



**WOLLO UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ACCOUNTING AND FINANCE**

DISTANCE MODULE FOR DEGREE PROGRAM

**PROJECT ANALYSIS & EVALUATION
(ACFN3131)**

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Editor: Natnael Fentaw (Assistance Professor)

Distance Education Program

2020

Wollo University

Collage of Business and Economics

Department of Accounting and Finance

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About the Course

Course Code	AcFn3131
Course Title	Project Analysis & Evaluation
Degree Program	BA Degree in Accounting and Finance
Module	Project and Investment Analysis
ETCTS Credits	5
Credit Hour	3
Course Objectives & Competences to be Acquired	This course aims to help students create an understanding of the processes, techniques, and procedures of project identification, formulation, appraising, planning, organizing, and implementing. It also highlights the monitoring, evaluation and impact analysis concepts.
Course Description	The course deals with the different stages of project management. Topics covered include: national plans and programs, the project cycle, market and demand analysis, raw materials and supplies study, location, site and environmental assessment, production plan and plant capacity, technology and engineering study, financial analysis, economic analysis, appraisal criteria, and project management.
<u>Evaluation Type</u>	<u>Weight</u>
Assignment	35%
Tutorial Attendance	5%
<u>Final exam</u>	<u>60%</u>
Total	100%

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CHAPTER ONE

INTRODUCTION TO PROJECT

Learning Objectives:

Dear students, welcome to the first chapter of project analysis and evaluation. At the end of this section, you will be able to:

- + Understand the meaning and Classification of a project
- + Explain characteristics and objectives of projects
- + Describe the role of project manager and project management environment
- + Identify project organization structure

1.1. Definitions of a Project

Dear Learners! You might have heard the term ‘project’ in different occasions and over the media. Even also you might have been involved in a certain project undertaking. Hence, would you have any idea about it? What is the definition of a ‘*project*’? Give your own answer before you proceed to the following paragraphs.

In General Speaking, the term project, long before has been conceived in different dimensions. Projects are about work, actions, buildings, re –buildings, achievements, deliverables and outcomes. Moreover, project may have also the following meaning. “ a sequence of connected events that are conducted over a defined and limited period of time and are targeted towards generating a unique but well – defined outcome”.

According to *Project Management Institute* the term project can be defined as” a temporary endeavor undertaken to create a unique product or service. *Temporary* means that every project has a definite end. *Unique* means that the project or service is different in some distinguishing way from all similar products or services.”

It is also defined as ‘A unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or organization to meet specific objectives within defined schedule, cost and performance parameters.’

Project may be defined as planning work for various activities for a completion of a final work. Project is a plan for arranging, coordinating, supervision, monitoring and complication of various activities related to a final objective. Examples; construction of building, construction of dam and

road, establishment of factories, launching of products, marketing a project, developing a new product, designing a software, implementation of software and so on.

Activity 1.1:

- 1) Define the term project.
-

1.2. Characteristics of a Project

Dear learners! Are you known about the typical features of a project? Try to give some of the characteristics of a project in writing before you go through the following discussions.

Despite differences in project definition, the following few characteristics are usually common to all projects. The key *features* of a project are as follows:

- ✚ A project has a *specific* objective – an expected result or product. The objective of a project is usually defined in terms of scope, schedule and cost.
- ✚ A project is expected to meet *measures of quality* and customer satisfaction.
- ✚ A project *requires various resources* such as people, materials, equipment, and facilities.
- ✚ A project *has a schedule* and takes place within predefined time periods. That means a project has a definite starting and finishing point.
- ✚ A project *requires a budget* (financial plan) for cost and resource allocations.
- ✚ A project is *a unique undertaking*. It may be unique because it has never been attempted before or because of unique customer satisfactions (e.g. developing a new product).
- ✚ A project *has customers*. These customers provide the funds for the completion of the project and may be an individual, a group of people or an organization.
- ✚ A project involves some degree of *uncertainty* in how and when the project objective will be achieved.

A key point to note in relation to project goals is that they should be stated in a way that facilitates measurement of achievements. The general rule is that project goals should be SMART – an acronym for:

- ✚ **Specific** – well defined and clear to anyone that has a basic knowledge of the project,
- ✚ **Measurable** – how do we know how far away completion is and when it has been achieved
- ✚ **Action-oriented** – indicate what should be done to achieve the objective,

- ✚ **Reliable/achievable** – do we have the resources (human, financial, material, information, time) to make the goal happen? Is the objective achievable with the available resources and timeframe, and
- ✚ **Time-based** – it should identify a definite target date for completion and/or frequencies for specific action steps that are important for achieving the goal on/within a specific time period.

Activity 1.2:

- 1) List certain primary features of a project.

- 2) Every project is characterized by ‘start and finish’. What type of concern a project is? Explain briefly.

1.3. Classification of a Project

Much of what project will comprise and consequently its management depends essentially on the category it belongs to. Projects can be categorized according to type of activity, location, time, ownership, size and need.

- 1 **According to Type of Activity:** Under this category, projects can be classified as industrial and non-industrial projects. Industrial projects are set up for the production of some goods. Non-Industrial projects comprise health care projects, educational projects, irrigation projects, soil conservation projects, highway projects etc.
2. **According to Location:** Location wise, projects can be categorized as national and international projects. National projects are those set up in the national boundaries of a country, while international projects are set up by the government or private sector across the globe.
3. **According to Completion Time:** Projects under this category can be divided into two types as normal and crash projects. In case of normal projects there is no time constraint. Crash projects are those which are to be completed within a stipulated time, even at the cost of ending up with a higher project cost.
4. **According to Ownership:** Projects under this category can be grouped into public, private and joint sector projects. Public sector projects are owned by the Government. In private

sector projects ownership is in the hands of the project promoters and investors. Joint sector projects are those in which ownership is shared by the Government and private entrepreneurs.

5. **According to Size:** Based on size, there may be three categories of projects- small, medium and large. This depends on investment on plant and machinery requirements and the category as small, medium and large varied from country to country.
6. **According to Need:** Based on the need for the project, projects can be classified as new balancing, expansion, modernization, replacement, diversification, backward integration and forward integration projects.

Activity 1.3:

- 1) What are the major classification of projects and specify their difference?

1.4. National Development Planning and Project Analysis

Development is of utmost significance for all countries. It is especially so for the underdeveloped economies which accounts for more than three fourth of the world's population. To grasp the process that involves initiations and sustenance of development of it is necessary as a first step that we understand as to what it implies and how to indicate the economic progress that it makes possible. In the broadest sense, development aims at an improvement in the quality of life. This involves progress in the economic sphere as also the non-economic fields.

Economic development encompasses growth i.e., rise in per capita income of the people and all that goes to improve the essential elements that make for a better quality of life such as progress in education, health and nutrition and a cleaner natural environment. Development planning is concerned with many decisions most of which are related to capital expenditure on projects and their financing.

There are three distinct stages through which development planning is carried out:

- National Planning
- Sectoral Planning
- Project Planning

1.4.1. National Planning

National planning refers to the drawing of a national plan indicating projection of the economy on a macroeconomic basis. It requires the formulation of overall economic and social objectives (called development strategy) identifying the constraints such as shortage of investment, foreign exchange or skilled labour, and maintaining consistent inter relation between the various sectors and regions of the economy. Macro economic planning is concerned with the rate of economic growth, establishing regional balance and priorities and with the formulation of investment policies and programs, which will achieve the target set.

The national economy is divided into sectors such as

- agriculture
- manufacturing industries
- service industries
- infrastructure
- social service

1.4.2. Sectoral, (Sub-Sectoral) Planning

Once the national planning is done, planning will be developed on sub-sectoral basis. The analysis of each sector will provide an indication for investment, employment, export etc. Before embarking on an individual project, it is frequently necessary to possess detailed knowledge of the sector concerned (e.g., chemical, textile, engineering, iron and steel, these referred to as sub-sector with manufacturing sector) especially when the project is fairly large in relation to the sector. Such sectoral planning should provide area where new investment may be made, and as such, play an essential part in project identification. In addition, it provides an important framework in which to analyze new projects and to assess their ramifications.

1.4.3. Project Planning

Once a sectoral (sub-sectoral) plan has been drawn up, the way is clear for project planning. This consists of two states.

- A. A pre-feasibility study, which concentrates on the market identification and on the costing of a project to satisfy the market, and a rough financial plan and economic analysis.
- B. A detailed feasibility study, it will be undertaken when the investor is known, and the availability of finance will be discussed and will consists of a very detailed description and analysis of the project.

1.4.4. Project Analysis (Evaluation)

Project analysis means the [examination](#) of all the [costs](#) or problems of a [project](#) before work on it is started. [Valuation analysis](#) is used to evaluate the potential merits of an investment or to objectively assess the value of a business or asset. Valuation analysis is one of the core duties of a fundamental investor, as valuations (along with cash flows) are typically the most important drivers of asset prices over the long term.

1.5. Role of Project Manager

As things stand today, none of the present generation project manager, including the very successful ones, come from any of our management schools. They were just given the job-some succeeded and others did not. Those who succeeded are not many, because only a handful of projects in India were ever completed on time, within budget and performed to expectations. While the failures of these projects had been analyzed in many seminars and workshops, the role of project managers and their development did not form the subject of any serious discussion. There could be two reasons for this: (a) Perhaps no one thinks that success or failure of a project depends on the project manager; and (b) It may also be that no one considers them as a special breed of managers. Surprisingly, even some of the practicing project managers themselves subscribe to these views. The basic roles and responsibilities of a project manager that we are referring to could be grouped under the following heads.

1. Defining and maintaining the integrity of a project;
2. Development of project execution plan;
3. Organization for execution of the plan;
4. Setting of targets and development of systems and procedures for accomplishment of
5. Project objectives and targets;
6. Negotiation for commitments;
7. Direction, coordination and control of project activities;
8. Contract management;
9. Non-human resource management including fiscal matters;
10. Identify actual and potential problems and take corrective actions (Problem-solving);
11. Human resources management;
12. Satisfaction of customer, Government and the public; and
13. Achievement of project objectives, cash surplus and higher productivity.

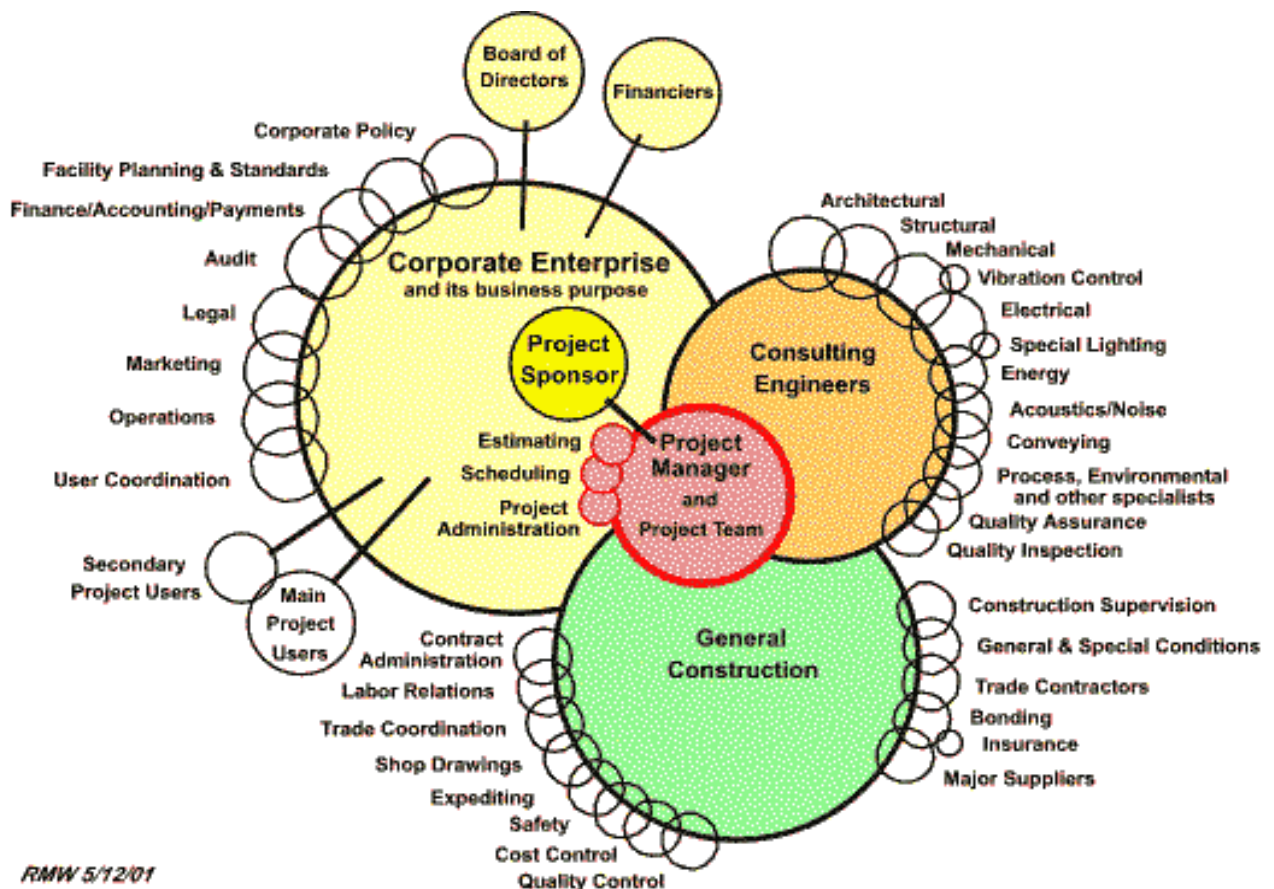
1.6. Project Management Environment

Certainly the project manager needs to be similarly concerned about the project's technology, and manage accordingly. This applies to both the implementation and shorter term practical construction impacts of the project as well as its conceptual development and consequent long term impacts. However, today's project manager also needs to be attuned to the cultural, organizational and social environments of the project. Understanding this environment includes identifying the project stakeholders and their ability to affect its successful outcome. This means working with people to achieve the best results, especially in the highly technical and complex environments such as those involving modern day construction projects. Therefore, it is essential that the project manager and his or her project team are comfortable with, and sympathetic towards, their cultural, organizational and social surroundings.

This leads to the possibility of influencing the project environment in a positive way, for the better reception of the change which the project is designed to introduce. For example, peoples' typical resistance to change will no doubt be evident amongst some of the stakeholders. Others may have vested interests or personal or group agendas which are only indirectly related to the project. If these can be identified in good time, they may be dealt with proactively and in such a way that the corresponding risks, which are otherwise likely to undermine the success of the project, can be significantly reduced.

- People involved in projects Contribute and work Have interests and expectations are project stake holders
- Project stakeholders consists of the project environment

Project management in corporate environment



Classification of project environment

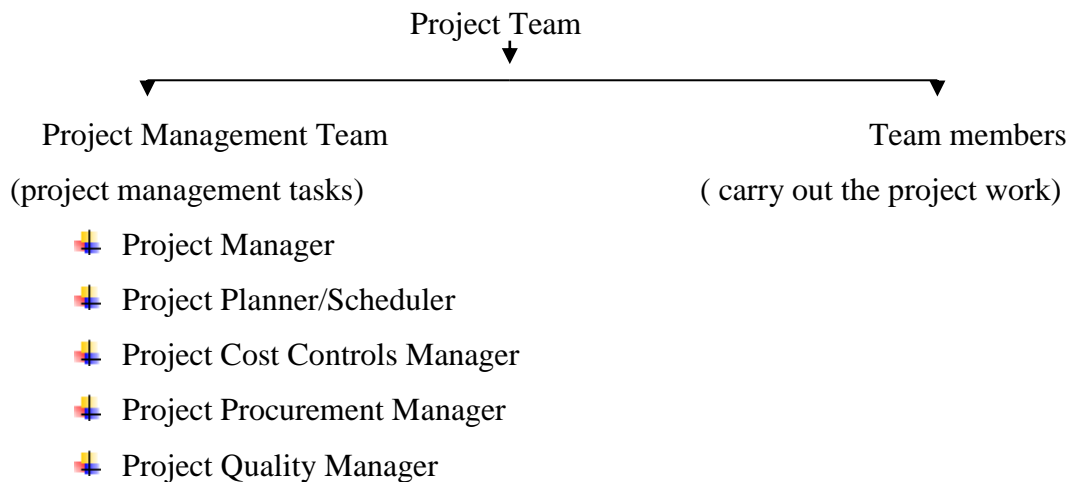
1. Internal project environment

- ✚ Direct interest on the project.
- ✚ Contribute to achieve objectives
- ✚ It consists of Project Owner and Project Team includes project Management Team and Project Team members (Assign roles and responsibilities)

Role of Project Owner

- ✚ initiates the project
- ✚ benefits from its final result
- ✚ responsible to monitor the project objectives
- ✚ provides financial or other resources to the project

Role of project Team



2. External Project environment

- ✚ Main interest on its outcome or on objectives and phases
- ✚ It consists of End Users, Customers, Social Groups and Suppliers (Manage)
- ✚ Role of above people - Identify needs, expectations, power, Develop Managing Strategy, involve them actively in decision making, meet their expectations and Communicate the benefits

Activity 1.4:

- 1) Explain the role of project manager?

- 2) Describe classification of project management environment?

1.7. Project Organization Structure

A project organization is a structure that facilitates the coordination and implementation of project activities. Its main reason is to create an environment that fosters interactions among the team members with a minimum amount of disruptions, overlaps and conflict.

One of the important decisions of project management is the form of organizational structure that will be used for the project. Each project has its unique characteristics and the design of an organizational structure should consider the organizational environment, the project characteristics in which it will operate, and the level of authority the project manager is given.

A project structure can take on various forms with each form having its own advantages and disadvantages. One of the main objectives of the structure is to reduce uncertainty and confusion that typically occurs at the project initiation phase. The structure defines the

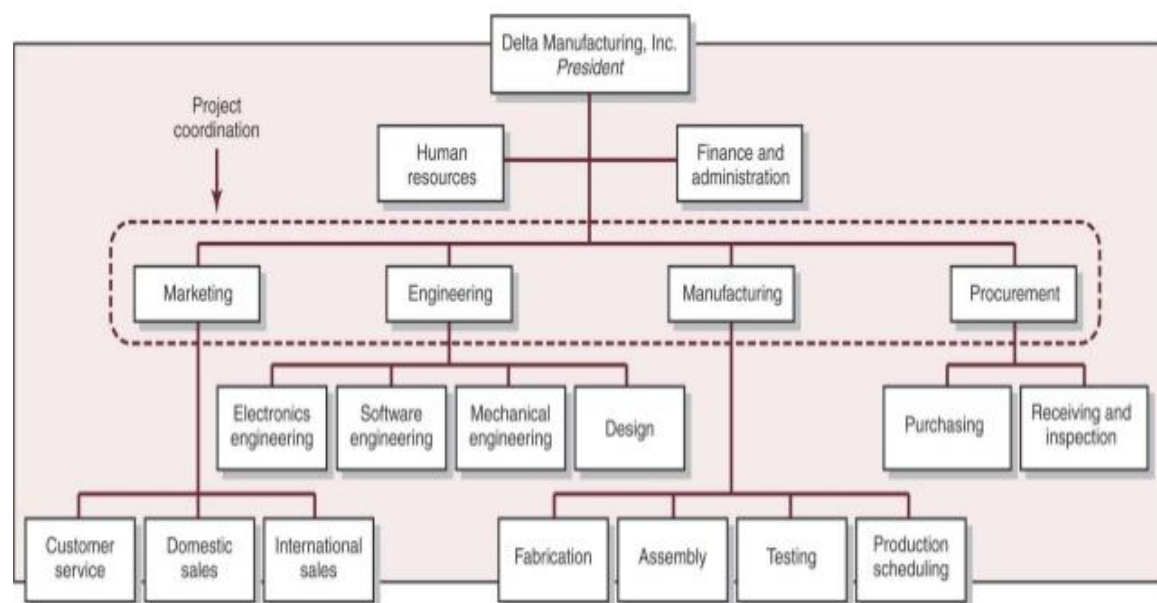
relationships among members of the project management and the relationships with the external environment.

The structure defines the authority by means of a graphical illustration called an organization chart. A properly designed project organization chart is essential to project success. An organization chart shows where each person is placed in the project structure. An organization chart is drawn in pyramid form where individuals located closer to the top of the pyramid have more authority and responsibility than members located toward the bottom. It is the relative locations of the individuals on the organization chart that specifies the working relationships, and the lines connecting the boxes designate formal supervision and lines of communication between the individuals.

Types of organizational structure of project management are: functional organizational structure, project-based organizational structure and matrix organizational structure.

1.7.1. Functional organizational structure.

Functional organizational structure is to be managed in the current organization hierarchical structure, once the project begins operation, the various components of the project are taken by the functional units, each unit is responsible for its charged component. If the project established, a functional area play a dominant role, functional areas on completion of the project, senior managers will be responsible for project cooperation coordination.



Advantages of this structure:

1. The use of personnel with greater flexibility, as long as the choice of a suitable functional departments as the project supervisor, the department will be able to provide

professional and technical personnel required by the project, and technology experts can also be used by different projects and after completion of the work can go back to his original work;

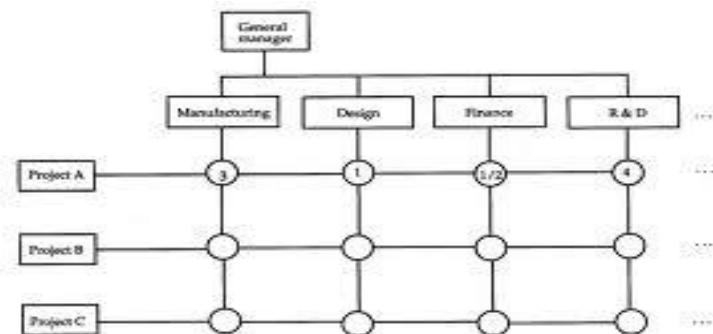
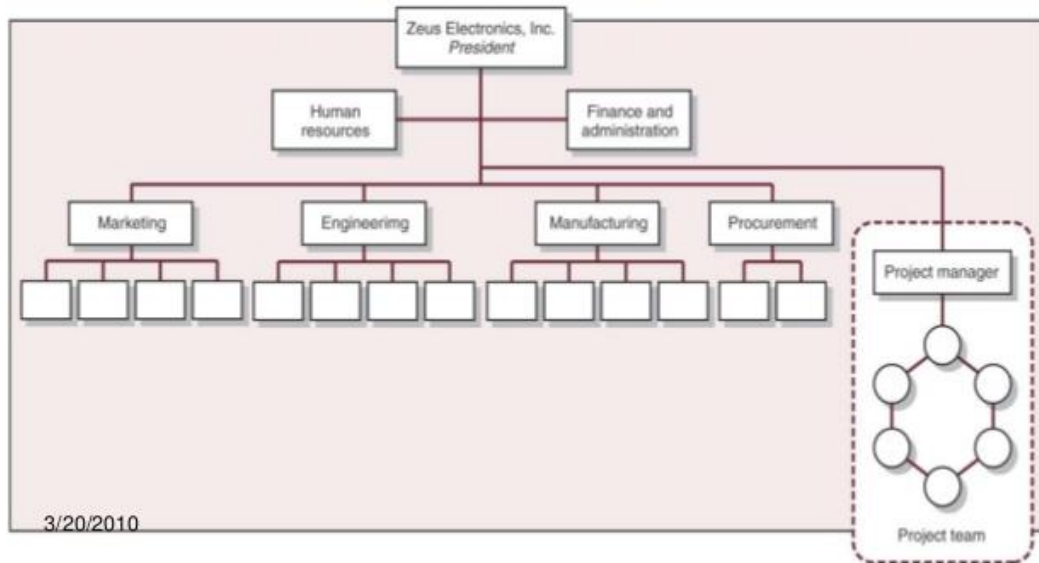
2. When the project team members leave or leave the company, the functions can be used as the basis for maintaining the continuity of the project;
3. Functional department can provide a normal career path for professionals.

Disadvantage of this structure:

1. Projects often lack of focus, each unit has its own core functions of general business, sometimes in order to meet their basic needs, responsibility for the project will be ignored, especially when the interest taken in the project brought to the unit not the same interest;
2. Such organization has certain difficulties in the inter-departmental cooperation and exchanges;
3. Motivation is not strong enough for project participants, they think the project is an additional burden, and not directly related to their career development and upgrading; in such organizational structure, sometimes no one should assume full responsibility for the project, often the project manager is only responsible for part of the project, others are responsible for the other parts of the project, which leads to difficulties in coordination situation.

1.7.2. Project-based Organizational Structure.

Project organizational structure refers to the creation of an independent project team, the team's management is separated from the parent organization's other units, have their own technical staff and management, enterprise assigns certain resources to project team, and grant project manager of the largest free implementation of the project.



The advantages of this structure:

1. Focus on this project team, project manager is solely responsible for the project, the only task for project members is to complete the project, and they only report to the project manager, avoiding the multiple leadership;
2. The project team's decision is developed within the project, the reaction time is short;
3. In this project, members work with strong power, high cohesion, participants shared the common goal of the project, and individual has clear responsibilities.

Disadvantage of this organizational structure:

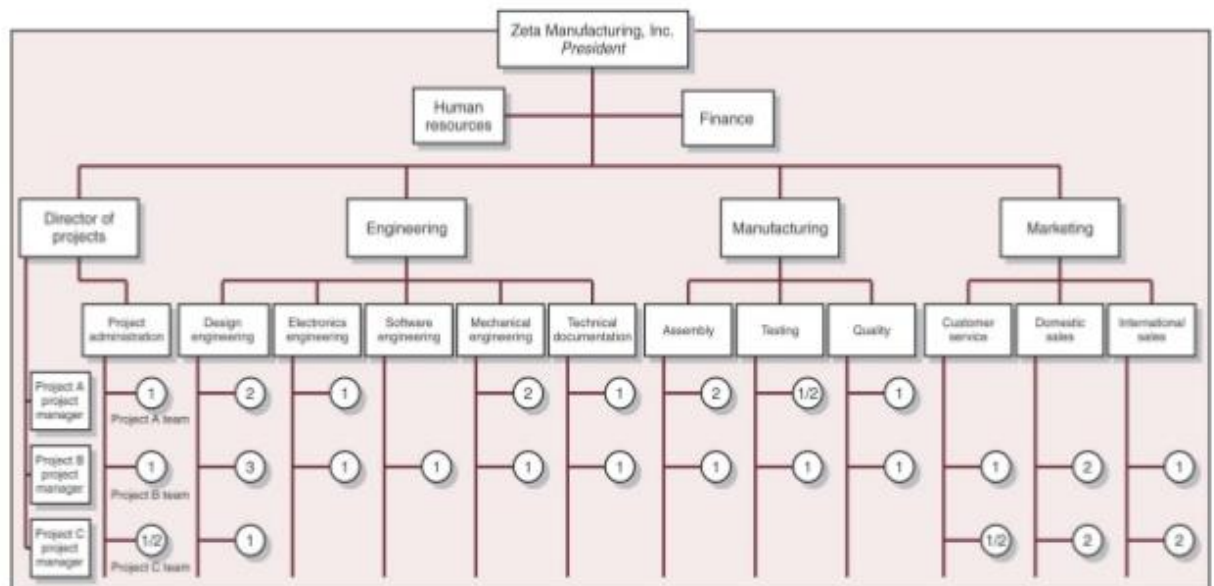
1. When a company has several projects, each project has its own separate team, which will lead to duplication of efforts and the loss of scalable economies;
2. The project team itself is an independent entity, prone to a condition known as "Project inflammatory" disease, that is, there is a clear dividing line between the project team

and the parent organization, weakening the effective integration between project team and the parent organization;

3. The project team member's lack of a business continuity and security, once the project ended, return to their original functions may be more difficult.

1.7.3. **Matrix** **Organizational** **Structure**

Matrix organizational structure is a hybrid form; it loads a level of project management structure on the functional hierarchical structure. According to the relative power of project managers and functional managers, in practice there are different types of matrix systems, respectively, Functional Matrix: in this matrix, functional managers have greater powers than project managers); Project Matrix: in this matrix, project managers have greater powers than functional managers); Balance Matrix: in this matrix, functional managers and project managers have the equal powers.



The advantages of this organizational structure:

1. It is the same as functional structure that resources can be shared in multiple projects, which can significantly reduce the problem of redundant staff;
2. project is the focus of work, with a formal designated project manager will make him give more attention to the project, and responsible for the coordination and integration work between different units;
3. when there are multiple projects simultaneously, the company can balance the resources to ensure that all the projects can progress to complete their respective costs and quality requirements;

4. The anxiety of project members is reduced greatly after the end of the project, while they are strongly associated with the project, on the other hand, they have a “home” feeling about their functions.

Disadvantage is that this organizational structure:

1. The matrix structure has exacerbated the tensions between functional manager and project manager;
2. under any circumstances, sharing equipment, resources and personnel among different projects will lead to conflict and competition for scarce resources;
3. In the process of project implementation, the project manager must negotiate and consult with the department managers on various issues, which leads to the delay in decision making;
4. Matrix management is not according to the principles of unified management, project members have two bosses, the project manager and functional managers, when their commands are divided, it will make members at a loss.

Three different forms of the matrix organizational structure does not necessarily have the advantages and disadvantages described above: Project Matrix can increase the project's integration, reduce internal power struggle, its weakness is poor control of their functional areas and prone to “project inflammation”; Functional Matrix can provide a better system for managing the conflict between different projects, but maintaining the control of functions is at the cost of inefficient integration of projects; Balanced Matrix can achieve the balance between technology and project requirements better, but its establishment and management is very subtle, is likely to encounter many problems related to matrix organization.

1.8. Management by Project

Managing work: Organizations work perform can be categorized into two types: operations and projects. They are the same perform in that they are both

- Performed by people
- Constrained by limited resources
- planned, executed and controlled

They are different in that:

- Operations are ongoing
- Projects are temporary and unique

The **Management by Projects** technique allows us to manage both types of work as projects.

Management by projects recognizes that projects cannot be considered in isolation from other work. All work needs to be considered in aggregate so that the right projects are being worked on by the right people at the right time.

This may involve operational activities as well as project type activities. Is an ongoing support service less important than a particular development project? We should be able to view resource plans and actual time spent across all activities and not just projects where a project plan has been defined.

The Project Management Institute recognizes this approach as follows: -

The term project management is sometimes used to describe an organizational approach to the management of ongoing operations. This approach, more properly called **management by projects**, treats many aspects of ongoing operations as projects in order to apply project management to them.

An Approach to Business

Management by projects is therefore an **approach** to conducting business. It is not more of the same project management.

Rudolph Boznak (PM Network, January 1996) puts it succinctly:

"Project management versus Management by Projects is not merely a twist on words ... there is a significant difference in concepts, scopes and capabilities. Success in a Management by Projects environment requires a far different approach than merely applying more of the same project management systems and methods."

The table below summarizes this:

Project Management is:	Management by Projects is:
The direction and management of a project	The integration, prioritization, communication and continuous control of multiple projects
A discipline	An operating environment
A tactical issue	Enterprise-wide
Project-wide	A strategic issue

Summary of the Chapter

- ✚ Project is a unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or organization to meet specific objectives within defined schedule, cost and performance parameters.
- ✚ The major project characteristics are: it has its own specific objective; it has starting and finishing time; uniqueness; commitment of scarce resources; team work; change and so on.
- ✚ It is convenient to classify projects on different basis: sectors wise, industrial and non-industrial projects, need-based projects and others.
- ✚ A project has certain specified objectives. These objectives, which are usually meet three fundamental criteria: the project must meet the prescribed quality requirements; must be accomplished within the budgeted cost; the project must be completed on time.
- ✚ The process of project planning involves the following main steps: defining the objectives of the project; making forecasts for achieving the goals, identifying the alternative courses of action for achieving the goals; evaluating the resources available to the organization; evaluating the available alternative courses of actions and selecting the course of action/actions that are most suited to achieve the desired results, taking into account resource constraints, if any.
- ✚ Almost all projects involve a capital expenditure. Essentially, each of them represents a scheme for investing resources which can be analyzed and appraised independently.
- ✚ Capital expenditure decisions often represent the most important decisions taken by a firm. Their importance stems from three inter-related reasons: Substantial Outlays, Long-Term Effects and Irreversibility
- ✚ While capital expenditure decisions are extremely important, they also pose difficulties which stem from three principal sources: measurement problems, uncertainty, and temporal spread
- ✚ The important facets of project analysis are: Market analysis; Technical Analysis; Financial analysis; Economic analysis; and Ecological analysis
- ✚ It is obvious that project management is not new. There are many published definitions of project management, but the following definition covers all the important ingredients:

the planning, monitoring and control of all aspects of a project and the motivation of all those involved in it, in order to achieve the project objectives within agreed criteria of time, cost and performance.

Model Examination Questions

A) Short Answer Questions

1. Define the term project.
2. Explain the characteristics and objectives of project.

B) Matching

Listed below are items and phrases associated with typical features of a project. Pair each item from list A with the item from list B that is most appropriately associated with it.

List A:

1. Team roles
2. Non – repetitive
3. Start and finish
4. A budget
5. Use of resources
6. A life cycle
7. a single responsibility

List B:

- A. Having beginning and an end with a number of distinct phases in between.
- B. Utilization of inputs (material, human, and financial).
- C. Specific assignment of responsibility.
- D. Group work and relationships among professionals.
- E. No two projects are exactly a like.
- F. A project is having a beginning and certain definite end.
- G. Forecasted amount for undertaking of a project.

CHAPTER TWO

PROJECT LIFE CYCLE

Introduction

In this chapter a brief discussion of the elements of a project life cycle will be given. There are distinct stages that shall be passed in achieving goals of a project and that are repeated in the right order whenever a project is to be undertaken.

These stages of a project life cycle may differ according to the expression of different authors or institutions. But the basic ones are the pre investment phase, the investment phase and the operational phases.

Each of the above phases with their various divisible stages will be detailed and discussed in this chapter and the remaining of the chapters in this module. The framework is given in here to be discussed items by item in the remaining chapters.

Objectives of the chapter

After completing this chapter, you should be able to:

- ✚ Briefly describe what project life cycle means
- ✚ Identify and describe the stages in a project cycle
- ✚ Describe the different stages in each phase of a project life cycle Compare and contrast different classifications of project life cycle

2.1. Meanings and Definition of Project Life Cycle

Project life cycle refers to the various stages through which a project passes from its time of inception up to its completion. The stages/phases constitute a specific sequence that is cyclical in nature.

There tends to be a natural sequence in the way projects are planned and carried out. Before any project is actually realized it goes through various planning phases Therefore, the different stages through which project planning proceeds from inception to implementation are often called “the project cycle”. It is the project’s life cycle through which it advances from infancy to

maturity. The main features of this process are *information gathering, analysis, and decision making*.

The stages or phases through which the project passes are necessary for its completion and they constitute a specific sequence that is cyclical in nature identified as *project life cycle*. Dividing project life cycle into phases helps in better management and control of a project.

The project cycle considers various stages in which each stage not only is grown out of the proceeding ones, but also leads into the subsequent ones. The planning process does not contain such a stringent sequence of events since all aspects of the project have to be considered simultaneously and, if necessary, adjusted to one another.

Therefore, **projects cycle** is a self – renewing cycle in that new projects may grow out of the old ones in a continuous process and self – sustaining cycle of activity.

A project cycle is a sequence of events, which a project follows. These events, stages or phases can be divided into several equally valid ways, depending on the executing agency or parties involved. Some of these stages may overlap. Capital expenditure decision is a complex decision process, which may be divided into the following broad phases.

2.2. Project Cycle Models

The main features of this process are information gathering, analysis and decision making. Through the project cycle, the primary preoccupation of the analyst is to consider alternatives, evaluate them and to make decisions in which of them should be advanced to the next stage.

Many project cycle models differ in their perspective, emphasis and level of detail. Four of these models are listed below and explained further in the next paragraphs of this chapter.

1. The BAUM's Project Life Cycle
2. The New Project Cycle (World Bank 1994) Project Life Cycle
3. United Nation Industrial Development Organization (UNIDO) Project Life Cycle

2.2.1. The Baum Cycle (Adopted by the World Bank in 1970)

The World Bank suggested some stages in the project activities. These project cycles is divided into the following five stages.

2.2.1.1. Project Identification (Pre-feasibility studies)

Project identification is the initial stage of the project. It contributes towards achieving specified development objectives are identified. A project idea may originate from multiple

sources. Many of the important projects in developing countries emerge from political commitment of national leader, as response to crisis, emergencies and external threats or to foreign governments' policies and assistance agency priorities. Others are new experiments emerging from previous project failures or expansion and replication of successful projects tested locally or proven feasible in other developing countries or from the discovery of critical economic and social bottlenecks of shortages, excess or idle resources and forward & backward linkages with existing projects.

The work of voluntary agencies, non-profit organizations and foundations in such fields as health care, education, family, social services and housing has been a catalyst for new ideas. Developing nations are required to link informal processes with formal national planning systems very closely.

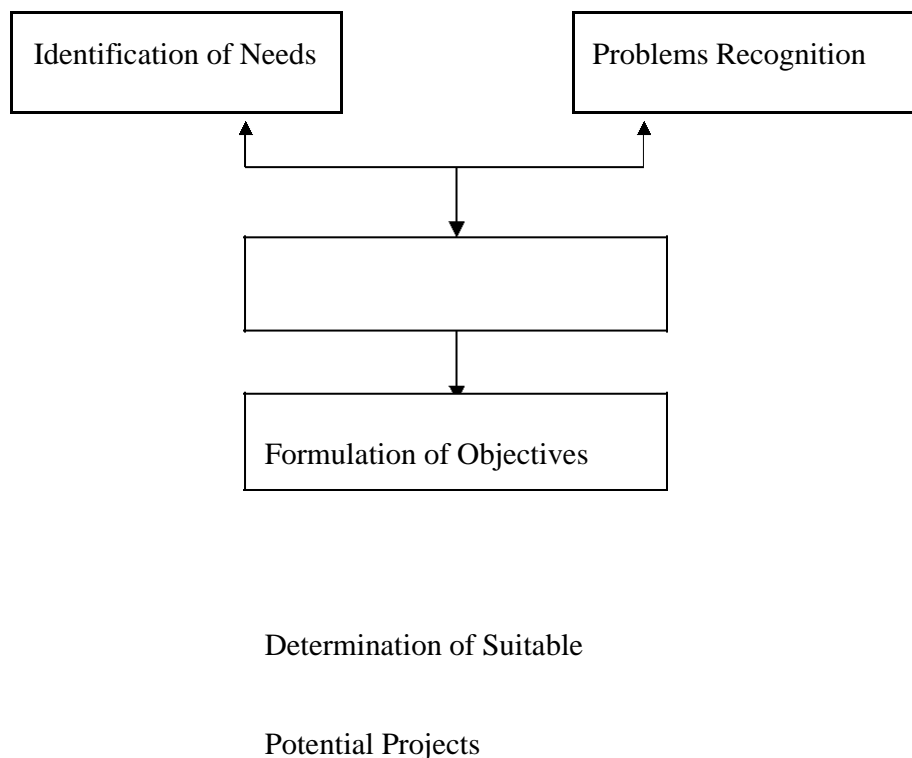


Figure 2.1: Steps Involved at the Project Formulation Stage

Generally, project ideas are born at two levels, the micro-level and macro-level.

A. Preliminary Screening

Project planning is a process of elimination of inferior alternatives. Once some project ideas have been put forward, the first step is to select one or more of them as potentially viable. This calls for a quick preliminary screening by experienced professionals who could also

modify some of the proposal. At this stage the analyst should eliminate proposals that are technically unsound.

B. Pre-feasibility Study

Following the preliminary study, promising options should be investigated in a systematic manner to suggest which are to be eliminated. Sophisticated analysis of the technical, financial, social and institutional aspect of the project is postponed to a later stage. However, the report should indicate which of these aspects deserve particular attention during the subsequent step. These reports are called pre-feasibility studies.

To enable the relevant authorities to decide on the merit of various project options, the studies should contain:

- a.** The structure and objective of the project
- b.** The nature and size of the demand of output or the need that it would satisfy
- c.** Availability of material and human input
- d.** Basic alternative technologies available and their merit and drawbacks
- e.** Approximate investment and operation cost
- f.** Rough estimates of financial and economic return
- g.** Any major factor that is likely to have an impact on the project and
- h.** What further information on technical, financial, economic or institutional aspects of the project should be acquired through special studies and surveys?

2.2.1.2. Project Preparation (feasibility Study)

Pre-feasibility study indicates that the project *prima facie*, promising and further work is justified; the project enters the next stage for more and sophisticated analysis supported by accurate information in the study. All aspect, technical and non-technical, should receive the attention to serve without postponing any consideration to the later stage

Project Preparation necessitates a team work approach with professionals investigating different aspects of the project, working closely. They should exchange views and check their conclusions under the coordination of an expert working as team leader.

Time spent on project is not lost time. There is tradeoff between project preparation and implementation. The better a project is prepared, the easier and faster its implementation and lowers the probability of cost over runs. Where a project is to be financed by multilateral or bilateral and agencies, their specific requirements and standards of project preparation should be taken in account.

There are no basic economic choices to be made in project analysis. The economic dimension of the project is reflected in its basic objectives and it is the responsibility of authorities to make such choices. There are two key areas where the analysts have choices to be making: *the technological area* and *institutional area*. Some economic aspects relating to employment and income distribution may be placed under these areas if they are not included in the basic objectives. The feasibility study should give due consideration to the strong interrelation linkages to ensure mutual support between the technical and institutional components in achieving the objectives of the project.

On the other hand, there are two key areas where the analysts have choices to be making: the technological area and institutional area. Some economic aspects relating to employment and income distribution may be placed under these areas if they are not included in the basic objectives. In the technological sphere the choices to be made through comparative consideration of alternatives. Building a new plant or facilities as against improving the capacity of existing one; indigenous against imported technologies labor intensive against capital intensive one and technologies with high initial costs but low maintenance requirements against those low initial cost but high maintenance need; and possibility of implementing the project in the stage and the merits of one big plant in the center versus a number of smaller regional ones are made by professionals.

In institutional area considering the merits of establishing a new agency to implement and operate the projects as against using an existing one; comparative advantages of various degrees of centralization and decentralization of functions and decision making; evaluate alternative types of ownership and control such as public, private, cooperative, joint venture, domestic, foreign, etc and comparing alternatives in the supply of inputs and the supply

chain of output are undertaken. Project evaluation constitutes a part of the feasibility study of a project.

2.2.1.3. Projects Appraisal and Investment Decision

Appraisal is the comprehensive and systematic assessment of all aspects of the proposed project. The appraisers are usually the central economic authorities responsible for drafting the overall development strategy and entrusted with major decisions on matters relating to this strategy. The project is reviewed to conform that it accords with the broad development objectives and fits into the development process of the country.

The project is viewed from different perspectives; technical, commercial, financial, economic, managerial and organizational. It is to ensure that the project represents a high priority use of country's resources and in combination with other policies, contributes the maximum possible towards achieving national development objectives.

Appraisals should cover at least seven aspects of a project, each of which must have been given special consideration during the project preparation phase:

- a) Technical** – here the appraisals concentrate in verifying whether what is proposed will work in the way suggested or not.
- b) Financial** – the appraisals try to see if the requirements for money needed by the project have been calculated properly, their sources are all identified, and reasonable plans for their repayment are made where necessary.
- c) Commercial** – the way the necessary inputs for the project are conceived to be supplied is examined and the arrangements for the disposal of the products are verified.
- d) Incentive** – the appraisals see to it whether things are arranged in such a way that all those whose participation is required will find it in their interest to take part in the project, at least to the extent envisaged in the plan.
- e) Economic** – the appraisal here tries to see whether what is proposed is good from the viewpoint of the national economic development interest when all project effects (positive and negative) are taken into account and check if all are correctly valued.
- f) Managerial** – this aspect of the appraisal examines if the capacity exists for operating the project and see if those responsible ones can operate it satisfactorily. Moreover, it tries to see if the responsible are given sufficient power and scope to do what is required.
- g) Organizational** – the appraisal examines the project if it is organized internally and externally into units, contract policy institution, etc so as to allow the proposals to be carried out properly and to allow for change as the project develops.

These issues are the subjects of specialized appraisal report. And on the basis of this report, financial decisions are made – whether to go ahead with the project or not. In practice, there can be quite a sequence of project selection decisions. Following appraisal, some projects may be discarded.

If the project involves loan finance, the lender will almost certainly wish to carry out his own appraisal before completing negotiations with the borrower. Comments made at the appraisal stage frequently give rise to alterations in the project plan (project proposal).

2.2.1.4. Project Implementation, Supervision and follow up

It is the stage the conclusions reached and decisions made are put into action. Detailed designs and specification should be drawn, contract to be signed, workers to be hired and put to work, materials to be moved to site, etc. It is not well-prepared and evaluated but studiously executed projects that deliver the envisaged benefits. The project planning and execution require higher level of managerial skills and adequate administrative capacities. With many developing countries have proved to be lacking, many countries are not so expert as they are at planning. Any plan is only as good as it achieves. Some implementation problems are changed in the economic and political situation of the country or the world market while others project specific.

The execution of the project should be supervised closely and progress should be reported regularly to ensure that the implementation is progressing without deviating from the envisaged path. The follow up exercise or ex-post evaluation is considered as continuation of supervision to assess whether the objectives of the project have been reached.

It is during implementation that many of the real problems of projects are first identified. Because of this, the **feedback** effect on the discovery and design of new projects and the deficiencies in the capabilities of the project actor can be revealed.

Therefore, to allow the management to become aware of the difficulties that might arise, **recording, monitoring** and **progress reporting** are important activities during the implementation stage. There are some aspects of implementation that are of particular relevance to project planning and analysis.

i. The first is that the better and more realistic a project plan is, the more likely it is that the plan can be carried out and the expected benefit realized. This emphasizes once again the need for careful attention to each aspect of project planning and analysis.

ii. The second is that project implementation must be flexible. Circumstances will change and project managers must be able to respond intelligently to these changes.

The common ones are technical changes (soils, water logging, nitrogen application) price changes economic changes, political changes and these will alter the ways in which it should be implemented.

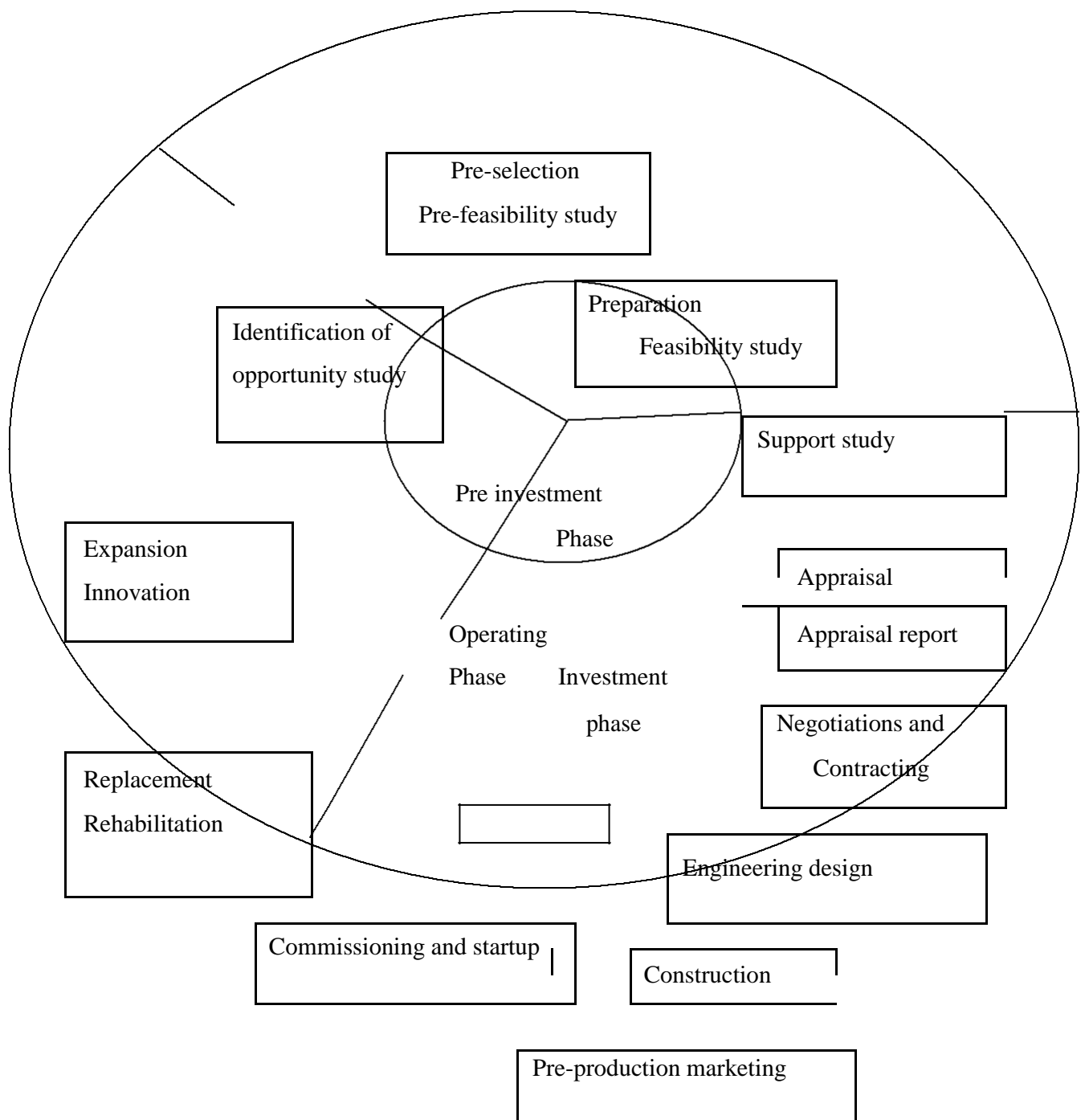
2.2.1.5. Project Evaluation

The ex-ante evaluation involves many forecasts and estimates of the project's viability. On the other hand, the ex-post evaluation of a project finds out its actual incomes and makes comparisons with anticipations in hindsight (Sang, 1995). An important purpose of this stage is to ascertain the reason for the project's success or failure, in order to pinpoint the pitfalls that should be avoided or the successful features that deserve replication in the future (Baum & Tolbert, 1985). This is an audit process to assess the extent of achievement or possible deviation from the objectives for which the project is undertaken. The result of ex-post evaluation would be the lessons learned from the experience of planning and implementation of the project. The ex-post evaluation also unveils the errors in forecast, measurement and evaluation during the pre-investment stages.

2.2.2. UNIDO (United Nation Industrial Development Organization) Project Life Cycle Approach

The following phases are the project cycle according to UNIDO:

1. Per-investment studies (project identification)
 - ✚ Opportunity studies (Project identification)
 - ✚ Pre-selection (Pre-feasibility study)
 - ✚ Preparation (feasibility study)
 - ✚ Appraisal (appraisal report)
- 2 Investment phase (implementation)
- 3 Operating phase (operation and ex-post evaluation)



Training

Figure 2.2 UNIDO project life cycle

2.2.2.1. Pre-investment phase

The pre investment phase comprises several stages: identification of investment opportunities (opportunity studies), project preparation (pre-feasibility and feasibility studies) and project appraisal (preparation project investment decisions report).

A. Opportunity Studies/Project Identification

Identification of investment potentials in developing countries generates inters data required to develop project idea in to a proposal is the opportunity study, which should consider analyzing the following:

- | | |
|---|---|
| 1. Availability of natural resources | 8. Possible linkage with other industries |
| 2. Existing agricultural pattern | 8. Extension by backward as forward linkage |
| 3. Future demand for goods | |
| 4. Increasing population, purchasing power | 9. Industrial politics |
| 5. Export and import substitution | 10. General input climate of the economy |
| 6. Environmental impact | 11. Expanding an existing firm to have large scale of economy |
| 7. Functioning similar project of other countries | 12. Export potential |
| | 13. Availability and cost of production factor |

The general opportunity studies can be categorized as area studies, industry studies and resources based studies.

B. Per-feasibility/pre-selection studies

To analyze that:

1. All possible alternatives are examined
2. The project concept justifies detailed analysis
3. A critical area necessitates in-depth investigation
4. Project idea is either attractive for investment or non-viable
5. The environmental situation at the site in line with national standards

Support functional studies to convert specific areas such as;

- | | |
|--------------------------------------|------------------------------------|
| 1. Marketing | 5. Environmental impact assessment |
| 2. Raw material and factory supplies | 6. Economics of scale and |
| 3. laboratory and Oliphant testing | 7. Equipment selection |
| 4. location | |

C. Feasibility study/Project preparation/

Feasibility study should provide all data, define and critically examine the commercial, technical, financial, economic and environmental aspects for each alternative. The data should be based on investigate efforts rather than on guest. A window dressing approach should be avoided. The supporting data should fulfill the following minimum reliability standard

D. Appraisal report/Appraisal

When a feasible study is completed the various parties involved in the project will carry out their own appraisal of the investment project in accordance with their individual objective and evolution of expected a risk, costs, and gains. Large investment and development finance institutions have formalized project appraisal procedures and usually prepare an appraisal report. The appraisal report will prove whether these pre-production expenditures were well spent, project appraisal as carried out by financial institutions concentrates on the health of the company to be financed, the returns obtained by equity holders and the protection of its creditors.

Appraisal reports as a rule deal not only with the project by also with the industries in which it will be carried out and its implications for the economy as a whole. Thus if a care manufacturing plant is to be appraised the report will also review the relationship of the plant to its feeder industry. The transport, the availability of highways and the energy supply. For large scale projects, appraisal reports will required field missions to verify the data collected and to review all those factors of a project that are conditioned by its business environment, location and markets and availability of resources.

2.2.2.2. Investment phase

The investment or implementation phase of a project provides wide scope for consultancy and engineering work, first and foremost in the field of project management. The investment phase can be divided in to the following stages.

- ✚ Establishing the legal, Financial and organization basis of the implementation of the Project.
- ✚ Technology acquiring and transfer, including basic engineering
- ✚ Detailed engineering design and contracting including tendering evaluation of bids and acquisition of Land, construction work and installation
- ✚ Pre-Production marketing, including the securing of supplies and setting up the administration of the firm.
- ✚ Recruitment and training of personnel Plant commissioning and start- up

2.2.2.3. Operating phase

The problems of the operational phase need to be considered from both a short and a long term view point. The short term view relates to initial period after commencement of production. When a number of problems may arise concerning such matters as the application of production techniques, operation of equipment or inadequate labor productivity owing to a lack of qualified staff and labor. Most of these problems have their origin in the implementation phase. The long-term view relates to chosen strategies and the associated production and marketing costs as well as sales reviews. These have a direct relationship with the projections prove faculty any remedial measures will not only be difficult but may prove highly expensive.

2.2.3. New Project Cycle (World Bank 1994)

This cycle emphasizes on the issue of participation of different groups in the project. It is particularly relevant where beneficiary participation is critical to the success of projects. It has four distinct phases:

- ✚ Listening- this is the stage of understanding the needs of the stakeholders of the completed project.
- ✚ Piloting- is a stage of trying the success or failure of the project in small scale operation before scarce resources are spent and wasted.

- ✚ Demonstrating- this is the stage of showing the stakeholders the successfulness of pilot in an effort to convince them accept the whole project idea.
- ✚ Mainstreaming- this is the stage of duplicating the pilot as large scale operation and getting into the main project activity.

It can be shown by the following diagram:

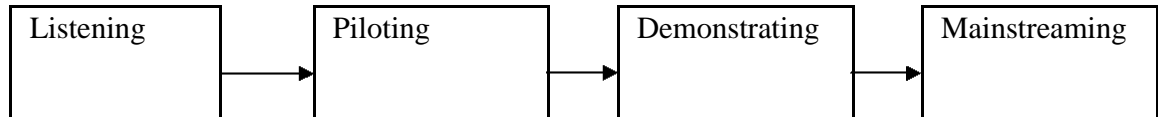


Figure 2-1 World Bank Project life cycle

2.2.4. Management Approach to Project Cycle

Project cycle management (PCM) is the process of planning, organizing, coordinating, and controlling of a project effectively and efficiently throughout its phases, from planning through execution then completion and review to achieve pre-defined objectives or satisfying the [project stakeholder](#) by producing the right deliverable at the right time, cost and quality.

Projects go through definite and describable phases. Each phase can be brought to some sense of closure as the next phase begins. Phases can be made to result in deliverables or accomplishments to provide the starting point for the next phase. Phase transitions are ideal times to update planning baselines, to conduct high level management reviews, and to evaluate project costs and prospects.

PCM or Project Cycle Management is an approach to manage multiple projects or programs and to improve the quality of projects by learning from one project and applying the lessons in the following ones. The approach was introduced by the World Bank in the 1980, and spread throughout the development world in the 90s, when it was picked up by the European Commission. Following an evaluation on Aid Efficiency, the EC introduced PCM as its main approach to manage and evaluate development project proposals.

Since then, other donor agencies and NGOs picked it up, although not always voluntarily. The fact that donor agencies actively pushed PCM and models and tools related to PCM led to resistance and often gave this approach a bad rep. One of the main tools of PCM, apart from the overall cycle, is the logical framework. With its emphasis on participation from both partners

and beneficiaries, PCM incorporated the logical framework approach (LFA) and added two main elements:

The link between the long term policies or the strategic framework of the organization and their execution in the form of projects (or programs)

Learning from experiences: PCM puts a heavy emphasis on monitoring and evaluation. The main idea behind the cycle is that the quality of projects gradually improves as lessons are passed on from one project to the next. Also, within a single project there is flexibility and learning, as continuous monitoring allows the people who manage the project to adapt the activities and planning to the (changing) situation in the field. At least, that is the theory.

Another benefit of PCM, both from the management point of view and the quality improvement point of view, is that it presents a standardised approach with standardised tools. However, this is also the main reason why PCM meets with a lot of resistance. As a project management approach, PCM is mainly interesting for donor agencies and large NGOs. The problem is that these large organisations tend to force their partners to use the procedures and tools in a very rigid way. This goes up to the point that the emphasis shifts from flexibility in the field and learning between projects, towards respecting contracts, forms, procedures, administrative rules, budget restrictions, and so on. PCM is used to manage contracts, control projects and see to it that laws, regulations and budgetary restrictions are respected. Often, this leads to a situation where both beneficiaries and the NGO or NGOs that manage the projects are bound by hands and feet to the contract, the logframe, the budget and the planning. This is a far cry from the original notion of flexibility and learning.

The **Logical Framework Approach (LFA)** is designed to improve and streamline projects, making them more effective in realising their development objectives, including that of producing sustainable benefits. The LFA is used by most governments, multi-lateral and bi-lateral aid agencies, international NGOs, etc. to prepare sector development plans and/or project proposals. It is the principal tool used for project design during the identification and formulation phases of the project cycle. Using the LFA during identification helps to ensure that project ideas are relevant, while during formulation it helps to ensure feasibility and sustainability. However, it is not a substitute for experience and professional judgment and must also be complemented by the application of other specific tools (such as Economic and Financial Analysis and Environmental Impact Assessment) and through the application of techniques which promote the effective participation of stakeholders

Four Key principles have been identified by PCM practitioners to improve the quality of judgment and decision making at all stages of the project cycle. These key principles interpreted from a perspective of sector development are:

- ✚ Projects are supportive of overarching sector policy objectives;
- ✚ Projects are relevant to an agreed-upon strategy and to the real problems of target groups/beneficiaries;
- ✚ Projects are feasible, meaning that objectives can be realistically achieved within the constraints of the operating environment, the given budget and the capacities of the implementing organization; and
- ✚ Benefits generated by projects are likely to be sustainable.

These four principles are important measures of the quality of the project, and should provide information for judgements and decisions of managers and advisors not only during the planning stage, but at all moment during the project cycle when amendments and course corrections are indicated.

A particular mention is to be given to the last principle “sustainability”. In order to foster the sustainability of the benefits generated, a careful analysis of the other three principles is fundamental. Sustainability is in fact a delicate issue depending on the coherence with the overarching sector policy objectives, the ownership and the alignment with the target groups needs and capacities and a realistic feasibility assessment. The list of over-ambitious failed projects is long.

To support the achievement of these aims, the PCM:

- ✚ Requires the active *participation* of key *stakeholders* and aims to promote local ownership;
- ✚ Uses the Logical Framework Approach (as well as other tools) to support a number of key assessments/analyses (including *stakeholders*, problems, objectives and strategies);
- ✚ Incorporates key quality assessment criteria into each stage of the project cycle; and
- ✚ Requires the production of good-quality key document(s) in each phase (with commonly understood concepts and definitions) to support well-informed decision-making.

Summary of the Chapter

- ✚ Project life cycle refers to the various stages through which a project passes from its time of inception up to its completion. The stages/phases constitute a specific sequence that is cyclical in nature.
- ✚ The main features of this process are information gathering, analysis and decision making. Through the project cycle, the primary preoccupation of the analyst is to consider alternatives, evaluate them and to make decisions in which of them should be advanced to the next stage.
- ✚ The World Bank (Baum cycle) suggested some stages in the project activities. These project cycles is divided into the following stages: Project identification; Project preparation; Project appraisal; Project implementation; and Project evaluation.
- ✚ New Project Cycle (World Bank 1994) emphasizes on the issue of participation of different groups in the project. It is particularly relevant where beneficiary participation is critical to the success of projects. It has four distinct phases: Mainstreaming; Listening; Piloting; Demonstrating.
- ✚ Project cycle according to UNIDO has the following phases: Pre-investment studies (project identification); Investment phase (implementation); Operating phase (operation and ex-post evaluation)
- ✚ The general opportunity studies can be categorized as area studies, industry studies and resources based studies.
- ✚ When a feasible study is completed the various parties involved in the project will carry out their own appraisal of the investment project in accordance with their individual objective and evolution of expected a risk, costs, and gains.
- ✚ The investment or implementation phase of a project provides wide scope for consultancy and engineering work, first and foremost in the field of project management.
- ✚ The problems of the operational phase need to be considered from both a short and a long term view point. The short term view relates to initial period after commencement of production. The long-term view relates to chosen strategies and the associated production and marketing costs as well as sales reviews.

Exercises

1. What is a project life cycle?

2. How are opportunity studies pre-feasibility studies and feasibility studies different? What similarities do they have?
3. what is the major different between the project cycle according to Baum and the new project cycle (world bank 1994)?
4. List the phases of the UNIDO project cycle.
5. List the phases of the UNIDO project cycle in investment stage.
6. Discuss the problems that exist in the operational phase

CHAPTER THREE

PROJECT IDENTIFICATION

Objectives of the Chapter:

Dear learners, welcome to the third chapter of project analysis and evaluation. At the end of this chapter, you will be able to:

- ✚ Know how to identify suitable project ideas
- ✚ Identify the different sources of project ideas
- ✚ Know how to select the most viable project ideas
and who is responsible to identify it
- ✚ Describe the difference between project concepts
and profile
- ✚ Explain the concept of project prioritization and
ranking

3.1. Concepts of Project Identification

Project identification is the process of searching for and subsequently finding potential projects that might be realized to generate benefits in excess of costs that accrue to the society and contribute towards the attainment of development objectives. The generation of promising investment (and/or project) ideas is among the major stages in the project cycle. It is the first stage in the project planning process.

Project identification is made in rather general terms with broader scope at the first glance and then, the idea will be progressively developed. According to the UNIDO model, opportunity studies and/or assessments of existing investment opportunities are considered very essential and hence, should precede the task of identification. Opportunity studies generally provide useful insights about possible/potential areas for investments. Generally speaking, a range of alternative project ideas needs to be considered, and even alternative versions of the same project may be conceived.

The search for promising project ideas is the first step towards establishing a successful venture. Identifying suitable project ideas is the most important and crucial step in the whole process of project preparation. As the traditional adage goes, the key to success lies in getting into the right business at the right time. While this advice is simple, its accomplishment is difficult because






good business opportunities tend to be elusive. Identification of such opportunities requires imagination, sensitivity to environmental changes, and realistic assessment of what the firm can do. The task is partly structured, partly unstructured; partly dependent on convergent thinking, partly dependent on divergent thinking; partly requiring objective analysis of quantifiable factors, partly requiring subjective evaluation of qualitative factors; partly amenable to control, partly dependent on fortuitous circumstances.

Identification is often the outcome of a triggering process rather than an analytical exercise. While the notion of identification is simple, it is difficult to develop methods or procedures for accomplishing it as there is no well-defined theory to guide this task. As these difficulties become more severe as one moves up the hierarchy of organizational decision-making levels because of the relative uniqueness (non-routineness) of higher level decisions as compared to lower level decisions.

With this note of caution, this chapter discusses certain broad considerations and guidelines helpful in the generation and screening of project ideas. The objective is to identify investment opportunities which are *prima facie* and promising and which merit further examination and appraisal.

3.2.Sources of Project Ideas

It is the first and foremost task of an entrepreneur to find out suitable business which is feasible and promising and which merit further examination and appraisal. Therefore, he has to first search for a sound of workable business idea and give a practical shape to his idea. While doing so, the entrepreneur has to tackle the various problems from time to time to achieve the ultimate success. Since the good project ideas are elusive, a variety of sources should be trapped to stimulate the generation of project ideas. Project ideas can originate from a number of sources- from national, sectoral or regional plans or strategies from operating agencies & intended beneficiaries. In practice, project ideas often result from;

-  Unsatisfied demanded /need and the most effective means to meet them.
-  Problems/constraints in the development process due to shortage of essential facilities, services or material.
-  Unused /under-utilized material or human resources for their conversion towards more productive purpose.
-  Need to complement other investments that have already taken place.
-  Initiative/response to government incentives of local, private or public entrepreneurs who wish to take advantage of the opportunities they perceive.

- ✚ Government's desire to respond to local political or social pressure originating from growing economic, social or regional inequalities.
- ✚ Personal experience & knowledge of field officers on the needs & potentials. This requires-imagination, creativity, ability & commitment to analyze the economic & national resource.
- ✚ Perception of market potentials through the review of statistical data & available surveys concerning:
- ✚ Products which the country has a comparative advantage due to natural resources. Products which substitute previously imported goods.
- ✚ Products for which there is export market potential.

3.2.1. Classification of Source of Project Idea

A. Macro Vs micro level

3.2.1.1. Macro source of the project

Project establishment depends on external factors called as macro factors exclusively. Government, fiscal policy, monetary policy, and other regulatory policies come under these sources.

- 1 Government as a policy maker:** In the planned economy, the government plays a major role in the industrial development. The government prepares plans for the industrial and overall development of the country, spells out priorities for the economy and lays the framework for development and resource allocation.

Individual entrepreneurs who are in search for profitable projects venture to locate their project opportunities within the overall framework for development laid out by the government. If export promotion and import substitution are the priority areas identified by the government, entrepreneurs tend to look for projects in such priority areas. If the government announces its policy of development of backward areas, entrepreneurs may find it easier and advantageous to set up their identified projects in such declared areas as this will help them to avail both financial and non financial incentives offered by the government for projects set up in backward areas.







The government lays down certain industrial priorities for the country development. These priorities depend upon the thrust areas relevant to the state development. The thrust areas keep on changing, as the government keeps on changing its development plans. The government adopts

industrial licensing policy to control new investments in areas which are saturated or areas that are to be encouraged.

Fiscal policy: The policy under which the government influence the economic activity of the country through the medium of budgets. The government presents details of public revenue and public expenditure through budgets. Fiscal policy is the policy under which the government uses its expenditure and revenue programs to produce desirable effects and to avoid undesirable effect on national income, output, employment, resource allocation/reallocation and so on.

Monetary policy: Monetary policy is concerned with the quantity of money and its regulation in an economy. The monetary policy of a country is formulated by the government and is carried out through the agency of the Central Bank of the country (National Bank of Ethiopia in case of Ethiopia). Monetary policy is designed to control and regulate the volume of money in circulation. It has its influence over the credit policy of banks. The main objectives of monetary policy are to control inflation/deflation, to make available the quantity of money in accordance with the requirements of economic development and to ensure stability of exchange rate of money.

2 Other Regulatory Policies: Apart from the above mentioned policies, Government also uses the following control measures to affect the desired patter of resource allocation.

-  Industrial licensing policy
-  Control over capital issues
-  Control over foreign exchange and foreign collaboration
-  Export promotion and import controls
-  Control over monopolies and restrictive trade practices
-  Control over pricing and distribution of commodities

3.2.1.2. Micro Source of the project

Success of the project depends on the internal and specific factors related to a particular industry as such. Availability of raw materials, availability of skilled labor, import/export of goods, price trend and so on come under the micro sources of the project. In general, at micro level project ideas can be generated from various sources. Some of these are discussed below.

1 Availability of Raw Materials: Easy availability of good quality of raw materials at fair prices is a definite indication that some projects that can make use of those raw materials may be through of. For example in an areas where agriculture in the

predominant activity and where agricultural produces (like cereals, vegetables and fruits) are available in plenty, the potential can be made use of by setting up food processing industries. Availability of minerals may give lead to chemical industries.

- 2 Availability of skilled labor:** Based on the locally available skilled labor force, suitable industries that can make better use of the skilled manpower can be identified.
- 3 Analysis of the performance of existing industries;** A study of existing industries in terms of their profitability utilization can indicate promoting investment opportunities which are profitable and relatively risk free. An examination of capacity utilization of various industries provides information about the potential for further investments. Such study is more useful if it is done region wise. Particularly for products which have high demand for consumption and wide scope for production.
- 4 Examination of the input-outputs of various industries:** The analysis of inputs required for various industries may throw some project ideas. Opportunities exist when { 1] Materials, purchased parts, or supplies are presently procured from distance sources with considerable time lag and transportation cost and [2] Several firms produce internally some components parts which can be supplied at lower cost by a single producer who can enjoy economics of scale. Similarly, a study of the output of the existing industries may reveal opportunities for adding value through further processing of the main outputs, by produce, by products as well as waste products.
- 5 Review of imports and exports;** Analysis of import statistics for a period of five to seven years is helpful in understanding the trend of imports of various goods and the potential for import substitution. Indigenous manufacture of goods currently imported is advantageous for several reasons. [1] It improves the balance of payments situation. [2]It generates employment, and [3] it provides market for the supporting industries and services. Likewise an examination of export statistics is useful in learning about the export possibilities of various products.
- 6 Investigation of local materials and resources;** A search for project ideas may begin an investigation into local resources and skills. Various ways of adding value to locally available materials may be examined. Similarly, the skills of local artisans may suggest products that might be profitably produced and marketed. Such assessment may consider issues such as the human and material resources, Infrastructure facilities and market for various products.

7 Analysis of economic and social changes: A study of economic and social trends is helpful in projecting demands for various goods and services. Changing economic conditions and consumer preferences provide new businesses opportunities. For example a greater awareness of the value of time is dawning on public. Hence the demand for time saving products like prepared food items, ovens and powered vehicles has been increasing. The other change that can be seen during analysis is the increasing desire for the leisure and recreational activities. This has caused a growth in the market for recreational products and services.

8 Study of new technological developments: New products are the new process and technologies for existing products developed by the research laboratories may be examined for profitable communication.

9 Exploring the possibility of reviving sick units: Industrials sickness is spread in many countries. There are innumerable bossiness units which have been characterized as sick. These units either closed are have reached the prospect of closure. A significant proportion of sick units however can be nursed back to health by sound management, fusion of further capital and provision of complementary inputs. Hence there is a fairly good scope investment in this area.

10 Identification of unfulfilled psychological needs:

For well-established multi brand product groups like bathing soaps, detergents, cosmetics and tooth paste, the questions to be asked is not whether there is an opportunity to manufacture them for satisfying an actual physical need, but whether there are certain psychological needs of the consumers which are presently unfulfilled.

11 Attending trade fairs:

National and international trade fairs provide an excellent opportunity to know about new product and developments.

12 Stimulating creativity for generation's new product lines:

New product ideas may be generated by thinking along the following lines: Modifications, rearrangements, reversal, magnifications, reductions, substitutions, adoptions and combinations.

- 13 Price Trend:** The trend in the price of various products/services may give an indication about the demand-supply relationship. If the general price level is rising during the past few years and if the rise in price level of a particular product is steeper than the rise in general price level, it may indicate a demand-supply gap. Further detailed study may be undertaken to ascertain the extent of demand-supply gap.
- 14 Data from Various Sources:** Various publications of Government, banks and financial institutions, consultancy organizations, manufacturer's, export promotion councils, research institutions and international agencies contain data and statistic which may indicate prospective ventures.

3.3. Who Identify Project Ideas?

There are quite large number of institutions and/or groups that often identify investment opportunities (or generate project ideas) in the society. These entities may be private firms, public enterprises, government units, local or international development agencies, financial institutions, as well as profit seeking or not-for-profit organizations. Listed below are the major groups that are involved, by and large, in the identification of projects in the society:

1 Technical specialists

Technical specialists can initiate project ideas from their experiences of through their research findings. This usually is common in manufacturing firms where mechanical and industrial engineers working there generate new expansion and/or new industrial projects. These projects usually either improve the products being produced currently or produce new products.

2 Local leaders

Social and community projects could emanate from the suggestions made by local leaders regarding the problems prevailing in the area. Local leaders could also initiate project ideas from already identified or implemented projects. For instance, project ideas on irrigation could be initiated from an already constructed hydro-electric dam.

3. Entrepreneurs

Entrepreneurship includes the characteristics of perception of managerial competence and motivation to achieve results. These characteristics make entrepreneurs the major sources of industrial and commercial projects. Although entrepreneurship skills have been passed on from one generation to another along family and socio-economic circles, it has been recognized that programs for entrepreneurship development will help individuals to come up with useful ideas.

4. Governments

Government guidelines such as national development plans that spell out what the government is likely to do to achieve its targets in different sectors of the economy are the sources of many projects by the government and entrepreneurs.

5. Others

In addition to the above list down economic units the following agents are also becomes source of project ideas;

- ✚ Small producers organizations/producers' unions;
- ✚ Large scale individual private sector producers;
- ✚ Product marketing organizations;
- ✚ Private sector companies (local/multinational);
- ✚ State owned enterprises & organizations;
- ✚ Government ministries, authorities, agencies, and commissions;
- ✚ Development banks (local as well as foreign);
- ✚ International development agencies, aid agencies, and self-aid associations;
- ✚ Local governments and state, regional, and sub-regional authorities;
- ✚ Local political & pressure groups such as opposition parties;
- ✚ Local and/or international NGOs;
- ✚ Credit institutions (such as credit unions, savings and loan associations, saving banks, commercial banks) and cooperatives; and so on.

3.4. Project Concepts and Profiles

3.4.1. Project concepts

A project concept is a complete documentation of the proposed project but needs to be implemented yet. The term "concept" means that it is under planning and processing for implementation. A full blown project concept consist of following documentation such as; project feasibility studies (technical, financial, environmental, etc.), detailed drawings/plans & specifications, detailed estimates for project cost, environmental permit, social acceptability of the project and other requirements for fund sourcing. A project concept is also called project proposal and can only be called "Project" when it is funded and under implementation.

The Feasibility, or Concept, stage of the project is the first development stage undertaken after determining the reasons and benefits for undertaking a project. This usually consists of a study, where an Initial Project Definition is developed in outline, demonstrating that the project is feasible, and identifying how the project should be structured in order to deliver the benefits

expected of it.

Reasons for undertaking a concept study before implementing a project. It will:

- ✚ Be the opportunity to consider all options for achieving the project's objectives.
- ✚ Develop consistently, alternative scopes and options for the project before determining the Best Value solution to proceed with.
- ✚ Have only committed a relatively small amount of money to understand the project and its chances of success, before committing larger sums of money associated with project implementation.
- ✚ Identify the most significant risks facing the project, should it proceed to implementation.
- ✚ Test the identified project scope and definition against the reasons for undertaking the project.
- ✚ Be the time of the project where most value can be added, through the creativity and experience of those involved, where ideas can be considered and tested in a safe environment.
- ✚ Test the sponsor's level of commitment and enthusiasm to see the project through, when the resulting conclusions and recommendations are presented.

Be following recognized Best Practice in project management. Research has demonstrated that project pre-planning activity, when carried out properly, is the biggest factor determining success for a project.

3.4.2. What is a Project Profile?

A project profile is a simplified description of an eventual project. In addition to defining the purpose and ownership of the project, it presents a first estimate of the activities involved and the total investment that will be required, as well as the annual operating costs and, in the case of income generating projects, the annual income.

It is simplified in a number of senses; costs may still not be well defined, minor items may be excluded, and assumptions as to the demand for the output of the investment, whether it be a childcare facility, a bridge, or canned vegetables, are probably just that - assumptions.

What is the Purpose of the Profile?

The project profile serves a number of important purposes. These are discussed briefly below.

a) It helps to ensure that the members of the community or group involved understand the probable implications of their proposal in terms of investment and operating costs, labor requirements, scale of operations and other factors. It is often not until the proposed project is debated publicly and written down in front of everyone that these elements really emerge. Up to this point, group members may just have felt that it would be 'good' to have a new access road

to the village, without really understanding what that might entail - both for the village as a whole and for them personally.

b) It helps eliminate wasted effort in preparing detailed projects that are incoherent, lacking support among the applicants, or which fail to meet basic tests of viability. If human and financial resources to support project formulation are limited - which is usually the case - this aspect of the profile in acting as a 'filter' is very important. If the community can only receive funds to support one full project preparation per year, it is best not to waste those resources on a project that has no chance of success.

c) The participation of group members in the preparation and assessment of the profile is an important stage in the ownership process for the specific project, as well as increasing the confidence of the participants in their ability to identify and develop real solutions to their problems (or responses to opportunities). For communities and groups, which have always relied on outsiders telling them what should be done, such confidence building is a valuable contribution to the social capital of the community.

d) Together with the other stages in the Rural Invest approach, it contributes to a more successful implementation process. Experience has shown that projects developed through Rural Invest, and which have had participatory project profile development exercises, present fewer problems during the subsequent implementation process. In part this seems to occur because the applicants understand more clearly the objectives and operation of the project. Other factors may include their increased confidence and ownership in the project, and the relationship developed with the local technicians.

The Principal Elements of a Project Profile

The project profile, as prepared with the applicants, consists of five parts. The last part has two variations: one exclusively for income generating projects (5a); and the other for non-income generating projects (5b). With the exception of Part 1 (the Introduction) it is not essential that the components be completed in the same order as presented. Many groups prefer to define the investment before tackling general costs or income, but this is not required. An example layout for the components is presented in Annex 1 to this manual, and can be used as a guide when drawing out the tables on a blackboard or large sheet of paper.

Part 1: Background Information: This section provides general information about the applicants, the location of the project and its characteristics, as well as a brief summary of the objectives and justification for the investment, including the demand anticipated for the product or service resulting from the project when operating. The purpose of Part 1 is to allow anyone not familiar with the project to understand - preferably in no more than 1 page - the background to the proposal. Agreement should be obtained from the applicants as to the general purpose and

characteristics of the eventual project as well as who would likely be involved in its operation and management.

Part 2: Investment. In this section the applicants are asked to list the various elements that will have to be obtained (purchased or supplied by the group) for the investment to be realized. For each item (except land - see Section 4 of this manual) it is also necessary to estimate the average working life of the item and who is to provide it (loan, donation, contribution of the community). A simple calculation is then made to determine the average annual cost of each item.

Part 3: Operating Costs and Income per Activity: This section describes income and costs directly resulting from carrying out activities made possible by the project, and which change according to the scale of activity (i.e. the greater the activity, the greater the costs and income). If the project is a simple one, there may only be a single activity, for example the grinding of grain (in the case of a local mill). However, in other cases there could be several activities; for example a dairy plant may produce cheese, butter and yoghurt. The section is primarily of relevance to income-generating projects, although there are some circumstances where it may prove useful to list operating costs and even income for other types of projects as well (e.g. where there is a user charge for a health clinic). To adequately complete this section, it is necessary for the group to understand the concepts of production units, sales units and production cycles, which are discussed further in Section 4 of this manual.

Part 4: General and Maintenance Costs: Some types of costs are not associated with the scale of production, but are a consequence of the project in general. These may include such expenses as: hiring a manager, nurse, or other employee; operating a vehicle; local land or property taxes; or office expenses. They will also include the costs of maintaining (but not replacing) equipment and other goods purchased or built at the investment stage - for example maintaining an access road, or repairing fences used to protect a reforested area.

Part 5a: Preliminary Estimate of Viability (income generating projects only). This section is used to perform the simple calculations required to make the preliminary estimate of project viability. The key calculations are:

- Annual Net Income: To determine if projected income is higher than direct and general costs
- Annual Net Income less Annual Investment Costs: To determine if annual net income (above) is sufficient to also cover replacement of the investment as it reaches the end of its useful life

- Number of Years of Net Income Needed to Cover the Investment: To determine if the annual net income is high enough to pay back the investment cost within a reasonable period of time.

Part 5b: **Preliminary Beneficiary Estimates (non-income generating projects)**. This section relates the overall cost of establishing and running the project to the number of beneficiaries and also considers how operating costs will be paid for. Key calculations are:

- ✚ Investment Cost per Beneficiary: The total expected investment cost divided by the number of direct beneficiaries (users and suppliers) and indirect beneficiaries (all those potentially affected by the project).
- ✚ Annual Operating Cost per Beneficiary: The total annual operating cost (including maintenance and repairs) divided by the number of direct and indirect beneficiaries.

The preliminary identification of future sources of funds for project operation and upkeep is also a very important part of profile preparation for non-income generating projects. Obtaining investment funds is often much easier than finding resources to cover annual costs once the project is underway. Any part of this cost not assured from outside sources will have to be met by the users of the project and/or the surrounding community.

3.5. Prioritization and Ranking

The need for project prioritization appears when an organization has two or more either independent or dependent (portfolio) projects that are performed in parallel. In order to ensure the achievement of strategic goals and objectives, that organization needs to focus on right projects among the variety.

Prioritization Process

In simple terms, the process of prioritizing projects is an activity for defining what projects within a portfolio to perform in what sequence. It is an attempt to make the project portfolio more effective through identifying the most effective way of implementing the projects. Here's a broader definition:

Project Prioritization Process is a structured and consistent activity that aims to analyze the current operational environment to identify any projects running in parallel within the same portfolio, develop a scoring model including ranking criteria, and apply that model to prioritizing the projects in order to determine the execution order that ensures the highest efficiency of the overall portfolio. The process serves as a framework for managing the effectiveness of parallel projects.

The process of project prioritization is complex and iterative so it can be repeated several times within the same portfolio lifespan. It is deliverable-oriented meaning that it produces some certain result that is vital for success of further portfolio management. The process ranks projects within the same operational environment in order to address multi-modal capacity and linkage gaps that may exist between the environmental components.

We divide the prioritization process into the **following key steps**:

- ✚ Collection – you must collect and gather all the data about your projects.
- ✚ Ranking – you must develop and use a ranking model that includes criteria for prioritizing.
- ✚ Verification – you must approve the ranked projects.

Establish Ranking Criteria

Below we suggest a list of measures you can use as **ranking criteria** for prioritizing parallel or portfolio projects. Please note the list is not full and can be supplemented with more items (for example, Safety, Integration, Connectivity, Mobility, Cost-effectiveness, Implement ability, etc.). In this publication we describe the key criteria only. If needed you can develop your own criteria when doing your project prioritization process.

Efficiency. The measure of efficiency shows a project’s ability to produce the desired outcome with the minimized possible consumption of the resources available to the project. If the project is able to turn inputs into output consuming fewer resources, then this project appears to be efficient. Common formula for calculating project efficiency is:

$$\frac{\text{Actual}}{\text{Standard Output}} \times \text{Output} = 100\%$$

Changeability. It proves a project’s ability to realize the planned changes as well as to adequately react to any new changes that seem to be vital and important to project success. As the higher changeability is, as the greater impact the project has to the changing environment. This means your project is highly adaptable to the changes so the project gains more chances to produce the desired outcome under preset or altering requirements.

Manageability. This item determines how much a project can be led and directed using existing controls. The measure is characterized by:

- ✚ Planning
- ✚ Monitoring
- ✚ Leading

Controlling

These characteristics determine whether your projects are manageable. Higher manageability entails higher effectiveness.










Coordination. This metric proves whether a project is well coordinated and whether it follows the adopted management plan. It relates to project effectiveness. The project manager coordinates the project effectively if this person is able to ensure that the project resources are used and consumed in pursuit of the specified goals and objectives. Remember: your project gets higher value if it is highly “*coordinately*”.

Sustainability. It indicates whether a project is able to maintain continued development, without significant deterioration of the existing environment. Your project is sustainable if it generates the desired results without reducing its current productive capacity. Sustainable projects should obtain higher ranking.

Develop A Ranking Model

Now it is time to develop a scoring model that explains how you will do the ranking process. It means you need to decide which criteria to use and what data is required for the evaluation. We suggest you use all the criteria listed here. Also you can develop your own measures that fit into your specific portfolio. Remember: as more criteria you use, as more accurate and appropriate project ranking you are likely to get.

Now regarding the data required for ranking. Here’s a list of the **data sources** you need to review to get the data required for project analysis and ranking:

-  Current project status against plan (you can gain this data from status reports and meetings)
-  Deliverables accepted/unaccepted at any given point in time
-  Scope creep data
-  Stakeholder involvement level (can be retrieved from Stakeholders Matrix)
-  User requirements
-  Project goals and objectives and their status
-  Issue and risk logs
-  Team training and capabilities
-  Other important papers and records that explain the current performance of every individual project.

- You must gather as much information on your portfolio projects as possible in order to get a clear picture of what's going on in the portfolio environment. Below we give a **project score table example**.

Criteria Project Name	Efficiency	Changeability	Manageability	Coordination	Sustainability	Score
Project 1	100	25	12	30	55	222
Project 2	43	55	50	60	15	253
Project 3	80	60	80	10	90	320
...

Example: Project Score Table

[source: www.mymanagementguide.com](http://www.mymanagementguide.com)

In this example, Project 3 gets higher score (320) as compared to Project 1 (222) and Project 2 (253). The Score column of the table is used as the basis to set priorities for the projects. Actually Project 3 gains the highest priority while the rest two projects obtain lower priority.

- Please note we do not explain here how to calculate the data in the table. It is the matter of your project portfolio management team to decide what scoring approach or methodology to use for evaluating by the criteria. In the given example, we used *our own method*.

1.6. Identification of Commercial Project Ideas

Project ideas are generated through different sources like customers, competitors, and employees. Sometimes they are discovered through accident. Project manager should try to enhance people's creativity, scan the entire business environment and appraise the company's strengths and weaknesses to generate a large number of ideas. Techniques like attribute listing, brainstorming, and Delphi technique are useful for improving the creativity at individual and group level.

- A **business idea** is a concept which can be used for commercial purposes. It typically centers on a commodity or service that can be sold for money, according to a unique model.

Stimulating the flow of ideas or tools and techniques to identify new projects

1 SWOT ANALYSIS

SWOT Analysis: SWOT is an acronym of Strengths, Weaknesses, Opportunities and Threats and as these titles suggest it is not purely a method used for controlling areas of planning and

risk, but it is also used to highlight areas of the project that could be maximized to the benefit of the whole project or individual areas where some competitive advantage may be gained. It is used to evaluate particular activities of the project in order to optimize their potential as well as to evaluate risks in order to determine the most appropriate way of mitigating those risks.

	Positive	Negative
Internal	Strengths <ol style="list-style-type: none"> 1. Strong need 2. Grassroots support 3. Political support 4. Funding 5. Strong, creative leadership 6. Collaborative process 	Weaknesses <ol style="list-style-type: none"> 1. FHWA tends to be large, slow government 2. Mega projects are very complex 3. Mega projects are very costly 4. Mega projects are likely to present many unforeseen problems 5. Mega projects always have environmental impacts
External	Opportunities <ol style="list-style-type: none"> 1. Opportunities Improve the economy of the effected area 2. Improve safety for those that live in the area 3. Conserve the environment by eliminating other impacts 	Threats <ol style="list-style-type: none"> 1. Environmental constraints 2. Limited funding 3. Scope creep 4. Time - delays increase costs 5. Politics - People use large projects to satisfy personal needs 6. Opposition - People hate change

SWOT analysis represents a conscious, deliberate, and systematic effort by an organization to identify opportunities that can be profitably exploited by it. Periodic SWOT analysis facilitates the generation of idea.

2 CORPORATE APPRAISAL

9. A realistic appraisal of corporate strengths and weaknesses is essential for identifying investment opportunities which can be profitably exploited. The broad areas of corporate appraisal and the important aspects to be considered under them are as follows:

- *Marketing and Distribution
- *Market image
- *Product line
- *Market share
- *Distribution network

- *Customer loyalty
- *Marketing and distributions costs
- *Production and Operations
- *Condition and capacity of plant and machinery
- *Availability of raw material, sub-assemblies, and power
- *Degree of vertical integration
- *Location advantage
- *Cost structure
- *Research and Development
- *Research capabilities of the firm
- *Track record of new products developments
- *Laboratories and testing facilities
- *Coordination between research and operations
- *Corporate Resources and Personnel
- *Corporate image
- *Relation with governmental and regulatory agencies
- *Dynamism of top management
- *Competence and commitment of employees
- *State of industrial relations
- *Finance and Accounting
- *Financial leverage and borrowing capacity
- *Cost of capital
- *Tax situation
- *Relations with shareholders and creditors
- *Accounting and control system
- *Cash flows and liquidity.

3 MICHAEL FIVE PORTERS MODEL

There are several useful tools or frameworks that are helpful in identifying promising investment opportunities. The most popular one is Porter model, which is discussed below.

Porter Model: Profit Potential for Industries

Michael Porter has argued that the profit potential of an industry depends on the combined strength of the following five basic competitive forces:

- 1 Threat of new entrants: New entrants add capacity, inflate costs, push prices down, and reduce profitability. Hence, if an industry faces the threat of new entrants, its profit

potential is limited. The threat from new entrants is low if the entry barriers confer an advantage on existing firms and deter new entrants.

- 2 Rivalry between existing firms: Firms in an industry compete on the basis of price, quality, promotion, service, warranties, and so on. Generally, a firm's attempts to improve its competitive position provoke retaliatory action from others. If the rivalry between the firms in an industry is strong, competitive moves and countermoves dampen the average profitability of the industry.
- 3 Pressure from substitute products: All firms in industry face competition from industries producing substitute products. Performing the same function as the original product, substitute products may limit the profit potential of the industry by imposing a ceiling on the prices that can be charged by the firms in the industry.
- 4 Bargaining power of Buyers: Buyers are a competitive force. They can bargain for price cut, ask for superior quality and better service, and induce rivalry among competitors. If they are powerful, they can depress profitability of the supplier industry.
- 5 Bargaining power of suppliers: suppliers, like buyers, can exert a competitive force in an industry, as they can raise prices, lower quality, and curtail the range of free services that they provide. Powerful suppliers can hurt the profitability of the buyer industry.

Summary of the Chapter

- ✚ The search for promising project ideas is the first step towards establishing a successful venture. Identifying suitable project ideas is the most important and crucial step in the whole process of project preparation.
- ✚ Identification is often the outcome of a triggering process rather than an analytical exercise. While the notion of identification is simple, it is difficult to develop methods or procedures for accomplishing it as there is no well defined theory to guide this task.
- ✚ Major stimulates of the flow of ideas are SWOT analysis, Clear articulation of objectives and Fostering a conducive climate.
- ✚ For purposes of monitoring, the business environment may be divided into: Economic sector, Governmental sector, Technological sector, Socio-demographic sector, Competition sector, Supplier sector
- ✚ A realistic appraisal of corporate strengths and weaknesses is essential for identifying investment opportunities which can be profitably exploited.




- ✚ By using the suggestions in the preceding section, it is possible to develop a long list of project ideas. Some kind of preliminary squired to eliminate ideas which prime facie are not promising.
- ✚ When a firm evaluates a large number of project ideas regularly, it may be helpful to streamline the process of preliminary screening. For this purpose, a preliminary evaluation may be translated into a project rating index.
- ✚ Project ideas can originate from a number of sources- from national, sectoral or regional plans or strategies from operating agencies & intended beneficiaries.
- ✚ Project establishment depends on macro factors exclusively. Government, fiscal policy, monetary policy, and other regulatory policies come under these sources.
- ✚ Success of the project depends on the internal and specific factors related to a particular industry: availability of raw materials, availability of skilled labor, import/export of goods, price trend and so on come under the micro sources of the project.

CHAPTER FOUR

TECHNICAL ANALYSIS OF PROJECT

Objectives of the chapter:

Dear learners, welcome to the fourth chapter of project analysis and evaluation. At the end of this chapter, you will be able to:

-  Understand the concept of a feasibility study and its role
-  Know market demand analysis
-  Know about the elements of technical analysis of project

4.1. Introduction

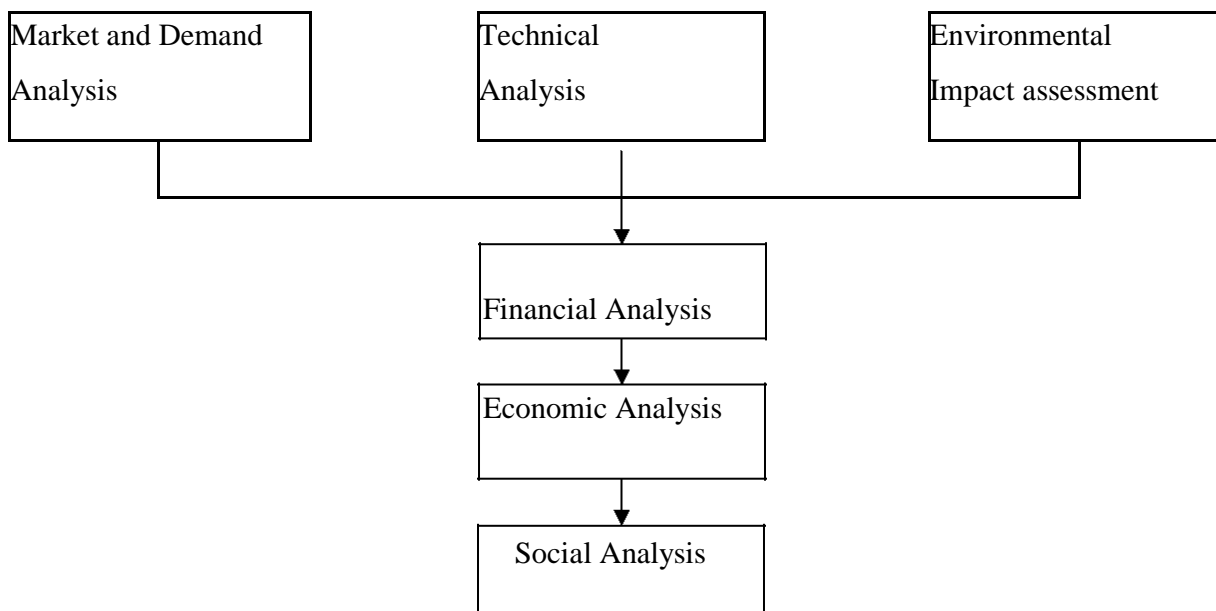
Project preparation involves undertaking a feasibility study for all but the simplest and most routine projects. As the term implies, its purpose is to establish the feasibility or justification of the project, both as a whole and in its principal dimensions-technical, economic, financial, and social and so on. Each dimension must be analyzed both separately and in relation to all the others. This is done in a series of approximations that test different technical approaches for their economic benefit and financial viability. The purpose of the analysis is not to determine whether a particular idea is good enough to proceed with but to arrive at the best one possible under the circumstances.

4.2. Feasibility Study

It is a detailed analysis of prima facie promising/most viable project ideas. It provides commercial, technical, environmental, financial, economic and social information needed for investment decision making and it must provide all data necessary for an investment decision. Feasibility study is also defined as an analysis and evaluation of a proposed project to determine if it (1) is technically feasible, (2) is feasible within the estimated cost, and (3) will be profitable. Feasibility analysis is the process of determining if a business idea is viable. It is the preliminary evaluation of a business idea, conducted for the purpose of determining whether the idea is worth pursuing. Feasibility analysis takes the guesswork (to a certain degree) out of a business launch, and provides an entrepreneur with a more secure notion that a business idea is feasible or viable

4.2.1. Component Parts of Feasibility Study

Techniques and stages for feasibility study:



It should be noted that due to the specific characteristics of the different types of projects (agricultural, industrial, infrastructure, and social projects); the techniques outlined above and discussed below serve as guides only.

4.3. Technical Analysis

Technical aspect of the project provides the basis for all other forms of project design and analysis because a technically unfeasible project must be either revised or abandoned, regardless of its performance in other areas.

Analysis of technical and engineering aspect is done continually when a project is being examined and formulated. Other types of analysis are closely interwoven with technical analysis. Technical feasibility must be conducted on the basis of the project's ability to meet its objectives using a technology and standards, which are appropriate to the circumstances of the country in which the project will be located.

Project formulators or promoters must bear in mind the key word 'appropriate' in formulating a project. The project should have to be designed analyzed in-terms of its appropriateness and relevance with regard to the project's objective. In line with this perspective, the project objective is the key to technical analysis.

The broad purpose of technical analysis is (a) to ensure that the project is technically feasible in the sense that the inputs required to set up the project are available, and (b) to facilitate the most optimal formulation of the project in terms of technology, size, location, and so on. The following are basic issues pertaining to technical analysis using common sense and economic logic.

- Manufacturing process /technology
- Technical arrangements
- Materials and Inputs
- Plant capacity
- Location and site
- Structures and civil works
- Environmental aspects

A. Manufacturing Process Technology

In manufacturing a product or service often two or more alternative technologies are available. For instance, cement can be made either by the dry process or the wet process. Similarly, a soap can be manufactured by the semi – boiled process or the fully – boiled process.

Technology Choice

Selection of appropriate technology and know-how is a critical element in any feasibility study. Such selection should be based on a detailed consideration and evaluation of technological alternatives and the selection of the most suitable alternative in relation to the project to investment strategy chosen and to socio – economic and ecological considerations. Appropriate technology choice is directly related to the conditions of application in particular situations. What may be appropriate in industrialized economies with high labor costs may not necessarily be the optimum for low – age developing countries, with severe constraints on infrastructure and availability of inputs. On the other hand, a plant in a developing country that produces primarily for export to industrialized countries may need to utilize the latest automated and capital – intensive production processes in order to compete in such markets. Competitive production capability in intended markets is one of the most crucial factors for technology choice, and the related plant capacity can be a major determinant of such capability. Generally, technology choice must be directly related to market, resource and environmental conditions and the corporate strategies recommended for a particular project.

It is also necessary to take into account new technological developments and applications and their impact to plant capacity. The choice of technology is influenced by a variety of considerations:

- ✚ Plant capacity
- ✚ Principal inputs
- ✚ Investment outlay and production cost
- ✚ Use by other units
- ✚ Production mix
- ✚ Latest developments
- ✚ Ease of absorption

Plant Capacity. Often, there is a close relationship between plant capacity and production technology. Perhaps, only a certain production technology may be viable so as to meet a given capacity requirement.

Principal Inputs: The chosen technology, in some cases, may be influenced by the raw materials available – for instance, the quality of limestone determines whether the wet or dry process should be used for a cement plant.

Investment Outlay and Production Cost. The effect of alternative technologies on investment outlay and production cost over a period of time should be carefully assessed.

Use by Other Units: The technology adopted must be proven by successful use by other units.

Product Mix: The chosen technology must be judged in terms of the total product – mix generated by it, including saleable by – products.

Latest Developments: The technology adopted must be based on the latest developments in order to ensure that the likelihood of technological obsolescence in the near future, at least, is minimized.

Ease of Absorption: The ease with which a particular technology can be absorbed can influence the choice of technology.

✚ **Appropriateness of Technology**

Appropriateness of technology refers to the methods of production which are suitable to local economic, social, and cultural conditions. Nowadays, advocates of appropriate technology urge that the technology should be evaluated in terms of the following points:

- Whether the technology utilizes local raw materials?
- Whether the technology utilizes local manpower?
- Whether the goods and services produced cater to the basic needs?
- Whether the technology protects ecological balance?
- Whether the technology is harmonious with social and cultural conditions?

B. Technical Arrangements

To obtain the technical know-how needed for the proposed manufacturing process, suitable arrangements must be made. When collaboration is sought, among other things, the following aspects of the arrangement must be worked out in detail:

- ✚ The nature of support to be provided by the collaborators during the designing of the project, selections and procurement of equipment, installation and erection of the plant, operation and maintenance of the plant, and training of the project personnel.
- ✚ Process and performance guarantees in terms of plant capacity, product quality and consumption of raw materials and utilities.
- ✚ The price of technology in terms of one – time licensing fee and periodic royalty fee.
- ✚ The continuing benefit of research and development work being done by the collaborator.
- ✚ The period of the collaboration agreement.
- ✚ The assistance to be provided and the restrictions to be imposed by collaborator with respect to exports.
- ✚ The level of equity participation and the manner of sharing management control, especially if the technical collaboration is backed by financial collaboration.
- ✚ Assignment of the agreement by either side in case of change of ownership.
- ✚ Termination of the agreement or other remedies when either party fails to meet its obligation.
- ✚ Approach to be adopted in unexpected situations.

C. Material Inputs and Utilities

An important aspect of technical analysis is concerned with defining the materials and utilities required; specifying their properties in some detail, and setting up their supply program. There is a close relationship between the definition of input requirements and other aspects of project formulation, such as the definition of plant capacity, location and selection of technology and equipment, as these inevitably interact with one another. Material inputs and utilities may be classified into four broad categories: (i) Raw materials, (ii) Processed industrial materials and components, (iii) Auxiliary materials and factory supplies, and (iv) Utilities.

1. Raw Materials

Raw materials (processed and/or semi – processed) may be classified into four types; (i) Agricultural products, (ii) Mineral products, (iii) Livestock and forest products, and (iv) Marine products.

2. Agricultural products:

If the basic raw material is agricultural products, its quality, present and potential quantities should be identified. In food processing industry, only the marketable surpluses of agricultural products should be viewed as basic raw materials, after meeting the consumption and sowing requirements. If the project requires large quantities the production of agricultural products should be increased by extending area of cultivation (sugar cane) or adding one more crop to estimate availability, the data on the past crop to be collected and also to study their distribution by market segment. Storage and transportation costs to be considered. Future cultivation studies should be based under varied conditions and the quality and suitability to be tested.

3. Livestock and forest product:

Specific surveys are conducted for viability of an industrial project to have a more dependable and precise data base. To assess the potentials of availability, yield and cost of collection, other consideration are, ecological factors, national policies, and bilateral and multilateral agreements, fishing quotas by quantity related licenses and the danger of over fishing.

4. Mineral products:

Information about metallic, non-metallic and clays and their exploitable deposits, proven reserves, viability, open cost or underground mining, location, size, depth, quality of deposits, impurities etc, should be gathered. Deposit from different location may differ in chemical properties. Analysis and test results of ores and mineral should be included in project reports.

5. Processed industrial materials and components:

To defined requirement of base metals, semi processed material part and components and specifications are to be detailed. Their availability and price may be unstable in international market. Substitutes and FOREX constraints should be enquired into. Careful analysis should be conducted regarding source of chemicals and petrochemicals, both on the domestic and foreign markets, their costs and backward linkages.

6. Factory Supplies:

These include auxiliary materials like chemicals, additives, packing materials, paints, varnishes, maintenance materials, oils, grease, cleaning materials, wear and tear parts and tools etc, and estimate of utilities consumption is essential for identifying the existing sources of supply and shortages. The utilities include: **Electricity:** An analysis of energy situation, sources, cost, power demand, load aspect, stand by arrangements, consumption level and rejection of thermal power plants for environmental reasons are certain points to consider in the study. **Fuels:** while using large combustion materials, environmental protection and technologies are to be integrated in the planning. Using of coal is resulting in worldwide carbon dioxide pollution and increased global temperatures. Thus care has to be taken in the choice of use of fuels. **Water:**

the requirement of the water estimated should be by considering recycling arrangements, for various purposes. **Packing materials:** packing materials are most important for the commodity; for export markets, special protective packing may be required and in competitive markets attractive packing may be helpful. **Recycled waste:** pollution! In developing countries, dumping of wastes is no longer possible. Proper technology usage and sophisticated recycling methods should be suggested. **Spare Parts:** to avoid break downs of machinery and equipments, essential spare parts and tools should be identified and keep it in stock. They may comprise large number of small items.

7. Specification of requirements:

All requirements of material and supplies should be identified and specified in the study considering all socio-economic, commercial, financial and technical factors. Project characteristics and envisaged technology determines the requirement of materials and supplies. Flow sheets for materials and other inputs indicating quantitative flows should be prepared. The quality of various inputs and their quantities are estimated based on the user demand and market expectations about the products of the project. The *nominal and feasible plant capacity* will have to be defined on the basis of varying supply conditions, number of shifts and products, skill of the labor force and marketing strategies. To identify the characteristics of materials and inputs, the analysis should cover physical properties, mechanical properties, chemical properties and electrical and magnetic properties.

8. Availability and supply:

The source of materials availability, their users and price of inputs are to be analyzed. The interdependencies between project, material and input requirements and supply of these items should be considered. The machinery, equipment, production process, capacity etc. may have to be revised if inputs with the specified characteristics and quantities are not available. Data regarding locations of availability, area of supply, whether concentrated or dispersed, transportability, transport costs and alternate usage of such materials need to be collected. If the material has to be imported, the implication of such imports should be assessed. There may be lack of knowledge of alternative external source of inputs. The implications of domestic production of materials that were being imported should be analyzed. If alternative materials are used, the discussion should also include an assessment of the environmental impact of each material.

9. Supply program

Making use of the marketing research information, suppliers to be identified and input quantities should be determined. The objectives of supply marketing are; 1. Cost minimization

that will have significant impact on profitability. The 80-20 rule should be followed. 2. Reliability of supplies, quality wise, quantity wise and timing. Late deliveries and lack of quality may have serious consequences for the production process. 3. To cultivate good business relations with suppliers for smooth and mutual trusting transactions. Purchasing prices and condition largely depend on the bargaining power of the project and its management. The systematic observation and analysis of supply market is of central operations depending on the market conditions.

10. Costs of raw materials and supplies:

The costs of materials and other supplies have to be analyzed in detail to determine project economies. In case of domestic materials, current prices have to be viewed in the context of past trends and future projections of the elasticity of supply. The costs of alternative means of transport should also be considered. For imported material **CIF** prices to be adopted together with loading and unloading, port charges, tariffs, insurance and taxes, cost of internal transport and other cleaning costs.

Estimates of annual operating costs for materials and supplies are to be made explaining the price mechanism and key factors affecting price including price controls by the government. Cost estimates are to be divided in to *foreign and local currency* components are specified exchange rates. Some costs may vary with capacity utilization and production levels and others may be fixed. It is advisable to divide cost items to variable and fixed. Cost estimates may be expressed either as the cost per unit produced or in terms of a contain production level to conduct sensitivity analysis. The amounts resulting from environmental protection and pollution control measures should be included in indirect costs element in addition to overhead costs at the level of service, administration and sales centers.

D. Production/Plant Capacity

The term production capacity can be defined as the volume or number of units that can be produced during a given period. Plant capacity may be seen from two perspectives: *Feasibility normal capacity* (FNC) and nominal maximum capacity (NMC). FNC refers to capacity achievable under normal working conditions, taking into account not only the installed equipment and technical conditions of the plant, such as normal stoppages, down time, holidays, maintenance, tool changes, desired shift patterns and indivisibilities of major machines to be combined, but also the management system applied. Hence, the feasible normal capacity is the number of units produced during one year under the above conditions.

Nominal Maximum Capacity (NMC) is the technically feasible capacity, which frequently corresponds to the installed capacity as guaranteed by the supplier of the plant. A higher capacity – nominal maximum capacity – may be achieved, but this would entail overtime, excessive consumption of factory supplies, utilities, spare parts and wear – and tear parts, as well as disproportionate production cost increases.

E. Location and Site

The choice of location and site necessitates an assessment of demand, size, and input requirement. Although most often the terms '*location*' and '*site*' are used synonymously, they should be distinguished. Location refers to a relatively broad area like a city, an industrial zone, or a coastal area; site refers to a specific piece of land where the project would be set up. The locational requirements and conditions that are significant for the selection of both location and site should be judged against the defined corporate strategies and the financial and economic impacts.

Choice of Location

In a feasibility study, a good starting – point for the final selection of a suitable location is the location of raw materials and factory supplies, or if the project is market oriented – the location of the principal consumption centers in relation to the plant.

Generally, the choice of location is influenced by a variety of considerations: proximity to raw materials and markets, availability of infrastructure, labor situation, governmental policies, and other factors.

Proximity to Raw Materials and Markets

Proximity to the sources of raw materials and nearness to the market for the final products are an important consideration for location. In light of a basic location model, optional location is one where the total cost (raw material transportation cost plus production cost plus distribution cost for the final product) is minimized. Practically, it means that:

i) a resource – based project like a cement plant or a steel mill should be located close to the source of the basic material (for example, limestone in the case of a cement plant and iron ore in the case of a steel plant; (ii) a project based on imported material may be located near a port; and (iii) a project manufacturing a perishable product should be close to the center of consumption.

A great many industrial products, however, are not affected by any one particular factor. Petroleum products and petrochemicals, for example, can be located at source, near consumption centers or even at some intermediate point. A wide range of consumer goods and

other industries can be located at various distances from materials and markets without unduly distorting project economics.

Availability of Infrastructure

In a feasibility study, availability of power, transportation, water, and communications should be carefully assessed before a location decision is made. Inadequate supply of power or its high unit cost in a particular area can constitute a major constraint for a project or for a particular technological process such as electrical smelting. The project has to provide its own power source, where the location of resource – based project cannot be changed. Power requirements can be defined in relation to plant capacity, and the supply and cost at various locations should be studied. In assessing power supply, the following should be looked into: the amount of power available, the stability of the power supply, the structure of the power tariff, and the investment required by the project for a tie – up in the network of the power supplying agency.

Transportation facilities (by rail, road, air, or water) may be available for the inflow of various inputs and for the marketing of outputs. The availability, reliability, and cost of transportation for various alternative locations should be assessed. Water requirement for the project can be assessed based on the given plant capacity and technology. Once the required quantity is estimated, the amount to be drawn from the public utility system and the amount to be provided by the project from surface or sub – surface sources may be determined. Moreover, the following factors may be examined i.e. its relative costs, relative dependability, and relative qualities.

In addition to power, transport, and water, the project should have good communication facilities, including telex telephone, and internet should also be ascertained for alternative locations.

Labor Situation

In project where there is labor–intensive, the labor situation in a particular location becomes important. The key considerations in evaluating the labor situation are:








- Availability of labor, skilled, semi – skilled and unskilled
- Existing labor rates
- Labor productivity
- State of industrial relations
- Labor legislation
- Other major factors

Governmental Policies

Policies and regulations of a government have a considerable influence on location. In most of the cases of public sector projects, location is directly decided by the government. In the case of private sector projects, location is influenced by certain governmental restrictions and inducements. Most often the government may forbid the setting up of industrial projects in certain areas which suffer from urban congestion. Particularly, the government may offer inducements for establishing industries in back ward areas. These inducements consist of subsidies, concessional finance, sales tax loans, power subsidy, income tax benefits, lower promoter contribution, and so on.

Site Selection

After the completion of final locational selection, a specific project site and, if available, site alternatives should be defined in the feasibility study. This will require an evaluation of the characteristics of each site. The structure of site analysis is basically the same as for location analysis and the key requirements, identified for the project, may give guidance also for site selection. For sites available within the selected area, the following requirements and conditions are to be assessed:

-  Ecological conditions on site (soil, site hazards, climate etc.)
-  Environmental impacts (restrictions, standards, guidelines)
-  Socio – economic conditions (restrictions, incentive, requirements)
-  Local infrastructure at site location (existing industrial infrastructure, economic and social infrastructure, availability of critical project inputs such as labour and factory supplies)
-  Strategic aspects (corporate strategies regarding possible future extension, supply and marketing policies)
-  Cost of land
-  Site preparations and development, requirements and costs

The cost of land tends to differ from one site to another in the same broad location. Sites close to a city cost more whereas sites away from the city cost less.

The cost of site preparation and development depends on the physical features of the site, the need to demolish and relocate existing structures, and the work involved in obtaining utility connections to the site. Some sites may require substantial work on site preparation and development, or it may be exposed to site hazards such as strong winds, fumes, and flue gases from nearby industries or to risks of floods. The required land area should be specified on the basis of buildings, technical installations and facilities included in the project. Moreover,

topography, altitude and climate may be of importance for a project, as well as access to water, electric power, roads and railways or water transport.

4.4. Market and Demand Analysis

A market and demand analysis should be carried to establish whether the product to be provided by a new productive unit are required by the community and estimate the aggregate demand for the proposed product (demand) at a given price. In addition, to estimate the market share of the projects under consideration (supply) is the main reason for market and demand analysis. There can be no discussion of profitability or of the other aspects of the feasibility study if there is no demand. Therefore, the market study includes determination of demand for the project's output and the volume, target group and time frame for the demand. Market and demand analysis is important for both commercial and non-commercial products.

In most cases, the first step in project analysis is to estimate the potential size of the market for the product proposed to be manufactured (or service planned to be offered) and get an idea about the market share that is likely to be captured. In other words, market and demand analysis is concerned with two broad issues: What is the likely aggregate demand for the product/service? What shares of the market will the proposed project enjoy?

These are very important, yet difficult, questions in project analysis. Intelligent and meaningful answers to them call for an in-depth study and assessment of various factors like patterns of consumption growth, income and price elasticity of demand, composition of market, nature of competition, availability of substitutes, reach of distribution channels, so on and so forth.

Given the importance of market and demand analysis, it should be carried out in an orderly and systematic manner. The key steps involved in the market and demand analysis are depicted below.

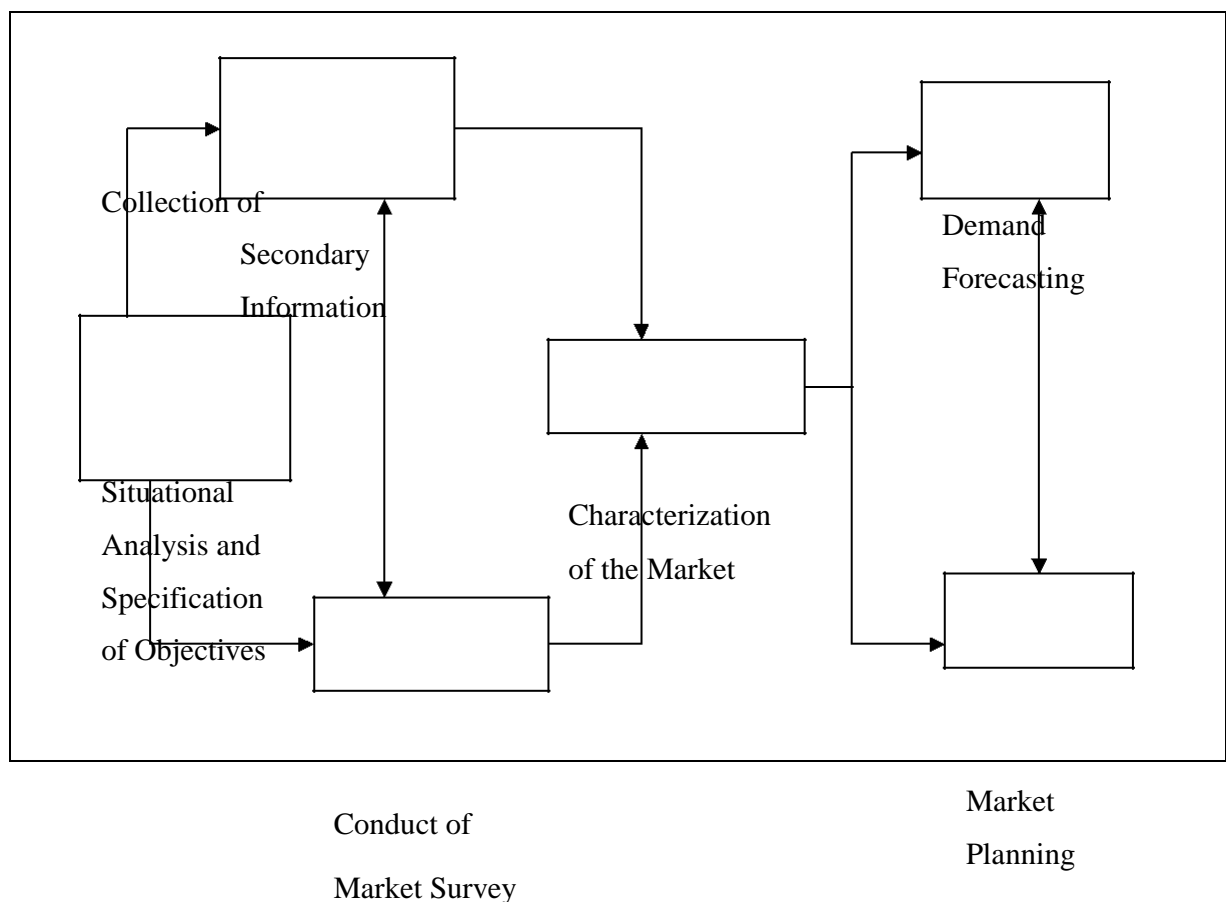


Figure 4.1 Key Steps in Market and Demand Analysis and their Interrelationship

1. Situational Analysis and Specification of Objectives

In order to get the sense of the relationship between the product and its market, the project analyst may informally talk to customers, competitors, middleman and others in the industry. Wherever possible, he may look at the experience of the company to learn about the preferences and purchasing power of customers, actions and strategies of competitors and practices of the middleman.

If such a Situational analysis generates enough data to measure the market and get a reliable handle over projected demand and revenues, a formal study need not be carried out, particularly when cost and time considerations so suggest. In most cases, of course, a formal study of the market and demand is warranted. To carry out such a study, it is necessary to spell out its objectives clearly and comprehensively. Often this means that the intuitive and informal goals that guide situational analysis needed to be expanded and articulated with greater clarity. A helpful approach to spill out objectives is to structure them in the form of

questions. Of course, in doing so, always bear in mind how the information generated will be relevant in forecasting the overall market demand and in assessing the share of the market that the project will capture.

To illustrate, suppose that a small but technologically competent firm has developed an improved Fertilizer based on a new principle that appears to offer several advantages over the conventional Fertilizer. The chief executive of the firm needs information about where and how to market the new Fertilizer. The objectives of the market and demand analysis in this case may be to answer the following questions:

- ✚ Who are the buyers of Fertilizer?
- ✚ What is the total current demand for Fertilizer?
- ✚ How is the demand distributed temporally (pattern of sales over the year) and geographically?
- ✚ What is the break-up of demand for Fertilizer of different size?
- ✚ What price will the customers be willing to pay for the improved Fertilizer?
- ✚ How can potential customers be convinced about the superiority of the new Fertilizer?
- ✚ What price and warranty will ensure its acceptance?
- ✚ What channels of distribution are most suited for the air cooler? What trade margins will induce distributors to carry it?
- ✚ What are the prospects of immediate sales?

2. Collection of Secondary Information

In order to answer the questions listed while delineating the objectives of the market study, information may be obtained from secondary and/or primary sources. Secondary information is information that has been gathered in some other context and is already available. Primary

information, on the other hand, represents information that is collected for the first time to meet the specific purpose on hand. Secondary information provides the base and the starting point for the market and demand analysis. It indicates what is known and often provides leads and cues for gathering primary information required for further analysis.

While secondary information is available economically and readily (provide the market analyst is able to locate it), its reliability, accuracy and relevance for the purpose under consideration must be carefully examined. The market analyst should seek to know:

- ✚ Who gathered the information? What was the objective?
- ✚ When was the information gathered? When was it published?
- ✚ How representative was the period for which the information was gathered?
- ✚ Have the terms in the study been carefully and unambiguously defined?
- ✚ What was the target population?
- ✚ How was the sample chosen?
- ✚ What was the degree of sampling bias and non-response bias in the information gathered?
- ✚ What was the degree of misrepresentation by respondents?

3. Conduct of Market Survey

Secondary information, though useful, often does not provide a comprehensive basis for market and demand analysis. It needs to be supplemented with primary information gathered through a market survey, specific to the project being appraised. The market survey may be a census survey or a sample survey. In the census survey, the entire population is covered. (The word 'population' is used here in a particular sense; it refers to the totality of all units under consideration in a specific study). Census surveys are employed in particular for intermediate goods and investment goods when such goods are used by a small number of firms. In other cases, a census survey is prohibitively costly and may also be infeasible.

Due to the above mentioned limitations of the census survey, the market survey, in practice, is typically a sample survey. In such a survey a sample of population is contacted or observed and relevant information is gathered. On the basis of such information, inferences about the population may be drawn.

The information sought in a market survey may relate to one or more of the following:

- Total demand and rate of growth of demand
- Demand in different segments of the market
- Income and price elasticities of demand
- Motives for buying
- Purchasing plans and intention
- Satisfaction with existing products
- Unsatisfied needs
- Attitudes toward various products
- Distributive trade practices and preferences
- Socio-economic characteristics of buyers

Steps in a sample Survey

Typically, a sample survey consists of the following steps:

- A. Define the target population:** In defining the target population the important terms should be carefully and unambiguously defined. The target population may be divided into various segments which may have differing characteristics. For example, all television owners may be divided into three to four income brackets.
- B. Select the Sampling Scheme and Sample Size:** There are several sampling schemes: simple random sampling, cluster sampling, sequential sampling, stratified sampling, systematic sampling and non-probability sampling. Each scheme has its advantages and limitations. The sample size, other things being equal, has a bearing on the reliability of the estimates-the larger the sample size, the greater the reliability.
- C. Develop the questionnaire:** The questionnaire is the principal instrument for eliciting information from the sample of respondents. The effectiveness of the questionnaire as a device for eliciting the desired information depends on its length, the types of questions and the wording of the questions. Developing the questionnaire requires a thorough understanding of the product/service and its usage, imagination, insights into human behavior, appreciation of subtle linguistic nuances and familiarity with the tools of descriptive and inferential statistics to be used later for analysis. It also requires knowledge

of psychological scaling techniques if the same are employed for obtaining information relating to attitudes, motivations and psychological traits. Since the quality of the questionnaire has an important bearing on the results of the market survey, the questionnaire should be tried out in a pilot survey and modified in the light of problems/difficulties noted.

D. Recruit and Train the Field Investigators: Recruiting and training the field investigators must be planned well since it can be time consuming. Great care must be taken in recruiting the right kind of investigators and imparting the proper kind of training to them. Investigators involved in industry and trade market surveys need intimate knowledge of the product and technical background, particularly for products based on sophisticated technologies.

E. Obtain Information as per the Questionnaire from the Same of Respondents: Respondents may be interviewed personally, telephonically or by mail for obtaining information. Personal interviews ensure a high rate of response. They are, however, expensive and likely to result in biased response because of the presence of the interviewer. Mail surveys by snail mail or e-mail are economical and evoke fairly candid response.

F. Scrutinize the Information Gathered: Information gathered should be thoughtfully scrutinized to eliminate data which is internally inconsistent and which is of dubious validity. Sometimes data inconsistencies may be revealed only after some analysis.

G. Analysis and Interpret the Information: Information gathered in the survey needs to be analyzed and interpreted with case and imagination. After tabulating it as per a plan of analysis, suitable statistical investigation may be conducted, wherever possible and necessary.

H. Results of the data based on the sample survey will have to be extrapolated to the target population. For this purpose, appropriate inflationary factors, based on the ratio of the size of the target population to the size of the sample studies, will have to be used.

It may be emphasized that the results of the market survey can be vitiated by:

- ✚ Non representativeness of the sample
- ✚ Imprecision and inadequate in the questions
- ✚ Failure of the respondents to comprehend the questions
- ✚ Deliberate distortions in the answers given by the respondents
- ✚ Incompetent handling of the interviews by the investigators
- ✚ Cheating on the part of the investigators
- ✚ Careless scrutiny of data and
- ✚ Incorrect and inappropriate analysis and interpretation of data.

4. Characterization of the Market

Based on the information gathered from secondary sources and through the market survey, the market for the product/service may be described in terms of the following:

A. *Effective demand in the past and present:* To get the effective demand in the past and present, the starting point typically is apparent consumption which is defined as:

$$\text{Production} + \text{Imports} - \text{Exports} - \text{Changes in stock level}$$

The figure of apparent consumption has to be adjusted for consumption of the product by the producers and the effect of abnormal factors. The consumption series, after such adjustments, may be obtained for several years. In a competitive market, effective demand and apparent consumption are equal. However, in most of the developing countries, where competitive markets do not exist for a variety of products due to exchange restrictions and controls on production and distribution, the figure of apparent consumption may have to be adjusted for market imperfections. Admittedly, this is a difficult task.

B. *Breakdown of Demand:* To get a deeper insight into the nature demand, the aggregate (total) market demand may be broken down into demand for different segments of the market. Market segments may be defined by:

Nature of Product: One generic name often subsumes many different products: steel covers sections, rolled products, and various semi-finished products; commercial vehicles, cover trucks and buses of various capacities; so on and forth.

Consumer group: Consumers of a product may be divided into industrial consumers and domestic consumers. Industrial consumers may be sub-divided industry-wise. Domestic consumers may be further divided into different income groups.

Geographical Division: A geographical breakdown of consumers is helpful, particularly for products which have a small value-to-weight relationship and for products which require regular, efficient after-sales service.

C. *Price:* Price statistics must be gathered along with statistics pertaining to physical quantities. It may be helpful to distinguish the following types of prices: i) manufacturer's price quoted as FOB (free on board) price or CIF (cost, insurance and freight) price, ii) landed price for imported goods, iii) average wholesale price, and iv) average retail price

D. *Methods of Distribution and Sales Promotion:* The method of distribution may vary with the nature of the product. Capital goods, industrial raw materials or intermediates,

and consumer products tend to have different distribution channels. Likewise, methods used for sales promotion (advertising, discounts, gift schemes, etc.) may vary from product to product. The methods of distribution and sales promotion employed presently and their rationale must be specified. Such a study may explain certain patterns of consumption and highlight the difficulties that may be encountered in marketing the proposed products.

Consumers: Consumers may be characterized along two dimensions as follows:

<i>Demographic and Sociological</i>	<i>Attitudinal</i>
Age	Preferences
Sex	Intentions
Income	Habits
Profession	Attitudes
Residence	Responses
Social background	

E. Supply and Competition: It is necessary to know the existing sources of supply and whether they are foreign or domestic. For domestic sources, information along the following lines may be gathered: location, present production capacity, planned expansion, capacity utilization level, bottlenecks in production and cost structure. Competition from substitutions and near-substitutes should be specified because almost any product may be replaced by some other product as a result of relative changes in price, quality, availability, promotional effort, and so on.

F. Government Policy: The role of the government in influencing the demand and market for a product may be significant. Governmental plans, policies and legislations, which have a bearing on the market and demand of the product under examination should be spelt out. These are reflected in: production targets in national plans, import and export trade controls, import duties, export incentives, excise duties, sales tax, industrial licensing, preferential purchases, credit controls, financial regulations and subsidies/penalties of various kinds.

5. Demand Forecasting

After gathering information about various aspects of the market and demand from primary and secondary sources, an attempt may be made to estimate future demand. A wide range of forecasting methods is available to the market analyst. These may be classified in three categories:

- a. **Qualitative Methods:** These methods rely essentially on the judgment of experts to translate qualitative information into quantitative estimates. The important qualitative methods are:

➤ Jury of executive Method ➤ Delphi Method

- b. **Time Series Projection Methods:** These methods generate forecasts on the basis of analysis of the historical time series. The important time series projection methods are:

➤ Trend Projection Method ➤ Moving Average Method

➤ Exponential Smoothing Method

- c. **Causal Methods:** More analytical than the preceding methods, casual methods seek to develop forecasts on the basis of cause-effect relationships specified in an explicit, quantitative manner. The important causal methods are:

➤ Chain Ratio Method ➤ Leading Indicator Method

➤ Consumption Level Method ➤ Econometric Method

Jury Executive Opinion Method

This method, which is very popular in practice, involves soliciting the opinions of a group of managers on **expected** future sales and combining them into a sales estimate. They are the persons who have been dealing in this product and in related products for a long time and thus are able to predict the future trend. This method is also called the hunch method since the experts give their opinions after weighing pros and cons of all factors affecting the product demand and arrive at an estimate, which is nothing but hunch; the hunch of course is backed by knowledge and experience of the experts. If the views of more number of experts are obtained, and if their views differ significantly, then a forecast can be safely arrived at by taking the average of the expert's predications.

The advantages of this method are:

- i. It is an expeditious method for developing a demand forecast
- ii. It permits a variety of factors like economic climate, competitive environment, consumer preference, technological developments, and so on, to be included in the subjective estimates provided by the experts
- iii. It has immense appeal to managers who tend to prefer their judgment to mechanistic forecasting procedures.

The disadvantages of this method are:

- i. The biases underlying subjective estimates can not be unearned easily.
- ii. The reliability of this technique is questionable

Delphi Method

This method is used for eliciting the opinions of a group of experts with the help of a mail survey. This is a group decision by experts in which the individual experts act separately. Their views are pooled together and an attempt is made to arrive at consensus. If the views of the experts differ significantly, the individual experts are fed with the views of other experts in areas where there is distinct difference and they are asked to further analyze the

problem and to revise/improve upon their views in the lights of the view of the other experts in the group. The process can be repeated till a near coincidence of views is achieved. The important aspect of Delphi technique is that the experts who offer their opinions do not have face-to face interaction and hence they are free to express their views. If at all they change their views in response to the views offered by other experts, it is only after due consideration and analysis without any external pressure from whomsoever. Hence, Delphi technique is found to give more accurate results as compared to Jury of Expert's opinion method.

The steps involved in this method are:

1. A group of experts is sent a questionnaire by mail and asked to express their views
2. The response received from the experts are summarized without disclosing the identity of the experts, and sent back to the experts, along with a questionnaire meant to probe further the reasons for the extreme views expressed in the first round
3. The process may be continued for one or more rounds till a reasonable agreement emerges in the view of the experts.

Delphi method appeals to many organizations for the following reasons:

- i. It is understandable to users
- ii. It seems to be more accurate and less expensive than traditional face-to-face group meetings.

Trend Projection Method

The trend projection method involves a) determining the trend of consumption by analyzing past consumption statistics, and b) projecting future consumption by extrapolating the trend.

Market Planning

A marketing plan usually has the following components:

■ Current marketing situation

■ Marketing strategy

■ Opportunity and issue analysis

■ Action programme

■ Objectives

Current Market Situation

This part of the marketing plan deals with the different dimensions of the current situation. It examines the market situation, competitive situation, distribution situation and the macro-environment. In other words, it paints a pen-picture of the present.

Market situation: This deals with size, the growth, the customer aspirations and buying behavior in the market under consideration.

Competitive Situation: this dwells on the major competitors, their objectives, strategies, strength, etc.

Distribution Situation: This compares the distribution capabilities of the competitors.

Macro-environment: This describes the effect of social, political, economic, technological, and other external variables on the market.

Opportunity and Issue Analysis

A SWOT (strength, weakness, opportunity and threat) and core issues analysis is conducted for a company before the product are identified. The **strength** of a company might be parent company has to launch successfully another product in the current market. The **weakness** might be its limited resources. Its **opportunity** could be the growth witnessed in the medium-priced segment of a product market at the expense of low-priced same product. The threat might be the growing acceptance of new product launches.

With the limited resources, launching a product in different areas and whether to use a new brand name or should it extend the existing brand name are the issues in light of the SWOT analysis for a company.

Objectives




Objectives have to be clear-cut, specific and achievable. Achieving breakeven, attaining specific sales volume, attaining top-of-mind recognition in the target segment and setting retail outlets can be the objective of a firm.

Marketing Strategy

The marketing strategy covers the target segment, positioning (how product is placed in the mind of customers, like romantic or rugged), product line, price, distribution, sales force, sales promotion and advertising. The target may include certain groups such as students or teenagers or middle income citizens. A firm may launch a single variant or more than one variant of product line.

Marketing Program

The final aspects of a market analysis are a comprehensive marketing program as follows:

-  Determine the types of marketing program prevalent in the industry and gauge their respective effectiveness;
-  Draw up a marketing plan that identifies and defines the target market, the selling price, the packaging, the distribution network, the sales management mechanism and promotion activities.
-  Design the marketing organization which will implement the plan and determine the costs involved.

Summary of the Chapter

- ▶ Feasibility study is a detailed analysis of most viable project ideas related to market and demand, technical, environmental, financial, economic, and political and social information needed for investment decision making.
- ▶ The market and demand analysis would provide estimates on the benefits or revenue derived from the project about the aggregate market and share of proposed project.
- ▶ The technical analysis would provide the input requirements (material, site, machinery and equipment, building and construction, human resource and organization).
- ▶ With the rapid pace of economic development, the environmental impact assessment is essential to prevent environmental problems.
- ▶ The benefits/revenue of the project with its corresponding cost to determine whether benefits/revenues exceed the costs assessment is undertaken in the financial analysis.
- ▶ An investment project should also be justified within the wider context of the national economic environment under the economic analysis.
- ▶ The social/political analysis considers not only the effect of the project on the distributional objectives of development but also political acceptability of the project (special to development project)

Review question

1. What are the basic components of cost of project?
2. What are the basic components of cost of production? Discuss briefly.

CHAPTER FIVE

FINANCIAL ANALYSIS OF PROJECTS

Objectives of the chapter

Dear learners, welcome to the fifth chapter of project analysis and evaluation. At the end of this chapter, you will be able to:

- ✚ Understand the concept of financial feasibility study;
- ✚ Know how to measure project cash flows;
- ✚ Know about financial feasibility analysis methods/approaches
- ✚ Understand the basic criteria for investment decision
- ✚ Know about the alternative finance sources of a project

5.1. Introduction

Financial analysis of a project amounts to reviewing it from the angle of the entity (private or public) that will be responsible for its execution. The necessity to determine the financial profitability of a project to the project implementer calls for undertaking financial analysis. It aims at verifying that under prevailing market conditions the project will become and remain viable. It is concerned with assessing the feasibility of a new project from the point of view of its financial results. The project's direct benefits and costs are, therefore, calculated in monetary terms at the prevailing (expected) market prices. In other words, the financial analysis is all about the assessment, analysis and evaluation of the required project inputs, the outputs to be produced/generated/ and the future net benefits, (expressed in financial terms) with the aim of determining the viability of a project to the private investor or the executing entity public body.

Here, you need to lay out the capital you require to start the business. Don't just think only about what you need in the startup phase, but also think about any further investment needed at a later date, which if requested at the time when required will be seen as a failure to plan properly or a failure to execute your plan effectively.







The financial analysis is one of the analyses conducted in a feasibility study and is normally undertaken after the market technical and environmental analyses. The objective of the analysis is to determine the financial viability of the project and there are basically two main types of analyses, viz.

Analysis of projects with "measurable benefits" - benefits that can be valued at market prices. The output of these projects, if sold in the market, provides the benefits of the project. This analysis examines the opportunity cost of capital and determines if the project is a justifiable investment, especially to the individuals or agencies undertaking the investment. If it is not justifiable, then it will be financially prudent to consider alternative investments to maximize the use of capital and other resources.

Analysis of projects with "non-measurable benefits" i.e. benefits that cannot be valued at market prices. These are mainly social and security projects which are undertaken by the public sector to provide essential services and therefore cannot be valued at market prices. It is not possible to make a direct comparison between benefits and costs. The decision to implement such projects is usually determined through policy and strategy considerations. The financial analysis, in this case, examines the various alternatives of implementing the project and selects the least cost alternative in order to optimize the use of capital.

Financial analysis and final project appraisal involves the assessment, analysis and evaluation of the required project input, the output to be produced and the future net benefit, expressed in financial terms.

Issues considered in this part are:

-  Estimating cost of project
-  Means of financing the project
-  Estimation of production and sales
-  Cost of production
-  Estimation of working capital requirement
-  Cash flows in financial analysis

5.2. Cost of Project

Cost of project is costs incurred for which the goods (service) are believed to serve the project for a long period of time. Conceptually, cost of project represents the total of all items of outlays associated with a project which are supported by long term funds. The cost of project represents all cost items associated with a project. It is the sum of the outlays on the following items.

1. ***Land and Site Development:*** this includes costs related to basic cost of land, lease payment, cost of leveling and developing, cost of road (internal), etc. Cost of land as

>

well as cost of developing land varies from one location to another. The cost of land and site development is the sum of the following

Basic cost of land including conveyance and other allied charges	>	Cost of laying approach roads and internal roads
Premium payable on leasehold and conveyance charges	>	Cost of gates
Cost of leveling and development	>	Cost of tube wells

The cost of land varies considerably from one location to another. While it is very high in urban and even semi-urban location, it is relatively low in rural locations. The expenditure on site development, too, varies widely depending on the location and topography of the land

2. **Buildings and Civil Works:** such costs include cost of building for the main plant and equipment, building for auxiliary service (like workshop, laboratory, etc.), warehouse, and yard facility, non-factory buildings (like cafeteria, guest house, offices, etc.), garage, drainage, etc.
3. **Plant (Machinery and Equipment):** This is the most significant of locally produced machinery, cost of spares, foundation and installation charges.
4. **Technical know-how and engineering fees:** Either local or foreign consultants may be required to advise matters like, preparation of project report, choice of technology, selection of the plant (machinery and equipment), etc. Thus, the amount payable for such technical know-how is one of the components of the project cost and is included in cost estimation. It also includes expenses for foreign technicians that provide training for the local staff which include costs like travel cost, salary and allowance.
5. **Miscellaneous Fixed Asset.** This includes costs like furniture, office machinery and equipment, tools, vehicles, etc.
6. **Preliminary expenses/pre-operative expenses.** These are expenses incurred till the commencement of production. Rents and taxes, traveling expenses, insurance charges, mortgage expenses and interest on deferred payments.
7. **Provision of Contingency:** A provision for contingencies is made to provide for certain unforeseen expenses and price changes.

5.3. Estimation of Sales and Production

So far you have learned about what cost of project is and its component, the means of financing it and planning of the means of finances. Please make note the different aspects that are to be born while estimating the level of sales and sales revenue, cost of production of a project over its estimated life.

5.3.1. Estimation of Sales

Typically, the starting point for profitability projections is the forecast of sales revenue. In estimating sales revenue, the following consideration should be born in mind.

1. It is not advisable to assume a high capacity utilization level in the first year of operation. Even if the technology is simple and the company may not technical problems in achieving a high rate of capacity utilization in the first year itself, there are likely to be other constraints like raw materials shortage, limited market problem, etc, it is sensible to assume that capacity utilization would be somewhat low in the first year and rise there after gradually to reach the maximum level in the third or fourth year of operation.
2. It is not necessary to make adjustments for stock of finished goods. For practical purposes it may be assumed that production would be equal to sales.
3. The selling price considered should be the price realizable by the company net of excise duty it shall, however, include dealers commission is shown as an item expense (as part of the sales expense).
4. The selling price used may be the present selling price- it is generally assumed that changes in selling price will be matched by proportionate changes in cost of production. If a portion of production is saleable at a controlled price, take the controlled price for that portion.

5.3.2. Estimation of Cost of Production

On the basis of estimated production, cost of production is estimated. The major components of cost of production are (for instance, for an agricultural project, the following costs can be considered):

1. **Material cost:** These costs are comprised of the cost of raw materials such as seeds, fertilizers and pesticides.
2. **Utilities:** Consists of power, water, and fuel are production cost components.
3. **Labor:** This is the cost of all manpower employed in the farm.
4. **Overhead cost:** The expense on repairs and maintenance, rent, taxes, insurances etc. are collectively referred as farm overheads.

5.3.3. Estimation of Working Capital Requirement

In this unit you will learn about the determination of the requirements of the working capital of a project that is how you determine the amount of working capital sufficient to finance operations, and how the working capital is financed?

In estimating the capital requirement and planning for its financing the following have to be born in mind:

1. The working capital requirement consist of: i) raw material and components, ii) stock of goods-n-process iii) stocks of finished goods iv) debtors v) operating expenses vi) consumable stores.
2. The principal sources of working capital finance are working capital advances provided by commercial banks, trade credits, accrual and provisions, and long term sources of financing.
3. There is limit to obtaining working capital advances from commercial banks. they are into two forms i) the aggregate bank finance is specified as per the norms of lending, followed by the lending bank, ii) against each current asset a certain amount of margin money has to be provided by the firm.

5.4. Cash Flows in Financial Analysis

All the financial information obtained will be used to plan the project's cash flow. Evaluating the project requires identifying all benefits and costs of project. Thus, a cash flow schedule is an important tool that shows the overall cash inflows (receipts) and outflows (payments) of a project throughout its life.

5.4.1. Components of the Cash Flow Stream

Given the estimates of sales revenue and cost of production as discussed above, the next step is to prepare the profitability projections or estimates of working. Once the income statement is projected the next step will be the preparation of cash flow statement and cash flow statement over the same period as the income statement.

The cash flow stream associated with a project may be divided into three basic components:

1. ***An initial investment:*** represents the relevant cash flow when the project is set up, such as plant (machinery and equipment).
2. ***Operating cash inflows:*** are the cash inflows that arise from the operation of the project.
3. ***A terminal cash flow:*** is the relevant cash flow occurring at the end of the project life on account of liquidation of the project.
4. The estimates of working result may be prepared along the following lines:

	Items to be included
A. Cost of production	<i>Material, labor, utility & factory overhead</i>
B. Total administrative expense	<i>Administrative salaries, remuneration to directors, professional fees, light, postage, telegrams & telephones and office supplies, insurance and taxes on office property, etc.</i>
C. Total sales expense	<i>Commission, packing & forwarding charges, salary of sales staff, sales promotion & advertising expenses & miscellaneous expenses</i>
D. Royalty and know-how payable	<i>2-5 % of sales</i>
E. Total cost of production (A+B+C+D)	
F. Expected sales	<i>Sales revenue</i>
G. Gross profit before interest (F- E)	
H. Total financial expense	<i>Interest on term loans & bank borrowings</i>
I. Depreciation	
J. Operating profit (G-H-I)	
K. Other income	<i>Disposal of scrap, income arise from sale of machinery, etc</i>
L. Preliminary expense written off	
M. Profit or loss before taxation (J+K-L)	
N. Provision of taxation	
O. Profit after tax(M-N)	
Less: dividend on	
- preference capital	
- equity capital	

P. Retained profit	
Q. Net cash accrual(P+I+L)	

Illustration of Cash Flows

Consider Cement Project with the following information

1. The initial investment outlay of the project is birr 100 million, which consists of birr 80 million on plant (machinery and equipment) and the remaining birr 20 million is on working capital.
2. The project will be financed with birr 80 million of equity and the remaining birr 20 million of firms own financial capita.
3. The life of the project is expected to be 5 years. Plant (machinery and equipment) will depreciate at a rate of 25% per year as per the written down value method (WDV). At the end of the 5th year, fixed assets will have a net salvage value of birr 18.97 million, whereas the networking capital will be liquidated at its book value.
4. The project is expected to increase the revenue of the firm by 120 million per year.
5. The increase in cost of the project is expected to be 80 million per year (this includes all cost items other than depreciation and tax).
6. The tax rate applicable to the firm is 30%.

Nº	Item	Birr in Million in time period (years)					
		0	1	2	3	4	5
1	Fixed Asset	80					
2	Net Working Capital	20					
3	Revenue Added		120	120	120	120	120
4	Costs		80	80	80	80	80
5	Depreciation		20	15	11.25	8.44	6.34
6	Profit Before Tax (3-4-5)		20	25	28.75	31.56	33.66
7	Tax (30%)		6	7.5	8.63	9.45	10.10
8	Profit After Tax (6-7)		14	17.5	20.12	22.11	23.56
9	Salvage Value of Asset						18.97
10	Recovery of Working Capital						20
11	Initial Outlay (1+2)	100					

12	Operating Cash Inflow (5+8)		34	32.5	31.37	30.55	29.90
13	Terminal Cash Inflow (9+10)						38.97
14	Net Cash Flow (12+13)	(100)	34	32.5	31.37	30.53	68.87

5.4.2. Basic Principles for Measuring Project Cash Flow

For developing the stream of financial costs and benefits, the following principles may be kept in mind:

1. Incremental principle

The cash flow of the project must be measured in incremental terms. To ascertain a project's incremental cash flows, one has to look at what happens to the cash flows of the firm with the project and without the project. The difference between the two reflects the incremental cash flows attributable to the project. That is, Project cash flow for year t = cash flow for the firm with the project for year t - cash flow for the firm without project for year t .

2. Post -tax principle

Tax payments, like other payments must be properly deducted in deriving the net cash flows.

5.4.3. Biases in Cash Flow Estimation

As cash flows have to be forecasted far into the future, errors in estimation are sure to occur. Yet, given the critical importance of cash flow forecasts in project evaluation, adequate care should be taken to guard against certain biases, which may lead to over statement or understatement of the true project profitability.

A) Overstatement of Profitability

Profitability is often overstated because the initial investment is under-estimated and the operating cash inflow is exaggerated. The main reasons for such optimistic bias appear to be as follows:

Intentional overstatement: project sponsors may intentionally over-estimate the benefits and under-estimate the costs.

Lack of experience: inadequate experience of project sponsors generally leads to over-optimistic tendencies. Inexperience, on the other hand, may lead to wishful thinking.

Lack of objectivity: sponsors may estimate profitability subjectively.

B) Under-statement of Profitability

There could be an opposite kind of bias which may depress a project's true profitability. This can happen if:

- ✓ Salvage values are under-estimated
- ✓ Intangible benefits are ignored

5.5. Financial Appraisal Criteria of Projects

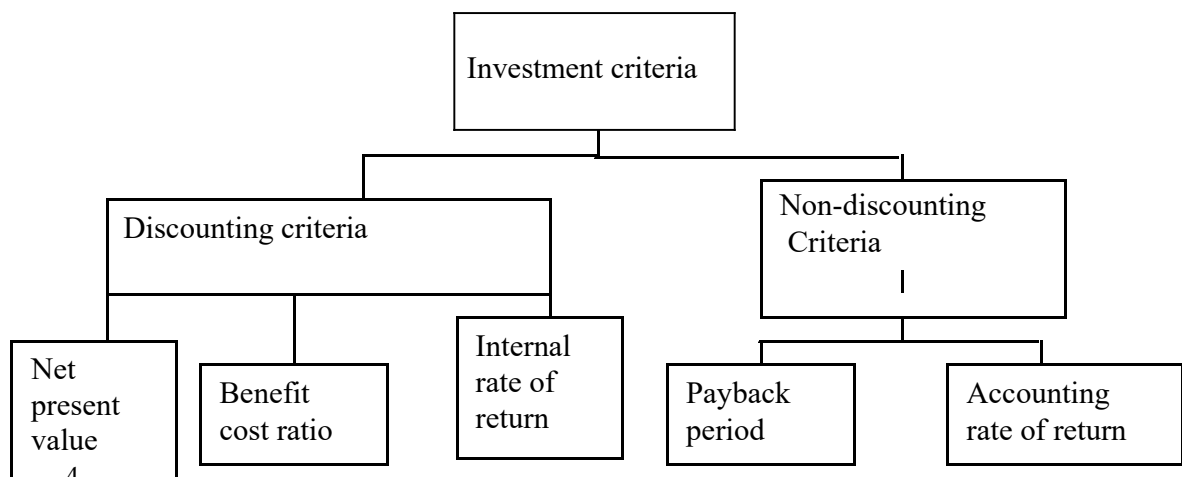
It is to be reminded that the theme of project planning/study is to determine whether an investment is feasible or not. Although sufficient returns are essential for a project to be implemented, investments must be justified usually within wider context, which for investors and financiers includes any gains, whether net profits or non-cash benefits, resulting directly or indirectly from an investment.

Thus, once costs and benefits have been valued, the project analyst should work out to determine on which project (s) to invest. To this effect, the project analyst should have approaches to select more profitable from less profitable or unprofitable projects.

A wide range of criteria have been suggested for choosing investment proposals, which are suitable for both financial and economic analysis. These criteria may be classified into two categories:

1. Non-discounting criteria
2. Discounting criteria

There are several criteria that have been suggested by economists, accountants, and others to judge the worthwhileness of capital project. The important investment criteria- classified into two broad categories – Discounting Criteria and Non -Discounting criteria- are shown as follows.



5.5.1. Non-Discounting Method of Project Selection

Projects, which are powerful means of development, have to be appraised by multiple criteria. Since any national investment decision must be a political act summing up the best judgment of

those responsible, the function of project analysis would be to provide one more tool by which these judgments can be sharpened.

The non-discounted criteria will not in general take into account the time value of money. That is, inter-temporal variations of costs and benefits, and its influence on cash flow are largely ignored. As a result, a time dimension is not included in the evaluation. There are different methods under this category.

1. Ranking by Inspection;
2. Payback Period;
3. Proceeds per Unit of Outlay;
4. The Average Annual Proceeds per Unit of Outlay.

1) Ranking by Inspection

It is possible, in certain cases, to determine by mere inspection that which of the two or more investment projects is more desirable.

There are two cases under consideration:

- (i) When two projects have identical cash flows but different project life, one has shorter life while the other has longer project life, the project with the longer life would be more desirable.
- (ii) When two projects have the same initial outlay, the same total proceeds (profits), but one project has more of the flow earlier in the time sequence, then we choose the project having higher proceeds in the earlier period than later.

Example: consider the following hypothetical irrigation project.

Project	Initial cost	Net cash proceeds per year		Total Proceeds
		Year I	Year II	
A	10, 000	10, 000	-	10, 000
B	10, 000	10, 000	1, 100	11, 100
C	10, 000	3, 762	7, 762	11, 524
D	10, 000	5, 762	5, 762	11, 524

Accordingly, project B is better than project A, since all things are equal except that B continues to earn proceeds after A has been retired.

More analysis is required to decide between C and D. Project D is more profitable than C, since D earns 2000 more in year 1 than project C, which does not make up the difference until year 2.

2) The Payback Period

The payback period is one of the simplest and apparently one of the most frequently used methods of measuring the economic value of an investment. The recovered money can be reinvested in something else. If the investor recovers its initial outlay, then in a way it is minimizing the risk it faces in the subsequent operation of the project.

The payback period is defined as the length of time required for the stream of cash proceeds produced by the investment (project) to be equal to the original cash outlay required by the investment (capital investment). It is defined as the number of years it is expected to take from the beginning of the project until the sum of its net earnings (receipts minus operating costs) equals the cost of the projects initial capital investment. It is the period of time that the investor recovers its initial total outlay. This criterion is most often used in the business enterprises. However, its use in agricultural projects is limited.

Example: if a project requires an original outlay of Birr 300 and is expected to produce a stream of cash proceeds of Birr 100 per year for 5 years, the payback period would be $300/100 = 3$ years.

Note: if the expected proceeds are not constant from year to year, then the payback period must be calculated by adding up the proceeds expected in successive years until the total is equal to the original outlay.

Example: consider project C. $10,000 - 3762 = 6238$. Then $6238/7762 = 0.8$ so the payback period is 1.80 years.

Example: consider the previous projects

Investment	Payback period (in years)	Ranking of projects using the payback period criteria
A	1	1
B	1	1
C	1.8	4
D	1.7	3

Investment A and B are both ranked as 1, since they both have shorter payback periods than any of the other investments, i.e., 1 year. Investment B, which has the same rank as A, will not only earn 10,000 Birr, but also 1,100 Birr a year later. Thus, investment B is superior to A. But a ranking procedure such as the payback period fails to disclose this fact.

The two important limitations of payback period:

1. It fails to give any considerations to cash proceeds earned after the payback date. It simply emphasizes on quick financial returns, ignoring the performance of the project over its economic life.
2. It fails to take into account differences in the timing of receipts and earned proceeds prior to the payback date. For instance, if we have two projects with the same capital cost and if they have the same payback period then they are equally ranked. Yet, we know by the inspection method that the project with earlier benefits should be desirable and preferred, since it can be reinvested or consumed.

3) Proceeds per Unit of Outlay

Under this method, investments are ranked according to their total proceeds divided by the amount of the corresponding investments. In other words, the total net value of incremental production divided by the total amount of the investment gives us the proceeds per unit of outlay.

Example: consider the following hypothetical example

Investment	Total proceeds	Investment outlay	Proceeds per unit of outlay	Ranking
A	10,000	10,000	1.00	4
B	11,100	10,000	1.11	3
C	11,524	10,000	1.15	1
D	11,524	10,000	1.15	1

Accordingly, project C and D given the same rank must be implemented. Although, we know by inspection that project D is superior because D generates Birr 2000 of proceeds in year 1. This method is again deficient because it still fails to consider the timing of proceeds. In other word, the method considers that 1 Birr of proceeds received in year 2 is equal to 1 Birr received in year 1. This is inconsistent with the generally accepted economic principle that 1 Birr today is more valuable than 1 Birr at some future date.

5.5.2. Discounting Method of Project Selection

The undiscounted measures discussed so far share a common weakness. They fail to take into account adequately the timing of benefits and costs. It is an accepted principle in economics that inter-temporal variations of costs and benefits influence their values and a time adjustment is necessary before aggregation.

For a whole range of reasons, people, enterprises and governments are said to have time preference in that they prefer to receive income sooner rather than later, and to pay for expenditures later rather than sooner.

Example: if a person is offered the choice between receiving Birr 100 now, or year later, he will invariably opt to receive Birr 100 now.

Some of the main reasons why people prefer to have income now rather than in the future include the following:

1. There is an expectation that society and individuals will be better off in the future than they are now:
2. One may expect *inflation* to reduce the real value of Birr 100 in the coming year.
3. If there is no inflationary effect (say where the offer is made in real terms) it would still be preferable to take the money today and *invest it at some rate of interest, r* , hence receiving a total of Birr 100 $(1+r)$ at the end of the year.
4. ***Uncertainty about the future***: Even if no investment opportunities are available, one might reason that Birr 100 today would still be preferable on the ground that there is a finite risk of not being around to collect the money next year.
5. Even where inflation, investment opportunities, and risk are ignored, there is **pure time preference**, which would lead one to prefer the immediate offer.

For all these reasons, tomorrow's income available from a project cannot be treated as if it were equally valuable to today's income. Therefore, we have a positive rate of discount, which leads us to place a lower present value on a given sum of money that will be received some times in the future. The most important discounted cash flow measures are:

1. Discounted Payback Period (DPBP)
2. The Net Present Value (NPV)
3. Profitability Index (PI)
4. The Internal Rate of Return (IRR)

1. The Net Present Value (NPV)

NPV is defined as the difference between the present value of benefits and the present values of costs. The NPV can be obtained by discounting separately for each year, the difference of all cash outflows and inflows accruing throughout the life of project at a fixed, pre-determined discounting factor.

The net present value **formula** is:

$$NPV = \sum_{t=0}^n \frac{(B_t - C_t)}{(1 + r)^t}$$

Where:

- ✓ B_t stands for the project benefits in period t
- ✓ C_t stands for the project costs in period t
- ✓ r , stands for the discount rate
- ✓ n , the economic life of the project

The discounting period should normally be equal to the life of the project. This period is the economic life of the project and varies from project to project.

During the implementation period, the net benefits are usually negative since investments costs may be greater than benefits.

Decision Rule: Having set the discount rate, an investment project is deemed acceptable, if the discounted net benefit (benefits minus costs) is positive. The economic criterion of project appraisal is to accept all projects that show positive NPV at the predetermined discount rate and reject all projects that show negative NPV. That means, the decision is to accept if **NPV > 0**.

Example 1: Consider the following Discounted Cash Flows for a Fertilizer Project in million Birr

Year	Net Cash Flow	Discount factors for 10 percent	Discounted cash flow (10%)	Discount factors for 20 percent	Discounted cash flow (20%)
0	-20	1.00	-20	1.00	-20
1	4	0.909	3.64	0.833	3.33
2	4	0.826	3.30	0.694	2.78
3	4	0.751	3.00	0.579	2.32
4	4	0.683	2.73	0.482	1.93
5	4	0.621	2.48	0.402	1.61
6	4	0.564	2.26	0.335	1.34
7	4	0.513	2.05	0.279	1.12

8	4	0.467	1.87	0.233	0.93
9	4	0.424	1.70	0.194	0.78
10	4	0.386	1.54	0.162	0.65
NPV			4.58		-3.21

Note: the values for discount factors for $r = 10\%$ and $r = 20\%$ can also be obtained from any standard set of discount tables.

Since discounting the cash flow at 10 percent produces a positive NPV of 4.58 million Birr, we conclude that the project should be undertaken. Suppose now that the cost of capital were to be raised to 20 percent, the project produces a negative NPV of 3.21 million Birr. In this event, the project would have to be rejected. **This shows that the NPV is critically dependent upon the level of the discounting rate, r .**

Prioritization (Selection) from a Number of Projects

If one of the several project alternatives has to be chosen, the project with the **largest NPV** should be selected.

(i) NPV and Decision Rule for Independent Projects

Independent projects are projects that are not in any way substitutes for each other. In such cases, the decision rule is to accept the project, if the NPV is greater than 0 (approve any project for which **NPV > 0**). If two independent projects have positive NPV and there is no budget constraint both should be accepted and you do not need to choose the one with higher NPV. For example, if two independent projects road and fisheries development projects in different locations are being considered and both have a positive NPV, then both should be undertaken. Both will increase community's welfare if they were undertaken and hence both should be undertaken. If there is resource constraint and the decision maker is forced to make choices, then one will have to choose the project with the highest NPV.

(ii) Decision Rule for Mutually Exclusive Projects

- (iii) A mutually exclusive project is defined as a project that can only be implemented at the expense of an alternative project as they are in some sense substitutes for each other. Example of the mutually exclusive projects includes two versions of the same

project, say with different technology, scale or time. Apparently, the decision rule is to choose the project with the highest NPV.

(iv) Limitations of the Net Present Value

1. The selection of an appropriate discount rate is one major limitation of this method.
2. NPV does not show the exact profitability rate of the project.
3. It requires detailed long term forecast of incremental costs and benefits of the project.
For some projects the required information for computing the NPV may not be available, or cheaply accessible.
4. When it is used to select among projects, it implicitly assumes that all projects share common type and degree of risk.
5. The NPV is expressed in absolute term, hence does not consider the scale of investment.

2. The Internal Rate of Return of a Project (IRR)

The IRR of a project is probably the most commonly used assessment criterion in project appraisal. This is because the concept of an IRR is in some way comparable to the long-term profit rate of a project.

Unlike NPV, it does not rely on the selection of a predetermined discount rate. The method utilizes present value concept, but avoids the arbitrary choice of a discount rate. Hence, an attempt is made to find a discount rate that make the net present value of the cash flow equal to zero. It is possible to think a level of interest rate that could result in NPV of zero. This rate of interest rate is termed as the Internal Rate of Return (IRR). The IRR is the rate of discount, which makes the present value of the benefits exactly equal to the present value of the costs.

The calculation of the IRR amounts to searching for the discount rate that gives a zero NPV. This is achieved through trial and error method. This rate, if determined, will represent the exact profitability of the project.

The Decision Rule

The formal selection criterion using the IRR is to accept all independent projects having an internal rate of return (IRR) greater than the opportunity cost of capital, **IRR** > **r**, where r stands for the opportunity cost of capital, the discount rate that we use when we compute NPV.

Calculation of IRR

The calculation procedure begins with the preparation of a cash flow table. Estimated discount rate is then used to discount the net cash flow to the present value. If the NPV is positive, a higher rate is applied. If NPV is negative at this higher rate, then the IRR must be between those two rates.

By **iterations**, it is possible to determine the discount rate that just makes the project's NPV equal to zero. This rate is the IRR of the project. If the positive and negative NPVs are close to zero, a precise and less time consuming way to arrive at the IRR is using the following interpolation formula.

$$IRR = I_1 + \frac{PV(I_2 - I_1)}{PV + NV}$$

Where: I_1 = the lower discount rate

I_2 = the upper discount rate

PV = NPV (positive) at the low discount rate of I_1

NV = NPV (negative) at the high discount rate of I_2

Note: I_1 and I_2 should not differ by more than one or two percent.

Example 1: Estimation of the IRR for a road project (Million Birr)

Year	0	1	2	3	4
Cash flow	-100,000	30,000	30,000	40,000	45,000

- ✓ Let us begin with say $r=12\%$, $NPV = 7,771.05$
- ✓ Now let us try with $r=15\%$, $NPV = 800.82$
- ✓ Since the value is still positive at $r = 15\%$, we increase the value to 16% ($NPV = -1362.5$)
- ✓ So we conclude that the value of r lies between 15% and 16% .

$$IRR = I_1 + \frac{PV(I_2 - I_1)}{PV + NV}$$

$$IRR = 15 + \frac{806.5(16-15)}{806.5+1362.5} = 15 + 0.3718 = \mathbf{15.3702}$$

The Decision Rule

According to the IRR version of economic criterion, we implement all projects that show an IRR greater than the predetermined discount rate (opportunity cost of capital).

All projects with an IRR greater than some target rate of return, r^* , should be accepted. The target rate is usually the same rate used as the discount rate employed in the computation of the projects net present value.

Advantages of the IRR

1. It is the **only** measure of project worth that takes account of the time profile of a project but can be calculated without reference to a predetermined discount rate. (Useful for international institutions like the World Bank, since they cannot do with different discount rate for different countries.
2. It is a measure that could be understood easily by non-economists, since it is closely related to the concept of the return on investment.

3. It is a pure number and hence allows projects of different size to be directly compared.

(v) Limitations of IRR

1. It assumes that cash flows over the life of the project are reinvested at the IRR.
2. It is relatively complex to compute the IRR-the iterative nature of its computation.
3. Requires detailed long term forecasts of the projects incremental costs and benefits.

3. The Benefit Cost Ratio (BCR)

It is the ratio of the present value of the projects benefits to the present value of its investment costs. This is given by:

$$BCR = \frac{PVB}{I}$$

Where: PVB = Present value of Benefits

I = Investment cost.

Decision Rule

The decision rule using BCR is to accept project when the ratio is greater than 1. This criterion is especially important for ranking independent projects, since it shows the benefit per unit of investment.

Example: consider the following cash flow (assume $r = 10\%$)

Time	0	1	2	3	4	5
Net Cash Flow	-100	34	32.5	31.37	30.53	68.87

$$BCR = \frac{PVB}{I} = \frac{\frac{34}{(1+0.1)^1} + \frac{32.5}{(1+0.1)^2} + \frac{31.37}{(1+0.1)^3} + \frac{30.53}{(1+0.1)^4} + \frac{79.9}{(1+0.1)^5}}{100}$$

$$BCR = \frac{30.91 + 26.86 + 23.57 + 20.85 + 42.76}{100} = \frac{144.95}{100} = 1.45$$

Therefore, the project should be accepted since $BCR > 1$.

5.6. Project Financing (Means of Finance)

After the cost of the proposed project is determined, the next step is to identify means of financing the project. That is, to identify the sources of finance. The major sources of finance are:

1. **Capital (Equity Financing):** One way of financing projects is by issuing stocks (shares), i.e., equity. Equity financing is often used to cover the initial capital investment and/or to meet working capital requirements.
2. **Debt Financing:** another way of financing the project is through external sources, i.e., debt financing. Some of such sources are,
 - A) **Loan Financing:** In many countries, it is relatively easy to get loans for a sound project. Thus, the analyst needs to identify such sources. Loan may be obtained from commercial banks or other financial institutions. Moreover, loan can also be available at government-to-government level (through bilateral agreement).
 - B) **Suppliers Credit:** Machinery and spares can often be financed on differed credit term with payments spread over years (6 to 10 years). This means, payment for the purchase of plants (machinery and equipment) can be made over a period of time.
 - C) **Debenture Capital:** These are long term financial instruments issued by firms to raise funds. These instruments can be convertible or non-convertible to stock.
3. **Incentive Sources:** The government and its agencies may provide financial support as an incentive to certain types of projects or for setting up industrial units in certain location.

Summary of the Chapter

- ▶ Feasibility study is a detailed analysis of most viable project ideas related to market and demand, technical, environmental, financial, economic, and political and social information needed for investment decision making.
 - ▶ The market and demand analysis would provide estimates on the benefits or revenue derived from the project about the aggregate market and share of proposed project.
 - ▶ The technical analysis would provide the input requirements (material, site, machinery and equipment, building and construction, human resource and organization).
 - ▶ With the rapid pace of economic development, the environmental impact assessment is essential to prevent environmental problems.
 - ▶ The benefits/revenue of the project with its corresponding cost to determine whether benefits/revenues exceed the costs assessment is undertaken in the financial analysis.
 - ▶ An investment project should also be justified within the wider context of the national economic environment under the economic analysis.
- The social/political analysis considers not only the effect of the project on the distributional objectives of development but also political acceptability of the project (special to development project

Review question

1. What are the basic components of cost of project?
2. What are the basic components of cost of production? Discuss briefly.
3. Discuss briefly the means of project finance?
4. What are the types of financial projection you are to prepare in order to judge the financial viability of a project?
5. Briefly explain the discounted and non-discounted project decision criteria?
6. List the merit and demerit of NPV of the alternative project decision technique?

CHAPTER SIX

ECONOMIC ANALYSIS OF PROJECTS

Objectives of the Chapter

Dear learners, welcome to the fifth chapter of project analysis and evaluation. At the end of this chapter, you will be able to:

- ✚ Understand the concept of economic analysis of projects;
- ✚ Know the basics of economic analysis valuation and shadow Prices

6.1. Introduction

Social cost benefit analysis (SCBA) also called economic analysis is a methodology developed for evaluating investment project from the point of view of the society (or economy) as a whole. Used primarily for evaluating public investments (though it can be applied to both private and public investments), economic analysis has received increasing emphasis in recent years in view of the growing importance of public investments in many countries, particularly in developing countries, where governments are playing a significant role in economic development. Economic analysis is also relevant, to a certain extent, to private investment as these have now to be approved by various governmental and quasi-covenantal agencies which bring to bear larger national consideration in their decisions.

In the context of planned economies, SCBA aids in evaluating individual project within the planning framework which spells out national economic objectives and broad allocation of resources to various sectors. In other words, SCBA is concerned with tactical decision making within the framework of broad strategic choices defined by planning at the macro level. The perspectives and parameters provided by the macro level plans serve as the basis of SCBA which is a tool for analyzing and appraising individual projects.

6.2. Economic Analysis – Meaning

A systematic approach to determining the optimum use of scarce resources, involving comparison of two or more alternatives in achieving a specific objective under the given assumptions and constraints.

Economic analysis takes into account the opportunity costs of resources employed and attempts to measure in monetary terms the private and social costs and benefits of a project to the community or economy.

6.2.1. Rational for Economic Analysis

In Economic Analysis the focus is on social cost and benefits of a project. These often tend to differ from the cost incurred in monetary terms and benefits earned in monetary terms by the project.

The principle reasons for discrepancies are -:

1. **Market imperfections -:** The common market imperfections found in developing countries are
 - ✚ **Rationing -:** rationing means control over the prices and distribution of a commodity. The price paid by the consumer in case of rationing is much less than the price prevailing in the competitive market.
 - ✚ **Prescription of minimum wage rates -:** in case of minimum wage rates the wages paid to the laborers are more than what the wages would be in a competitive labor market free from such wage legislation.
 - ✚ **Foreign exchange regulations -:** the official rate of foreign exchange in most of the developing countries which exercise close regulation over foreign exchange is typically less than the rate that would prevail in the absence of foreign regulation.
2. **Externalities: -** a project may have beneficial external effects, for e.g. a project may create certain infrastructure facilities like roads which benefit the neighboring areas, or a may have harmful external effects like it may create environmental pollution. Such benefits/losses are ignored in assessing the monetary benefits to the project sponsors but such externalities are relevant in Economic Analysis because in such analysis all cost and benefits, irrespective to whom they accrue and whether they are paid for or not, are relevant.
3. **Taxes and subsidies -:** in case of monetary cost and benefit of a project taxes and subsidies are to be considered because they are definite monetary gains, however, taxes and subsidies are ignored in case of **Economic Analysis** because they are considered as transfer payments.
4. **Concern for savings -:** in case of monetary cost benefit analysis a private firm is least concerned as to how its benefits are divided between consumption and savings, but from social point of view, however, the division of benefit between saving and consumption is relevant because while doing **Economic Analysis** it is assumed that a rupee of benefit saved is more valuable than a rupee of benefit consumed. Thus a higher concern of society for saving and investment is duly reflected in Economic Analysis where higher valuation is put on saving than on consumption.

5. **Concern for redistribution -:** while doing monetary cost and benefit analysis a private firm is least concerned about as to how its benefits are being distributed among various groups of the society, but while doing Economic Analysis this factor is kept in mind because it is assumed that a rupee of benefit going to the poor section is considered more valuable than a rupee of benefit going to an affluent section.
6. **Merit wants -:** while merit wants are not relevant from the private point of view, they are important from the social point of view. E.g. GOVT may prefer to promote an adult education programme even though they are of no benefit to the consumers in market, but from the point of view of the society they are important.

6.3. Valuation and Shadow Prices - meaning

It is concerned with determination of economic prices also referred as shadow prices. Where price does not reflect the actual value of a good or commodity, or no market value for a good or commodity exists, *shadow pricing* can be used. Shadow pricing is a proxy value of a good, often defined by what an individual must give up to gain an extra unit of the good. The value of a good or impact resulting from a project when measured using shadow pricing may, however, differ from the value of that or similar goods or impacts when measured using market prices. This occurs due to market failure in real markets which impacts on the shadow value of certain goods and impacts.

A key issue in shadow pricing is that in what unit the input or output is expressed i.e. in what unit of currency should benefit or cost be expressed, whether the cost and benefit should be valued at current or constant prices. Shadow price is also known as hidden price, a price that is hidden under monetary cost and benefits.

Another issue in shadow pricing is whether a good is tradable or not. For a traded good the shadow price is the border price translated in the domestic currency at market exchange rate. The shadow price in case of non-tradable good is consumer willingness to pay or cost of production depending on the impact of the project on the rest of the economy.

Regarding taxes, the UNIDO approach says that if a project result in diversion of non- traded input from the producer or addition of non-traded input, taxes should be included. If a project augment domestic production by other producers, taxes should be excluded and for fully traded goods taxes should be ignored.

6.3.1. Valuation of Shadow price

Traded goods and services -: the shadow prices of traded goods and services are the border price. If a good is exported its shadow price is the FOB (free on Board) price and if a good is imported its border price is the CIF price. If foreign demand is not perfectly elastic the marginal

export revenue is substituted for the FOB and if foreign supply is not perfectly elastic, the marginal import cost is substituted for CIF (Carriage Insurance Freight) prices.

Non traded goods and services -: accounting prices for non-traded good are defined in terms of marginal social cost and benefit. The marginal social benefit is the value of an extra unit of good from social point of view and the marginal social cost of a good is the value in terms of accounting prices of the resources required to produce an extra unit of the good.

6.3.2. Shadow pricing for specific resources

Tradable input and output -: a good is fully traded if its domestic changes in demand or supply affect just the level of import or export. For a good being tradable the following condition should be met-:

- ✚ The import quota, if any should not be restrictive.
- ✚ The import supply should be perfectly elastic.
- ✚ There is no surplus capacity in the domestic industry.
- ✚ If, additional demand exist inland, the imported goods even after taking into account the cost of transport from port to the point of inland demand should be less than the marginal cost of local production.
- ✚ The imported input cost should be less than the domestic marginal cost of purchase.

Non-tradable inputs and outputs -: a good is non-tradable if following conditions are satisfied -:

- ✚ If its CIF prices is greater than its domestic cost of production.
- ✚ Its FOB price is less than its domestic cost of production.

For traded goods the shadow price border price translated in domestic currency, at market exchange rate.

For non-traded goods the shadow price is measured in terms of consumer willingness to pay or cost of production, depending on the impact of project on the rest of the economy.

Externalities -: since Economic Analysis seeks to consider all cost and benefits, to whomsoever they may accrue external effects should also be taken into account. The valuation of external effects is rather difficult because they are often intangible in nature and there is no market price, which can be used as a starting point.

(vi) **Labour inputs** -: the principle of shadow pricing may be applied to labour as well, though labour is considered to be services. When a project takes away labour from other employment, the shadow pricing of labour is equal to what other user of labour are willing to pay.

(vii) The shadow prices associated with inducing additional production of workers consist of the marginal product of labour in previous employment plus certain other costs.

The social cost of associated with import of foreign labour is the wage they command. However, a premium should added on account of foreign exchange remitted abroad by these workers from their savings.

Capital input -: the shadow pricing in case of capital investment involves -:

What is the value of physical assets?

1) What is the opportunity cost of capital?

The value of physical assets is determined the way values of other resources are calculated. The opportunity cost of capital depends on how the capital required for the project is generated. To the extent that it comes from additional savings its opportunity cost is measured by the consumption rate of interest.

General Principles of Shadow Pricing:

- The import (CIF) price is less or the export (FOB) price is more than the domestic cost of production

a) A good/service is non-tradable; if

- It imports (CIF) price is greater than its domestic cost of production and/or
- its export (FOB) price is less than its domestic cost of production.

(b) Taxes:

- If the project augments domestic production, taxes should be excluded
- if the project consumes existing fixed supply of non-traded inputs, tax should be included
- For fully traded goods, tax should be ignored

Conversion Factor (CF)

- ✚ Are used to convert financial values in the project cash flows
- ✚ May be specific (CFI) or general (GCF)
- ✚ CFI is particular for goods or services, while the GCF is an average of groups of goods and services
- ✚ Generally, the CFI or more narrowly defined as GCF is preferred over more broadly defined GCF because the former should more accurately reflect actual resource flows.

- ✚ Conversion factor may be either centrally calculated or they may be project related CF.
- ✚ Project related CF are more accurate than centrally calculated
- ✚ Project related CFI be calculated for project costs or benefits exceeding 10% of the project total.
- ✚ CF can be divided into
 - ✚ (a) Demand price CF – calculated when the primary project impact is manifest through an effect on the demand side of the market for the good.
 - ✚ (b) Supply price CF – calculated when the project impact is on the supply of the good.

Sources of shadow pricing	Basis of valuation
Increase/decrease total consumption	Consumer willingness to pay
Increase /decrease total production	Cost of production
Increase/decrease export or imports	Foreign exchange value

6.4. World Price System of Economic Analysis (Little-Mirrlees Method)

An approach was originally set out in the OECD Manual by Little and Mirrlees (LM). Later Squire and Van der Tak (SVT) expanded this approach. In these methods the *costs* and benefits are measured in world price equivalent terms i.e. in border price equivalent terms. This means that benefits and costs *are* counted not in units of domestic currency of average purchasing power but in units of foreign exchange translated into domestic currency at the official exchange rate. This is called border rupee.

The Numeraire is: income in the hands of the government measured in world prices.

- (1) The OECD approach is to leave the world prices of tradable commodities unadjusted (of course we take into account the transportation, handling etc and exclude items like taxes and subsidies to arrive at Border Parity Price at the project site).
- (2) In OECD approach, the prices of non-traded goods and domestic resources *are* adjusted into world price equivalent terms. The foreign exchange effect of projects are taken into account by treating all domestic resources as less valuable than

foreign resources. All domestically produced non-traded items are reduced in value, below their market prices to *reflect* the fact that they are less valuable than traded goods. LM or OECD system would apply a conversion factor of less than 1 say .8, to the domestic resources costs.

(3) All the additional consumption going to workers as a result of the employment effect of project *is* translated into a value in terms of government income. Therefore, where incremental consumption is c the value of this extra consumption in terms *of* the Numeraire will be divided by v where v is the present value of the extra consumption stream, that is equal to one unit of government income at world price.

(4) The income distribution effect of a project is introduced by relating all the benefits to a particular group of consumers to government income.

(5) The conversion factor for skilled labor is Calculated as follows:

$$CF = ma + b(c-m) - bd/v (c-m) + c-c' \text{ where,}$$

m = opportunity cost of labor/ market price i.e. marginal product lost in the sector from which labor is drawn when a wage of Rs 1 is being paid

a = SCF

b = SCF, sometimes a specific consumption factor.

d = consumption weight for unskilled labor

v = the value of a unit of investment in terms of units of consumption

c = market wage

$c - c'$ = amount that the society has to spend on providing social overheads to labor

ie c' is the cost of overheads + wages paid.

6.5. Domestic Price System of Economic Analysis (UNIDO Method)

All countries, and particularly the developing ones, face the basic economic problem of allocating limited resources such as labor, land and other natural resource, foreign exchange, etc. to their best use.

Best use is defined as the use where these resources make the maximum contribution in achieving fundamental objectives specified in the development strategy of the country.

Market prices and market distortions

Under the traditional approach to cost-benefit analysis, all inputs and outputs of a project are valued at prices prevailing in the domestic market, with occasional adjustments for transfer payments such as subsidies and evident taxes. The rationale of using domestic market prices lies in the crucial, but questionable, assumption that these prices reflect both marginal utilities of consumption and marginal production costs. Consequently, the structure of consumption is expected to determine optimally the structure of production and the allocation of resources.

This assumption holds true only under the ideal conditions of perfect competition and, therefore, the optimality of resource allocation depends on whether such conditions actually

prevail in the market. It is generally accepted that the markets of most countries and particularly those of the developing countries are very far from this ideal. For social, political, historical and economic reasons, the markets of these countries are distorted and consequently the signals they give in the form of prevailing prices are also distorted and do not reflect marginal productivities and marginal utilities. As a result, these prices cannot be used in allocating limited resources optimally and this has created the need for a new set of prices to serve this purpose.

It is believed that in many countries all sections of the domestic market are distorted, though to varying degrees, since distortions emanating from one section of the market have a tendency to penetrate the others. It was recognized early that serious distortion exist in the markets for labor, capital, and foreign exchange and efforts were made to replace the signals from these market by more appropriate ones. To this end, the traditional cost-benefit analysis employed what has been known as shadow wage rates, opportunity cost of capital, and shadow foreign exchange rate respectively. For other inputs and outputs domestic market prices were used with some corrections for taxes and subsidies. Nevertheless, even with these corrections and the use of shadow prices for the inputs mentioned, the pattern of domestic consumption remained the basic determinant of production structure and allocation of resources. In other words, the demand for goods and services for domestic consumption determined what should be produced. The current cost-benefit analysis considers international market as the main determinant of resource allocation and productive efficiency.

Even if the degree of competitiveness of the world market is questioned, the fact remains that trade is always possible and a country can import or export at international prices; consequently these prices can be taken as opportunity costs for the economy.

The new approach resorts to the international market, believed to be more competitive, to receive signals that will guide the allocation of resources and the structure of domestic production. Even if the degree of competitiveness of the world market is questioned, the fact remains that trade is always possible and a country can import or export at international prices; consequently, these prices can be taken as opportunity costs of the economy.

In this approach, all project inputs and outputs are valued at world prices which are formed independent of whatever distortions prevail in the domestic market. These world prices are accounting or shadow prices estimated as border prices in the form of c.i.f. for imported and f.o.b. for the exported commodities. Under this approach international trade replaces domestic consumption structure in providing information for determining the allocation of resources. The rationale of using international prices as the benchmark of productive efficiency is found in the theory of comparative advantage.

Since in this approach international efficiency, as reflected in world trade, is the main determinant of domestic efficiency, the accounting prices of all inputs and output should be world prices read at the borders of the country, i.e. border prices. However, not all project inputs and outputs are traded goods and services and world prices might not be available for those that are non-traded. If the goods are not traded, the conversion factor can be used (as short cuts).

Shadow prices are simply set of prices that are believed to better reflect the opportunity cost, i.e. the cost in their best use, of different goods and services. They are employed instead of domestic market prices in guiding the allocation of resources since the latter are distorted and using them would lead to resource misallocation. Often these prices are not observed but estimated; hence the term shadow prices. Equally often, however, they are observed, as for example in the case of world price, and therefore the adjective “shadow” could be misleading. A more accurate term is “accounting prices” since these prices, estimated or observed, are used in the calculations, in the account of the project.

With a very broad interpretation of the term accounting prices we might say that all values relating to price and even quantities in project analysis are shadow values. Some of these values are observed, some are estimated or assumed and others are forecasts or even hopes. It is only when implementation has been completed and the project is operational for some time that the real prices and quantities will be known. Strictly speaking, project planning is an exercise in forecasting.

Limits in the role of shadow prices

If accounting prices are considerably different from the prevailing market prices, it is almost certain that in the implementation and operation stage we will face input and output prices substantially different from the shadow prices used in calculating costs and benefits at the planning stage. Therefore, since workers and owners of other inputs don't accept “shadow Birrs”, it is necessary to include in project planning what is called financial analysis, where market prices are used.

It should be clear that shadow/accounting prices do not replace market prices in all project considerations. Their role is to guide the allocation of resource and it ends there. Actual and not shadow capital requirements, revenue, operating expenditures and similar matters will be determined by prevailing market prices as will be the monetary deficit or surplus that the project will generate. Comparing project analysis under market prices (financial analysis) with the one under accounting prices (economic analysis), will provide valuable information on subsidies and other government measures that might be necessary to ensure that timely implementation and smooth operation of the project. Although the need for possible subsidies is revealed by

financial analysis itself, it is the comparison with economic analysis that shows the difference in returns under desirable and prevailing market conditions and provides the justification for subsidies and other measures.

Efficiency or Economic Shadow Prices

Q? The market prices are inappropriate in project selection, and therefore, how to estimate the necessary shadow prices?

Ans. Look for them in international trade. What has to be emphasized here is that, the formula used in estimating accounting prices is determined by what we try to achieve by employing such prices. In other words, although all non-market prices are called shadow prices their value might differ. To avoid confusion, we should make this term more specific to indicate clearly what we aim at in using such prices, e.g. efficiency shadow prices and social accounting prices.

The objective in employing shadow prices is derived from the aim of the project and, therefore, how shadow prices will be estimated depends on what we try to achieve through project selection. We have already stated that projects are just a policy instruments and not a panacea (cure) for development. Some development objectives can be reached more efficiently through other means such as fiscal, monetary and trade policies. However, since a project commits scarce resources we should, as a minimum, aim at achieving through project evaluation the efficient allocation of such resources. Consequently, accounting prices should be estimated with at least this objective in mind. When the analysis is limited to the efficiency objective, the accounting or shadow prices employed are called efficiency or economic shadow prices; they are distinguished from social shadow prices. It has been said that efficiency shadow prices are boarder prices determined by international trade.

Social Shadow Prices

The scope of social pricing

When efficiency prices are used in project analysis it is implicitly assumed that our primary concern is the efficient allocation of scarce resources, leaving to other policy measure the task of achieving other development objectives. Specifically, it is assumed that we are interested in maximizing project net benefits and we are not concerned with the question as to who receives these benefits and to what use they are put. In other words, we are not interested whether the benefits go to a poor or a rich person and whether they are consumed or saved. Stated differently, under efficiency pricing the project analysis is, in his work, indifferent to the question of intra-temporal distribution of income (rich vs. poor) and to the inter-temporal allocation of benefits (present consumption and future consumption through savings). Under efficiency pricing a Birr is a Birr irrespective of whom it goes to and how it used. Traded, non-traded and potentially traded goods

Imported inputs

Some project inputs are directly imported or, though supplied locally, they indirectly lead to imports since local production is not sufficient to satisfy domestic demand. Inputs that fall in this category are valued at the c.i.f. price which represents the direct foreign exchange cost of the inputs up to the port or other borders.

Exported Output

The project output that is directly exported or, although sold on the domestic market, leads to additional exports because the domestic demand is already satisfied for existing capacity, should be valued at the border price which in this case is the f.o.b. price. The border price should be adjusted to expenses incurred in bringing the exported commodity to the port or the borders.

Import and export substitutes

Imported inputs and exported outputs are broadly interpreted and the valuation procedure described earlier applies also to import and export substitutes.

Non-traded Goods

Goods and services produced in a country are defined as non-traded when they don't enter world trade; either because of their nature, due to trade barriers and other special reasons. In this case, the non-traded goods will be valued at the domestic price multiplied by a conversion factor. Conversion factor is the factor by which we multiply the actual price in the domestic market of an input or output to arrive at its shadow price, when the latter cannot be observed or estimated directly. The conversion factors are estimated by central planners.

Potentially traded goods






This category falls between the traded and non-traded groups. It includes commodities that are not traded at present but could be traded if the country had followed optimal trade policies.

CHAPTER SEVEN

PROJECT PLANNING, ORGANIZATION AND IMPLEMENTATION

Objectives of the Chapter

Dear students, welcome to the seventh chapter of project analysis and evaluation. At the end of this chapter, you will be able to:







-  Understand the concept of project planning and organization;
-  Know the basic concepts of managing the project implementation process
-  Understand problems and success in project Implementation;
-  Know the concept of project monitoring and evaluation;
-  Understand how to make project Impact Analysis and reporting evaluation results


7.1. Concepts of Project Planning and Organizing

Project Planning is foreseeing with blue print towards some predicated goals or ends. Project plan is a skeleton which consists of bundle of activities with its future prospects; it is a guided activity. It is a plan for which resources are allocated and efforts are being made to commence the project with great amount of preplanning, project is a way of defining what we are hoping to do about certain issue. The project alone is not responsible for what happens during the course of a planning. Project is a final form of written documents that guides us as to what steps need to be taken next.

7.1.1. Functions of Project Planning

The following functions are to be performed carefully in the Project Planning process.

-  It should provide a basis for organizing the work on the project and
-  allocating responsibilities to individuals.
-  It is a means of communication and co-ordination between all those
-  involved in the project.
-  It induces the people to look ahead.
-  It instills a sense of urgency and time consciousness

 It establishes the basis for monitoring and control.

It planning a project, the project manner must structure the work into small elements that are: Manageable, independent, Integratable and also measurable in terms of progress.

Project planning must be systematic and flexible enough to handle unique activities, disciplined through reviews and control and capable of accepting multifunctional inputs.

7.1.2. Types of Project Plan

The routinisation of planning is done by types of planning decisions, they are as follows:

(a)Single use plans: It includes programs schedule and special ways of operating under particular circumstances. Single plans are meant as objectives which centre on focused and desired results. In can also be known as short term plans to deal with the specific problem for specific place with prescribed time limit.

(b) Standing plans: Standing plans are those plans which include policies, standard methods and standard operation, procedures. They are designed to deal with recurring problems. It may be treated as standard document to be used in different plans to deal with a set of problems. The design procedure and steps are already described. It may require adjustment considering the unit of operation.


7.2. Project Organization - Meaning

An English author Harrison (1981) defines a project organization as the arrangement and relationships between Client Company, contractor, and subcontractor organizations and their respective project managers who are all involved in undertaking a project in a particular environment.


Project organization must have specific objectives a formal structure of authority with some persons in leadership roles and others in sub-ordinate roles, division of work which entails specialization by members in various activities or functions, a formal system of communications and generally a set of formal procedures and customs that distinguish them from the social entities.

The prime objective of a project organization it to accomplish the specific project in the most economical, efficient and effective manner within the constraints of time, budget and performance or quality standards.

7.2.1. Features of Good Project Management Organization

 There should be an effective project head

 Good and experienced Project group

 Separate Project department in case of continuous project activities

- ✚ Involving agencies like project, operation, consultant, finance and commercial departments effectively.
- ✚ Good System of selection, training, promotion and remuneration of project
- ✚ Personnel Well equipped computerized information system and impossible with project management software.
- ✚ Capable to execute the projects along with the operation activities.
- ✚ In large project organization own construction facilities may be created.

7.3. Managing Project Implementation Process

Project implementation can be referred to as a process whereby “project inputs are converted to project outputs as set out in the project framework”. The process involves a series of activities, which need to be planned, operated and controlled, and which will inevitably involve the utilization of resources. The management of these activities is fundamental to a supervisor or monitor so that the project can be completed on time and at cost consistent with the project plan.

Project implementation may be looked at as:

- Putting in action the activities of the project.
- Putting into practice what was proposed in the project document i.e. transforming the project proposal into the actual project.
- Management of the project or executing the project intentions.

Project, implementation is carried out following the already laid down timetable or work plan. It leads to the realization of project outputs and immediate objectives.

Project implementation is usually done by the organization that prepared the project and received funding for it. This organization is referred to as the **implementing agency**. The implementing agency sets up a project **implementation unit**, which carries out the implementation on behalf of the implementing agency.

Other organizations that participate in the implementation of the project by way of collaboration say by according good working relationship, extending some technical advice or seconding their staff to the project, are referred to as **Co-operating agencies**. Example: If a given sub-county is to implement a sanitation project, the departments of water, community development and health will act as cooperating agencies.

The project implementation phase involves:

1. Project activation

Project activation simply means making arrangements to have the project started. It is the preliminary or foundation stage of project implementation and it involves the coordination and allocation of resources (funds, labor and materials) to make the project operational.

The following activities are undertaken during project activation

- Establishment of Project Implementation Units (PIUs)
- Recruitment of project manager and other staff
- Tendering and procurement of machines, equipment and other suppliers
- Preparation of contingency plans
- Designation of the internal project authorities for decision making and establishment of communication channels
- Putting in place staff training and development programmes and code of conduct
- Setting up linkages with the target group
- Location and negotiation of sites

2. Project Operation

Project operation is also referred to as the development and normal life period of the project. It is the actual management of a project in practical terms. This is the level when the project inputs are transformed into outputs via the project activities following the laid down work plan. This leads to the attainment of immediate objectives.

It involves the coordinating, monitoring and control of the performance of the various project groups and the use of project resources in such a way that the project activities are completed in an orderly and optimal fashion within the constraint of time and resources available.

(b) Operation and maintenance

In order to attain value from the project and get maximum returns on the investment the district/municipality or the beneficiaries organize for the facility to be used properly and maintained regularly. An operation and maintenance manual will be prepared by the contractor and handed to the district.

7.4. Success of Project Implementation

a) Political Commitment

Political or government commitment is the continuing interest and active support of those agencies and individuals who are in a position to influence the attainment of the project's objectives, whether through the allocation of human and financial resources or through the working of the administrative and political apparatus. For the success of any project, sustained commitment by the Government to the projects is a pre-requisite.

b) Simplicity of Design

Projects with relatively simple and well-defined objectives and based on proven and appropriate technologies or approaches have good chance of being implemented successfully.

c) Careful preparation

Projects need to be implemented after they have been sufficiently prepared

d) Good management

Successfully implemented projects are associated with good managers and as such sound project management is a key to project success. The influence of the quality of management on project performance is always visible. Many projects in serious difficulty during implementation have been turned around by the appointment of a competent manager, just as performance in others has noticeably declined when a good manager has departed.

In summary, there is no simple formula for the success of projects. Each project faces a unique set of circumstances, many of which can be foreseen and controlled but some of which cannot. Effective project planning, design and implementation are at the heart of successful projects. It their presence cannot always guarantee success; their absence is almost certain to lead to failure.

7.5. Problems in Project Implementation

a) Financial Problems

These include:

- 1 Pressure on the cost side because of the general wage and price increases
- 2 Difficulties in raising prices, taxes and interest rates
- 3 Losses due to fluctuations in foreign exchange rates

b) Management problems

Managerial or institutional problems are usually the root cause of implementation delays and cost overruns. Other project management problems include;

- 1 Lack of competent local project Managers
- 2 Insufficient capacity of local suppliers and contractors
- 3 Lack of a proper management information system
- 4 Unnecessary bureaucracy in project administration
- 5 A corrupt project management
- 6 Delays in delivery of project inputs
- 7 Inadequate personnel training, high personnel turnover, poor choice of personnel and frequent rotation of personnel

c) Technical problems

These include:

- 1 Poor quality materials and machinery
- 2 Technical defects in design of equipment's leads to quick failure.
- 3 Mistakes in the installation and start-up of equipment.
- 4 Late arrival of machinery.
- 5 Unsuitability of imported equipment for local conditions (inappropriate technology).
- 6 Difficult or unexpected soil conditions e.g. using a tractor in a wetland.

7 Political problems

Even in the absence of such obvious disruptions as war and internal upheavals, political problems are the major causes of the difficulties experienced by projects. When political/government commitment is absent, weak or variable, project implementation suffers. Political pressure affects the location of projects.

Other typical implementation problems

- 1 Poor scheduling of projects leading to delays in implementation.
- 2 Delay in disbursement of project funds
- 3 Misallocation of funds
- 4 Delay and sometimes lack of counterpart funding
- 5 Lack of accountability and transparency by project managers and other implementers.
- 6 Bureaucracy in decision-making.
- 7 Selfishness/nepotism/favoritism by some project managers.
- 8 Weak monitoring systems
- 9 Natural calamities like drought, earthquakes, landslides, and hailstorms.
- 10 Policy changes
- 11 Migration of beneficiaries
- 12 Lack of team work
- 13 Lack of incentives for implementers.

7.6. Project Monitoring

As a management function 'monitoring' assesses whether project inputs are being delivered, are being used as intended (to create outputs) and are having the initial effects as planned. Particularly, monitoring is an internal project activity, a fundamental part of good management, and hence, an integral part of day to day activity. The primary function of monitoring is to provide and use data in a manner that management can improve performance in the future.

Project Monitoring System

Project monitoring system is to track actual progress against planned progress at any given time. It includes financial progress (monitoring of actual expenditure against budgeted expenditure) as well as the progress of project activities.

When designing a monitoring system, the project formulators should consider the following points:

- Identify key personnel for the monitoring information. These many include line managers, accountants, contractors and suppliers.
- Indicate frequency of data/information collection time. Here data mean only useful or relevant one.
- Identify responsibilities for data processing. Appoint also responsibilities to act on the results of these data.
- Attempt to attain the right combination of speed and accuracy.
- Make sure that the monitoring system only intends to processes that data which is necessary.

Information acquired through monitoring systems can be divided into three categories:

- Monitoring of physical progress
- Monitoring of financial progress
- Monitoring the quality of project outputs


Monitoring of Physical Progress

The prime purpose of physical progress monitoring is to ensure whether project activities are on schedule. This can be achieved through milestone monitoring and time chart monitoring.

Milestone monitoring involves the use of project milestones which were identified as part of the project implementation plan. The milestones which represent the actual data can be entered in a tabular form or Gant chart. Milestone monitoring provides a retrospective record of project progress, but it is unable to provide us with information about activities which are still in progress.

Time chart monitoring is a method which is used to anticipate whether or not milestones will be reached on schedule.

When dealing with physical progress of an activity there are three possibilities that will happen:

-  Activity outputs can be quantified as a single number. This is relatively simple to monitor. For example, if the activity was to print a certain number of magazines then the physical target and progress to date can be expressed in terms of this single number (for example, 500 magazines printed out of a target of 2000).

- Activity outputs can be measured and valued. This is the case with the construction of buildings and roads. Progress towards meeting physical targets should be expressed as:

$$\frac{\text{Value of Work done}}{\text{Total Value of Work Planned}} \times 100\%$$

- Activity outputs cannot be directly value. This is the case in activities such as training or in supply – only contracts. These activities should use milestones to mark the beginning and end of each separate activity phase. If this is not possible, physical progress can be expressed as:

$$\frac{\text{Time Spend to date}}{\text{Total time to Complete}} \times 100\%$$

This may be difficult because the time taken may not have any relation to the actual amount of physical progress towards activity completion. Once physical progress has been monitored for all ongoing activities, it is possible to plot this information against the implementation plan in the form of a bar chart.

Monitoring Financial Progress

This involves comparing actual expenditure against the financial plan (budget) produced as part of the implementation plan. The project must therefore have a cost reporting system in place to enable a comparison of actual and predicted costs. Once accurate data are accessible, it is possible to utilize this information in the process of project cost control. Using the following relationship can do this:

$$\frac{\text{Cost of Work to date}}{\text{Value of Work to date}} = \frac{\text{Cost of Work Remaining}}{\text{Value of Work Remaining}}$$

The information gained through this calculation can then be entered

Monitoring the Quality of Project Outputs

This involves ensuring that outputs are delivered according to specification.

This is normally done through a system of direct inspection and specification. Monitoring is sometimes carried out by outside agencies against a set of internationally or nationally recognized standards.

7.6. Project Evaluation

Project evaluation appraises the progress and performance of a project compared to the Progress and performance of other, similar projects. The evaluation also supports any management decisions required for the project. Therefore, the evaluation must be conducted and presented in a manner and format that assures management that all appropriate data have been considered.

Like a project itself, the audit/evaluation has a life cycle composed of an orderly progression of well-defined events. These are the following:

1. **Project Audit Initiation:** This step involves starting the audit process, defining the purpose and scope of the audit, and gathering sufficient information to determine the proper audit methodology.
2. **Project Baseline Definition:** the purpose of this phase is to establish performance standards against which the project's performance and accomplishment can be evaluated.
3. **Establishing an Audit Database:** Once the baseline standards are established, execution of the audit begins. The next step is to create a database for use by the audit team.
4. **Preliminary Analysis of the project:** After standards are set and data collected, judgments are made.
5. **Audit report preparation:** this involves the preparation of the audit report, organized by whatever format has been selected from use. A set of recommendations, together with a plan for implementing them, is also a part of the audit report.
6. **Project Audit Termination:** The same as to the project itself, after audit has accomplished its designated task, the audit process should be terminated. When the final report and recommendations are released, there will be a review of the audit process.

A good evaluation system in a project right from the beginning may assist the progress of the projects as planned and avoid repeating mistakes in their future endeavors.

Generally speaking, evaluation could be ongoing (mid – term), terminal or ex – post.

In – Progress Evaluation

It is necessary to exercise strict control on in – progress capital projects. There are two aspects of controlling in – progress capital projects:

Establishment of Internal Control Procedures: Proper accounts are established for every in – progress capital project. These are charged with all relevant expenditures, which are further classified into capital and revenue items. These accounts reflect out – of – pocket payments as

well as allocated expenses. The project by project segregation of costs ensures that proper attention can be directed to projects as they approach stages/milestones.

Use of Regular Progress Reports: Periodic progress reports compare actual expenditures against estimates. They provide several benefits: (i) They provide timely information so that corrective action can be made to overcome potential problems. (ii) they generate inputs for cash budgeting and fund raising. (iii) They serve as the basis for calculating variances and explaining variances.

Post – Completion Evaluation

Post – audit or post – completion audit is an audit of a project after it has been commissioned.

Regular post – completion audit of capital projects: (i) provide a documented log of experience that may be valuable in improving future decision making, (ii) enable the firm in identifying individuals with superior abilities in planning and forecasting (iii) help in discovering systematic biases in judgment, (iv) induce healthy caution among sponsors, and (v) serve as a useful training ground for promising executives who need broader business experience and exposure.

7.7. Project Impact Analysis

A *Project impact analysis* is a business analysis tool that helps you predict how significantly your project will impact the business. You use it to gather information about the project's various elements, players, and entities so you can determine the depth and breadth of your potential efforts.

Here's a worksheet to help you complete a PIA. In the third column, write "low," "medium" or "high" according to the guidelines in the second column. Then count the numbers of each ranking. The predominant ranking denotes the impact of project.

Summary of the Chapter

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