

UNIT ONE

INTRODUCTION TO PROJECT

1.1 BASIC CONCEPT OF PROJECT

The modern concepts and methodologies of projects have been developed since the end of the 2nd world war. Since then, projects have been widely used to solve different kinds of technological, economical and social problems.

What exactly is a project? Three project managers met at a training course. In the first session, they introduced themselves and described the projects on which they were currently working:

- ‘I’m in charge of the construction of a retail development in the centre of a large town. There are 26 retail units and a supermarket in the complex. My main responsibilities are to co-ordinate the work of the various contractors to ensure that the project is completed to specification, within budget and on time.’
- ‘I am directing a team of research scientists. We are running trials on a new analgesic drug on behalf of a pharmaceutical company. It is my responsibility to design the experiments and make sure that proper scientific and legal procedures are followed, so that our results can be subjected to independent statistical analysis.’
- ‘The international aid agency which employs me is sending me to Central America to organize the introduction of multimedia resources at a teachers’ training college. My role is quite complex. I have to make sure that appropriate resources are purchased – and in some cases developed within the college. I also have to encourage the acceptance of these resources by lecturers and students within the college.’

On the face of it, these three projects appear to have little in common. They have been set up to achieve very different outcomes: a shopping complex, a new drug and a new method of teaching students. Clearly, a project is not defined by the type of outcome it is set up to achieve. It is not, as they say, what you do, but the way that you do it.

Projects can be set up for a wide variety of purposes. They exist in all sectors of industry and in every type of organization. Some projects are also much more complicated than others. The Association for Project Management recognizes four levels of projects:

- An in-house project involving a single disciplinary team

- An in-house project involving a multidisciplinary team
- A multi-company multidisciplinary project
- A multi-country multi-company multidisciplinary project.

Project management skills are needed at each of these levels, but the challenges increase as projects become more complex. In a single disciplinary in-house project, the people involved have probably worked together before. They understand each others' functions and are familiar with how things are done within the organization. At the other end of the scale, the project manager may have to coordinate the efforts of people who:

- Are geographically distant
- Do not speak the same language
- Are working within different cultural and legal frameworks
- Are working for different organizations
- Do not understand each others' roles.

However, all projects, whatever their scale and proposed outcome, share certain basic characteristics.

1.1.1 Definition 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 undertakings. Hence, would you have any idea about it? What is the meaning of a '**project**'? What is the definition of a '**project**'? Give your own answer before you proceed to the following paragraphs.

Project is defined in different ways by different authors and all relate it to endeavor and investment to produce a product or provide services. The following are some of the definitions of a project as used by different authors.

Project Management Institutes defines project as a "temporary endeavor undertaken to create a unique product or service" (PMI, 2008).

According to Lake (1997):

A project is a temporary endeavor involving a connected sequence of activities and a range of resources, which is designed to achieve a specific and unique outcome and which operates within time, cost and quality constraints and which is often used to introduce change.

This is a complex definition. We need to look at its separate elements very start of the project.

Project Design and Management in GeES

- Because projects invariably result in something new, they always bring about change of some kind. The change may be relatively unimportant, and be easily assimilated by the people it affects. Or it may have very significant consequences.
- A project manager therefore needs to be aware of management techniques which can be used to overcome resistance to change.
- Every project is unique. If you have built an office building in one location and are then asked to build an identical building on another site, you will find that you are faced with a new set of challenges. The geology may be slightly different. The weather conditions may not be the same. You will probably be working with a different team, with different skills and personalities. The uniqueness of projects calls for a distinctive approach to management. Instead of trying to maintain an established and stable process, you must constantly think of new solutions to new problems.
- Projects have time, cost and quality constraints. The triangle of time, cost and quality lies at the heart of project management. It is the project manager's task to achieve the required outcomes within a pre-determined schedule and budget, whilst maintaining quality standards. When a project is being planned, and also while it is underway, it is necessary to balance these three interrelated elements.

The outcome of a project can only be achieved by the completion of a variety of separate, but linked, activities. In a small project, these activities may be performed by the same multi-skilled individual or individuals. More usually, they require a team of people who have different types of technical skill or specialist knowledge. Most of the tools and techniques which are associated with project management are used as aids to plan and monitor this sequence of activities.

As a project progresses, different types of resources are required. Among other things, these resources may include: people with specific skills, equipment, raw materials, premises, information and tratraresources are available when they are required.

Projects need leadership. Projects involve the co-ordination of different resources to achieve a predetermined result. One person, the project manager, needs to maintain an overall vision of the goal and a detailed understanding of the progress that has been made towards this goal. Project teams are usually made up of people with complementary, and consequently different, areas of expertise. It is up to the project manager to co-ordinate – and provide direction to – their efforts.

Activity 1.1:

- 1) Explain the meaning of a project.
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1.2. Primary Features 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.

Traditionally work in the construction industry and defense procurement were seen as projects, but in recent times pro – active companies restructuring their work as projects (management – by – projects). Projects range in size, scope, cost and time from mega international projects to small domestic projects. To mention few examples:

- Designing and constructing a building, a house.
- Launching a new product (advertising and marketing project).
- Planning and conducting an audit (quality management project).
- Disaster Recovering (limiting the damages of fire, floods or any type of accident).
- Olympics (a sports Project).
- Going on Holiday (a domestic project).

Generally, all projects are characterized by a certain features which may be common to all. Thus, the following are typical features of a project:

- **A start and finish.** The start may have been crystallized over a period of time and the end may be a slow phase out. This shows that every project has a beginning and certain definite end. It is not like other ordinary course of business activities which are having an indefinite term of existence – going – concern.
- **A life cycle.** This means that there will be a beginning and an end, with a number of distinct phases in between.
- **A budget.** It is going to be unthinkable to undertake any project without sufficient cash flows. During the planning stage adequate budget allocation is mandatory for the smooth flow of all project related activities.
- **Non – repetitive.** As it was discussed in the definition part all project activities are essentially unique. The project activities are rare and new. In a project, once a

certain activity is completed it would not be repeated. Generally, projects may found to be similar but no two projects are exactly alike.

- **Use of resources.** In a project undertaking resources are quite necessary for successful accomplishment of its activities. The resources i.e. material, human, financial may be coordinated from various sources.
- **A Single Point of Responsibility.** All Projects have a well defined responsibility. In general the head or manager of the project ultimately takes the responsibility of the project, therefore in the project, responsibility should be specifically identifiable.
- **Team Roles.** A project is a team work activity of different professionals. In a project, team roles and relationships that are subject to change need to be developed, defined and established (team building).

Activity 1.2:

- 1) List certain primary features of a project.

- 1) Every project is characterized by 'start and finish'. What type of concern a project is? Explain briefly.

1.2 Meaning and Types of development plan

Dear students before going to development plan, lets us see some definition regarding to planning.

What Is Planning?

- Planning is a term that is widely used and means different things to different disciplines

Planning a head is characteristic of human beings.

- Planning is one of the most powerful tools available to societies to shape their future.
- Many agree that planning is a mode of action in which activities are arranged in a sequence to meet envisaged objectives.

Involves choosing between alternative

- Concerned with the efficient use of scarce resources. Land, for instance is a finite resource yet it has to be allocated for many competing uses (residential, commercial, industry, public purpose, infrastructure, recreation, transport, etc).
- Objective /Goal oriented and
- Concerned about the future

What is the development plan?

The development plan is the main public statement of planning policies for the local community. It sets out the land use, amenity and development objectives and policies of the planning authority, for a 6 year period. The plan consists of a written statement of objectives and a map or series of maps.

What makes a good development plan?

While all development plans will differ in their policies and objectives, it is possible to identify some of the common criteria likely to be shared by high quality development plans, in that they should:

- Create a clear strategic framework for the proper planning and sustainable development of the area over the duration of the plan, consistent with longer- term planning and sustainable development aims, including those set out in the National Spatial Strategy and any Regional Planning Guidelines in force.
- Set out an over-arching vision for the development of the area to which the plan relates.
- Give spatial expression to the economic, social and cultural aims of the County or City Development Strategy.
- Be grounded in public and political consensus around the plan's strategic framework.
- Provide a clear framework for public and private sector investment in infrastructure and in development in the area, having regard to both national and regional plans and policies.
- Protect and enhance the amenities of the area.
- Offer clear guidance to developers in framing development proposals and to the planning authority in assessing such proposals.
- Establish a policy framework within which more detailed plans (such as local area plans or plans for architectural conservation areas) can be drawn up for specific parts of the planning authority's area.

for achieving the set goals of an organization. The time frame for strategic planning is between five to ten years. The top managers are mainly responsible for preparing strategic plans.

2. **Tactical (Intermediate planning):** This is the process of translating strategic plans in to specific objectives that must be achieved and specific actions that must be done by each individual department/division of an organization. The time frame for tactical planning usually covers between two and five years. Usually the middle level managers are responsible for preparing departmental plans with the aim these plans contribute to the achievement of organization's broad goals.
3. **Operational plans-** this plan show how departmental plans can be implemented by each section of the department on a daily basis. In most cases the time frame for this kind of planning is between one and two years. The operational level managers are responsible for preparing daily, weekly and monthly schedules of activities and targets of their units in line with the objective and goal set for their departments.

Based on the above levels of planning, the essential point is to understand the logical relationships existing between planning and projects. The first step of organizations is to determine what and when to achieve their goals. The second step is to formulate strategies on how to achieve their goals. Strategies answer the "how?" question of planning.

The levels of courses of actions are strategies, programs and projects. The major difference between a project and a program is not so much in the objectives stated, but lies more in scope, details, and accuracy. A project is designed with a high degree of precision and details as regards to its objectives, features, calculation of return and implementation plan. A Program by contrast, is general and comprehensive and aims at a broader goal often related to a sectoral policy of a country or departmental policy of an organization. A Program may cover a large sector of the economy, thus contributing to increased national output, and having an important impact to the society. In most cases, it may be difficult to calculate the returns of a Program because it has no details of activities amenable for estimating and calculating costs.

Hence, a project can be defined as a specific component of a broad Program. Program in turn may consist of a number of specific projects. However, there is no clear line of demarcation to separate a strategy, a program and a project. A project can be considered as a program when the Program is addressing a narrow scope of a problem, when it is not necessary to break into major specific

components and when there is no a higher level system for which a project is a component. Projects, which are not linked with others to form a program, are sometimes referred to as “stand alone” projects.

Let us consider the following example how a strategy, a program and projects are interrelated.

- **Government Vision:** Freeing the Ethiopian People from poverty and seeing economically strong and prosperous Ethiopian people (used as example).
- **Government Goal:** Improving the living standard of the Ethiopian People by 50% within ten years (example).
- **Government Strategy:** Agricultural Development Led Industrialization.
- **Government Program:** Moving farmers from highly densely populated areas to uninhabited arable lands (Villegisation Program, which is one of the many programs for the above strategy)
- **Government Projects:** The villagization Program contains different projects such as education projects (opening elementary and secondary schools), Road construction project, Health projects such as establishing clinics and hospitals, Water and sanitation projects, etc that are essential for a new village.

Though investment decision is the responsibility of the top management, project implementation is the responsibility of the operational level management. Therefore, projects are the means by which investment and other development objectives stated in the plans can be clarified and realized. Sound development plans require good projects, just as good projects require sound planning.

Almost all developing countries have national plans to speed up their economic growth and social development. Sound planning depends on the availability of a wide range of information about existing and potential investment opportunities and their impacts on the growth of the national economy and other national objectives. The top management can conduct a project to get information needed for planning. Realistic planning involves identifying the resources (financial, human, material, plant and assets) needed for implementing a particular project. Governments allocate financial and administrative resources among many sectors and many competing programs. If the project needs to have a significant effect on the whole growth of the economy, then it must be

very carefully planned in coordination with other investments. Therefore, project analysis can help to prioritize this allocation.

Effective project preparation and analysis must be set in a framework of broader development plans. Projects must fit appropriately to the overall development strategy and a broader planning process. In addition, projects should be planned within an appropriate policy framework of the national plan. Usually economists state "a good policy beats a good project any day". This is simply to mean that a policy affects the whole sub sector where as a project affects only a part of the sub-sector. For example, setting the price of rice at an economically efficient level can make farmers to produce the 'right' quantities of rice. However, providing irrigation water below cost to compensate for the distorted price of rice will affect only those farms that receive the subsidized water.

If there is no organic link between policies, plans and projects, then the **effectiveness and efficiency of investment decisions** could be compromised. Accordingly, one has to ensure adequate and proper responses to the following questions.

3. What is the major objective of the project? The actual aims / quotas / milestones to be reached within a specified time, according to client requirements specified.
4. What is the basis for the demand or need for the goods/services to be produced by the project?
5. What problem or opportunity is the project addressing?
6. How does the project contribute to the wider goals of the sector/organization/ region? I.e. whether the project is consistent with the priorities set in policy and development plan documents of a country, region, zone, woreda or a specific organization.
7. What alternative ways of addressing the problem/opportunity/ have been considered? What Path (Strategy) to be followed and actions to be taken to reach the aims and objectives.
8. Why is the proposed project the most appropriate way of addressing the problem/opportunity;
9. What is the approximate cost and timescale Schedules of the project? This is a plan showing when individual / group activities will start and end and at what cost.
10. Who are the major stakeholders and beneficiaries of a project? In what ways are they expected to participate?

11. Which institution is the most appropriate for implementation? This is about organizing and Assigning specific people to a specific objective, as well as the specific responsibilities for each task

12. Are there additional or special circumstances relevant to the project?

13. Standards and Determining quality for each action

The act of planning, in essence, is about the creation of a plan and that plan can be a diagram, a table of figures, a programme of dates or a sequence of actions. From a system point of view, management must make effective utilization of resources. This effective utilization over several different types of projects requires a systematic plan in which the entire company is considered as one large network subdivided into smaller ones.

Program Plans

Dear learners! Have you heard about program plan? If so, try to forward your own answer in writing.

Fundamental to the success of any project is documented planning in the form of a program plan.

The program plan provides the following framework:

- Estimates conflicts between functional managers
- Eliminates conflicts between functional management and program management
- Provides a standard communications tool thought the life time of the program.
- Provides verification that the contractor understands the customer's objectives and requirements.
- Provides a means for early identification of problem areas and risks.

The program plan is a standard from which performance can be measured, not only by the customer, but by program and functional management as well. The plan serves as a cook book for the duration of the program by answering these questions for all personnel identified with the program.

→ What will be accomplished?

→ How will it be accomplished?

→ Where will it be accomplished?

→ When will it be accomplished?

→ Why will it be accomplished?

Activity 1.4:

1) What is a program plan?

Developing a Project Plan: What to Include?

Dear student, I think you are clear with plan, project and program. In writing project key contents should be included. You may take it as aspect of good project planning and those are:

1. An executive summary/project vision – comprising a brief description of the project and clearly demonstrating the aims and objectives (e.g. SMART targets) of the project.
2. A description of the target audience and the desired learning outcomes. Think about the USP (Unique Selling Point) of your project to the target audience.
3. Details about the content and context of the project – is it a new project, or does it build on previous experience? Will it utilise an existing platform?
4. Key roles and responsibilities – details of individuals involved in the design and delivery of the project and the tasks assigned to them. Who is ultimately responsible for the project and final decisions e.g. the principal funding applicant. This is extremely important for any project, but even more so when a project is a collaboration between different organisations. (You should also establish who is accountable within each partner organisation).
5. Key tasks and deliverables required to achieve the objectives of the project (key tasks broken down into sub-tasks if required).
6. Resources necessary to achieve the aims of the project, (real, virtual, people, organizations etc.)
7. **Project timeline and key milestones** – all tasks put into a sensible order with sufficient timescales. Start and end dates should be clearly identified. Gantt charts are a useful planning tool for this: <http://www.jiscinfonet.ac.uk/tools/gantt-charts>.
8. Budget and Costing – a budget showing a breakdown of all the project costs linked to key tasks and deliverables e.g. salaries, consultancy fees, communication with stakeholders, materials & consumables, venue/access charges, events, equipment, travel & subs, consumables, evaluation etc. This should also include any funding that has been secured ‘in kind’ e.g. room hire that has been waived. This will demonstrate the true cost of the project.

9. Contingency plans – allow time and budget for ‘contingencies’ and detail how any project issues and changes to the scope of the project will be managed. Risks to the project should be continuously assessed and mitigated for as far as possible.
10. Communication strategy/mechanisms – how will communications with all stakeholders be managed? Including methods of and frequency of communication. This should also include plans for marketing and promotion, dissemination and sharing any learning.
11. Monitoring and evaluation strategy – what are the intended impact(s) and outcomes, and how will you measure success?
12. Record keeping/document management system –The person(s) responsible for record keeping and managing all the project documents (i.e. funding proposal, detailed project plan, interim reports, stakeholder communications, processes for change, health and safety documents etc) needs to be agreed at the start of the project. (This is often the Project Manager).
13. Legacy – what is the intended legacy of the project e.g. working towards a sustainable activity?

Chapter Three

3.0 Project Development

3.1 Generation and Screening of Project Idea

Introduction

The search for promising project ideas is the first step towards establishing a successful venture. Searching opportunities requires imagination, sensitivity to environmental changes, and realistic assessment of what a firm can do. The task is partially 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.

Many of the most important projects in developing countries emerge from the political commitments of national leaders, as response to crisis, emergencies and external threats or foreign governments' policies and assistance agency priorities, etc.

Stimulating the Flow of Ideas

Often firms adopt a somewhat casual and haphazard approach to generation of project ideas. To stimulate the flow of ideas, the following are helpful:

1. **SWOT Analysis:** SWOT is an abbreviation for strengths, weaknesses, opportunities and treats. SWOT analysis represents and a systematic effort by an organization to identify opportunities that can be profitably exploited by it. Periodic SWOT analysis facilitates the generation of ideas.
2. **Clear Articulation of Objectives:** The operational objectives of a firm may end up with one or more of the following:
 - Cost reduction
 - Productivity improvement
 - Increase in capacity utilization
 - Improvement in contribution margin
 - Expansion into promising fields

A clear articulation and prioritization of objectives helps in channel sing the efforts of employees and encourage them to think more imaginatively.

3. **Fostering Conducive Climate:**

To tap the creativity of people and to harness their entrepreneurial urges, a conducive organizational climate has to be fostered.

3.2 Project Identification and Selection

The first stage in the project life cycle is to find potential projects. Such projects usually start as new ideas which are carefully examined and if found feasible and desirable are translated into projects.

3.2.1 Sources of project ideas

There are many sources from which ideas or suggestions for projects may come.

a. Project ideas from technical specialists

For industrial projects, ideas will usually tend to come from technical specialists, who by virtue of their experience and/or research findings will give useful information which may lead to the manufacturing of new products or improving the existing products.

b. Project ideas from Local leaders

For community or social projects, local leaders will usually have important ideas, which they, together with the local people, have identified as being important in improving the welfare of the people. In the case of social projects, depending on which one is identified, there may be a number of other projects which are linked to the identified project. For example, a project for constructing a dam for the generation of hydro-electric power will bring about suggestions for the start of an irrigation project, a fishing project and a water communication project.

c. Project ideas from entrepreneurs

For commercial and industrial projects, entrepreneurship is an important source of ideas. Entrepreneurship, according to Srivastava (1981), includes the characteristics of perception of managerial competence and motivation to achieve results. 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 which can be translated into viable projects.

d. Project ideas from government policy and plan

From time to time, governments produce guidelines such as the national development plans, sessional papers which spell out the direction of what the government is likely to do to achieve certain targets in various sectors of the economy and guidelines to various organizations and individuals. The information contained in these documents is useful in generating ideas for new

projects. Individuals using government policy guidelines as a source for project ideas must make sure that they operate within the overall national policy framework as contained in the relevant documents

3.2.2 Participatory analysis

Participation or stakeholder's analysis seeks to identify the major interest groups involved (all those affected by or involved) in the project. The conditions and characteristics of local community groups and organizations likely to be affected are identified and analyzed to establish whose problems merit priority solution. The idea is to involve at least a representative of each interest group, if possible, in the subsequent analysis of problems. If not possible, the workshop should try to perceive problems from each of their perspectives.

It should be noted that even if people come from a particular area their interests and problems may differ, depending on the organization and on social classes to which they belong. Even within a group, men and women can have different problems. Moreover, several groups with conflicting interests may exist within a community and in extreme cases; some groups may even be anti-development. Therefore, it is desirable at the outset to identify to clarify different social, political, economic, cultural and religious background of potential target group members.

The following is an example of how the stakeholders can be categorized in to groups before subjecting them into a detailed analysis.

a. Target Group Identification

A target group is the main group for which positive change is desired and intended by implementing the project. Usually, it is selected from among the groups identified in the group categorization stage of participation analysis. Selection is through a process of considering which groups' interests should be given the highest priority or which group is the most deserving.

Once a target group is identified, their unique or core problems. The causes of the core problem and impact of the core problem can be identified and easily analyzed. in cases where a consensus is hard to reach out on the deserving target group, a tentative group can be selected for the purpose of initial analysis and be changed later if an alternative group is found to deserve a higher priority.

b. Group Categorization

Group categorization can be done in many ways but the following is the generally accepted one:

- **Beneficiaries:** groups likely to benefit from the expected projects;
- **Negatively affected groups:** groups likely to be adversely affected by the expected project
- **Decision makers:** groups with decision making authorities
- **Funding agencies:** groups which can bear expenses
- **Implementing agencies:** groups which can implement the expected project
- **Community leaders:** groups representing the community
- **Potential opponents:** groups which may oppose or obstruct a project because before design ; and
- **Supporting groups :** groups likely to cooperate with the expected project

c. Detailed group analysis

Detailed group analysis is done using several factors. Characterize the common members to be affected by the project by considering the following major issues:

- interests;
- potential or actual conflicts;
- inter-dependencies;
- social –relationships (social capital)

Structure, organization, size and leadership are important aspects in a group. Religious and cultural backgrounds and gender issues as well as economic, political, institutional aspects should be given consideration.

Problems, needs and demands of the group should be identified and be related groups. Also to be identified are: potentials, strengths, weaknesses, constraints and opportunities.

3.2.3 Problem analysis

Planners use a problem tree analysis techniques to identify all the problems surrounding a given problem condition and displaying this information as a series of cause and effect relationship. A problem tree approach can also be used for a general diagnosis of a problem in some situation or organization. In this case no specific problem needs to be taken as the starting point. Instead all

existing problems are identified and then interrelated in the cause and effect linkages for the situation as a whole.

The problem analysis begins with identifying a core problem. The tree is then expanded upwards and downwards as the causes and effects of the problem are identified.

a. Procedure of a problem analysis

Begin with the specific problem or need to be solved. List all other interdependent conditions and problems. Brainstorming or other group's idea generating techniques can be used, or simply ask the following questions for each problem as it is identified:

- What is this problem caused by?
- What does this problem cause?

To ensure a more complete diagnosis, include as many relevant perspectives as possible as discussed in the participation analysis earlier.

- The clientele- those affected by the problem
- Top decision makers
- Ordinary people with the organization or setting
- Appropriate experts
- National or regional planning organization
- The view of unbiased outsiders
- Others involved

Using separate sheets of paper for each, arrange identified problems and interdependent conditions in their logical, cause and effect relationship, in the form of a "tree". Make sure all elements are correctly connected by arrows indicating the directions of causal linkage. The resulting diagram represents a rough but effective casual model of the complete problem environment from the root cause of the problem to the impact of the problem. For easy reference, the main procedural elements are stated below as a sequence of analytical steps.

b. problem tree steps

- Identify major interest groups involved (all those affected by or involved in the project)

- Involve a representative of each, if at all possible, in your analysis of problems. If not possible, try to perceive from each of their perspectives as described in the participation analysis section.
- List as many problems as possible from each of the above perspectives, remembering that a problem is not the absence of a solution but the difference between what is desired and what the current state of affairs is;
- For each of the problems you have listed above ask yourselves what are (could be) the major causes. add any new problems that you have discovered to the list;
- For each of the problems on the list ask : what are the most important problems to your list;
- Structure the above problems in cause –effect relationships, checking to see that you have not overlooked linkages or other important causes or effects.
- Review your logic to see if your cause effect relationships are correct and to see if you have omitted any linkage or major causes or effects. (It may help to show it to someone who have not been involved in its development for an objective technique); and change as needed.

3.2.4 Objective analysis

An objective tree is a technique for identifying the objectives that will be achieved as a result of solving the problems cited in the problem tree. The objectives are also displayed as a series of cause and effect relationships.

A. Procedure

- Examine the problem tree to determine which problems can be simply reversed into objectives by restating negative conditions as positive conditions.
- Recognize that not all causal relationships are simply reversible, so that solving one problem automatically solves those it caused. For example, although flooding destroys crops, pumping out the water does not thereby restore the crops to health. For such problem relationships, other types of objectives must be formulated to represent solutions.
- Recognize that some problems in the problem tree may actually be symptoms of other deeper problems.

- Add new objectives if these appear relevant. Determine the cause and effect relationships among the objectives and draw the objective tree. The level of detail required is a judgment that must be made by those developing the problem tree.

In general it is the amount of detail that permits a clear understanding of the problem and its environment. If the analysis is too superficial, the solution chosen could itself cause a whole series of additional problems because the cause – and –effect relationships of the first analysis were not well-defined.

3.2.5 Alternative Tree Analysis or Project Selection

An alternative tree analysis is a technique for identifying alternative solutions or course of action that can be used to achieve the same or alternative objectives and the display of this information in a simple format.

3.2.6 Logical Framework Approach

A logical framework is a four by four matrix, which enables the decision maker to identify project purposes and goals and plan for project outputs and inputs. The log frame is useful in planning a project and to provide measures of evaluating the project. Important assumptions about the causal linkages in the project are stated on the log frame, and these are useful when it comes to project implementation. It is important to understand the meaning of various terms which are used in a log frame.

3.3 The Preparation and Analysis Appraisal

This is the phase of making detailed project planning because this phase gives detail answers for questions like what to do, when to do it and how to do it. This phase is mainly concerned with the pre-feasibility and feasibility study of a project.

Once projects have been identified, the process of project preparation and analysis starts. The process of project preparation and analysis includes: undertaking of pre-feasibility and feasibility studies and preparation of the feasibility report.

3.3.1 Pre-feasibility study

A pre-feasibility stage is stage of rough assessment on the financial, economical and technical viability of the project. The identification of project ideas is followed by a preliminary selection stage on the basis of their technical, economic and financial soundness. This is known as the pre-feasibility study stage.

The principal objectives of pre-feasibility study are to determine whether:

- All project alternatives have been examined.
- A detailed analysis through feasibility study is required.
- Functional or support studies [such as market surveys, laboratory tests or pilot tests] are necessary.
- The investment opportunity is viable or not on the basis of the available information.
- The environmental situation at the planned site and the potential impact is in line with the national standards.

At this stage, the various alternatives in the scale of production, technology to be adopted and location of plant should be compared and the overall project viability should be assessed. However, the assessment of viability at this stage includes only analysis of costs and benefits of all alternatives without going into the details of financing and organization. The emphasis here is the **overall viability** of the project with little consideration as to how the project is to be financed or organized.

A pre-feasibility study should be viewed as an **intermediate stage** between a project opportunity study and a detailed feasibility study. The difference lies in the degree of detail of the information obtained and the intensity with which project alternatives are discussed. The structure and contents

of a pre-feasibility study are, hence, the same as that of a detailed feasibility study. Particularly, the contents of the pre-feasibility should cover the following main components of the study.

- A clear definition of the project idea and objectives; and its scope.
- Market analysis and marketing concept.
- Raw material and supply requirements.
- Location, site and environmental impact.
- Engineering and technology (including production process)
- Organization and overhead costs.
- Human resource; especially managerial staff, (labor costs and training requirements & costs).
- Project implementation schedule and budgeting.

The financial and economic impact of each of the above-mentioned factors should be assessed. If the opportunity study is well-prepared and comprehensive enough, the pre-feasibility stage could be by-passed. Hence, it is not always necessary to undertake the pre-feasibility study. Rather, *if an opportunity study provides sufficient information, the pre-feasibility stage could be dropped and the feasibility study could be conducted instead.*

3.3.2 Support study

Support or functional studies cover specific aspects of an investment project. They are required as prerequisite for or in support of pre-feasibility and feasibility studies. Such studies are particularly important for large-scale investment proposals.

Examples of these studies are:

- **Market studies** of the product to be manufactured, including demand projections.
- **Raw material and factory supply studies**, covering current and projected availability of raw materials and their respective prices.
- **Laboratory and pilot-plant tests** to determine the suitability of particular raw material or products.
- **Location studies** where transport costs constitute a major determinant.
- **Economies-of-scale studies** generally conducted as part of technology selection studies.

- **Equipment selection studies** when large plants with numerous divisions are involved and the sources of supplies and the costs are widely divergent.
- **Environment impact assessment** which covers current environmental conditions in the area surrounding the envisaged site

The contents of a support study vary depending on the nature and type of the project. However, the result of such a study should be clear enough to give direction to subsequent stage of project preparation.

3.4 Feasibility study

Feasibility stage is detail research and data gathering of economic, financial, technical, social and environmental (ecological) impacts of the project.

The major difference between the pre-feasibility and feasibility studies is the amount of work required in order to determine whether a project is likely to be viable or not. If the preliminary screening suggests that the project is prima facie worthwhile, a detailed analysis of the marketing, technical, financial, economic, and ecological aspects is undertaken. Feasibility study provides a comprehensive review of all aspects of the project and lays the foundation for implementing the project and evaluating it when completed.

In developing countries, it is not uncommon to find a situation where only a few projects (implemented by governments and big organizations) are sufficiently prepared and carefully selected. This happens because of several reasons. Some of the reasons could be:

- There aren't enough skilled people to perform this task;
- There is some unwillingness to spend money in this process and
- The use of non-numeric selection models like:
 - a. Sacred cow:** in this model, a project is usually suggested by senior and powerful individuals in an organization and the idea is passed to the officers below.
 - b. Operating necessity:** in this model, projects are initiated because they are required to keep a system in operation.
 - c. Competitive necessity:** projects are usually initiated and given a lot of support if they will help an organization to maintain a competitive edge over other originations.

- d. Product line extension:** this approach is used when a project is intended to develop and distribute a new product(s)
- e. Comparative benefit model:** this model is used when a firm has several projects which must be considered and some ranking given.

However, the application of these models to the project selection may be limited to projects, which do not involve huge investment resources. For those projects which involve huge resources especially those involving governments and other institutions such as that of the WB and IMF, feasibility studies must be usually carried out before a project is selected for implementation.

A feasibility study should provide all data necessary for an investment decision. The commercial, technical, financial, economic and environmental prerequisites for an investment project should therefore be defined and critically examined on the basis of alternative solutions already reviewed in the prefeasibility study.

3.5 Elements of feasibility study

The feasibility study should contain the following elements:

1. Market analysis
2. Technical analysis
3. Organizational analysis
4. Financial analysis
5. Economic analysis
6. Social analysis, and
7. Environmental analysis

1. Market analysis

Market analysis indicates the demand potential of the output of the project. Such potential is determined by examining a number of factors such as the **demographic statistics** of the areas or regions where the outputs will be sold, the **income levels of the people** in these regions and what is **contained in the development plans** of these regions.

It is important to establish whether or not there are competitors who are already producing similar outputs and how much share of the market they command. The gap in the market which competitors are unable to satisfy will form the basis establishing the demanded potential.

In sum, the market analysis should address the following questions:

- Is the product for domestic or export consumption.
- Is the market large-enough to absorb the new product without affecting the price?
- What share of the total market will the proposed product have?
- What marketing strategies and distribution channels are required?

The objective of undertaking market analysis is, therefore, to assess whether there exists an unsatisfied demand for the product and to determine the share that can be captured by the project through appropriate marketing strategies.

2. Technical analysis

The technical analysis is concerned with the projects inputs (supplies) and outputs of real goods and services and the technology of production and processing. The other aspects of project analysis can only proceed in light of the technical analysis.

This aspect may include the works of engineers, soil scientists and agronomists in case of, say, agricultural projects. The primary objective of technical appraisal is to evaluate the *type of technology, its capacity, and degree of integration* (flexibility of manufacturing system), *the production processes involved*, as well as *the inputs and infrastructure* facilities envisaged for the project.

Technology is examined at two levels: first, the technology used must be **suitable** for the realization of the specific objectives of a given project. The imported machinery might be obsolete and inefficient that leads to high cost of production and maintenance. Second, technology must be examined for suitability according to the socio-economic environment. The imported technology may not be **appropriate**. for example, due to the need to provide employment to people, government sponsored projects would usually prefer projects with technology which is labor intensive as opposed to those which encourage less human labor.

3. Organizational analysis

A whole range of issues in project preparation revolves around the overlapping institutional, organizational, and managerial aspects of projects, which clearly have an important effect on project implementation. To have a chance of being carried out, a project must relate properly to the institutional structure of the country and region. What will be the arrangements for and use them to further the project? How will the administrative organization of the project relate to existing agencies? Is there to be a separate project authority? What will be its links to the relevant operating ministries?

The organizational proposal should be examined to see that the project is manageable. Are authority and responsibility properly linked? Does the organizational design encourage delegation of authority or do too many people report directly to the project director? Does the project have sufficient authority to keep its accounts in order and to make disbursements promptly? Managerial issues are crucial to good project design and implementation. The analyst must examine the ability of available staff to judge whether they can administer such large-scale public sector activities as a complex water project, an extension service, or a credit agency.

4. Financial analysis

It is concerned with assessing the feasibility of a new proposal for investment on the basis of financial requirements and their availability. The project's direct benefits and costs are estimated at the prevailing market prices to appraise the viability of the project as well as to rank projects on the basis of profitability. In order to measure the profitability of a business, various methods and instruments may be used as appropriate. To facilitate the analysis and to rationalize the conclusions, financial statements and schedules should be compiled. Financial analysis also deals with the identification of sources of funds required for implementation of the project.

For the purpose of determining the financial viability of the project, estimates of cost of the project, profitability, cash flow and projected balance sheets have to be prepared.

In sum, the main objective of financial analysis is to determine whether an investment proposal described and analyzed under certain assumptions will render a return acceptable to the investor. Hence, it is a crucial part of project appraisal to check on the assumptions that form the basis for the estimates and forecasts in the study.

5. Economic analysis

Economic analysis is basically concerned with the following:

- how to identify effects of the project on the society ;
- qualification of the effects of the proposed projects; and
- pricing of costs and benefits to reflect their values to society

Financial analysis aims at appraising the financial and commercial feasibility of a project from the view point of an entrepreneurs, investor or financier. On the other hand, economic evaluation deals with the economic contribution and impact of a project at the macro or national or society level.

The economic evaluation of a project uses the same financial statements and schedules as a financial analysis. However, *market prices and costs will have to be adjusted to eliminate distortions resulting from social factors and government measures*. In so doing, market values are converted to economic values. For this reason, financial appraisal covers only ***private costs and benefits***, while economic analysis takes into *account social costs and benefits*.

The most important distinctions between financial and economic analysis are:

In economic analysis, *taxes and subsidies are treated as transfer payments*. But in financial analysis, *taxes are treated as costs and subsidies as a return*. In financial analysis, *market prices* are used. In economic analysis, however, market prices may be adjusted to reflect social benefits. These adjusted prices are called ***shadow or accounting prices***. In financial analysis, interest paid to external suppliers of money may be deducted to obtain the stream of benefit available to the owner of the project. But, in economic analysis, interest on capital is never separated and deducted from gross return because it is part of the total return to the capital available to the society as a whole.

6. Social analysis

Social Analysis examines carefully the broader social implications of proposed investments. This includes:

1. Weights for income distribution so that projects benefiting lower-income groups will be favoured.
2. Considering carefully the adverse effects of a project on particular groups of people in particular regions.
3. The impact of the project on improving the quality of life.
4. Considering the contribution of alternative projects in furthering the same objectives.

7. Environmental analysis

Environmental Analysis is assessing the impact of the project on nature and its habitat such as plants (forests), water, air, wild and domestic animals, human beings, etc. Some of the examples of the questions to be asked are:

- What chemicals and wastes are emitted from the project that will pollute air and water?
- What hazardous chemicals are used that will harm the health of employees and the people living around the project area?

For example, a dam constructed can be the cause of the spread of malaria or increase the incidence of Schistosoma in regions where snail-transmitted disease is endemic. It is recognised that projects are important vehicles for development. However, people are at the centre of this development. Therefore, people, animal and plant life must not be affected in the name of development.

Chapter Four

4.0 Project Appraisal

During appraisal a critical review is conducted to re-examine every aspect of the project and hence to assess the appropriateness of the project before committing large sums of money. Appraisal helps to revise and modify the plan formulated during the first two phases because unnoticed factors can be uncovered at this stage of detail planning.

After the appraisal, we develop a fuller system design and compose a capital expenditure proposal. At the design stage the activities are scheduled, standards are set and the procedures to be followed by each unit are documented.

4.1 Financial Analysis of projects

The departure points for financial analysis of projects are revenue (benefit) information collected during market analysis; and cost information collected during the analyses of inputs of the project such as raw materials/supplies analysis, technological (technical) analysis, social impact analysis, environmental analysis and location and site selection analysis.

4.1.1 The Costs of a Project

It is the total outlay of all items associated with a project. These items include the estimation of costs related to the investment of the project and costs incurred during the operation of the project.

A. Costs relevant to the initial investment of a project

- **Land and site Development:** The cost of land and site development consists of cost of land acquisition and the costs incurred for preparing the land for use.
- **Buildings and Civil Works:** These costs cover the costs of constructing main buildings and auxiliary buildings, such as laboratory, workshop, warehouses, garages etc.
- **Plant and Machinery:** The most significant component of project cost is the cost of plant and machinery.
- **Technical know-how and engineering fees:** Technical consultants and engineers may be employed for assisting the management in technical works such as preparing project report, choice of technology, detailed engineering and selection of plant and machinery. The fees paid to them are components of a project cost.
- **Miscellaneous Fixed Assets:** They are costs associated to fixed assets that are not part of the direct manufacturing process. They include costs incurred for procuring office equipment, laboratory equipment, workshop equipment, vehicles, etc.
- **Capital issue expenses:** Expenses incurred for raising capital are known as capital issue expenses.
- **Pre-operative Expenses:** Establishment expenses, rent, travel expenses, interest on borrowings, insurance charges, miscellaneous expenses and start-up expenses are the major components of pre-operative expenses.
- **Provision for contingencies:** Provisions for contingencies may range from 10 to 20%..

Other costs irrelevant to project decisions

There are many cost items that are irrelevant for project decisions. Among others, two categories are mentioned below.

- I. **Sunk costs:** Sunk costs are expenditures, which have been incurred before appraisal and are irrecoverable whether the project is accepted or rejected. Examples of such costs include research and development expenditure or market research costs.
- II. **Depreciation:** It is the measure of the loss of value of an asset arising from the passage of time, obsolescence or market changes.

B. Costs related to the operation of a project

The operation cost of the project, is collected at the time of material, supplies and human resource analysis. We use the estimated quantities of products to estimate the inputs required for production.

Operational costs can be classified into:

- **Direct and indirect costs:** Direct costs are directly attributable to the production where as indirect costs are incurred to facilitate the production process but are not the direct inputs of production.
- **Variable costs and fixed costs:** variable costs are costs that vary with the volume of the product where as fixed costs are costs that do not vary with the volume of the product.

Cost of production comprises of three main factors: cost of materials, labor cost and factory overhead.

$$\text{Cost of production} = \text{Material cost} + \text{labor cost} + \text{factory overhead cost.}$$

$$\text{CostOfPr oduction perUnit} = \frac{\text{TotalCostOf Pr oduction}}{\text{TotalNo.ofUnits}}$$

Working Capital Estimates

Working capital is the financial requirement needed to finance the current asset of the balance sheet. In general, working capital is an average finance tied-up in the following items during the life of the project.

- raw materials, supplies and components temporarily held in stock until usage,
- Work-in-process,
- finished goods until the time of selling,
- accounts receivable until payment made by the customer,
- Other items in the current asset of the balance sheet.

The major sources of financing working capital are short-term loans obtained from banks, trade credit, accruals and long-term sources. ***In project financial analysis, the working capital is assumed returnable at the end of the project.***

After the estimates of sales revenue and the cost of production are made, the next step is to prepare the profitability projection. This is done by preparing a projected income statement and cash flow statement.

Income statement

Estimating sales revenue and costs over years of the project operation helps to prepare projected balance sheet and income statement and to decide on the *profitability* of the project. There are major purposes of preparing income statements:

- To determine indicators of relative efficiency,
- To determine the net profit to be incorporated in the balance sheet,
- To determine the tax liability of the project.
- To provide financial information to concerned stakeholders.

Cash Flows

It is a process of review of costs and benefits, measured in terms of cash outflows and cash inflows. There are two categories of cash flows. The cash inflow of a project includes the project revenues, government grants, resale/scrap values of assets, tax receipts and other cash inflows as a result of accepting a project. The cash outflow of a project includes initial investments in acquiring the assets, project costs (labour, materials, etc.), working capital investments, tax payments and any other cash outflows as a result of accepting the project.

The cash flow method is more useful than the income statement methods in appraising project financial viabilities. **One of the benefits of cash flow statement is it** eliminates the influences of subjective factors such as estimation of accruals, methods of depreciation and non-cash items where as accounting profit is influenced by all these factors. Another benefit is cash flow method is more appropriate for calculating the financial viability of a project by considering the time value of money

4.1.2 Project Appraisal Methods

A wide range of appraisal criteria have been developed to judge the worthwhile of a project. They are divided into two broad categories, viz., non-discounting criteria and discounting criteria. The principal non-discounting criteria are the payback period and the accounting rate of return. The key discounting criteria are the net present value, the internal rate of return, and the benefit cost ratio.

A. Return on investment

- Rate of return is the ratio of average annual **profits**, to the capital invested. It is the measure of **profitability** which relates income to investment.
- The formula for computing the ROI is:

$$\text{ROI} = \frac{\text{Average annual net income}}{\text{Total Investment}} \times 100\%$$

Decision criterion: *the higher the ROI, the better the project is.*

The main Advantage of return on investment is that it is very simple to calculate and use. However, ROI has the following disadvantages.

- It does not consider the time value of money,
- It uses the accounting profit as a measure of return of the project,
- There is no uniform method of calculating ARR.

B. Payback Period

The payback period is the *length of time required to recover the initial investment*. Unlike accounting rate of return, it uses project cash flows. If the net cash inflow is uniform each year, then the payback period of a project can be found by dividing the initial investment by the uniform net cash inflow.

$$\text{PaybackPeriod} = \frac{\text{Initial Investment}}{\text{Annual Uniform Cash Inflow}}$$

E.g. A project whose investment outlay is 100 million is expected to have a uniform annual net cash inflow of 25 million for five years.

$$\text{PaybackPeriod} = \frac{100\text{million}}{25\text{million}} = 4\text{Yrs.}$$

If the cash flows of a project are not uniform, the payback period is calculated by accumulating a series of cash flows until the amount reaches the initial investment.

According to the payback criterion, *the shorter the payback period, the more desirable the project is.*

Advantages

1. It is simple to apply. It doesn't involve tedious calculations.
2. It is helpful in weeding out risky projects that usually bring substantial cash inflows in later years than earlier years of the operations of the project.
3. It can be used to assess the effect of an investment proposal on liquidity of the firm- the firm's ability to meet its financial obligations.

Disadvantages

1. It ignores the time value of money.

2. It overlooks cash flows beyond the payback period.

Since it focuses on a project's capital recovery, it may divert attention from profitability

C. Net Present Value (NPV) method

NPV is the difference between the present values of the yearly net cash inflows and the initial investment outlay. It is calculated using the following equation.

$$NPV = \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \dots + \frac{CF_n}{(1+k)^n} - I_0$$

$$NPV = \left(\sum_{t=1}^n \frac{CF_t}{(1+k)^t} \right) - I_0$$

CF_t = cash flow of the t^{th} period, k is cost of capital (Required Rate of Return or discount rate), t is the number of periods between 1 and n .

We can use the following simple annuity formula if the net cash inflow is estimated as uniform (even) for all project years.

$$NPV = CF \left(\frac{1 - (1+k)^{-n}}{k} \right) - I_0$$

Where CF is the uniform cash flow starting from year one, k is cost of capital (discount rate), n is the number of periods.

The rules for deciding on the financial feasibility of the project are the following:

1. If the NPV is positive, accept the project.
2. If the NPV is negative, reject the project.
3. If the NPV is zero, be indifferent

Example: Take our previous example of the 100million initial investment. Find the NPV of the project if it has an annual uniform net cash inflow of Birr26million for five years and if the cost of capital is 10%.

The present value annuity factor for the 10% discount rate and for five years cash flow of Birr1 is **3.7908** (obtained from the present value annuity table). 3.7908 can also be found by adding the individual discount rates (0.9091+0.8264+0.7513+0.6830+0.6209 = 3.7908).

Using the annuity table, the NPV of the project is calculated as follows.

$$NPV = 26 * 3.7908 - 100 = \underline{\underline{-1.44}}$$

Decisions: The project is rejected with the discount rate of 10%.

Advantages

The NPV constitutes a very sound investment appraisal criterion. The following merits can be pointed out for this method.

- The time value of money is taken into account.
- The cash flows from the beginning to the end of the project are considered.
- It focuses on the profitability of the project.
- It is particularly useful for the comparison and selection from among mutually exclusive projects or when capital rationing is used.
- It discounts cash flows by the cost of capital which gives explicit recognition to financing costs and the returns required by shareholders or investors,
- Since the NPV is expressed in Dollar or Birr, the managers can understand it more easily than percentages.

Disadvantages

- The NPV method can be employed in selecting from mutually exclusive projects only when the projects are of the same size.
- The NPV method assumes that funds are reinvested at the cost of capital. The actual reinvestment rate may differ from the cost of capital, there by distorting the NPV.
- The cost of capital is assumed to remain constant throughout the life of the project.
- A project with zero NPV can be accepted because the zero NPV indicates that the project produces the required rate of return and no more.

D. Benefit Cost Ratio (BCR)

Benefit – cost ratio is also referred to as **profitability index**. It is an extension of the NPV approach to compare the profitability of investment alternatives before arriving at investment decision.

There are two ways of defining the benefit cost ratio.

1) The first definition of BCR relates the present value of benefits to the initial investment.

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

Where PVCI is present value of benefits and I is initial investment.

2) Net Benefit Cost Ratio (NBCR): The NBCR relates NPV to initial investment.

Example: Consider a project with initial investment of Birr50000 and the following Cash inflows. Discounting rate is 12%

Year	1	2	3	4
Cash inflow	12500	10000	30000	25000

1. Benefit Cost Ratio

$$BCR = \frac{PVCI}{I} = \left(\frac{12500}{(1.12)} + \frac{10000}{(1.12)^2} + \frac{30000}{(1.12)^3} + \frac{25000}{(1.12)^4} \right) \div 50000$$

$$= \frac{11160 + 8000 + 21428 + 15924}{50000} = \frac{56512}{50000} = 1.13$$

2. NBCR = 1.13 - 1 = 0.13

Decision rules

1. When BCR > 1 or when NBCR > 0, accept the project
2. When BCR < 1 or when NBCR < 0, reject the project
3. When BCR = 1 or when NBCR = 0, be indifferent

Advantages of BCR Method

1. BCR indicates a relative and not absolute measure of profits i.e. the benefit per dollar (Birr) of investment.

Disadvantages

1. This method cannot be employed when a package of smaller projects is to be considered in relation to a large project.

E. Internal Rate of Return (IRR)

IRR is the discount rate that makes the present value of cash inflows equal to the present value of cash outflows. Previously, we find the IRR of a project by trying different discount rates until we discover the discount rate that makes the NPV zero. However, today it is easier to find IRR of a project using Excel Application.

If we want to identify the IRR without computer help, we use trial and error method.

Decision Rules

The IRR is the rate of return earned on the investment made in the project. In other words, it is an interest rate that represents the compound rate of return on an investment. Thus, acceptance and ranking of project proposals involve comparing the IRR with the cost of capital or any other chosen rate. The following are the rules for accepting or rejecting a project proposal based on the IRR

1. If IRR > cost of capital, accept the project
2. If IRR < cost of capital, reject the project
3. If IRR = cost of capital, be indifferent.

Advantages of IRR

1. It gives due consideration for the time value of money
2. It recognizes the total cash flows during the project life
3. It conveys the direct message about the yield on the project. Hence, investors, who think in terms of rate of return, can understand it easily.

Disadvantages

1. It involves tedious work through trial and error and interpolation.
2. The IRR does not reflect the scale, or dollar size
3. It assumes that all proceeds are reinvested at the particular IRR,

F. Discounted payback period

To overcome the limitations of the payback period, the discounted payback period method has been suggested. .

Example:

Project Year	Cash In flow	PV of \$1 at 10%	PV of cash inflow	Cumulative cash savings
0	-10000	1.000	-10000	-10000
1	5000	0.909	4545	-5455
2	6000	0.826	4956	-499
3	8000	0.751	6008	5509
4	7000	0.683	4781	10290
5	6000	0.621	3726	14016

$$\text{Payback Pd} = 2 \text{ Yrs} + \left(\frac{499}{6008} \right)$$

$$= 2 \text{ Yrs} + .083 \text{ Yr} = \underline{2.083 \text{ Yrs}} \text{ OR } \underline{2 \text{ yrs and one month}}$$

4.2 Time Value of Money

Time Value of Money (TVM) is an important concept in financial management. It can be used to compare investment alternatives and to solve problems involving loans, mortgages, leases, savings, and annuities.

TVM is based on the concept that a dollar that you have today is worth more than the promise or expectation that you will receive a dollar in the future. Money that you hold today is worth more because you can invest it and earn interest. After all, you should receive some compensation for foregoing spending. For instance, you can invest your dollar for one year at a 6% annual interest rate and accumulate \$1.06 at the end of the year. You can say that the **future value** of the dollar is \$1.06 given a 6% **interest rate** and a one-year **period**. It follows that the **present value** of the \$1.06 you expect to receive in one year is only \$1.

A key concept of TVM is that a single sum of money or a series of equal, evenly-spaced payments or receipts promised in the future can be converted to an equivalent value today. Conversely, you can determine the value to which a single sum or a series of future payments will grow to at some future date. You can calculate the fifth value if you are given any four of: Interest Rate, Number of Periods, Payments, Present Value, and Future Value

4.3 Social cost benefit analysis (SCBA)

Social cost benefit analysis is a systematic and cohesive method to survey all the impacts caused by a development project or other policy measure. It comprises not just the financial effects (investment costs, direct benefits like profits, taxes and fees, et cetera), but all the societal effects, like: pollution, environment, safety, travel times, spatial quality, health, indirect (i.e. labour or real estate) market impacts, legal aspects, et cetera. The main aim of a social cost benefit analysis is to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these prices reflect the value a society attaches to the caused effects, enabling the decision maker to form an opinion about the net social welfare effects of a project.

4.4 Economic Analysis of a project

For revenue earning private enterprises, the overriding objective is financial viability (i.e. making profit). Therefore, a private investor ends at the financial analysis (discussed so far).

When measuring the benefits and costs to the *nation we do economic analysis*. In measuring the profitability of projects from stand point of view of the society, we find that the *market prices* (which we have used for financial analysis) for inputs and outputs may *not be acceptable measures* of true costs and benefits to the society (or for carrying out economic analysis).

Therefore, we have to note that market prices are often distorted by:

1. Taxes
2. Subsidies
3. Quotas
4. Regulatory measures
5. Monopolistic/Oligopolistic measures
6. Rent, Interest
7. Protection etc.

To deal with these problems we use *Shadow prices* or *Accounting Prices*:

Shadow prices: *It is the price used for analysing the cost and benefit of a project when the market price is felt to be a poor estimate of the economic value of a project. It is generally used as a synonym for "accounting prices".* **Shadow price** measures the *value* of commodity from point of view of the *society* or the *economy of a nation*. After estimating the shadow prices, we measure the viability of the project through the normal process of calculating NPV, IRR or CBR.

In economic analysis we consider the benefits of the project to the society such as:

- Employment creation
- Foreign Exchange generation or saving
- Contribution to different sectors: such as health, education, etc.
- Multiplier effect (on other economic variables in the economy)
- Linkages (both forward and backward linkages)
- Economies and diseconomies of scale
- Externalities, etc.

Chapter Five

5.0 Project Financing

5.1 Means of finance

Projects receive their funds from various sources. Based on their sources of finance they can be classified into the following categories.

1. Projects funded by the government:

These projects mainly are not commercial profit making projects: From time to time, govt. undertakes developmental activities allocating adequate fund for each activity. Most of these projects are aimed at enhancing the social welfare and infrastructural facilities.

2. Projects funded by international organizations

International organizations such as UNDP, UNICEF, World Bank etc also participate in the developmental activities in various countries. They finance a number of non-commercial projects in many countries.

3. Projects partially funded by the international organizations and partially by the government.

4. Projects financed by individuals or groups. Including projects jointly funded by individuals and government.

The major sources of capital for projects that are aiming at making a commercial profit are the following:

- **Share Capital:** There are two types of share capital: equity capital and preferred capital. **Equity** capital represents the contribution made by the owners of the business, the equity shareholders, who enjoy the rewards and bear the risks of ownership. **Preference** capital represents the contribution made by preference shareholders without enjoying any ownership rights. Equity capital doesn't have any fixed dividend where as preference shares have fixed dividend.
- **Bonds:** Bonds are major sources for long term finance. Both secured bonds and unsecured bonds of various types with different maturity and interest rate may be issued by corporations.
- **Term Loans:** Short term loans and long term loans can be obtained from banks. Short term loans are usually used for financing the working capital requirements or the regular operations of the firm and long term loan is utilized for financing its long term operations.
- **Trade Credit:** Trade credit is one of the major sources of short term financing. It involves buying merchandise and materials on credit. Making prompt payment as per the agreement and maintaining a steady relationship will ensure that the firm could enhance its credit worthiness.

- **Accrued Liabilities:** These are expenses incurred but not yet paid the payment of the expenses would be postponed for a future date. Until it is paid, the firm is in a position to use the amount.
- **Incentive Sources:** The government and its agencies may provide financial support or incentive to certain types of promoters or for establishing industrial units in certain locations. These incentives may take the form of seed capital assistance or capital subsidy or tax deferment or exemption for a certain period.
- **Miscellaneous Sources:** A small portion of project finance may come from miscellaneous sources like leasing, hire purchasing, and public deposits. Public deposits may represent unsecured borrowings from the public at large.

Planning the means of finance is an important task for the project manager. When the project has a number of alternative sources of finance, the following factors should be considered in selecting the most suitable source.

1. **Cost:** The comparative cost advantage should be the prime factor to be paid attention in the selection of the means of finance. For example, preferred shares will be more expensive than debt capital because interest paid on debt is tax-deductible where as dividend on pref. Stock is not.
2. **Risk:** A project is usually exposed to business risk and financial risk. Business risk refers to the variability in earnings due to fluctuations in demand and supply. Financial risk represents the risk arising from financial leverage. Using excessive debt may load a firm bankruptcy. If the affairs of the firm can be managed at a low risk profile, debt financing may not be detrimental.
3. **Control:** The project promoters would ordinarily prefer a scheme of financing which enables them to maximize their control, current as well as potential, over the affairs of the firm. Ease of handling also considered in selecting a source of finance.
4. **Flexibility:** This refers to the ability of a firm (project) to raise further capital firm any source of finance. Flexibility indicates that the firm does not exhaust fully its debt capacity.
5. **Rules and Regulations of the govt. and financial institutions:** Means of project financing may be subject to rules and regulations of the govt. and the lending institutions. These rules have to be thoroughly examined before selecting a source of finance. Such an examination may provide a measure of protection to investors.

5.2 Basic Principles of Fundraising

In rising of funds, the following principles should be considered.

1. Identifying your prospects

In general, prospective donors must meet at least two of the following three qualifications:

- **Ability** – Do they have any available money to give?
- **Belief** – Do they care about your issue, programs, etc.?

- **Contact** -- Do they have a relationship with any of your board members, staff, or major donors?

2. The closer you get, the more you raise:

As the old saying goes, people give money to people, not organizations. Therefore, you want as much human contact with the donor as is reasonably possible. In terms of solicitation strategies, the following list descends from most effective to least effective:

- Personal face-to-face; team of two preferred over one
- Personal letter on personal stationery; telephone follow-up will improve results
- Personal phone call; follow letter will improve results
- Personalized letter
- Impersonal letter (direct mail)
- Impersonal telephone (telemarketing)
- Fundraising benefit/special event
- Door-to-door canvassing
- Media/advertising

3. The gift range chart.

In a typical annual campaign – the money that organizations raise each year for general support

- 10% of the donors yield 60% of the money;
- 20% of the donors yield 20% of the money;
- 70% of the donors yield 20% of the money.

In other words, most organizations rely on a handful of major donors to generate the majority of their unrestricted income. Using this principle, you can set your goal and then calculate how many donations at each level you'll need to meet that goal.

5.3 Ethical Standards

The Association of Fundraising Professionals believes that ethical behavior fosters the development and growth of fundraising professionals and the fundraising profession and enhances philanthropy and volunteerism. AFP Members recognize their responsibility to ethically generate or support ethical generation of philanthropic support.

1. Public Trust, Transparency & Conflicts of Interest

- a. Not engage in activities that harm the members' organizations, clients or profession or knowingly bring the profession into disrepute.
- b. Not engage in activities that conflict with their fiduciary, ethical and legal obligations to their organizations, clients or profession.
- c. Effectively disclose all potential and actual conflicts of interest; such disclosure does not preclude or imply ethical impropriety.
- d. Not exploit any relationship with a donor, prospect, volunteer, client or employee for the benefit of the members or the members' organizations.

- e. Comply with all applicable local, state, provincial and federal civil and criminal laws.
- f. Present and supply products and/or services honestly and without misrepresentation.
- g. Never knowingly infringe the intellectual property rights of other parties.
- h. Never disparage competitors untruthfully.

2. Solicitation & Stewardship of Philanthropic Funds

- 1. Ensure that all solicitation and communication materials are accurate and correctly reflect their organization's mission and use of solicited funds.
- 2. Ensure that donors receive informed, accurate and ethical advice about the value and tax implications of contributions.
- 3. Ensure that contributions in accordance with donors' intentions.
- 4. Ensure proper stewardship of all revenue sources, including timely reports on the use and management of such funds.
- 5. Obtain explicit consent by donors before altering the conditions of financial transactions.

3. Treatment of Confidential & Proprietary Information

- 1. Not disclose privileged or confidential information to unauthorized parties.
- 2. Adhere to the principle that all donor and prospect information created by, or on behalf of, an organization or a client is the property of that organization or client.
- 3. Give donors and clients the opportunity to have their names removed from lists that are sold to, rented to or exchanged with other organizations.
- 4. When stating fundraising results, use accurate and consistent accounting methods that conform to the relevant guidelines adopted by the appropriate authority.

4. Compensation, Bonuses & Finder's Fees

- 1. Not accept compensation or enter into a contract that is based on a percentage of contributions; nor shall members accept finder's fees or contingent fees.
- 2. Be permitted to accept performance-based compensation, such as bonuses, only if such bonuses are in accord with prevailing practices within the members' own organizations and are not based on a percentage of contributions.
- 3. Neither offer nor accept payments or special considerations for the purpose of influencing the selection of products or services.
- 4. Not pay finder's fees, commissions or percentage compensation based on contributions.
- 5. Meet the legal requirements for the disbursement of funds if they receive funds on behalf of a donor or client.

5.3 Financial Management

Financial management is defined in different ways by different authors. The following are some of the definitions of a financial management as used by different authors.

- "Financial management is that activity of management which is concerned with the planning, procuring and controlling of the firm's financial resources." By Deepika & Maya Rani
- Financial management is a body of business concerned with the efficient and effective use of either equity capital, borrowed cash or any other business funds as well as taking the right decision for profit maximization and value addition of an entity.- Kepher Petra;
- Finance management not only for the business, but also for every expense. Like it's for the home base expenses or the government expenses. The government also need to manage the finance for the develop of the country and the household also need to manage their expenses properly - By Vinod Verma

"Financial management refers to proper and efficient use of money" and it plays a significant role in analyzing to invest in profitable business enterprise. Return on Investment must be greater than the invested amount...By Ibrar Alam.

The Objectives of Financial Management

Profit maximization occurs when marginal cost is equal to marginal revenue. The main objectives of Financial Management are:

- Wealth maximization means maximization of shareholders' wealth. It is an advanced goal compared to profit maximization.
- Survival of company is an important consideration when the financial manager makes any financial decisions. One incorrect decision may lead company to be bankrupt.
- Maintaining proper cash flow is a short run objective of financial management. It is necessary for operations to pay the day-to-day expenses e.g. raw material, electricity bills, wages, rent etc. A good cash flow ensures the survival of company.
- Minimization on capital cost in financial management can help operations gain more profit.

Chapter Six

Project Management Information System (PMIS)

6.1 The meaning of PMIS

A PMIS is typically a computer- driven system to aid a project manager in the development of the project. PMIS is a web-based, centralized database created and used by the project team. A PMIS is

to the process what BIM is to the product. Both are collaboration software: centralized stores of integrated information with rules for access that serve the project team.

The PMIS defines the program and the projects: cost, time, scope and quality. It defines the team: people, organizations and their roles. It helps manage agreements: contracts, permits, approvals and commitments. It manages documents; produces standard and custom reports; presents vital signs on dashboards; guides collaboration and communicates best practices with policies, workflow diagrams and document management.

A PMIS is a management tool for control and collaboration. Control systems require feedback to measure progress so adjustments can be made to stay on track. A PMIS can calculate schedules, costs, expectations, risk assessments, and to gather feedback from stakeholders.

Project managers use the techniques and tools to collect, combine and distribute information through electronic and manual means. Upper and lower management to communicate with each other uses it. It is an automated system to quickly create, manage, and streamline the project management processes.

Project Management Information System (PMIS) help plan, execute and close project management goals.

- During the planning process, project managers use PMIS for budget framework such as estimating costs. The Project Management Information System is also used to create a specific schedule and define the scope baseline.
- At the execution of the project management goals, the project management team collects information into one database. The PMIS is used to compare the baseline with the actual accomplishment of each activity, manage materials, collect financial data, and keep a record for reporting purposes.
- During the close of the project, it is used to review the goals to check if the tasks were accomplished. Then, it is used to create a final report of the project close.

Project Management Information System is a tool used to document and store the project management plan, subsidiary plans and other documents / work products relevant for the project.

- ✓ It could be manual or automated and should support the change control procedures defined in the project.

The goal of a PMIS is to automate, organize, and provide control of the project management processes.

Project Management Information System Objectives

- Record and report relevant information and the status of various components of the project in such a manner as to bring the most critical activities directly to the attention of concerned managers at appropriate level.

- Highlight deviations from the plan, if any, in respect of every component of the project and also to indicate the effects of such, deviations on the overall status and completion of the project as a whole.
- Form the basis of updating of project schedule wherever necessary.
- Identify and report on critical areas, which are relevant to different levels of management and to highlight the corrective action that needs to be taken.
- Sift the information and report on an exception basis. In other words, emphasis is focused on those activities that are not going according to the plan.
- Provide a basis for the evaluation of the performance of the functions of various managers and departments by regular comparisons with budgets/plans/schedules.

Typical Features of A PMIS

The following are a list of the kinds of analytical capabilities, outputs, and other features offered by various PMI systems.

✓ Scheduling and Network Planning

Virtually all project software systems do project scheduling using a network-based procedure. These systems compute early and late schedule times, slack times, and the critical path

✓ Resource Management

Most project systems also perform resource loading, leveling, allocation, or multiple functions, although the analytical sophistication and quality of reports vary between systems.

✓ Budgeting.

In many project systems it is possible to associate cost information with each activity, usually by treating costs as resources. The ability of a system to handle cost information and generate budgets is a significant variable in the system's usability for both planning and control.

✓ Cost Control and Performance Analysis

WBS creation tools: here is where project system capabilities differ. The most sophisticated PMIS software "roll up" results and allow aggregation, analysis, and reporting at all levels of the WBS. They also permit modification and updating of existing plans through input of actual start and finish dates and costs. The most comprehensive PMISs integrate network, budget, and resource information and allow the project manager to ask "what if" questions under various scenarios while the project is underway. They allow the system user to access, cross-reference, and report information from multiple sites or databases linked via the Internet or an intranet.

✓ **Reporting, Graphics, and Communication**

This is an important consideration because it affects the speed with which PMIS outputs are communicated and the accuracy of their interpretation. Many systems provide only tabular reports or crude schedules; others generate networks and resource histograms; still others offer a variety of graphics including pie charts and line graphs. The main features to consider are the number, quality, and type of available reports and graphics

✓ **Interface, Flexibility, and Ease of Use**

Many larger PMISs allow data from different projects to be pooled so multi project analysis can be performed. Some systems are compatible with and can tie into existing databases such as payroll, purchasing, inventory, cost-accounting, or other PMISs.

The capability of a PMIS to interface with other software from which existing data files have been created is an important selection criterion. Many firms have had to spend considerable time and money developing interfaces to link a commercial PM package with existing data and other PMI systems. Most small, inexpensive systems are stand-alone and have limited interface ability

✓ **Flexibility**

Systems also vary widely in flexibility. Many systems are limited and perform a narrow set of functions which cannot be modified. Others allow the user to develop new applications or alter existing ones depending on needs.

- Among the potential additional applications and reports sometimes available are change control, configuration management, responsibility matrixes, expenditure reports, cost and technical performance reports, and technical performance summaries.
- Many software systems utilize Internet technology and protocols that enable easy access through a browser to a wide variety of management applications and databases.

✓ **Ease of Use**

How easy is it to learn and operate the system? Systems vary greatly in the style of system documentation, thoroughness and clarity of tutorials, ease of information input, clarity of on-screen presentation and report format, helpfulness of error messages, and the training and operating support offered by the developer.

Web-Based PMIS

A project Web site and Web-based project software are especially helpful in situations where project team members are located at different sites. Putting project information on the Internet or other networks utilizing internet standards expedites projects that might ordinarily be delayed because team members are dispersed.

Web-based project management fills the information needs of project stakeholders at all levels; from individual teams, team members, and project managers working on a particular project; to high-level managers who want information about every project in the organization.

Web pages for team members at scattered worksites enable everyone to easily send information to the project manager, and vice versa.

Web-based tools are easy to learn, understand, and use. Because the training and learning required for Web-based tools are minimal, team members can concentrate on their job rather than spend time in training, or in trying to figure out the software.

In most cases, the necessary tools are already at hand. Web-based software requires one thing: access to a Web browser, such as Internet Explorer or Netscape, which is available on any computer with Internet access. Internet and intranet networks are easy to use and learn, and therefore team members are likely to use them more frequently for status reporting.

Web based communication not only provides management with a current view of projects, but it demands low overhead and frees management from worry associated with system updates and maintenance.

Critical Deciding Factors

In designing project management information system, the following have to be spelt out clearly:

- ✓ The objective of each format or report in brief.
- ✓ The distribution chart.
- ✓ The periodicity of the reports.
- ✓ The persons responsible for preparation of the reports.
- ✓ The timing of the reports.
- ✓ The sources from which information has to be gathered in the preparation of reports.

Chapter 7

Project Monitoring and Evaluation

7.1 Introduction

This Chapter defines monitoring and evaluation and explains their roles in project management. It sets out the basic steps involved in design of a project-level monitoring, evaluation and closeout system, and highlights the main benefits of effective monitoring, evaluation and closeout as well as the main pitfalls to be avoided.

7.2 Project Monitoring

Once a project has been planned and financial support been secured, the most important part begins - implementation. It is very rare for any project to go exactly according to plan. In fact, it is common for a project to take on a direction and a momentum that was completely unanticipated during planning. Project management now has the important and difficult task of establishing sufficient controls over the project to ensure that it stays on track towards the achievement of its objectives. This is done by *monitoring*, which can be defined as the systematic and continuous collection, analysis and use of information for management control and decision-making.

Monitoring is an internal activity of project management, the purpose of which is to determine whether project activities have been implemented as planned. It seeks to oversee whether resources are being mobilized as intended and products are being delivered on schedule. It involves the provision of regular feedback on the progress of project implementation and the problems faced during implementation. Monitoring consists of operational and administrative activities that track resource acquisition and allocation, delivery of services and cost records. It helps to pinpoint problems requiring corrective and timely action and it is also important in the context of coping with uncertainty in implementation.

7.2.1 Level of Monitoring

There are two levels of monitoring. These are:

1. First Level Monitoring

The first level of monitoring is done by project staff. The project managers are responsible for monitoring the staff and tasks under them, and the project co-coordinator is responsible for monitoring all aspects of the project.

A monitoring report should:

- Contain a list of the activities to be monitored (derived from the plan),
- List the duration and deadlines for completion of different activities,
- State the methods of monitoring the activities,
- State the current progress on steps taken so far,
- State the barriers confronted, if any,
- Suggest solutions to overcome them.

Monitoring can be carried out through field visits, review of service delivery and commodities records. Whatever form is chosen monitoring reports always record any problem the project team has and plans to correct these problems. One also has to point out any changes in the original goals, objectives or activities and explain this change in direction.

2. Second Level Monitoring

The donor does the second level of monitoring. Through field visits and routine reports from the project manager, the donor monitors progress and measures performance. This includes financial reporting.

7.2.2 Types of Monitoring

There are two type of monitoring: namely performance monitoring and process monitoring.

a. Performance Monitoring

The purpose of performance monitoring is to assess the extent to which project inputs are being used in accordance with the approved budget and timetable and whether the intended outputs are being produced in a timely and cost effective manner. It may also assess whether project benefits are reaching the intended target group. It intended to improve project supervision, and it is essential that management receive constant feedback on key indicators of project performance so that problems can be detected and corrections made.

There are a number of techniques that help us undertake performance monitoring of a given project.

The main ones include:

- Project breakdown structure
- Bar charts (Gantt charts)
- Network techniques (PERT and CPM)

b. Monitoring work in progress

Project control is the process of collecting information related to the performance of the system, comparing it with the desired level of performance and taking corrective action to decrease the gap between the actual and the desired performance levels. Control aimed at managing the deviations in cost, time and performance of a project. The basic purpose of control is to regulate and control the firm's core assets such as physical, financial and human resources. A control system should be cost effective. Since it is closely related with the behavior of the humans involved in the project, it

should be designed in such a way that it balances the degree of control exercised and the risks involved. The reasons for measuring duration and cost deviations are to identify deviations from the curve early, dampen oscillation, facilitate early corrective action, and estimate weekly schedule variance and to determine weekly effort variance. There are three types of control processes, cybernetic controls, go/no-go controls and post controls.

The most important reason for deviations from the budget is scope creep. One factor that causes scope creep is the absence of a detailed definition of scope. A repeated attempt by the project team and the client to improve the product/service is another. Depending on the degree of detail and the frequency of reporting, project status reports can be classified into five categories. They are current period reports, cumulative reports, exception reports, stoplight reports and variance reports. A project undergoes the different kinds of reviews during its life-cycle. They are Status reviews that review the status of cost, performance, schedule and scope of the project, A design review that reviews the design of a product or service to ensure that it meets client requirements and a process review that reviews the processes and checks for the possibility of any improvements.

Designing a Monitoring System

There are five steps in the design and specification of a project-level monitoring system:

- **Analyze project objectives** to clarify project design. Good monitoring depends on clearly stated objectives. The log frame approach helps to ensure that objectives are correctly written and that actions are designed to lead to outputs and objectives. This logical sequence simplifies the choice of monitoring indicators.
- **Review implementation procedures** to determine information needs at the different levels of the project management structure. The level of detail of information required, and the frequency of reporting, will vary according to the level of management. Essentially, this step means matching information needs to decision-making roles.
- **Review indicators** for use in measuring achievement of objectives. Within the project implementation team the priority focus will be on physical and financial monitoring of activities and results. The tools for this are good record keeping for comparison of actual expenditure against budgets, and progress against the project's activity schedule.
- **Design report formats** to provide managers at different levels within the project with access to relevant and timely information which facilitates easy analysis.
- **Prepare an implementation plan for the monitoring system**, which specifies the necessary staff, skills and training required, and clearly allocates information collection and reporting responsibilities.

7.3 Project Evaluation

Evaluation can be defined as a periodic assessment of the relevance, efficiency, effectiveness, impact, economic and financial viability, and sustainability of a project in the context of its stated objectives.

7.3.1 Purposes of Evaluation

The purposes of evaluation are:

- To identify the *constraints or bottlenecks* that hinders the project in achieving its objectives.
- To assess the **benefits and costs** that accrues to the intended direct and indirect beneficiaries of the project.
- To **draw lessons** from the project implementation experience and using the lessons in the planning of other projects in that community and elsewhere.
- To **provide a clear picture** of the extent to which the intended objectives of the activities and the project have been realized.
- To provide **feedback** on project outcomes and successes to the community involved.

7.3.2 Processes of Evaluation

Evaluation can and should be done: before, during, and after implementation.

a) *Before project implementation*, evaluation is needed in order to:

- Assess the possible consequences of the planned project(s) to the people in the community over a period of time;
- Make a final decision on what project alternative should be implemented; and
- Assist in making decisions on how the project will be implemented.

b) *During project implementation*: Evaluation should be a continuous process and should take place in all project implementation activities. This enables the project planners and implementers to **progressively review** the project strategies according to the changing circumstances in order to attain the desired activity and project objectives.

c) *After project implementation*: This is to retrace the project planning and implementation process, and results after project implementation. This further helps in:

- Identifying constraints or bottlenecks inherent in the implementation phase;
- Assessing the actual benefits and the number of people who benefited;
- Providing ideas on the strength of the project, for replication; and
- Providing a clear picture of the extent to which the intended objectives of the project have been realized.

7.3.3 Evaluation Criteria

A major issue that affects any evaluation is the choice of criteria. The Commission uses the following criteria:

- **Relevance** - the appropriateness of project objectives to the problems that it was supposed to address, and to the physical and policy environment within which it operated
- **Project preparation and design** – the logic and completeness of the project planning process, and the internal logic and coherence of the project design
- **Efficiency** - the cost, speed and management efficiency with which inputs and activities were converted into results, and the quality of the results achieved
- **Effectiveness** - an assessment of the contribution made by results to achievement of the project purpose, and how assumptions have affected project achievements
- **Impact** - the effect of the project on its wider environment, and its contribution to the wider sectoral objectives summarized in the project's Overall Objectives

7.3.4 When to Perform Project Evaluations

Project work should be evaluated in four general ways: ongoing reviews, periodic inspections, milestone evaluations, and final project audit.

Ongoing Reviews

Work on the project should be reviewed constantly by project team members as part of an ongoing quality assurance program. Even though others may inspect for quality at specified checkpoints, the responsibility for quality rests with individual workers. They must feel a commitment to produce quality work, even if no one were to inspect it! Quality must be incorporated into the project from the beginning. It cannot be “inspected in” later. Ongoing reviews should ensure that the standards included in the project scope statement are being applied to the work. Such standards may include safety regulations, security issues, licensing requirements, environmental considerations, and legal requirements. Ongoing reviews should also verify that finances are being handled according to guidelines and that other project data, such as schedule data, are being reported correctly.

Periodic Inspections

Team leaders, functional supervisors, or quality inspectors should review project work periodically (both scheduled and unscheduled) to ensure that project objectives are being met. These may be daily, weekly, or monthly inspections according to the needs of the project. Since it is generally not feasible to inspect every bit of work produced, it should be determined at the beginning of the project what will be inspected at what frequency.

Milestone Evaluations

Additional project evaluations should take place when milestone events are reached (for example, at the conclusion of each major phase of the project). Such an evaluation is used to certify that all work scheduled for that phase of the project has been completed according to specifications.

Final Project Audit

A final audit should be made at the conclusion of the project to verify that everything was completed as agreed upon by the project sponsor, customer, and project team. This audit provides information that may be used in project closure and acceptance. This is also a time to gather and

document lessons learned during the project. What was done well? What could be improved? What could be learned from this project to help future projects?

7.3.5 Considerations in Project Evaluations

Each of the four types of project evaluation should consider quality of work, team performance, and project status.

Quality of Work

Each evaluation should review the work performed to ensure it meets specifications.

The project scope statement specifies the project scope and quality goals. The audit should determine whether proper quality has been maintained, or whether quality has been compromised to meet schedule and cost objectives. For example, in a home construction project, quality evaluations should determine if the proper materials have been used, or if lower-grade lumber was substituted to make up for cost overruns. Also, an audit would ensure that the construction complies with all building codes and industry standards, and that workers did not produce inferior work in an attempt to meet the schedule.

Team Performance

Sports teams review game films periodically to evaluate their performance and see where they need to improve. Without this kind of review, they may become very good at playing badly. Project teams also need to evaluate whether they are performing as well as they can. Such reviews may focus on efficiency and effectiveness of the work performed. They may analyze the work processes to determine if there is a more efficient workflow. These reviews may be conducted by the project team members themselves, the project manager, independent auditors, or other specialists.

Project Status

The project status review compares the planned with actual results and notes the variances. It reports any deviations in the schedule, cost, scope, or performance, and whether such deviations appear to be likely in the future.

Special attention should be given to activities on the critical path, because any delay in these activities will cause the project to be late (unless, of course, subsequent activities are completed in less than the scheduled time). Also give special attention to activities with high risk. Early identification and mitigation of problems can minimize their impact on your project.

7.3.6 Types of Evaluation

As mentioned earlier, project evaluation is the assessment of the extent to which the project has met its objectives (i.e. has been effective, economical and efficient). There are two evaluation types: **summative and formative**.

Formative Evaluation: Formative evaluation is a method of judging the worth of a project while the project activities are happening. Formative evaluation assesses the project as it is being put in place and during its early operation. Formative evaluation assesses current, ongoing project

activities, provides an internal process that compares the planned project with the actual program, and measures the progress made toward meeting the project goals.

This evaluation type helps identify problems threatening the project's viability, enabling the project manager and planning group to make mid-course corrections. Formative evaluation focuses on the **process**. The objectives of formative evaluation are:

- to find out the extent of program implementation; and
- to determine improvements and adjustments needed to attain the project objectives

Summative Evaluation: Summative evaluation is a method of judging the worth of a program **at the end** of the program activities. It is used to assess the project's success after the project has ended and to make decisions about the future of the project. Summative evaluation will attempt to determine: the success of the project, goals being met, participant satisfaction and benefit, effectiveness, end results versus cost, and whether the program should be repeated or replicated. The focus of summative evaluation is on the **outcome**.

The objectives of summative evaluation are to find out the extent to which project objectives are achieved; and to help you decide whether a project activity or any of its parts should be revised, continued, or terminated. Finally, a close examination of the formative and summative evaluation results is necessary to understand the successes and failures of the project

Problems of Monitoring and Evaluation

The problems associated with M&E can be classified in to four major groups.

- a) Organizational and political problems
- b) Managerial problems
 - *Minimization of accountability*
 - *Lack of confidence* that evaluation products will yield practical benefits, exceeding their costs.
 - *Lack of rewards associated with sponsoring evaluations*
 - *Length of time required to begin an evaluation*
 - *Length of time to produce results*
- c) Problem of focus
- d) Methodological problems

Exercise 6.1



Blankets, Inc. is upgrading its order processing system. You are assigned to manage the project, which includes six months of software development and two weeks of training. Describe below the evaluations you plan to perform for the project. For each, consider the quality of work, team performance, and project status.

