organisations are tangible and can be seen, touched and measured directly for example apparels can be touched and quality can be assessed by touching them, similarly in case of cars, computers etc.it is easy to ascertain quality. Therefore, in case of manufacturing organizations, definition of 'quality' mainly stress upon tangibility as feature of quality. Similarly, it includes conformance which means customers can see whether the product meets the pre-determined standards or not. Performance, reliability, durability and other features can also be easily judged. The degree of perception of quality of each customer vary.

Now, in service organizations, a product is intangible. It cannot be touched or completely seen, it can only be experienced. For example, in case of hospitals, services can be experienced only. Similarly, quality of holiday packages or resorts can be experienced only. These cannot be touched or seen. It is the intangibility of the product, which makes it different from the manufacturing organizations. Since it can be experienced only so the perception of quality is highly subjective. Other than tangibility, some features of quality in service sector includes Courtesy and friendliness of the one who is serving, Promptness in delivery of service, atmosphere where the service is delivered and consistency in delivey of service i.e. everytime the same standards are delivered.

c) Schedule Control

A project manager has to concentrate on monitoring schedules. Schedule is the process of monitoring status of the project in order to update the project progress and manage the changes in the schedule. The project manager has to control the schedule and make sure that all activities are line up with the schedule baseline. It is the proactive task of the project manager. Schedule control is the regular activity of the project manager throughout the project until all the activities have been completed. Schedule control is concerned with:

- Determining the current status of the project,
- Ascertaining factors responsible for the changes,
- Determining the variance in the project schedule, and
- Managing the variance

After calculating the updated schedule and budget, they have to be compared with baseline schedule and budget to analyze and compare the actual performance with the budgeted. The variance between the baseline schedule and budget and updated schedule and budget determines that whether the project is going as per schedule or behind the time schedule. This process continues till the end of the project. Thus, schedule control includes the following steps:

- Complete analysis of the schedule to measure the performance of each activity and making analysis to determine the variance.
- Deciding what corrective action should be taken.
- Revising the current plan to incorporate the changes, and
- Revaluation of the schedule after corrective action

The process will be continued till the planned corrective actions do not result in an acceptable schedule. Thus schedule controlling is a continuous process in order to measuring the performance of the activities as per schedule baseline.

Techniques of Schedule Control

The following are the techniques used to control the schedule:

i. **Variance Analysis:** Variance analysis is a technique to determine the variance in the planned schedule and actual time taken to complete any activity. It compares planning data with actual performance in order to discover delays or variations in the project schedule. For example, the production process of a

project is compared its scheduled start, duration and anticipated completion date with its actual start, duration and completion date in order to calculate the variance in that activity.

ii. **Progress Reporting:** Progress reporting is a technique to report the timely start and completion of the activities and the remaining duration of unfinished activities. In this technique normally a percentage is used to differentiate between the scheduled time and actual time taken to perform the activity.

iii. **Performance Measurement:** Under this method, the project performance is reviewed and compared with project plan. It assesses the reasons for delay and other deviations in completing any activity of the project. This technique helps the project manager to compare the performance of the activities and determine if corrective or proactive action is needed for the project. It can be done with the help of the following:

- Schedule comparison bar charts
- Project management software
- Schedule change control system
- Schedule Variance, and
- Schedule performance index

iv. **Resource Leveling:** Resource Leveling is a technique used by the project manager to review the allocation of resources to existing or new tasks. It will normally cause the resources to be leveled in order to control schedule.

v. **Schedule Compression:** Under this method the techniques like crashing, fast-tracking etc are used to control the schedule. The objective here is to determine an approach either to reduce the plans duration or to accommodate resource limitations.

d) Cost Control

Cost control is the process of monitoring the cost status of the project and controlling the same. The project manager has to monitor and control the budget of the project. The basic objective of controlling cost is that the project must stay within funding limitations. Under this process the project manager finds the variance in budgeted cost and actual cost and also make necessary actions to ascertain the reasons for such variance. He must control the factors contributing such variance. He should take appropriate steps to bring the actual cost in line with the budgeted cost either by modifying the future plans or changing the way to performing the work. For small projects it is easy to analyze the cost for the whole project but as the project becomes larger and more complex, 'cost centres' are to be established at various segments of the project.

Techniques of Cost Control

There are many techniques used to control the cost. Some of these are discussed as below:

i. **Project Budgeting:** The term Project Budgeting refers to long term planning for proposed capital expenditure and their financing. It includes both raising of long-term funds as well as their utilization. It is defined as a firm's formal process of investment in capital assets. Project budgeting is the decision making process by which a firm evaluates the acquisition of its major long term/fixed assets. It involves an enterprise's decision to invest its current resources for addition, disposition, modification and replacement of fixed assets. Thus, Project Budgeting consists in planning the deployment of available

capital for the purpose of maximising the long term profitability of an enterprise. Adhering to the project budget at all times is the key to the profit from project.

ii. **Tracking of Costs:** Tracking of costs is another method to control the costs of the project. Keeping track of all actual costs is also equally important as any other technique. At the foremost the project manager has to make the budget of all the activities to be undertaken in the project and keep track of the budget in each phase of the project. The actual costs will have to be tracked against the periodic targets that have been set out in the budget. These targets could be on a monthly or weekly basis or even yearly if the project will go on for long.

iii. **Time Management:** Another technique to control cost is effective time management. This technique is not only useful in cost control but in various management areas. Time management plays an important role in controlling activities as the delay in completion of any activity will increase the cost of the project. Therefore, the project manager would need to constantly remind his team about the deadlines of the project in order to ensure that work is completed on time.

iv. **Earned Value Management:** Earned Value Management is an effective technique for controlling cost. Its strength is that it looks at cost, time, and task completed within the scope of the project simultaneously. It uses a work breakdown structure (WBS) and budget created during the development stage, but tracks these metrics during the implementation stage of the project. This technique is particularly helpful for large project.

v. **Forecasting:** Under this technique the project manager not only consider the historical facts but also take into account the future costs and revenues. Forecasting uses techniques for determining new cost values on the basis of the experiences made during the project.

vi. **Project Performance Reviews:** In order to check the health of the project, project performance reviews are required. The performance of the project is reviewed with the help of cost and schedule. However, other parameters such as scope, quality and team morale may also be used for this purpose. Project performance reviews use earned value analysis and forecasting to compare cost performance.

4. Summary: Project control is the process of monitoring, evaluating and compared planned results with actual results to determine the progress toward the project cost, schedule and technical performance objectives, as well as the projects strategic fit with the objectives of the organization. It becomes the dominant concern of the project manager. The primary objective of establishing control is the completion of the project and that too within time, cost and according to specifications. The success of the project depends upon timely completion of the project, within the framework of allocated budget and it must perform up to the desired satisfaction. An ideal project is one which is carefully selected and prepared, thoroughly appraised/analyzed, closely supervised and consistently evaluated.

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Module: 38, Significance and Role of Small Scale Industries

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Significance and Role of Small Scale Industries
Module Id	Module no-38
Pre- Requisites	Basic knowledge about role of small scale enterprises
Objectives	To study how the Small Scale Industries contribute in the development of economy.
Keywords	SME, SSI, Small Scale Enterprises, Small medium Industries

QUADRANT-I

Module 38: Significance and Role of Small Scale Industries
1. Learning Outcome
2. Introduction
3. Scope of the Project Control
4. Summary

1. Learning Outcome

After completing this module, students will be able to:

1. Understand the concept of Small Scale Enterprises
2. Know the distinction between Micro, Small and Medium Enterprises
3. Understand the characteristics and significance of Small Scale Enterprises
4. Understand the contributions/role of SSEs in the Economic Development

SIGNIFICANCE AND ROLE OF SMALL SCALE INDUSTRIES

2. Introduction

Small scale sector occupies an important position in the industrial structure of our country. In a country like India, wherein on one hand there is the acute problem of unemployment and on the other hand scarcity of resources, therefore in such circumstances only the small scale sector is best suited to cater the needs of new entrepreneurs. Small scale industries play an important role in creation of employment with low capital investment. Thus, small scale industries play an important role in the development of the economy of the nation. The small-scale sector contributes around 40 percent to the total exports of the country, therefore it plays an important role in the development of Indian economy. In terms of value added it contributes to about 40 percent of the manufacturing sector and 80 percent of industrial production is from this sector.

The role of small scale industries is one of the important features of the planned economic development of India. In India this sector has been assigned with the significant role in the industrialization and economic development of the country and subs-serving the national objective of growth with justice. Its crucial role has been increasingly recognized as a solution for the country's problems of scarce capital, wide spread unemployment, regional imbalance of industrial development, inequitable distribution of National Income etc.

3. Definition of Small Scale Enterprises

The definition of small scale Enterprises is defined in different ways depending on country's pattern and stage of development, policy aims and administration set up. An SSE can be defined as a privately owned and operated business unit that is composed of a small number of employees and has relatively low turnover. In the words of **P. Neck**, *"Small enterprises are those in which the management lies in the hands of one or two people who are responsible for the major decisions."*

This definition draws a critical management feature of SSE in which one or two people bear the responsibility of many functions, which is generally distributed among several people in a large-scale enterprise. This characteristic is evident in many SSEs. SSE is defined differently in different countries depending on their economies, for example, an SSE in the US may be a large-scale enterprise in India. SSE can be classified on the basis of number of employees, capital invested, turnover, and type of business. For example, in African nations, a business unit is considered to be an SSE, if it employs 5 to 50 people. On the other hand, in Asian countries, it is between 30 and 100, whereas in the US it is any number less than 500. SSEs play a significant role in creating employment, utilizing resources, generating income, which, in turn, helps in the economic development of a country.

In India, Small-scale Industry (SSI) or small-scale sector lies between the organized sector represented by large-scale industries and the unorganized sector of widely dispersed cottage industries. Small-scale sector is defined in terms of certain criteria, such as investment ceiling on the original value of the installed plant and machinery, number of workers employed, use of power, plant capacity, and volume of output. The most acceptable criterion of defining the small-scale sector in India is the ceilings on investment in plant and machinery. The small-scale sector includes the following undertakings or enterprises:

- **Small-Scale Industrial Undertaking:** It refers to an industrial undertaking in which the investment in capital assets, such as plant, industrial equipments, machinery etc. (whether it is acquired or taken on lease, or by hire-purchase) does not exceed Rs. 1 crore. If the industrial undertaking exports 30% of its annual production by the end of third year from the date of its commencing production, then the limit of investment in fixed assets in plant and machinery is Rs. 5 crores.
- **Ancillary Industrial Undertaking:** It refers to an industrial undertaking that deals with the production of small equipments or spare parts, components and tool kits or the rendering of services. An ancillary industrial undertaking needs to provide at least 50% of its products and services to other undertaking. It is important to note that the investment of an ancillary industrial undertaking in fixed assets should not exceed Rs. 1 crore.
- **Micro or Tiny Enterprise:** Refers to an enterprise in which investment limit in plant and machinery is Rs. 25 lakhs irrespective of location of the unit.

4. Distinguishing between Micro, Small, and Medium Enterprises

In India, enterprises are broadly grouped into two categories, namely, manufacturing enterprises and service enterprises. These two categories of enterprises are explained as follows:

- **Manufacturing Enterprises**: Refer to enterprises engaged in the production of goods, such as textiles, coir items, chemicals, and beauty products
- **Service Enterprises**: Refer to the enterprises involved in providing or rendering of services, such as tailoring, dry cleaning, and desktop publishing

According to the provision of Micro, Small & Medium Enterprises Development (MSMED) Act, 2006, the aforementioned two categories are further classified into MSMEs on the basis of amount invested on plant and

machinery (in the manufacturing sector) and on equipment (in the service sector). The difference between MSMEs on the basis of investment ceilings are given in Table-1:

Table-1: Investment Ceilings for MSMEs		
Enterprises	**Investment in Plant and Machinery in Manufacturing Sector**	**Investment in Equipment in Service Sector**
Micro Enterprises	Does not exceed Rs. 25 lakhs	Does not exceed Rs. 10 lakhs
Small Enterprises	More than Rs. 25 lakhs, but does not exceed Rs. 5 crores	More than Rs. 10 lakhs, but does not exceed Rs. 2 crores
Medium Enterprises	More than Rs. 5 crores, but does not exceed Rs. 10 crores	More than Rs. 2 crores, but does not exceed Rs. 5 cores

5. Characteristics and Significance of Small-Scale Enterprises

As discussed earlier, SSEs play a significant role in the economic development of a nation. Following are the characteristics of an SSE:

- **Labour Intensive:** SSEs provide employment opportunities to individuals in urban and rural areas, which, in turn, enhances the economic position of the country.
- **Flexibility:** Implies that SSEs adapt themselves as per the dynamic industrial environment.
- **Innovative:** SSEs use new and innovative techniques, materials, methods of production, new markets, sources of materials, and even new forms of organizations such as sole proprietorship, partnership, and co-operatives.
- **Decentralization:** SSEs facilitate a balanced growth of the economy as a whole due to dispersal of industries.
- **Outlet of Entrepreneurial Spirit:** It represents the enthusiasm, persistence, and creativity of an individual who establishes the enterprise.

The significance and relevance of SSEs are discussed as below:

- Utilize locally available human and material resources and expertise/experience
- Create jobs at relatively low cost
- Improve the lifestyle and living standard of people
- Diversify the industrial structure
- Help in increasing the national productivity

- Contribute approximately 35 to 40 percent of export
- Prevent the creation of monopoly
- Ensure more equitable income distribution
- Attract and utilize indigenous entrepreneurship and encourage women entrepreneurs
- Develop a pool of skilled and semi-skilled workers as a basis for future industrial expansion
- Prevents regional imbalances by their presence in backward, rural, and the exterior most part of the country
- Adapt appropriate technological managerial approaches optimally
- Facilitate a favorable balance of trade
- Role of Small-Scale Enterprises in Economic Development

SSEs constitute a vital and decisive segment of small-scale sector. They account for 40% in the manufacturing sector and contributes approximately 35% of the total direct exports. SSEs play a crucial in employment generation, resource utilization, and income generation, due to their unique economic and organizational characteristics, which, in turn, help in the economic development of a country. In India, the emphasis is given to the development of SSEs; therefore, the government formulates several policies and programs to promote SSEs.

6. Contribution/Role of SSEs in the Economic Development

The contribution of SSEs is explained as follows:

1. **Employment Generation:** SSEs made a significant contribution in employment generation and rural industrialization due to their high labor intensive nature. Thus, the employment growth rate of SSI is higher than that of the large sector.
2. **Higher Productivity:** It refers to the fact that SSEs with a lower level of investment tend to achieve a higher productivity of capital than large-scale enterprises. It has been estimated that an investment of Rs. 1 lakh in fixed assets in small-scale sector produces 4.62 lakhs worth of goods or services, which are an approximate value addition of 10% to the total investment. Due to this unique characteristic, SSEs contribute to national productivity.
3. **Poverty Alleviation:** SSEs contribute in mitigating poverty by providing employment opportunities to people in urban and rural areas. SSEs create a large number of job opportunities and are focused on utilizing the traditional skills and knowledge of individuals along with advanced technologies, capital, and innovative marketing practices. According to a study conducted by World Bank, small to medium enterprises sponsor projects with a noticeably higher proportion of unskilled workers in comparison to medium to large enterprises. SSEs provide job opportunities to even those individuals, who are overlooked by large or modern enterprises, which directly help in alleviating poverty.
4. **Better Utilization of Local Resources:** SSEs make the efficient use of locally available resources, whereas large enterprises usually have a great propensity to import raw materials and capital goods. For example, SSEs are usually focused on fulfilling the demand of domestic market, while using the local

resources, such as land, labor, and raw materials. Moreover, SSEs are labor intensive in nature and make the efficient use of labor. The labor intensive techniques in large enterprises usually pose special difficulties, such as labor union demands or government regulations, which rarely create problem for SSEs. Therefore, SSEs are better able to use indigenous resources than large enterprises.

5. **Tapping of Savings:** SSEs generally have a potential of saving a large portion of their income. The empirical evidence shows that small-scale entrepreneurs are motivated to save for future investment purposes. By reserving a good proportion of their income, small-scale entrepreneurs can ensure their strong base and secured existence. This also helps in reducing the dependence of small-scale entrepreneurs on institutional sources of financing.
6. **Utilization of Domestic Technology:** It implies that SSEs are more likely to use relatively simple, general-purpose machinery that is often obsolete as per the standards of developed countries. Such machines are usually manufactured locally in small machine shops. In this way, the local industries involved in producing machinery and equipment and the local repair shops become closely familiar with the SSEs machinery and equipment requirements. Thus, SSEs promote machine building and adaptive capability evolution by using simple less efficient or elegant machines.
7. **Regional Balance and Rural Development:** SSEs contribute in maintaining regional balance and the development of rural areas to a large extent. In developing countries, industry is generally highly concentrated in few places resulting in regional imbalances and migration of people from rural areas and small towns. SSEs due to their locational flexibility require less infrastructure facilities and usually serve to a narrower geographical market, which results in maintaining the regional balance of the country. The relatively labor intensive technology of SSEs is appropriate for the lower wage rates prevailing outside metropolitans, that are small and medium towns and rural areas. This helps in the development and progress of small and medium towns and rural areas. Apart from this, underemployment is the major problem in rural areas due to slack agricultural seasons resulting in depressed rural incomes and increased migration of people to cities. Generally, SSEs involved in agricultural processing business create employment in rural areas. Other small scale involvements in rural areas include black-smithing, brick-making, tailoring, carpentry, and furniture-making.
8. **Export Contribution:** The number of small-scale undertakings involved in export is more than 5,000. The overall contribution of SSEs to the total export of India is approximately 35%. The direct export channel of SSEs includes merchant exporters, trading and export houses, and export orders of parts and components that are used in finished exportable goods by large-scale units. The major items of export by SSEs are low-skilled labor-intensive goods, such as readymade garments, leather products, gems and jewelry items, sports and plastic goods, chemicals, and processed food.
9. **Contribution to Decentralization:** SSEs prevent the concentration of power in few hands and ensure equitable distribution of wealth. It is evident that a number of SSEs are located in rural areas. On the other hand, large-scale industrialists take interest in locating their industries only in urban centers, which results in the accumulation of wealth in certain areas only.

10. **Complementary to Large-Scale Industries:** It signifies that SSEs produce various types of components, such as spare parts, tools, and accessories, which are required by the large-scale industries. In addition, SSEs also help in distributing the goods produced by large-scale industries. In this way, SSEs are complementary to large-scale industries.

7. Small-Scale Enterprises in Indian Environment

India has experienced a noteworthy growth of SSEs post-independence. SSEs have played an important role in the creation of employment opportunities in urban and rural areas. In addition, they have contributed to the export growth of India to a large extent. In this way, SSEs have helped in the economic development of India by increasing the national income. Small-scale sector include a wide spectrum of industries categorized under small, tiny, and cottage industries, ranging from craftsmanship, ancillary undertakings, EOUs, women-run enterprises, and SSSBEs to modern productive units with large investments. The emerging needs of the small-scale sector, such as protection against large-scale industries and foreign competition, have forced the Indian government to revise the investment ceilings for this sector. The current revision in investment ceilings for plant and machinery for SSEs is Rs. 1 crore and for service-related industrial enterprises is up to Rs. 10 lakhs. The main objectives of this revision is to enhance the growth of SSEs in the private sector, promote technological upgradation, improve the quality of existing SSEs, and boost exports.

In India, the small-scale sector can be further sub-divided into two categories, namely, traditional sector and modern sector. A significant number of SSEs in the traditional small-scale sector are located in rural belt as well in urban areas. The traditional small-scale sector includes khadi, village industries, handlooms, handicrafts, sericulture, and coir industries. On the other hand, the modern small-scale sector includes textile products, wood, furniture, paper and printing, metal products, chemicals, rubber and plastic products, electrical machinery, and transport equipment.

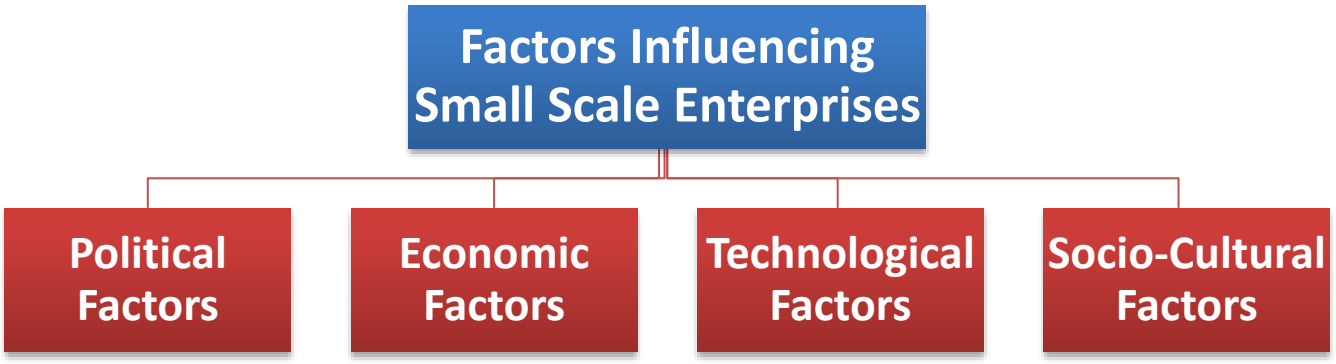
In India, since the beginning of planning in 1950-51,considerable efforts have been made to promote small-scale sector as a part of national development plans. At the time of independence, agriculture was the main source of employment for people, but with increasing rate of population, it became impossible to employ everyone in the agricultural field. Even, large-scale sector in India was also unable to provide employment to a large number of people as the investment cost per job is usually high there. Thereby, the government has formulated several policies and schemes for the development of SSEs because of their labor intensive nature.

8. Factors Influencing Small-Scale Enterprises

An SSE can be successful if the environment in which it operates is conducive. There are several factors in the environment that affect the performance of an SSE. Some of the important factors are explained as follows:

- **Political Factors:** Imply that overall political environment of a country affects the performance of an SSE. An SSE needs requires constructive measures from the government and political bodies to establish and expand its business. These measures involve investment policies, creation of promotional agencies, industrial estates, and free trade zones as well as availability of low cost loans for SSEs.

- **Economic Factors:** Signify that an SSE should take into consideration the economic environment of the country. Analyzing the economic environment helps the SSE in making investment decisions, determining market conditions, and forecasting.
- **Technological Factors:** Refer to the fact that an SSE needs to adjust itself according to the changes in the technological environment. An SSE needs to introduce new technologies or update the existing technologies to keep pace with the increasing competition.
- **Socio-Cultural Factors:** Play a crucial role in the success of an SSE**.** An SSE needs to fulfill the following conditions for its survival:
  - ⇨ Accepting change in the society and culture
  - ⇨ Facilitating social mobility
  - ⇨ Tolerating profit-making
  - ⇨ Tolerating private ownership



Apart from the aforementioned factors, a stable and well developed institutional framework, such as banks, insurance, and capital market, is indispensable for the emergence and growth of SSEs. In the recent decades, the world economy has experienced an unexpected growth due to the emergence of SSEs. India is leading the way to introduce entrepreneurship development programs to identify and utilize entrepreneurial talents of individuals from all walks of life. Apart from this, entrepreneurship development programs are now being introduced in schools and colleges.

9. Summary

In this module, you have learned about SSIs and their importance in economic development. The module has mentioned differences among micro, small, and medium enterprises on the basis of investment ceilings. It has explained the characteristics and significance of SSIs. In addition, the lesson has discussed the condition of SSIs in Indian environment in detail. Further, it has detailed upon various political, economic, technological, and socio-cultural factors that influence SSIs. As small scale industries play a significant role in the development of any country's economy, therefore the role and contributions of SSIs is also discussed in this module. Small Scale Industries can be successful if the environment in which they operate is conducive. There are several factors in the environment that affect the performance of an SSIs. Some of the important factors are also explained in this module for better understanding of the topic.

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Paper:09, Entrepreneurship Development & Project Management

Module:39, Commercial Banks and SMEs

ज्ञान-विज्ञान विमुक्तये

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development& Project Management
Module Title	Commercial Banks and SMEs
Module Id	Module no-39
Pre- Requisites	Basic knowledge about the role of commercial banks in promoting SMEs
Objectives	▪ To study the role of commercial banks in financing SMEs ▪ To know about the facilities and products of commercial banks for SMEs
Keywords	Commercial banks, SMEs, financial products for SMEs

QUADRANT-I

Module 39: Commercial Banks and SMEs
1. Learning Outcome
2. Introduction
3. Loan Advancing Schemes of Commercial Banks to Small Business
4. Principles of Good Lending to Small Business
5. Problems faced by banks in financing small scale entrepreneurs
6. Summary

1. Learning Outcome

After completing this lesson, you will be able to:

i. Understand the objective of commercial banks for financing SMEs
ii. Understand the fund based and non-fund based facilities of the banks for SMEs
iii. Know about the principles of lending for SMEs
iv. Understand the problems faced by banks in financing small scale entrepreneurs

2. Introduction: The Indian Financial System today consists of an impressive network of banks and financial institutions and wide range of financial instruments. Indian banking is an active participant in reshaping deregulated environment of Indian economy. The banks initiated a number of measures to respond to the changed environment of economy in addition to their traditional banking services to fulfill the newly emerging demands and aspirations of the small scale industries. The banks have introduced various innovative financial products and services like venture capital finance, factoring, lease financing, loan syndication and other merchant banking services etc. for providing financial support to SSEs. Banks play a significant role in the development of a country. Indian banking has contributed the economic development in the last seven decades in an effective way. A sound banking system is indispensable in the modern economy. Now banks have not only plays a role of financial intermediaries engaged in the mobilization of resources and lending them to industry, rather they acted as an agent of change in the Indian economy. The extent of services offered differs from bank to bank, depending upon the size and type of bank.

3. Loan Advancing Schemes of Commercial Banks to Small Business: Bank loans can be advanced through following different schemes to small scale industries:

(A) Fund Based Facilities

Many types of advances are allowed by the commercial banks in India. Demand loans are given normally for the purchase of fixed assets, whereas working capital facilities are allowed for acquiring current assets etc. Various types of fund based facilities are discussed below:

1. **Loans:** In a loan account the entire amount is paid to the business firms at one time or sometimes in instalments either in cash or by transfer to its account or by making payment directly to the supplier of goods, machinery or vehicle etc. No subsequent debit is ordinarily allowed except by way of interest and other bank charges. Loan accounts with no definite payment schedule are considered repayable on demand hence called ‘demand loans’. Where a loan is given for a specific period or term without allowing the demand character of the loan to be affected in any way, it is called ‘Term Loan’. Loans are generally granted by the banks for acquiring fixed assets. No cheque book facility is allowed in such accounts. Demand loans are also given by the banks against their own deposits, life policies, shares etc.
2. **Overdraft:** Overdraft means allowing the borrower to over draw his current balance. An overdraft account is a fluctuating or running account, the balance sometimes being in credit and at other times in debit. Overdraft facilities are generally allowed in current accounts only. For opening of an overdraft account, first of all current account will have to be opened formally.
3. **Cash Credit:** A cash credit is essentially a drawing account and the amounts may be debited or credited any number of times. Cheque book is issued to the customer to make drawing on this

type of account after properly assessing the requirements of the customer and viability of the project. As the very name implies in a cash credit account, credit is given in cash. Security for such advances may consist in pledge or hypothecation of goods (raw material, stock-in-progress, finished goods etc.) or documentary bills in collection etc. Cash Credit facility as a matter of rule and practice is allowed for one year although in fact this money never comes back to bank's basket. The demand for more and more credit limit continues for years together. Limits are to be renewed every year. Every month the borrower is required to furnish the bank, the figures of sales, purchases, stocks lying at his premises along with the life of such stocks.

4. **Bills Purchased and Discounted**: Bills are written instructions of a seller of goods to the purchaser for the payment of a stipulated amount at a particular date. It is approved by the purchaser. If the holder of the bill requires the amount of the bill before its maturity, the bills are purchased by the bank from its approved customer in whose favour regular limits are sanctioned. The bank holds a bill as security for the advance. Bills are also discounted by the banks. Bills of exchange which are discounted by the bank are debited to the Bills Discounted Account. The amount of the bill after deducting the commission is credited to the customer account. Discounting of bills constitutes a clean advance against two or more signatures of independent parties, one that of endorser and the other that of drawer.
5. **Composite Loans:** Another category of advances is also becoming popular for small advances. Under this facility, only one loan account is sanctioned for the requirements of current assets as

well as fixed assets. This is called composite loans. As per RBI guidelines, such advance is usually granted to farmers, artisans and cottage and village Industries. Like other advances, advance against bills should be allowed by a banker after satisfying himself about the creditworthiness of the drawer (i.e. seller) and the genuineness of the bills. The banks should also verify the financial standing of the drawees of the bills by obtaining their confidential reports.

6. **Consumption Loans:** Normally banks provide loans for productive purposes only, but these days' loans are also granted, on a limited scale, to meet the need for the purchase of consumer durable items, educational expenses, medical needs or, expenses relating to marriage and social ceremonies etc. Such loans are called consumption loans.
7. **Bridge Loans:** Bridge loans are essentially short term loans which are granted by the banks to industrial undertakings to meet the urgent needs during the period when sanctioning of term loans from financial institutions is in the-process or raising funds from the capital market is in the pipeline. Bridge loans are given by the commercial banks and are automatically repaid out of amount of the term loan or the fund raised in the capital market.
8. **Export-Import credit**: Banks also advances loans to finance export import business. They advance various types of loans for this purpose. Banks provide pre-shipment finance and post shipment finance to exporter.

(B) Non-Fund Based Facilities

1. **Letter of Credit**: It is an instrument issued by a bank at the request of the importer, in which the bank promises to pay a particular sum of amount to beneficiary presenting specified document in the letter of credit. Letter of credit is also known as "Commercial Letter of Credit", a Documentary Letter of Credit; or simply a Credit. It means letter of credit reduces the risk of non-completion of the transaction.

   It is innovative funding mechanism for the import of goods and services on deferred payment systems LOC is an arrangement of a financing institution/bank of one country with another institution/bank to support the export of goods and services so as enables the importers to import deferred payments terms. This may be backed by a guarantee furnished by the institutions/ bank in the importing country. The LOC helps the experts to get payment immediately as soon as the goods shipped since the funds could be paid out of the pool accounts with the financing agency. It acts as conduct of financing, which is for a certain period and on certain terms for the required goods to be imported. The greatest advantages of LOC are saving a lot of time and money on mutual verifications of bonafide sources of finance etc. It serves as a source of forex.
2. **Guarantees:** A guarantee is a contract to perform the promise or discharge a liability of a third person in case of his default. The person (in this case the bank) who gives the guarantee is known as 'the surety', the person in respect of whose default the guarantee is given is known as, 'the principal debtor and the person/department to whom the guarantee is given is called 'the

beneficiary'. The guarantee 'once issued cannot be revoked without the consent of the beneficiary, before the expiry of its validity. So the guarantee though a 'contingent liability' in terms of balance sheet item, so a definite undertaking enforceable on the happening of a certain event (default).

4. Principles of Good Lending to Small Business

The business of lending, which is the main business of banks, carry certain inherent risks. A banker must strive to earn profit (from lending) without exposure to greater risks. Banks cannot take more than calculated risks whenever it wants to lend. Therefore, banks have to follow a cautious approach towards lending, based on certain principles. There are three cardinal principles of bank lending that have been followed by the commercial banks since long. These are the principles of safety, liquidity and profitability. These principles are inter woven and cannot be isolated. However, these principles are not exclusive and one can add more criteria for deciding advances i.e. like the purpose of the loan, the diversification of risks, the security of the loan etc. These principles should be regarded as statements of general tendencies only and not irrefutable laws, which are inelastic and incapable of wider interpretations to meet the given situation. These principles are being discussed below: -

1. **Principle of Safety:** As the bank lends the funds entrusted to it by the depositors, the first and foremost principle of lending is to ensure the safety of funds lent. Safety of funds means that whatever is lent should come back through repayment of the loan. The safety of the loan depends upon the proper selection of the borrowers, his willingness and capacity to repay back the loan taken.

   Willingness to repay depends upon:

   - The honesty of the borrower
   - His integrity
   - His character
   - Fairness in dealing
   - Business morality
   - Creditworthiness of the borrower

   The capacity to repay back the loan depends upon:

   - Viability of the project
   - Strengths of tangible assets of the borrower
   - Success of the business of the borrower

   If any advance is deficient in savings, it has impact ultimately on the profits of the bank. An unsafe advance effects adversely the long-term profitability of the bank. Banks needs to ensure that the advance granted not only appears to be safe at the time it is released but continues to be

safe until it is repaid. The bank, therefore, must closely watch the activities of the borrower during the currency of the advance.

After the nationalization of banks, a new direction has been given to Indian banking and to the pattern of lending in particular. Banks had to reorient their lending policies in their efforts to achieve the social objectives expected from them. Economic viability of the project has replaced consideration of security in most of the lending to the priority sectors. Production oriented lending is preferred and credit for consumption or unproductive purposes has been curbed. The need-based approach has replaced the erstwhile security based approach. In the final analysis, ta bank's loan is safe only if it meets the production needs of the enterprise and helps in generating adequate internal cash surplus to meet the repayment. Over financing can result in overtrading, stockpiling or diversion of funds. While, underfinancing can compel the borrowers to resort to market borrowings at exorbitant rates of interest. proper appraisal of the needs of the borrowers is, therefore, necessary.

2. **Principle of Liquidity:** Coming back of bank's money is not the only point to be given attention, but it is also necessary that the money should come back or repaid fairly and quickly more or less on demand. Since the bulk of funds-in which a bank deals is depositors' money and the banker has necessarily to meet the demands of depositors. It is essential that the borrower would be in a position to repay the loan either on demand or within a reasonable period thereafter. If the money does not come back as stipulated, the bank may face a crisis of liquidity, and a mismatch of the assets and liabilities, which in turn could affect the capacity of the bank to meet its own obligations to return the money to the depositors. Hence it is not enough that money comes back but it should come back in time. Otherwise, such delay in the face of prudential guidelines on income recognition and asset classification, render the accounts non-performing.

   The role of commercial banks in providing short-term, medium-term and long-term is becoming increasingly important over the years. Most of the credit extended by banks in the field of industrial finance is by way of loans payable on demand, particularly, for the purpose of working capital finance. The commercial banks do provide long-term finance for the purpose of acquisition of fixed assets. If a large part of banks' funds is lent for a long term period i.e. for acquiring fixed assets, the ability of the bank to meet the demands of its depositors may be seriously affected. Thus it must be ensured that the money be lent for short term periods with definite repayment schedule.

3. **Principle of Profitability:** The commercial banks being commercial in character, have to -make profits. No commercial organisation can survive without making profits. Therefore, while making advances, the commercial banks should be guided by the consideration of an adequate return or profit. The difference between the rate at which a banker borrows from the public by way of deposits and lends money to borrowers by way of advances constitutes his gross profit. The

banker, therefore, should be governed by a satisfactory margin of profit. Banks pay interest on deposits received, salary to their staff and incur other expenses for its day to day functioning.

The rates of interest charged by banks were, in the past, primarily dependent on the directives issued by the RBI. But now banks are free to determine their own rates of interest on advances of above Rs.2 lakh. The variation in the rates of interest charged from different customers depend upon the standing of the customer, the nature and value of the security, size of the advance and the degree of risk involved in lending. The general principle followed is 'greater the risk higher the rate. Some banks rate the customers into categories A, B and C depending upon the value of their connections to the bank and their willingness to observe financial discipline and charge interest rate accordingly. In case of small industries, a progressively high rate is often charged as the amount of the-loan increases on the principle that the large borrowers are in a better position to bear heavy burden of interest.

5. Problems faced by banks in financing small scale entrepreneurs

Some of the most common problems faced by banks are given below:

- Banks fail to get the desired information about the character, goodwill or credit worthiness of the entrepreneur, when he approaches the bank for loan. Banks have the fear of granting loans to wrong persons resulting in delayed recovery.
- Entrepreneurs are also not aware of various schemes of banks.
- Small scale enterprises fail to maintain proper record of their repayment. They do not engage professionals for maintaining accounts and other records. As a result transparency in financial data is not ensured.
- Lack of knowledge about the management of funds make the problem more serious at many times, the entrepreneurs divert the business funds for their personal consumption without realising its negative effects.
- Increasing trend of non-performing assets acts as a strong demotivator for banks to grant loans to SSI's.
- Entrepreneur do not have sufficient knowledge of risk management techniques especially in up-coming areas like IT, biotechnology etc.
- Banks do not sanction the loans if they found the project commercial un-viable.
- Entrepreneurs generally do not select right project according to their aptitude and capabilities. The ignorance on their part become problem for the bank.

6. Summary: In this module we have discussed that Indian banking is an active participant in reshaping deregulated environment of Indian economy. The banks initiated a number of measures to respond to the changed environment of economy in addition to their traditional banking services to fulfill the newly emerging demands and aspirations of the small scale industries. The banks have introduced various innovative financial products and services like venture capital finance, factoring, lease financing, loan syndication and other merchant banking services etc. for providing financial support to SSEs. Banks play a significant role in the development of a country. Commercial banks provide short term, medium term and long term loans to small scale industries. They are playing a vital role in strengthening SMEs and MSMEs. Now banks have not only plays a role of financial intermediaries engaged in the mobilization of resources and lending them to industry, rather they acted as an agent of change in the Indian economy.

Paper: 09, Entrepreneurship Development & Project Management

Module: 40, Corporate Social Responsibility

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	Corporate Social Responsibility
Module Id	Module no-40
Pre- Requisites	Basic knowledge about CSR
Objectives	▪ To study the meaning and concept of CSR ▪ To study the benefits of CSR ▪ To study the challenges in implementation of CSR
Keywords	CSR, Corporate Social Responsibility, Social Responsibility of business

QUADRANT-I

Module 40: Corporate Social Responsibility
1. Learning Outcome
2. Introduction
3. Meaning and Concept of Corporate Social Responsibility
4. Benefits of CSR
5. Challenges Faced by an Enterprise in CSR Implementation
6. CSR in Small and Medium Enterprises
7. CSR towards stakeholders
8. CSR and Sustainable Growth
9. Summary

1. Learning Outcome

After completing this, module students will be able to:

i. Understand the concept of a corporate social responsibility.
ii. Understand the importance and benefits of corporate social responsibility
iii. Know about the challenges faced by corporates in implementation of CSR.
iv. Understand the CSR and Sustainable Growth

CORPORATE SOCIAL RESPONSIBILITY

2. Introduction: Corporate social responsibility is one the most significant global issues with serious challenges and implications on almost all the sectors of society. Emerging economies of the world including India, are coping with the issues relating to poverty, hunger, malnutrition, woman rights, child labour, injustice, farmers' suicides and community welfare etc and in this context the corporate sector have to develop innovative corporate social responsibility culture to address these social ills. In the market oriented economic structure, corporate sector is prime mover of economic growth. The business activities of an enterprise directly affect the environment and its stakeholders, such as customers, suppliers, employees, shareholders, and the society. It is therefore, imperative for business to come forward and share the responsibility for equity and sustainable development. The conventional approach of "Single Bottom Line – earning profit" has become a concept of past now with enactment of new Company Act 2013. There is paradigm shift in corporate governance. Companies now have to focus on triple bottom line representing economic profit, social and environmental dimensions. In the economic dimension corporate has to ensure the best input-output ratios in relation to financial bottom line. Business has to perform the economic function within ethical and legal framework, failing to do so is indeed being CSR- unfriendly. The second dimension deals with social good- inclusive and equitable development in terms of employment generation, poverty reduction, equal opportunities and other issues of social significance. And finally, the third dimension is concerned with the impact of the decisions and actions of corporates on the environment related issues such as pollution and emission control, energy conservation, climate change.

3. Meaning and Concept of Corporate Social Responsibility (CSR): Corporate Social Responsibility refers to the obligation of an enterprise towards the society. Today, customers are demanding that an enterprise should understand its responsibility towards the society and people. CSR is also known as corporate citizenship, responsible business, sustainable responsible business, or corporate social performance.

According to the ICC10, *"CSR is a voluntary commitment by business to manage its role in society in a responsible way"* and the EU Commission11 defines it as *"a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis"*

The concept of CSR is based on the fact that an enterprise operates in the society and uses its resources; therefore, it has some moral responsibility towards the society. When an enterprise adopts the principles of CSR, it fulfills its responsibilities towards environment, employees, communities, stakeholders, consumers, and other members of the society. The enterprise performs its responsibility by encouraging growth and development of the community and surroundings. Moreover, the enterprise works towards the elimination of unfair trade practices and other practices that negatively affect the society and public interest, regardless of legality.

Corporate social responsibility is closely linked with the principles of 'Sustainable development' and proposing that enterprises should be obliged to make decisions not only on the basis of financial/economic factors but they

should also focus on the social and environmental consequences of their activities. Corporate Social Responsibility thus helps to define the contribution of a company beyond economic value and employment generation, and weighs this contribution against the damage done by the company through its products and processes. Corporate Social Responsibility encompasses two aspects:

1. *The steps taken by a company to neutralize, minimize or offset the harmful effects caused by its processes and product-usage.*
2. *The further steps a company takes using its resources, core competence, skills, location and funds for the benefit of people and the environment.*

4. Benefits of CSR

Most of the enterprises are following CSR practices in the modern business environment. These practices provide various benefits to enterprises, which are as follows:

- **Improving relationship with stakeholders:** Refers to the fact that CSR activities help an enterprise to develop the relationship with stakeholders. The enterprises engaged in CSR activities are able to build trust and loyalty among stakeholders. If the enterprises are transparent about their activities conducted for the welfare of communities, they can better understand the perception of stakeholders and issues that may affect their operations. This information helps the enterprises in defining priorities and ensuring that the business practices are aligned with the ethical standards.
- **Attracting the investors:** Refers to draw the attention of investors through CSR activities. According to a study conducted by Mckinsey & Co. and World Bank, three quarters of stakeholders consider non-financial performance as important as financial performance, while evaluating the most suitable enterprise for investment.
- **Improving financial performance:** Refers to enhance the financial performance of an enterprise through CSR activities. A study by Mckinsey & Co. shows that investors are avoiding enterprises with poor CSR records and ready to pay a premium for enterprises having a good record of CSR activities.
- **Increasing public credibility:** Refers to improving the credibility of an enterprise through CSR activities. Accountability and transparency of CSR activities help enterprises to build trust and credibility with public. In addition, enterprises should ensure that they have a strong dedication to implement the CSR plans as failure to meet commitments may lead to a negative public response.
- **Utilizing the resources effectively:** Refers to the optimum usage of scarce resources. CSR practices may help in using the resources of the society in an effective manner to minimize cost and wastage. For example, Unilever in Bangladesh has started a tree plantation program to raise environmental awareness about using the resources efficiently.

5. Challenges Faced by an Enterprise in CSR Implementation

An enterprise faces numerous challenges while practicing CSR activities. These challenges may pose a hindrance in the process of strategic management in an enterprise. Some of these challenges are explained as follows:

- **Lack of Transparency:** Imposes a major hindrance in the authentic implementation of CSR programs when enterprises do not disclose the information regarding the CSR programs and funds allocated to implement these programs. The lack of transparency may negatively affect the trust between enterprises and communities. Transparency is required in the following areas:
  - ⇨ Codes of conduct: Include worker's right and environment protection
  - ⇨ Management standards: Include integrating social and environmental aspects of an enterprise
  - ⇨ Evaluation: Involves internal reporting of CSR activities by an enterprise
- **Lack of Community Participation:** Hinders the prospect of CSR activities. Many countries have less knowledge about CSR; thus, it leads to lack of interest by communities to participate with enterprises in the CSR activities. For example, in case of India, enterprises do not have adequate understanding of the CSR activities because they lack tools, resources, and commitment to carry these activities. This in turn results in lack of initiatives by Indian enterprises to undertake the CSR activities at an extensive level.
- **Lack of Non-Governmental Organizations (NGOs):** Leads to a lack of CSR activities as these activities are largely implemented through NGOs. In other words, the presence of NGOs is important to accelerate the pace of implementing the CSR activities in a country because NGOs guide and work with the enterprises to attain the objectives of CSR activities. Therefore, the non-availability of NGOs slows down the spread of CSR practices in remote areas in various countries.
- **Lack of CSR Guidelines:** Implies that many countries do not have clear guidelines related to CSR activities. As a result of this, the enterprises lack the proper direction to follow CSR practices. Enterprises do not measure and evaluate the CSR activities if no proper guidelines are defined.
- **Narrow View towards CSR Initiatives:** Refer to the limited perception of an enterprise towards CSR activities. However, what is required is the wider view or perception of CSR, which includes the willingness of the enterprises to take responsibility and being accountable for impacts created by their activities.
- **Importance to Visibility Factor:** Implies that sometimes NGOs involve themselves in the CSR programs to gain the media attention but fail to achieve the goals at the grassroot levels.
- **Lack of Budget:** Poses a major constraint for enterprises that wish to practice CSR activities. Sometimes, Small and Medium Enterprises (SMEs) do not have enough financial support to carry out CSR activities.

6. CSR in Small and Medium Enterprises

The general misconception about CSR practices is that they are meant only for large enterprises. No business can operate in solitude or just run for profit maximization. As discussed earlier, an enterprise affects or is affected by customers, suppliers, and the community. Therefore, like large enterprises, CSR practices are also equally important for SMEs. An SME can implement CSR practices by associating it with the values, core ideology, and goals of the business. The benefits enjoyed by SMEs that incorporate CSR in their business operations, are as follows:

- Makes investors interested in investing in the business
- Helps enterprises to survive in the long-run

- Ensures environmental friendly premises in the enterprise
- Motivates employees to perform efficiently
- Ensures health and safety of employees in the enterprise
- Acquires support from local community and get value as a great neighbor
- Attracts customers to purchase the products of the enterprise
- Encourages suppliers to work with enterprise

7. CSR towards Stakeholders

Stakeholders refer to individuals, who hold some interest, investment, and share in an enterprise. The stakeholders of an enterprise include shareholders, customers, employees, community, society, government, and others. These stakeholders directly affect or are affected by the business activities of an enterprise. Today's dynamic competitive, economic, and political environments require a continuous modification of facilities for stakeholders. An enterprise can be successful, if it strives to understand and fulfill the needs of its customers and value employees, community, and shareholders. In other words, an enterprise needs to have a deep understanding of the interests, concerns, and priorities of its stakeholders. Therefore, it should engage in a dialog and proper communication with its stakeholders. An enterprise should address the issues and grievances of its stakeholders, which, in turn, increases the productivity and effectiveness of the enterprise.

The responsibilities of an enterprise towards its stakeholders are as follows:

- **Responsibility towards shareholders**: Involves the concern of an enterprise towards the individuals, who invest in its business to earn profits in return. An enterprise has various responsibilities towards its shareholders, which are as follows:
  - ⇨ Providing accurate financial information of the enterprise to shareholders
  - ⇨ Providing fair and adequate returns on the capital invested by them
  - ⇨ Maintaining regular and effective communication with them
  - ⇨ Preparing audited financial reports of the business
  - ⇨ Informing shareholders about annual, general, and emergency meetings
- **Responsibility towards customers:** Involves the accountability of an enterprise towards the individuals, who buy the products or services of the enterprise. The responsibilities of an enterprise towards its customers are as follows:
  - ⇨ Providing high quality products and services at reasonable prices to customers
  - ⇨ Ensuring maximum satisfaction to customers by giving value for money
  - ⇨ Restraining the selling of adulterated and low-quality products and services
  - ⇨ Advertising products and services to make customers aware about them
  - ⇨ Introducing customer care centers and consumer advisory councils to listen and solve customer's grievances

- ⇨ Abiding by the rules and regulations under the Consumer Protection Act, 1986

- **Responsibility towards employees:** Involves the responsibility of an enterprise towards the individuals, who are appointed to render services to the enterprise in exchange of a fixed amount of wages and salaries. Some of the responsibilities of an enterprise towards its employees are as follows:
  - ⇨ Providing fair and timely wages and bonus to employees
  - ⇨ Appreciating and recognizing employees according to their performance
  - ⇨ Motivating and encouraging employees to perform efficiently
  - ⇨ Ensuring healthy, harmonious, and productive working conditions in the enterprise
  - ⇨ Providing growth opportunities to employees
  - ⇨ Facilitating effective communication with employees
  - ⇨ Providing necessary training to employees, whenever required
- **Responsibility towards community and society:** Involves the responsibility of an enterprise toward the society in which the enterprise operates. An enterprise has some responsibilities towards community and society, which are as follows:
  - ⇨ Generating employment opportunities for people in the society
  - ⇨ Avoiding the manufacturing processes that create environmental pollution
  - ⇨ Providing education, health, and other basic amenities to the people
  - ⇨ Working for the growth and development of the society
- **Responsibility towards government:** Refers to a responsibility of an enterprise to adhere the industrial rules and regulations set by the government. The responsibilities of an enterprise towards the government are as follows:
  - ⇨ Abiding by the rules and regulations prepared by the government
  - ⇨ Paying taxes on a regular basis
  - ⇨ Abstaining from submitting misleading and false information or documents
- **Responsibility towards other stakeholders:** Include suppliers, distributors, banks, and financial institutions. The responsibilities of an enterprise towards these stakeholders are as follows:
  - ⇨ Providing accurate and clear information, such as balance sheets, profits and loss statements, and ratio analysis, to banks and financial institutions
  - ⇨ Providing fair margins to distributors
  - ⇨ Providing correct and clear specifications to suppliers regarding raw materials
  - ⇨ Ensuring timely payment to suppliers
  - ⇨ Working in association with different Non-Governmental Organizations (NGOs) to develop the weaker section of the society

8. CSR and Sustainable Growth (SG)

Traditionally CSR in India is practiced by way extending financial supports to schools, hospitals and other social institutions. With growing globalization, CSR has been increasing in its importance as it helps organizations to improve their relationships with local communities, increased brand value and builds a good corporate image. Over the year, CSR has evolved to be a business necessity. CSR has now become an all pervasive business component of any forward looking business venture. While government is mandating it through various Yojanas and Social Schemes, it becomes the duty of any responsible corporate citizen to take care of the sustainability of its business. As of now, CSR has breached the contours of social philanthropy and traversed into the arena of business strategy for sustainable growth. At present a good number of corporations have leveraged CSR and articulated it into business strategies for growth.

This philosophy is embodied in this quote: "If trade and commerce is not sensitive to its social and environmental contexts, it will not sustainable, and if it is not sustainable, it will collapse". Sustainable growth is about ensuring a better quality of life for everyone, now and for generation to come. Thus, combining CSR and Sustainable Growth means combining the ecological, social and economic concerns and offers business opportunities for companies that can improve the lives of people. At present corporations are striving to attain sustainable growth. The integration of CSR with Sustainable Growth would build up a respectable, responsible and thriving management approach. Following principles suggest the best integration of CSR and SG i.e. social and environmental practices for an organization:

- **Set measurable goals:** Some goals can be set to bring small change like minimising waste and resource use. These sustainability efforts can support companies overall corporate strategy.

- **Stakeholder engagement:** Let us give equal treatment to all stakeholders. Stakeholders can not only solve all CSR roadblocks and potential crisis but also improving relationships proactively.

- **Mapping of sustainable issue:** Use of interactive maps to help prioritize and narrow down key issues saves company time and money, which can be used other productive activities.

- **Sustainability framework**: Developing a framework to ensure the integration of environmental, social and economic concern in tandem in decision making process.

- **Continuous assessment:** Continuous assessment of the existing products and efforts to create and innovates new products can ensure long term improvement.

- **CSR reporting/disclosure:** It is important to provide easy access of latest efforts to consumers. For this purpose, latest CSR initiatives can be posted on website and make it easy to download in any assessable format.

- **Branding of sustainability**: Here, transparency is the key of success. Make efforts to brand sustainable initiatives which can help you to capture reasonable market share and it will become easy to reach to a broader customer base.

9. Summary: In this module, we discussed the concept of corporate social responsibility along with its benefits and responsibilities towards different stakeholders. An enterprise faces numerous challenges while practicing CSR activities, therefore it also highlighted the challenges facing by corporates in implementation of CSR activities. The module also discussed that development cannot take place unless the people at the grass root level are not involved in the development programme. According to the modern point of view the objectives of business is to discharge its moral responsibility towards all the stakeholders and also earn profits simultaneously. The emerging concept for the need of social responsibility of the business is due to the fact that business is a part of society. So today the responsibility of the business corporate is not limited to its owner, but it has assumed large dimensions i.e. employees, consumers, suppliers, competitors, government, environment etc. and this responsibility of the business corporate, which includes the satisfaction of these parties along with the owner is called social responsibility of the business. In shaping India's future, the integration of the corporate sector into community development for all sections with full social responsibility is a need of the hour.

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Subject: Management

Paper: 09, Entrepreneurship Development & Project Management

Module: 29, Project Appraisal: Economic Analysis

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	**Project Appraisal: Economic Analysis**
Module Id	Module no-29
Pre- Requisites	Basic knowledge about the project appraisal
Objectives	▪ To study the economic feasibility of the project ▪ To know about the economic analysis for project appraisal
Keywords	Project appraisal, economic feasibility, economic analysis

QUADRANT-I

Module 29: Project Appraisal: Economic Analysis
1. Learning Outcome
2. Meaning and Concept of Project Appraisal
3. Market and Demand analysis
4. Steps in market and demand analysis
5. Characterization of the Market
6. Demand Forecasting
7. Forecasting techniques
8. Summary

1. Learning Outcome

After completing this module, you will be able to:

i. Understand the meaning and concept of project appraisal
ii. Understand the relevance of market and demand analysis
iii. Understand the steps in market and demand analysis
iv. Know about the demand forecasting and forecasting techniques

2. Meaning and Concept of Project Appraisal: *In the words of Cary Rosen "In schools, getting one right out of one is an A whereas getting two right out of twenty is an F. In business, two for twenty is an A, whereas one for one is probably luck".*

Project appraisal means a detailed evaluation of the project to determine its economic, technical and financial viabilities. Project appraisal is a generic term that refers to the process of assessing, in a structured way, the case for proceeding with a project or proposal. It is the analysis of costs and benefits of a proposed project with a goal of assuring a rational allocation of limited finance resources amongst alternate investment opportunities with the objective of achieving specific goals.

Project appraisal is therefore, a process whereby the entrepreneur makes an objective and independent assessment of the various aspects of an investment preposition of a project idea for determining its total impact and also is liability. It saves the entrepreneur themselves from a number of problems encountered by them while establishing a new project. It involves careful, critical and cautious look at the project idea and analyzing its various components, in order to formulate an objective project in its totality. It is an analytical management aid.

Project appraisal involves systematic examination of technical, economic, managerial, financial, organizational and legal aspects of a project. It is the process through which opportunities become a project, in which the entrepreneur is willing to invest his time, money and other resources. So it is the process of transmitting information accumulated through feasibilities studies into a comprehensive form in order to enable the decision maker undertake a comprehensive appraisal of various projects and embark on a specific project or projects by allocating limited resources. Since risk is involved in all activities associated with the project, project appraisal aims at improving the quality of projects and their long term profitability, aims at minimizing the risk of lending by rectifying their weaknesses and improving their effectiveness by incorporating into them safeguards missed by the promoters because of their lack of knowledge or information.

In a consumer drive market consumer is the Rex. The exploration of the future market is the first step in establishing the profitability of a future project and to get a clear cut idea as to market share that is likely to be captured. This is what market and demand analysis does as put in other words. Market and demand analysis is to do with two significant dimensions of market opportunities. In other words, it concentrates on the likely aggregate demand for the product or service and the share of the market the firm is likely to share along with other players. These dimensions are very difficult but very important in project analysis.

3. Market and Demand analysis: Market and demand analysis is the managing the demand- its estimation and determining the extent to which it can be met with satisfaction to consumers and profit to the producers. In simple words whenever a project planning and implementing comes to surface, it begins with two aspects of demand. That is, what is the potential size of the market? And to what extent the project planner is capable of getting share in the market?

In simple words market analysis is concerned with one question that is 'what would be the market share of the project under appraisal' and demand analysis is concerned with one question that is 'what would be the aggregate demand of the proposed product or service in future'. The first step in project analysis is to estimate the potential size of the market for the product proposed to be manufactured and get an idea about the market share that is likely to be captured. Demand and supply shall be on the long- term basis.

The market analyst requires a wide variety of information and appropriate forecasting method. The kinds of information required are:

1. Consumption trend in the past and present consumption level.
2. Past and present supply position.
3. Production possibilities and constraints.
4. Imports and exports.
5. Cost structure.
6. Structure of competition.
7. Elasticity of demand.
8. Distribution channels and marketing policies in use
9. Consumer behavior and requirements
10. Administrative, technical and legal constraints.

The study of present demand requires the following aspects:

1. Current purchases- what manufactured goods are being bought now, in what quantities and at what prices, by whom and for what purpose.
2. Not satisfied demand-it may be that the delivered price is very high or the product is not properly marketed or is not good quality.

3. Marketing facilities- whether proper marketing facilities exist and what are their capabilities and limitations.

4. Competition- the number of other firms involved in the production of that product and prices charged by them.

So to study the future demand we have to study the past trends of the product and relationship between the increase in incomes and the increase in demand for the product.

4. Steps in market and demand analysis: Market and demand analysis is very important for the success of the future project, so it is very essential that it should be carried out in an orderly and systematic manner. The various steps that are involved in the analysis of market and demand are as follows:

(1) Situational analysis as well as specification of objectives: The project analyst, may be entrepreneur himself, is expected to get relationship between a given product and its market presently available. The work start with base of an informal talk with customers, competitors, middlemen, dealers and even employees or someone who is directly or indirectly associated with the enterprise or enterprises. The existing company or companies have the past and present which is a rich source of valuable experience. In this regard, the analyst may get good deal of facts relating to customer preferences, purchasing power of customers, and the quantity they buy where they buy, when they buy and even why they buy? Such informal analysis sometimes generates enough data to measure the market and to find out the projected demand and revenues. If such an analysis seems to be reliable and enough and if time and cost considerations are there, sometimes an analyst can decide not to carry on a formal study. However, in most circumstances, a formal study is considered essential. For a formal study to be carried out, objectives have to be defined clearly and comprehensively. Objectives will help in generating the information relevant in forecasting the overall market demand and in assessing the projected future share of the market. Objectives are, generally, structured in the form of questions such as:

a. Who are the consumers?

b. How many consumers are there for that product?

c. What do they want

d. When do they want it?

e. Why do they want it?

f. How do they want it?

g. Where do they want it?

h. What quality is desirable?

i. How much can they spend?

j. What price is acceptable?

(2) Collection of market data: In order to answer the questions which are listed above, information may be obtained from two sources such as primary as well as secondary sources. Secondary information provides the base and the starting point for market and demand analysis. It indicates what is known and provides ways and hint for gathering information required for further analysis. Sources of collecting data include both internal and external sources. Major sources of information are primary and secondary data:

a. **Primary data**: Primary data can be defined as information that is collected first hand, generally, by original research tailor made to answer specific, current research questions. The major advantage of primary data is that the information is specific, relevant and up to date. But data collection from primary sources involves much time and cost.

b. **Secondary data**: secondary data is that data the information of which is collected for some other purpose and is thus, readily available. The advantages of primary data are the disadvantages of secondary data. As a rule, no research should be done without a search for secondary information first and secondary data should be used whenever available and appropriate. The important sources of secondary information used for market and demand analysis in India are as follows:

- Census of India issued by Govt. of India.
- National sample survey reports issued by cabinet secretaries and Govt. of India.
- Plan report issued by planning commission.
- Annual publication by central statistical organization.
- Indian year book by minister of information and broadcasting.
- Statistical year book issued by UNO.
- Economic survey issued by ministry of finance.
- Guidelines to industries by ministry of industrial development.
- Annual survey of industries by CSO
- Annual report of the development wing under ministry of commerce and industry.
- Annual bulletin of statistics of exports and imports by ministry of commerce.
- Techno-economic survey by national council of applied economic research.
- Industrial potential surveys by IDBI.
- The stock exchange directory by BSE
- Monthly bulletin of RBI, etc and annual report on currency and finance by RBI.
- Commodity reports and other studies of the Indian institute of Foreign trade.

- Studies of economic division of State Trading Corporation.
- Weekly bulletins of industrial licenses, import licenses and export licenses published by Government of India.
- Internal management reports.
- Consultant's reports.
- Government publications of chamber of commerce and industries, FICCI, Directorate of industries etc.
- International information bureaus.
- Financial papers and magazines.

Evaluation of secondary information: while secondary information is available economically and readily; its reliability, accuracy, and relevance for the purpose under consideration must be carefully examined. The market analyst should seek to know:

- Person who collected the information and his objectives
- Period in which information was collected and published
- Size of target population
- Size of sample chosen
- Degree of sampling and non-sampling bias in information collected
- Degree of misrepresentation by respondents
- Accuracy of information edited, tabulated and analyzed.
- Proper application of statistical analysis

(3) Conduct of market survey: When secondary data are not available, irrelevant or obsolete, the analyst must then turn to primary research. Sometimes secondary information need to be supplemented with primary information gathered through a market survey, specific to the project being appraised. Market survey may be census or sample survey. In census survey approach, the entire population or the universe is covered. Here the term population or universe is taken as collecting information from each and every respondent may be an individual or an organization. For example, we took the case of estimating demand and market share for the improved kitchen flour mill. To conduct the survey by census method we will have to cover the entire potential customers say in a state, or a region or all India on one hand and the existing units that are manufacturing the conventional kitchen flour mills, dealers and the other. Instead, sample survey can be resorted all the firms concerned. Each technique has its own merits and

limitations. Census method is time consuming, costly. However, the information got is quite adequate and reliable and accurate. On the other hand, sample survey is less expensive and less time consuming.

The information sought in a market survey relates to one or more of the following aspects

- Total demand and the growth rate of demand.
- Demand in different segment of the market.
- Income and price elasticity of demand.
- Objectives of buying.
- Buying plan and intentions.
- Satisfaction with the existing products unsatisfied needs.
- Attitudes towards different products.
- Practices and preferences in the area of distribution.

Steps in conducting sample survey:

Following are the steps which are involved in conducting sample survey:

i) **Define the target population**: Defining of target population is of almost importance in clear and carefully studied manner as it is first step. The target population may be divided into certain segment with their features.

ii) **Select the sampling technique and size**: Sampling technique implies the type of sampling i.e. simple random sampling, cluster sampling, sequential sampling, stratified sampling, systematic sampling and so on. Another important aspect of sampling is size of it, which has greater and deeper bearing on the reliability and accuracy of estimates.

iii) **Design the questionnaire**: To collect the information from the respondents, the main instrument is questionnaire. Questionnaire is a sequential array of questions, designed in a way which is ideally suited to elicit information from someone who is administered the questionnaire.

iv) **Recruitment and training of researchers**: proper plan of recruitment and training is to be prepared and implemented. Great care is needed in recruiting the researchers and imparting the right kind of training to them.

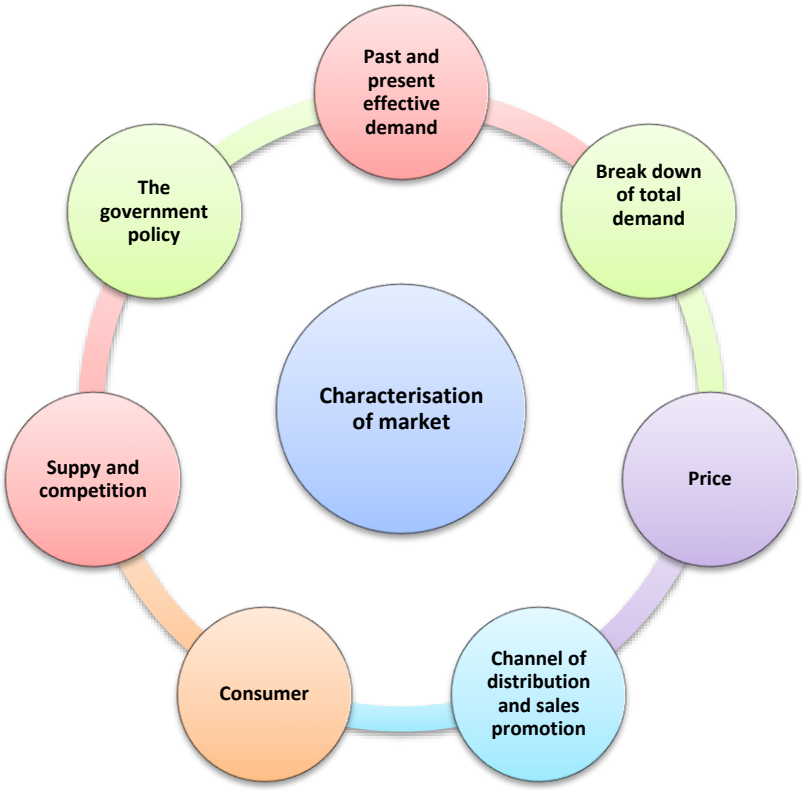
v) **Get information according to questionnaire from the target respondents**: the respondents can be interviewed personally, or through mail or telephone. Each means is having its own merits and demerits.

vi) **Scrutiny of information:** Next step is to scrutinize the gathered information so that irrelevant or inconsistent data can be eliminated.

vii) **Analysis and interpret the information:** The collected information has no meaning unless, it is minutely analyzed and interpreted with due care. The data are to be tabulated as per the plan of analysis followed by strict statistical investigation wherever possible and needed. The analysis should be done by a properly qualified person having a background in Statistics and Economics.

5. Characterization of the Market

This step characterizes the market on the basis of information gathered. The market for the product or service can be described in term of clear cut characteristics based on the information gathered from secondary sources and through the market survey or primary sources. It can be described in term of the following.



6. Demand Forecasting

After collecting information about various aspects of the market and demand an attempt is to be made to estimate market demand for the industry. The first step in market forecasting is to assess the market potential. Market potential is the highest possible level of demand in a given environment. Market forecast is the projection of demand for the entire industry and this lead to the firm's share and is called the sales forecasting. Thus, estimating sales or predicting the sales gives the base for the quantity and quality of production and base production figure are predicted, estimation can be made for each operations and the timely and sound decision can be taken. Therefore, forecasting means, demand forecast and indirectly the sales forecast.

7. Forecasting techniques

1. **According to time duration**: On the basis of time duration there are three types of forecast-- short term, medium term, and long term.

- **Short term forecast**: Short term forecast made for a very short period. Generally it covers a period of one month to twelve month i.e. one year. This type of forecast further divided into quarters or months for precision. The result achieved from this forecast is more accurate.

- **Medium term forecast**: The time horizon for medium-term is between two to four years. It means more than one year to four years. The results achieved from these forecasts are likely to be less accurate as compared to short term forecasts but more accurate than long term forecasts due to time factor.

- **Long term forecast**: Long term time horizon ranges over or beyond four years. It is a period of more than four years to fifteen years or can be extended more than in exceptional circumstances. The accuracy level of this type of forecast is minimum.

2. According to qualitative methods of demand forecasting: These surveys are conducted to collect information about consumer's intention and their future purchase plan. This method includes:

- Survey of potential consumers to elicit information on their intentions and plans.

- Opinion polling of experts that includes opinion survey of market experts and sales representative, and their market studies and experiments.

1. **Consumer survey**: This method involve direct interview of the potential consumers. This could be done either by presenting a questionnaire personally before the consumers or by sending the questionnaire by post. In this method we can include direct interview, sample survey, and end use method.

2. **Jury of executive opinion method**: In this method, small numbers of top executives are requested to register their individual opinions relating to the probable amount of future sales. So the executive who are selected for giving the opinions are those who are fully aware of the market conditions, capabilities and the boons and bans of the industry. In this method market studies and experiment such as laboratory tests, test market or Delphi methods are to be conducted.

3. **According to statistical methods of demand forecasting**: Statistical method is very helpful in demand forecasting. It is used for long-term forecasting of demand. Statistical methods have certain advantages over the other methods such as

- Estimation is based on the theoretical relationship between the dependent and independent variables.
- Element of subjectivity is minimum in this estimation.
- It is a scientific method.
- It involves minimum cost as compare to other methods.

- It is relatively more reliable.

Statistical method of forecasting involves the following techniques:

(1) Trend Projection Methods

(2) Barometric Methods

(3) Econometric Methods

(1) Trend projection method or Time series: Trend projection method is a classical method of demand forecasting. This method is concerned with the study of movements of variables through time. The use of this method requires a long and reliable time-series data. This method is used under the assumption that the factor responsible for the past trends in the variables to be projected for example sales and demand, will continue to play their part in future in the same manner and to the same extent in magnitude and direction. This assumption may be quite justified in many cases.

This method is also called Naïve forecasting or The projection of the Present Trend or Mechanical extrapolations or Quantitative method. There are three techniques of trend projection on the basis of time-series data.

- Graphical method
- Fitting trend equation or Least square method or Line of best fit.
- Box-Jenkins method

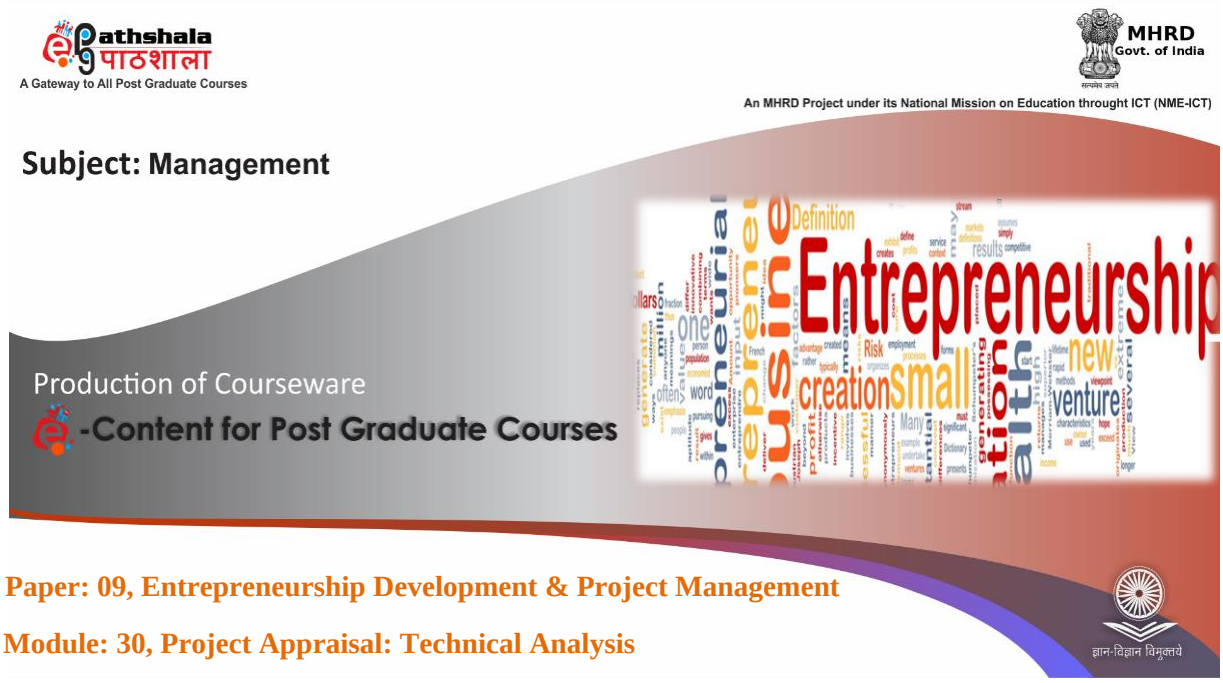
(2) Barometric Methods: This method is also known as Leading (economic) indicator method or Lead Lag method. The Barometric method of forecasting follows the method meteorologist's use in weather forecasting. They use barometer to forecast weather conditions on the basis of movements of mercury in the barometer. The basic approach of barometric technique is to construct index of relevant economic indicator and to forecast future trends on the basis of movements in the index of economic indicators. Use of barometric techniques is based on the idea that the future can be predicted from certain happenings in the present. Indicator used in this method are Leading indicators, coincidental indicators and lagging indicators.

(3) Econometric Methods: This method combines statistical tools with economic theories to estimate economic variables and to forecast economic events together with mathematical model building. The econometric methods are widely used to forecast demand for a product, for a group of products and for the economy as whole. An econometric model may be a

- Regression method
- Simultaneous equation method

8. Summary: Project appraisal involves systematic examination of technical, economic, managerial, financial, organizational and legal aspects of a project. It is the process through which opportunities become a project, in which the entrepreneur is willing to invest his time, money and other resources. So it is the process of transmitting information accumulated through feasibilities studies into a comprehensive form in order to enable

the decision maker undertake a comprehensive appraisal of various projects and embark on a specific project or projects by allocating limited resources. Since risk is involved in all activities associated with the project, project appraisal aims at improving the quality of projects and their long term profitability, aims at minimizing the risk of lending by rectifying their weaknesses and improving their effectiveness by incorporating into them safeguards missed by the promoters because of their lack of knowledge or information. Market and demand analysis is to do with two significant dimensions of market opportunities. In other words, it concentrates on the likely aggregate demand for the product or service and the share of the market the firm is likely to share along with other players. These dimensions are very difficult but very important in project analysis.



Paper: 09, Entrepreneurship Development & Project Management

Module: 30, Project Appraisal: Technical Analysis

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Items	Description of Module
Subject Name	Management
Paper Name	Entrepreneurship Development & Project Management
Module Title	**Project Appraisal: Technical Analysis**
Module Id	Module no-30
Pre- Requisites	Basic knowledge about the project appraisal
Objectives	▪ To study the feasibility study for project appraisal ▪ To know about the technical analysis for project appraisal
Keywords	Project appraisal, technical feasibility, technical analysis

QUADRANT-I

Module 30: Project Appraisal: Technical Analysis
1. Learning Outcome
2. Introduction and Concept
3. Technical Appraisal
4. Summary

1. Learning Outcome

After completing this module, you will be able to:

i. Understand the meaning and concept technical analysis
ii. Understand the techniques to be applied for technical analysis
iii. Know about various aspects of study under technical appraisal

PROJECT APPRAISAL: TECHNICAL ANALYSIS

2. Introduction and Concept: Project Appraisal is a process of detailed examination of several aspects to a given project before recommending the same. After market and demand analysis, there is need for further suitability of the project as to whether it is feasible or viable in other dimensions so that the project idea is put to acid test of cold facts before it is accepted for formulation and implementations. So there is need for feasibility studies which include Market feasibility, Technical feasibility, Economic feasibility, Managerial feasibility and Commercial feasibility. Therefore, feasibility study is the process of investigating a problem and finding a solution in depth to determine its economic viability and worth of development. Project feasibility is a test where prima-facie viability of the investment is evaluated.

Technical analysis seeks to determine whether the prerequisites for successful commissioning of the project have been considered and reasonably good choices have been made with respect to location, size etc. it is carried out to measure whether the project is technically sound and viable. Technical analysis of a product is very essential to ensure that necessary physical facilities required for production will be sufficient and the best possible alternative is selected to procure them. A technical analysis should review the techniques to be applied and should incorporate:

1. A description of the product, including specification relating to its physical, mechanical and chemical properties, as well as the uses of the product.
2. A description of the selected manufacturing process, showing detailed flow charts and presenting alternative processes which may have been considered and the justification for the adoption of the selected process.
3. A determination of the plant size and production schedule.
4. Selection of machinery and equipment.
5. Identification of plants location and as assessment of its desirability in terms of its distance from raw material sources and markets.
6. A design of the plant layout and an estimate of the cost of the erection of the proposed buildings and land improvements.
7. A study of the availability of raw materials and utilities including a description of physical and chemical properties, quantities needed, current and prospective costs, terms of payment, location of sources of supply, and continuity of supply.
8. An estimate of labour requirements, including a detailed break-down of direct and indirect labour requirement, and the supervision required for the manufacture of the product.
9. A determination of the type and quantity of waste to be disposed of, together with a description of the waste method, its costs, and the necessary clearance from proper authorizes.
10. An estimate of the production cost of the product.

3. Technical Appraisal: Technical feasibility assesses the technical viability for coming to a conclusion as to whether it fulfills the expected norms or not. Technical appraisal involves the critical study of the following aspects:

1. **Material inputs and utilities:** This aspect is concerned with defining the materials and utilities required, specifying their properties in detail, and setting up their supply programme. Material inputs and utilities may be classified into four broad categories such as (a) raw-materials (b) processed industrial materials and components (c) auxiliary materials and factories supplies and (d) utilities.
   a) **Raw-materials**: It may be full or semi processed. It can be further grouped into (a) agricultural products (b) Mineral products (c) Livestock and forest products (d) Marine products.
   b) **Processed industrial material and components**: processed industrial materials and components represent important inputs for a number of industries that includes base metals, semi-processed materials, manufactured parts, components and sub-assemblies. To get authentic and sufficient information, answer of the following questions must be sought: what are their properties-physical-mechanical-chemical and electrical? What are the domestic sources? What are foreign sources subject to limit laid down by authorities? Extent of dependability on supplies and suppliers? What has been the price trend in the past? What will be the future trend?
   c) **Auxiliary materials and factories supplies**: Any manufacturing project needs variety of auxiliary materials and factory supplies like chemicals, additives, packaging materials, paints, varnishes, oil, grease, cleaning materials, consumable stores in addition the first two categories of materials.
   d) **Utilities**: Utilities stand for power, water, steam, fuel, gas which play a constructive role in converting raw materials into end products. Correct assessment of these in terms of location,

technology, plant capacity and the like is a must. These utilities turn critical at times and become limiting factor in achieving highest level of efficiency or lowest level of cost.

2. **Manufacturing Process/Technology:** The methodology used in converting materials into final products in known as a technology. For manufacturing a product there are alternative technologies. To manufacture steel either open health process or Bossemer process can be used that represents a technology. In making cement the possible process are wet or dry. These technologies always changing from good to better and from better to best. Even, what is today the best can be supposed in case better than the best is made available. Research and development efforts make possible the best because even the very best can be improved upon a period of time. Feasibility study especially technical is to focus its attention on the significant aspects of choice of technology, acquisition of technology and the appropriateness of the technology.

   a) **Choice of technology**: The choice of technology or technical knowhow is influenced by many variables. Some of these are given below:

      - **Plant capacity:** Plant capacity and manufacturing technology are closely related with one another. In order to meet a given plant capacity requirement only a specific production technology may be viable.
      - **Investment outlay and production cost:** The impact of alternative technologies on invest expenditure and production cost should be carefully assessed over a period of time. As we all know cost and technology are closely related in that the cost and quality is based on the technology and that is based on its cost.
      - **Major inputs:** Basic inputs play significant role in choosing a manufacturing technology. For example, in manufacturing of cement the quality of lime stone decides whether the manufacturing unit should go in for 'Wet' or 'Dry' processing.
      - **Proof of success:** The technology adopted must well be proven by its success for use by other units. That is, a latest technology may not be always the best. One which is tried, tested, and trusted by successful units in the line is more acceptable.
      - **Latest advancement:** The technology adopted is one which is the latest or one which is adaptable for updating easily with least cost and time.
      - The product mix: Product mix stands for the main products, co-products and by products that are resulting by use of a particular technology.
      - **Ease of absorption:** Technology, however, latest and effective, has no meaning unless it is easier to be absorbed by the company. Very often it so happens that high-level technology may not easily percolating to the absorbing firm due to some reason or reasons.

   b) **Acquiring technology:** If technology is available openly, then the detailed information can be obtained even at feasibility stage. In case the know-how available with the owner, then this step-that is-evaluation of process, can altogether be eliminated. And if the know-how is not available with the owner, it has to be acquired from outside sources such as foreign collaborators, consultancy organizations, machinery suppliers, promoter's knowledge and

experience and recruitment of suitable personnel. The acquisition of technology from some other enterprise may be possible through:

- **Technology Licensing:** This is the most popular way of acquiring technology. Under this arrangement, the technology license gives the licensee the right to use the patented technology and get the concerned know how on a mutually agreed basis. The supplier of technology generally provides a technology package which may consist of some components which are not essential. Therefore, it becomes essential to break the package into component parts such as technology proper, engineering services, supply of intermediate products, and supply of equipment by the licensor, use of a trade name, among other things. Every effort should be made to acquire only the essential and matching components of the technology package. The contract for technology licensing should be careful with regard to Definition of technology to be acquired, Cost of technology licensing, Guarantee provided by the licensor, Duration of the technology licensing and Purchase of intermediate products, components and other related inputs.
- **Outright purchase of technology:** This alternative is most appropriate when:
  - **A.** There is no possibility of significant improvement in technology in the foreseeable future.
  - **B.** There is hardly any need for technological support from the seller of the technology.
    - **Joint venture arrangement:** This is also very popular method under which the supplier of the technology may participate technically as well as financially in the project. Financial participation is normally in the form of equity holding. Experts are of the opinion that financial participation is likely to strengthen the motivation of technology supplier to transfer improvements without hesitation.

c) **Appropriateness of Technology:** Appropriate technology means for those methods of production or process of production which are most fitting to the local, economic, social, cultural and environmental conditions. Technology should be considered appropriate if it satisfy the following questions:

- Whether the technology uses the local raw materials?
- Whether the technology employs the services of local labour force?
- Whether the goods and services produced cater to the basic needs?
- Whether the technology protects and maintains the ecological balance?
- Whether the technology is in harmony with the social and cultural values of the area?

3. **Product Mix:** The choice of product mix is guided by market requirement. Variations in size and quality of products are aimed here at satisfying a broad range of customers. It enables a company to expand its market and enjoy higher profitability. There should be a degree of flexibility in the product mix to response as to changing market conditions and thereby enhancing the power of the firm to survive and grow under different situations. Product mix is so designed as to meet the requirements of target market or segment or segments of the entire market for the companies, products and services. All other mixes namely price, place and promotion mix go in consonance in a

congruous way in requirements of a product mix. For example, a ready garment manufacturer of ladies suits will have a wide range of items of size and quality to suit individual differences in customers both physical and mental. Wide range of sizes, patterns and quality play significant role in enabling to garment maker to earn good profit through higher profitability. Thus each company comes out with different sizes, different colours, variation in inputs, packing and promotion package. These varieties meet the requirements of poor, middle and rich class. The idea is to arrive at maximum profit.

4. **Plant capacity or production capacity:** Plant capacity or Production capacity refers to the number of units that can be manufactured during a given period. According to experts "Plant capacity is defined in two ways namely, feasible normal capacity and normal maximum capacity". The feasible normal capacity stands for the capacity attainable under normal working conditions. This is established on the basis of installed capacity, technical conditions of the plant, normal stoppages, down-time for maintenance and tool changes, holidays and shift patterns. Whereas, normal maximum capacity is the capacity which is technically attainable and this normally corresponds to the installed capacity guaranteed by the supplier of the plant.
5. **Manpower requirement**: Requirement of manpower of different skills, both for construction stage and operational stage, should be assessed based on phasing of project execution and completion. The requirement of people should be assessed category, operation and function wise. The assistance of Consultancy Company for recruitment of staff with desired skills and qualification may be sought, if needed. The object should be to ensure the availability of adequate manpower for future operation and to avoid over staffing at any stage of project execution. Adequate provision for fund for the training of key personnel with a time bound programme should be estimated beforehand. The introduction of scheme of productivity- linked incentive/bonus may be kept in mind.
6. **Plant location and site:** Location refers to a fairly broad area like city, an industrial zone, or a coastal zone and site refer to a specific piece of land where project would be set up. Plant location includes selection of a requisite region, credible community and suitable site. Selection of region is a broad decision. For selection of proper site, a survey may be conducted, and both monetary and non-monetary factors should be looked into. The choice of location influenced by a variety of considerations such as raw material supplies, proximity of supplies, communication and transport facilities, manpower, labour laws and government policy taxes and fees, etc.

   After selecting of region, next step is to selection of a particular community or locality. The selection of a community or locality calls for rigorous factor like quality and quantity of labour force, banking and credit facilities, local taxes, rents, rates, and insurance charges, political stability, extent of state assistance and many more.

   The final round selection is selection of site or space where industrial plant is going to be located. The important factors that decide the choice of suitable site are price of land, the type of choice, ease of waste disposal, people's attitude, existence of religious and social institutions, etc.Taking all these factors, the most advantageous location is that at which the cost of gathering material and fabricating it plus the cost of distributing the finished product to the consumer is the least.

7. **Machinery and equipments:** It is the technology that determines the exact requirement of machineries and plant capacity. It is also influenced by the type of project. For a process, industrial plants, say petro chemical unit or pharmaceutical unit, the machineries and equipment required should be such that the various stages of manufacture are matched well. To determine the kind of machinery and equipment required for a manufacturing industrial plants, the following procedure is generally followed:
    - Estimate the likely levels of production over given period of time.
    - Define various machines and operations
    - Calculate machine hours required for each type of operation
    - Select machineries and equipments required for each function.

    The equipment required for the project may be classified into the following types:

    - Mechanical equipments,
    - Plant or process equipments,
    - Electrical equipments,
    - Instruments,
    - Controls,
    - Internal transportation system, and
    - Earthmoving and construction equipment and others.

    While selecting machines and equipments some possible constraints should be kept in mind like- shortfall of electricity, lack of cooperation on the part of employees when they are meant to advanced technological or numerical control of machines, hurdles in moving equipment or divided plant to remote places.

8. **Structure and civil work:** For the proper execution of civil work in the proposed project, the essential steps are:
    - Defining scope of work with respect to site preparation, construction of roads and buildings in factory and residential areas and construction of sewerage line and other civil works
    - Preparing cost estimates
    - Selecting agencies to be hired for construction
    - Preparing plans, charts and drawings.

    Civil work can be further divided:

    a) **Site preparation and Development:** This involve a set of activities namely, grading and levelling of site, demolition and removal of the existing unwanted structures, relocation of existing pipelines, cables roads power-lines, reclamation of swamps and draining and removal of stagnant water, connection of the utilities from the site to the public net-work, electric power—both high-tension and low-tension, water for drinking and various industrial purposes, communications-telephone, telex, roadways, railways and other activities of site preparation and development.

b) **Buildings and Structures:** It includes factory or process buildings, ancillary buildings required for stores, warehouses, laboratories, utility supply centers, maintenance services and others, administrative buildings, staff welfare buildings, cafeteria, medical centre, gymkhana facilities, recreation buildings and residential buildings.

c) **Outdoor works:** The outdoor works involves

- Supplies and distribution of utilities such as water, electricity, steam, gas, communication and the like
- Handing and treatment of emission, wastage and effluents
- Transportation and traffic arrangements such as roads, rail tracks, paths , parking areas, sheds, garages, traffic signals and so on
- Outdoor lighting
- Landscaping and
- Enclosures and supervision that include boundary wall, fencing barriers, gates doors, security posts, sewerage openings and the like.

9. **Project charts and layouts:** When data collected on major dimension of project that is on market size, plant capacity, production technology, machines and equipments, building and civil works, then project charts and layouts are prepared. These charts and layout define the scope of the project and provide the basis for detailed project engineering and estimation of investment and production costs. General functional layout, transport, utility consumption, communication, organization, plant material flow and production line diagram are the major charts and layouts.

- **General functional layout:** It shows the general relationship between equipments, building and civil work.
- **Utility consumption diagram:** It shows the principal consumption points of utilities and their required qualities and quanties.
- **Transport layouts:** It shows the distances and means of transport outside the production line.
- **Communication layouts:** It shows how the various parts of the project will be connected with telephone, telex, intercom, and fax etc.
- **Plant layouts:** It shows the physical layout of the factory, equipments dimensions, provision for material handling, level of computerization, nature of process etc. due consideration should be given while preparing a plant layouts to the followings:
    i. Consistency with production technology
    ii. Effective use of space
    iii. Flexibility to take care future changes
    iv. Smooth flow of goods from one work station to another or one stage to another
    v. Safety to the work force
    vi. Minimization of costs
    vii. Provision for better working conditions to enhance efficiency.

- **Material flow diagram:** It shows the flow of materials, utilities intermediate products, final products, by-products and emissions.
- **Production line diagrams:** It shows how the production would progress along with the key information for main equipments.
- **Organizational layouts:** It shows the organizational set up of the project along with information on personnel required for various departments and their inter-relationship even reaching grass-root level of each work position.

10. **Work schedule:** Work schedule is the plan of the work relating to installation and initial operation. The purpose of the work schedule is to:
    - Anticipate problems likely to arise during the installation phase and suggest possible means for coping with them.
    - Establish the phasing of investments taking into account the availability of finances.
    - Develop a plan of operations covering the initial period

    So in order to avoid the possible losses arising out of idle-plant capacity or idle capacity and the determination of stock of material, work schedule should be drawn in detail with clarity and ground realities. This help in making use of available inputs by adjusting plant capacity utilization or at least commissioning to start with.

9. Summary: Project appraisal is the assessment of project in terms of economic, social, commercial, ecological and financial viability. Technical feasibility assesses the technical viability for coming to a conclusion as to whether it fulfills the expected norms or not. Technical analysis seeks to determine whether the prerequisites for successful commissioning of the project have been considered and reasonably good choices have been made with respect to location, size etc. It is carried out to measure whether the project is technically sound and viable. Technical analysis of a project is very essential to ensure that necessary physical facilities required for production will be sufficient and the best possible alternative is selected to procure them. So, technical appraisal plays a very crucial role in acceptance or rejection of a project because a project which is not technical viable will not be financed by the lending institution.