
UNIT 1 PROJECT FORMULATION

Structure

- 1.1 Introduction
- 1.2 Project Proposal: Concept and Meaning
- 1.3 Steps in Project Formulation
- 1.4 Format for Writing Project Proposal
- 1.5 Logistic Framework Approach in Project Formulation
- 1.6 Let Us Sum Up
- 1.7 References and Selected Readings
- 1.8 Check Your Progress - Possible Answers

1.1 INTRODUCTION

Preparing a project proposal is a daunting task for an individual or an organization. A project proposal on any aspect of urban development should identify the scope of the project to be undertaken and describe the audience to be benefited. It needs to cover the objectives, activities and expected outcomes to be derived out of the project. The proposal should also describe the resources, both financial and human, that will be needed to achieve the project goal and objectives. It has to propose a time frame for development and delivery of the programme.

The proposal must be carefully crafted and its presentation must be professional. It is important that the proposal be technically sound, grammatically correct, and well designed, because the project proposal would most likely to compete with similar proposals submitted by other agencies and consultants. The proposal must communicate ideas and plans with eloquence that it will rise to the top of possible competition.

After studying this unit, the students will be able to:

- Describe the meaning of project proposal
- Explain various steps in project proposal formulation
- Formulate a training project proposal for urban health workers
- Prepare logistic framework of a urban health workers training project proposal

1.2 PROJECT PROPOSAL: CONCEPT AND MEANING

According to Connor et.al (1996), “a proposal is a request for action. Its purpose is to persuade decision makers that a need exists for action and that the action described in the document is the best response to that need”.

According ITTO, “a project proposal is a detailed description of a series of activities aimed at solving a certain problem. The proposal should contain a detailed explanation of the:

- Justification of the project

- Activities and implementation time line
- Methodology, and
- Human, material and financial resources required.

A project is a time-bound intervention consisting of a set of planned and interrelated activities executed to bring about a beneficial change. It has a start and a finish, involves a multidisciplinary team collaborating to implement activities within constraints of cost, time and quality and has a scope of work that is unique and subject to uncertainty.

1.3 STEPS IN PROJECT FORMULATION

The formulation of a good project proposal is not an easy task. It requires a lot of exercise on the part of proposal formulator both before and during the preparation of project proposal. Before writing a project proposal, the project coordination or institution has to take care of following pre- project formulation aspects.

- 1) **Review of past project proposals:** A group that is involved in the formulation of project proposal needs to review similar types of project proposal formulated by its own institution or other institutions. This will give an idea about the strengths and weaknesses to the project coordinator while thinking about formulating any project.
- 2) **Consulting experts, consultants, and previous project coordinators:** A person or group formulating proposal could consult an expert in the area in which the intended project is going to be formulated and even can appoint a consultant who could be helpful in the preparation of the proposal. It is always better to consult a person who has already completed similar type of projects which are being attempted. The project coordinator formulating project proposal can consult his/her fellow colleagues who have already formulated similar types of project proposals.
- 3) **Review past project evaluation reports:** Before formulating a proposal, it is advisable to go through the reports prepared by a similar type of research organizations/institutions. The project evaluation report, besides, providing the components of project activities and strategies, will give details about the methodology, evaluation, and impact assessment strategy.
- 4) **Interact with the prospective beneficiaries:** The project team can also interact with the prospective beneficiaries to be benefited from the project interventions and assess their need. It would be better if the coordinator could also interact with those who have already received benefits from the similar types of project.
- 5) **Check statistical data/ report:** The data regarding a previous similar types of projects from various documents must be collected so that an appropriate project strategy is formulated.
- 6) **Hold focus group discussion:** It is always better that the person who prepares a proposal undertakes a focus group discussion with the beneficiaries or the prospective clienteles or the stakeholders. If it is a training project for

grassroots level representatives e.g., urban local bodies, then the training organizer could conduct a focus group discussion with the elected representatives and functionaries of urban local bodies and assess their needs.

1.4 FORMAT FOR WRITING PROJECT PROPOSAL

After completing the ground work, the writing of a project proposal will begin. Here, we will mention the important components of a project proposal.

- 1) **Title page:** The project proposal must start with a title page. The title page needs to clearly spell out the title of the project proposal, the name of the sponsoring agency and the institution submitting the project proposal, and the address of the institution from where the proposal originates.

Title: Training of Urban Health Workers on National Urban Health Mission Submitted to Ministry of Health and Family Welfare Government of Delhi Submitted by National Institute of Urban Affairs, New Delhi

- 2) **Abstract:** Many project proposal peer group evaluators may not have the sufficient time to read the entire project proposal. Therefore, it is prudent to give an abstract. The abstract needs to include the following aspects.
 - i) The problem statement
 - ii) The project objectives
 - iii) Implementing organisations
 - iv) Key project activities
 - v) Expected outputs
 - vi) Total project budget
- 3) **Introduction:** Briefly introduce the topic of the project, and why an project in the areas is deemed necessary. Introduction must be brief and to the point focusing on the topic on which project is being proposed.
- 4) **Problem statement:** The project formulator must clearly give some background of the problem which the project is trying to solve in order to

make a case for the project. It also needs to clearly mention the needs of the target group which the project is attempting to address. Some of the essential points to be taken into consideration while narrating the problem statement are mentioned in the box below.

Problem Analysis

- Describe the key problem identified and its causes and effects.
- Delineate how these problems affect the target group.
- Explain how addressing the causes will lead to the eradication of the key problem.
- The description should be clear, concise and convincing.

- 5) **Project goal & objectives:** After delineating the statement of the problem, the second aspect to be covered in the project proposal is to clearly state the goal and objectives. The goal is the general aim of the project, while objectives are the core problems\ issues the project is trying to address to achieve the goal. Remember that there is one goal and more than one objective. The guidelines for preparing realistic objectives is given in the box below.

Guideline for Objectives Formulation

In nutshell objective must be 'SMART' -

S – Simple: It should be simple and covering one point at a time.

M– Measurable : It must be measurable so that a conclusion can be drawn

A – Attainable : It can be handled within the limit imposed by the time

R – Realistic : It must not be unrealistic which can not be achieved

T – Time-bound: It must be so framed that it is achieved with the set time.

- 6) **Project Output:** The project output should describe the services or products which the coordination intend to deliver to the beneficiaries or the survey which the organizers/coordinator intends to administer over the respondents. The results needed to be more detail and can be presented in measurable terms. It should be remembered that the results should address the main causes of the problem that the target group faces. The following are key points to be taken into consideration while formulating outputs.

- i) It should clearly relate to the objectives and should be stated in such a way that these can be measured in quantity, time, and space.
- ii) It should be achievable with in the available resources.
- iii) It should not be confused with activities.

- 7) **Target group:** The project proposal needs to clearly define the target group and show how they will benefit from the project/programme. The project should give clear details of the designation, caste, and age; the gender breaks up of the target group which will be covered in the project. If possible, a list of categories of participants may be given as an annexure in the proposal.

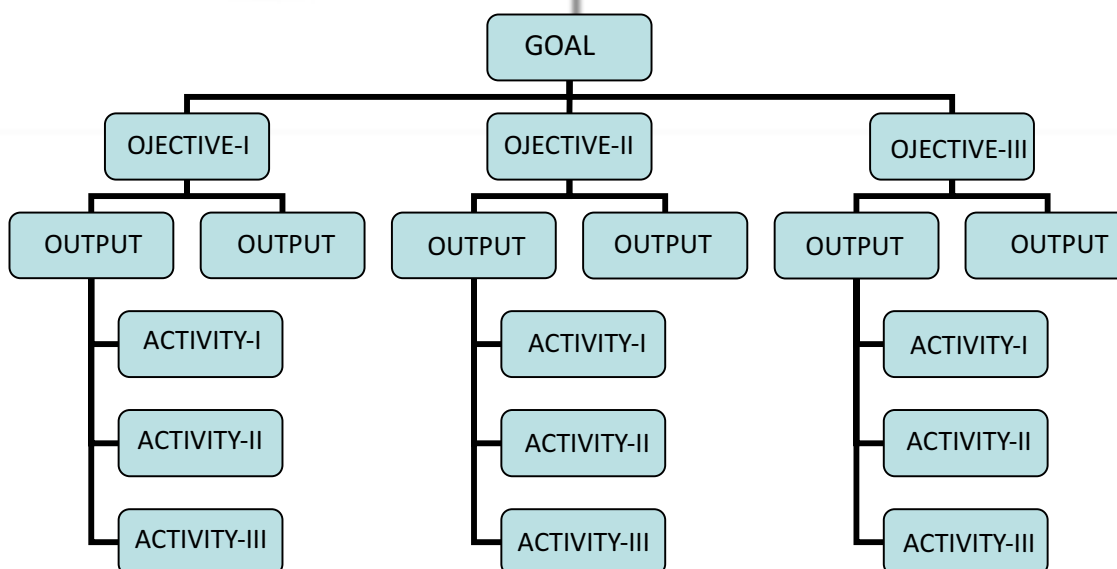
- 8) **Strategies:** The project proposal must clearly delineate strategies to be adopted during various steps of project implementation. The formulated strategies must be logically linked with the formulated objectives.
- 9) **Project Implementation Plan:** The project implementation plan must describe activities and resources allocation in as much detail as possible. The time and place of project implementation must be clearly mentioned. It should also specify the experts and other institutions who will be involved during the process of conducting the project activities. The implementation plan may be divided into the following two key elements.
- a) **The activity plan:** the activity plan must clearly include information about the activities to be conducted by the project. The activities must be drawn from the specific objectives and outputs formulated for the project. They should be stated in such a way that they precisely describe the actions or tasks to be undertaken by the project coordinator. It will be better if activities are further broken into tasks. Activities should indicate what will be done to transform inputs into outputs.

Some of the guidelines for the formulation of appropriate activities are:

- It should examine each output listed in the implementation plan.
- Formulate the complete set of activities required for achieving the stated objectives.
- Always verify that the formulated set of activities is sufficient for achieving the stated project output.
- Check the available set of inputs necessary for the implementation of formulated activities.

A good tool for establishing activities is the work breakdown structure, which identifies groups of activities related to each project output and presents them in a hierarchical structure as given in Flowchart 1.

A flow chart of goal, objectives, activities, and output is given below:



The activity map can be presented in a tabular form, popularly known as Gantt chart. An example of training project activities for urban health workers of a training programme for four months is presented in a Gantt Chart given below:

Gantt Chart

S.No.	Activities	Month-1	Month-2	Month-3	Month-4
1.	Conducting a need assessment	√			
2.	Preparation of training module	√	√		
3.	Conducting the training programme		√	√	
4.	Writing Training Report				√

- b) Resource Plan:** The resource plan must clearly provide information regarding resources required for the project. International project donors expect contributions from the project applicant organization. In this case, the training organizer should clearly mention the organization's contribution in the project budget.

Broadly, the resources may include instructional materials, hardware, software, and personnel. The various resources required for a training project of urban health are narrated below:

- 1) Instructional materials:** training manual, handouts, models, transparencies, flow charts, white boards, white sheets, reference guides, etc.
- 2) Hardware:** computer, video cameras, multimedia setup, overhead projector, power point presentation, etc.
- 3) Software**
- 4) Personnel:** Training consultants, resource persons, training assistants, and other support staff required during the training programme.

Customarily, the budget for a project proposal for training includes expenditures on following broad headings.

- 1) Payment to training coordinators
- 2) Payment to training Associate/Assistant
- 3) Payment to consultant trainers
- 4) Payment to resource persons
- 5) *Per diem* / TA/DA of the participant
- 6) Cost of training materials/modules
- 7) Charges of training hall (if available with the organization)
- 8) Charges of board / lodging of the participants
- 9) Cost of stationary/software/hardware
- 10) Miscellaneous charges (postage, photocopying, etc.)

However, this may vary from one training programme to that of the other. Budget for three months training of 12 participants is presented below.

Table 1.1: Format of Budget for Training Programme

Categories	Number of Units	Unit Cost permonth	Number of Months	Total Cost
1. Project Coordinator	1	10000	3	30,000
2. Project Associate/ Assistant	1	5000	3	15,000
3. Computer Assistant	1	4000	3	12,000
4. TA/ DA of the participants	12	500	3	18,000
5. Training venue rent for three days	—	—	—	3,000
6. Conveyance	—	—	—	10,000
7. Training material cost	—	—	—	20,000
8. Miscellaneous	—	—	—	10,000
Total Cost				1,18,000

- 11) Monitoring and Evaluation:** the project should clearly outline the monitoring mechanism. It will have to spell out the methods to be used for monitoring and evaluating the project.
- 12) Reporting:** The reporting mechanism to be used by the project coordinator must be clearly stated in the project. Generally, the mid-term evaluation and end-term evaluation are done. Moreover, as far as, monitoring is concerned the monthly progress reports need to be sent to the donor agency to inform them about the progress of the project.
- 13) Management and Personnel:** A brief description about the management of the project and personnel to be involved should be given. For example the type of consultants and resource persons to be hired, their qualification and experience, the payment as per official norms, etc must be delineated.

1.5 LOGISTIC FRAMEWORK APPROACH IN PROJECT FORMULATION

Now a day's most of the donor agencies are asking for logistic framework in preparing project proposals. The logical frame work analysis is an interactive process intended to promote clear conceptual thinking on what a project intends to do, and how it intends to do it. It is logical in the sense that it establishes internal relationships between project objectives, outputs and activities (inputs).

The steps that are used to construct a logical framework are given below.

Step 1: Define the overall **goal** which the project intends to achieve.

Step 2: Define the **objectives** (Purposes) to be achieved by the project.

Step 3: Define **outputs** for achieving the objective

Step 4: Formulate **activities** for achieving each output.

Step 5: Define **assumptions** under which success in achieving the objective of one level will contribute to achieving objectives at the next level.

Step 6: Define the **Objectively Verifiable Indicator (OVI)** at goal, objective, output and activity levels.

The contents of logistic framework are given below in tabular form.

Table 1.2: Contents of the Logframe Matrix

1. Project summary	2. Objectively Verifiable Indicators	3. Sources and Means of Verification	4. Assumption
1. Overall Objectives/ Goal The shared vision that your project contributes to	The extent of your contribution (not always possible)	How you will measure your contribution (not always possible)	—
2. Specific Objective/ Purpose What you intend to change during project period	How you will know the intended change has occurred and is sustainable	How you will measure change (the basis for evaluation)	Assumptions about <i>external factors</i> that need to be in place if project is to contribute to the Goal
3. Expected Results/ Outputs Tangible result of each activity intended to bring about change	How you will know the expected result of your project have been achieved	How you will measure results (the basis of periodic review)	Assumptions about <i>external factors</i> that many affect whether the project purpose is achieved
4. Activities (and processes) Groups of tasks needed to achieve each expected result	The means, inputs and resources needed to carry out the each task	Proof that each activity/ task completed (what needs to be regularly monitored)	Assumptions about <i>external factors</i> that may affect activities achieving the expected results Preconditions (that need to be fulfilled before the project can start)
<i>Source: Greta Jensen, The Logical framework approach, How to guide, July, 2010 bond for International Development, UK.</i>			

Some of the terms used in logical framework are described below:

- 1) Objectively Verifiable Indicators:** Means features which can be measured or at least described precisely in terms of quantity and quality, which would show a change in situation.
- 2) Means of Verification:** Indicate where and in what form information on the achievement of objectives and results can be found.
- 3) Assumptions:** conditions which could affect the progress of the project but which are not under direct control of project management.

One example of logical framework is given below.

Table 1.2: Logframe of A Health Training Project

Objective (Narrative Summary)	Objectively Verifiable Indicators	Means of Verification	Assumption
Goal: To enhance knowledge of health care to reduce child mortality	Child mortality rate reduced from 50% to 30% by 2015	Record of Primary Health centre	—
Objective: Raise health status of children in the age group 0-5 years	i. The percentage of delivery by trained personnel increased from _ % to _ % ii. The incidence of ARI and diarrhoea reduced from _ % to _ % by 2015	Hospital & Clinic records	Incidence of death among children 0-5 reduced
Outputs: i. Enhanced efficiency of health worker in delivery of immunisation programme ii. Improved skills identification of referral cases by the health works	i. The percentage of immunization increased from _ % to _ % by 2015 ii. The number of referral cases sent to referral centre increased from _ % to _ %	i. Clinic attendance record ii. Hospital register	The health workers became more efficient in dealing with child health care problems
Activities: i. To impart training on antenatal care delivery ii. To impart hands on training on how to conduct aseptic delivery and take care of new born iii. To improve skill as how to do various vaccination of children in the age group 0-5 years iv. To impart training on management of respiratory infection and diarrhoea	i. The knowledge of health workers increased from _ % to _ % on child health care ii. The skill level of health workers on conducting immunization enhanced by _ %. iii. The knowledge and skill of health workers on identification of referral cases of respiratory infection and diarrhoea enhanced by _ %.	Activity Schedule & Interacting with the field visit unit	The health workers are motivated to work for the promotion of health care of children

Till now you have read about the steps involved in format writing and the logical framework approach of training project proposal formulation. Now, answer the following questions in *Check Your Progress-1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

1) What are the different steps in project formulation?

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2) What is the full form of “SMART” objective?

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1.6 LET US SUM UP

Preparing a project proposal is a daunting task. The project proposal must be carefully crafted and its presentation must be professional, because most probably the project might be competing with similar proposals for grants. This unit at the outset has described the meaning of the project and various steps starting from the review of past project proposal to discussion on project while formulating a project proposal is dealt in detail. The project proposal required to be painted in a particular format. The fourth section of this unit has described in detail the format for writing project proposal. Logistic framework which now a days a requirement of bilateral and multi-lateral funding agencies is also discussed in the last section.

1.7 REFERENCES AND SELECTED READINGS

International Tropical Timber Organization (2009), *Manual for Project Formulation*, Third Edition; GI Series 13.

O’ Connor, B.N., Bronner, M. and Delaney, C. (1996), *South – Western Training for Organization*, South – Western Educational Publications, Baylor Universities, Waco, Texas.

P. Nick Blanchard and James W. Thacker (2005), *Effective Training: Systems, Strategies and Practices*, Prentice Hall India.

Steve Truelove (1997), *Handbook of Training and Development*, Beacon Books.

Vinayshil Gautam, Shobhana G. (2008), *Training and Development*, Indian Society for Training and Development, New Delhi.

1.8 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

- 1) What are the different steps in project formulation?

Different steps in the project formulation are: (i) Review of past project proposals; (ii) Consulting experts, consultants, and previous project coordinators; (iii) Review past project evaluation reports; (iv) Interact with the prospective beneficiaries; (v) Check statistical data/ report; and (vi) Hold focus group discussion

- 2) What is the full form of “SMART” objective?

In nutshell objective must be ‘SMART’ -

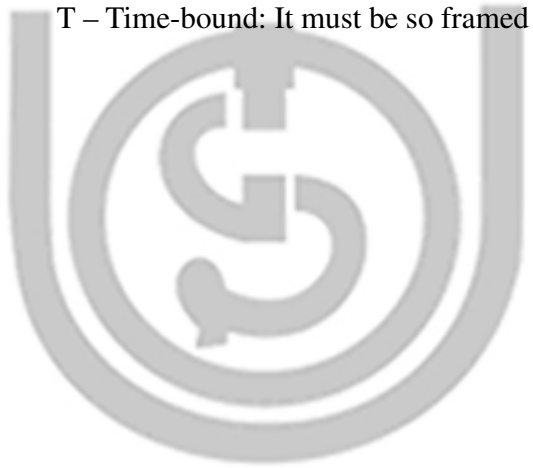
S – Simple: It should be simple and covering one point at a time.

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UNIT 2 PROJECT APPRAISAL

Structure

- 2.1 Introduction
- 2.2 Projects: Meaning and Concept
- 2.3 Difference Between a Project and a Programme
- 2.4 Criterion for Project Appraisal
- 2.5 Project Appraisal Techniques
- 2.6 Let Us Sum Up
- 2.7 References and Selected Readings
- 2.8 Check Your Progress – Possible Answers

2.1 INTRODUCTION

In the previous unit you have read about project formulation. This unit deals with the project appraisal techniques. Projects often provide the base for sustainable development intervention. Project appraisal is a generic term that refers to the process of assessing, in a structured way, the case for proceeding with a project or proposal. It often involves comparing various options, using economic appraisal or some other decision analysis technique. A good appraisal justifies spending money on a project. It is an important tool in decision making and lays the foundation for delivery and evaluation. Appraisal asks fundamental questions about whether funding is required and whether a project offers good value for money. It can give confidence that public money is being put to good use, and help identify other funding to support a project.

2.2 PROJECTS: MEANING AND CONCEPT

What are Projects?

Projects are the cutting edge of development. Projects are an investment activity in which financial resources are expended to create capital assets that produce benefits over an extended period of time.

UNIDO defines a project as a proposal for an investment to create and develop certain facilities in order to increase the production of goods/services in a community during a certain period of time.

The Chartered Management Institute define a project as “an activity that has a beginning and an end which is carried out to achieve a particular purpose to a set quality within given time constraints and cost limits”.

A project may be defined as an activity for which money will be spent in an expectation of returns and which logically seems to lend itself to planning financing and implementation as a unit. It is the smallest operational element prepared and implemented as a separate entity in a national plan of programmes of development.

A project is also defined as a proposal for an investment to create, expand and develop certain facilities in order to increase the production of goods and services

in a community during a certain period of time. Furthermore, for evaluation purposes, a project is a unit of investment, which can be distinguished technically, commercially and economically from other investments.

2.3 DIFFERENCE BETWEEN A PROJECT AND A PROGRAMME

Many people are uncertain about the difference between a project and a programme. A project is a temporary entity established to deliver specific (often tangible) outputs in line with predefined time, cost and quality constraints. Whereas, a program is a portfolio comprising of multiple projects that are managed and coordinated as one unit with the objective of achieving (often intangible) outcomes and benefits for the organization. Table 3.1 summarizes the main areas of differences between a project and a programme.

Table 2.1: Difference between Project and a Programme

Parameter	Project	Programme
Objectives	Outputs are tangible; relatively easy to describe, define and measure; tending towards objective.	Outcomes are often intangible; difficult to quantify; benefits often based on changes to organizational culture and behaviours; introducing new capabilities into the organization; tending towards subjective.
Scope	Strictly limited; tightly defined; not subject to change during the life of the project.	Not tightly defined or bounded; likely to change during the life cycle of the program.
Duration	Relatively short term; typically three to six months.	Relatively long term typically eighteen months to three years.
Risk profile	Project risk is relatively easy to identify and manage. The project failure would result in relatively limited impact on the organization relative to programme risk.	Program risk is more complex and potentially the impact on the organization if a risk materializes will be greater relative to project risk. Programme failure could result in material financial, reputational or operational loss.
Nature of the problem	Clearly defined.	Ill-defined; often disagreement between key stakeholders on the nature and definition of the problem.
Nature of the solution	A relatively limited number of potential solutions.	A significant number of potential solutions with disagreement between stakeholders as to the preferred solution.
Stakeholders	A relatively limited number of potential solutions.	A significant number of potential solutions with disagreement between stakeholders as to the preferred solution.
Relationship to environment	Environment within which the project takes place is understood and relatively stable.	Environment is dynamic; and programme objectives need to be managed in the context of the changing environment within which the organization operates.
Resources	Resources to deliver the project can be reasonably estimated in advance.	Resources are constrained and limited; there is competition for resources between projects.

2.4 CRITERION FOR PROJECT APPRAISAL

After a project has been prepared, it is generally appropriate for a critical review or an independent appraisal to be conducted. This provides an opportunity to reexamine every aspect of the project plan to assess whether the proposal is appropriate and sound before large sums are committed. The appraisal process builds on the project plan, but it may involve new information if the specialists on the appraisal team feel that some of the data are questionable or some of the assumptions faulty. If the appraisal team concludes that the project plan is sound, the investment may proceed. But if the appraisal team finds serious flaws, it may be necessary for the analyst to alter the project plan or to develop a new plan altogether.

If a project is to be financed by an international lending institution such as the World Bank or by a bilateral assistance agency, such an external lender will probably want a rather careful appraisal even if it has been closely associated with earlier steps in the project cycle. The World Bank, for example, routinely sends a separate mission to appraise proposed projects for which one of its member governments intends to borrow.

The preparation of a project entails consideration of many aspects. The major aspects to be considered during the appraisal of the project are:

- 1) Technical
- 2) Institutional
- 3) Organizational
- 4) Managerial
- 5) Social
- 6) Commercial
- 7) Financial
- 8) Economic
- 9) Sustainability

Let us now discuss each of these criteria of project appraisal.

1) Technical Aspect

The technical aspect of any project considers the technical feasibility of any project. It concerns with the technical aspect of a project from both input supply side and output delivery side. For example if you want to take up a metro project in a urban region, you may have to examine the soil type of the region for pillar strength, urban population to be benefited, availability of land, route etc. Such information can be collected through surveys.

2) Institutional Aspect

The institutional aspect of a project deals with the framework within which the project will have to operate. A complete knowledge of the institutional aspect helps identifying the components of institutional framework that will have a bearing on the project. Some of the elements that constitute the

institutional framework include government institutions, project authority, corporate bodies, land systems, banking and credit institutions, religious customs, practices and social mores. There is a need to understand the administrative system of the region where the project has to be undertaken.

3) **Organizational Aspect**

Here the term organization refers to the structure of the body that would undertake the task of project execution. The proposed organization must have the capacity to carry out the assignments given to it. Some of the basic principles to be followed include:

- 1) There must be clear lines of authority running from top to bottom of the organization and the chain of command should be clear.
- 2) The responsibilities of each authority should be clearly defined in writing.
- 3) The decision making power should be placed as near as possible to the scene of action.
- 4) The number of levels of authority should be kept at minimum.
- 5) The organization should be kept as simple as possible and should be flexible to adjust to changing conditions.

4) **Management Aspect**

The main task of management is to implement the project objectives within the framework of organizational structure. For good management, a clear definition of functions and activities are required. There is also a need for allocating responsibilities to various agencies for various project activities. A suitable mechanism for coordination of the activities of participating agencies should also be developed. Besides, proper staffing also comes under the purview of the management.

5) **Social Aspect**

It is very important to assess the social patterns, customs, culture, traditions and habits of the clientele. Various aspects like changes in living standards, material welfare, income distribution etc. In selecting some projects, weights are assigned for income distribution so that the projects which benefit the lower income group are benefitted. The adverse effect of the project on particular group is also examined. Preserving the environment and wildlife habitats is given high priority.

6) **Commercial Aspect**

The commercial aspects of a project involves the arrangements of marketing the output produced by the project and ensuring supply of inputs needed for the project to operate. There is a need to assess the effective demand of the project output and the prices that may prevail under the demand and supply situations. The analyst also needs to cautiously evaluate the impact of product supply on the price of the product and the viability of the project under such changed price situation.

7) Financial Aspect

Decisions about undertaking any project depend a lot on financial analysis of a project. As there could be many beneficiaries/participating agencies of any project, there is a need for separate financial analysis each.

8) Economic Aspect

The economic aspect is very important to be taken into consideration while appraising a project proposal. If it is a developmental project aims at improving the quality of life of the people in the project area, then what will be its economic impact in terms of raising income and standard of living of the people is essential.

9) Sustainability Aspect

Donor agencies are emphasising on the sustainability of the project after the intervention is withdrawn from the project area. While appraising the project proposal the reviewer must see that adequate attention has been given to the sustainability of the project by enquiring several questions i.e How will the project to be sustained after the project activities are withdrawn? Who will sustain it, both financially and technically? and What endeavour has been made by the proposer while proposing the project? and so on.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

1) What are projects? How do they help in development?

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2) Describe with an example the technical aspects to be considered while preparing a project?

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2.5 PROJECT APPRAISAL TECHNIQUES

Project appraisal is the effort of calculating a project's viability. Appraisal involves a careful checking of the basic data, assumptions and methodology used in project preparation, an in-depth review of the work plan, cost estimates and proposed financing, an assessment of the project's organizational and management aspects, and finally the viability of project. The project appraisal criteria can be divided under two heads:

- 1) Non-Discounting Technique
 - Urgency
 - Payback Period
 - Accounting Rate of Return
 - Debt Service Coverage Ratio (DSCR)
- 2) Discounting Criteria Technique
 - Net Present Value (NPV)
 - Internal Rate of Return (IRR)
 - Benefit Cost Ratio (BCR)
 - Annual Capital Charge

Now we will discuss the techniques in detail

2.5.1 Non-Discounting Techniques

i) Urgency

According to this criterion, the projects that are more urgent get preference over those that are less urgent. However, one of the problems in using this criterion is to judge the urgency of any project. The decision taken may be subject to the personal bias of the decision maker. In view of this limitation, it should not be used for investment decision making.

ii) Payback Period

In simple terms, the payback period is the length of time required to recover the initial cash outlay on the project. If the cash inflows are constant, then the payback period is calculated by dividing the initial outlay by the annual cash inflow. For example, a project which has an initial cash outlay of Rs 10,00,000 and a constant annual cash inflow of Rs 2,00,000 has a payback period of : $10,00,000 / 2,00,000 = 5$ years.

If the cash flow is not constant, e.g. if a project involves a cash outlay of 6,00,000 and generates cash inflow of Rs 1,00,000, Rs 1,50,000, Rs 1,50,000 and Rs 2,00,000 in the first, second, third and the forth years respectively, its payback period is four years because the sum of cash inflow during four years is equal to the total outlay.

Decision making: According to the payback period criterion, the shorter the payback period, the more desirable is the project. Firms using this criterion, generally specify the maximum acceptable payback period.

Evaluation of this method:

- It is simple in concept and application.
- It favours those projects that generate substantial inflows in earlier years and discriminate against projects that bring substantial cash flows only in later years.
- As this criterion emphasises on earlier cash flows, it may be a good criterion when the firm is pressed with the problem of liquidity.
- It fails to consider the time value of money thus violating the most basic principle of financial analysis which says that cash flows occurring at different points of time can be added or subtracted only after suitable compounding and discounting.
- Since payback period is the measure of a project's capital recovery, it may divert attention from profitability.

In spite of the shortcoming of not using the time value of money, payback period is used with advantage in appraising investments for the following reasons:

- The payback period may be considered roughly as the internal rate of return when annual cash flow is constant and the life of the project fairly long.
- The payback period is somewhat akin to the breakeven point.
- The payback period also gives information about the rate at which the uncertainty associated with the project is resolved. The shorter the payback period, the faster the uncertainty associated with the project is resolved.

iii) Accounting Rate of Return

The accounting rate of return or the simple rate is the measure of profitability which relates income to investment, both measured in accounting terms. As there are various ways of measuring income and investment, there are a large number of measures for accounting rate of return. The commonly used ones are given:

- 1)
$$\frac{\text{Average income after tax}}{\text{Initial investment}}$$
- 2)
$$\frac{\text{Average income after tax}}{\text{Average investment}}$$
- 3)
$$\frac{\text{Average income after tax but before interest}}{\text{Initial investment}}$$
- 4)
$$\frac{\text{Average income after tax but before interest}}{\text{Average investment}}$$
- 5)
$$\frac{\text{Average income before interest and taxes}}{\text{Initial investment}}$$
- 6)
$$\frac{\text{Average income before interest and taxes}}{\text{Average investment}}$$

Decision making: The higher the accounting rate of return, the better the project.

Evaluation:

- It is simple to calculate.
- It is based on accounting information which is readily available.
- It considers benefits over the entire life of the project.
- Though the income data of the entire life of the project is required, one can work out accounting rate of return even if the complete income data is not available by taking income from a typical year.

Disadvantages of accounting rate of return:

- It does not take into account the time value of money.
- There are numerous measures of accounting rate of return which can create confusion.

iv) Debt Service Coverage Ratio (DSCR)

The debt service coverage ratio is generally used to find the financial worthiness of the projects which need long term financing. The formula is [net profit + interest (on long term loan) + depreciation] / [interest (on long term loan) + principal loan].

Decision Making: Generally, the financial institutions regard a debt service coverage ratio of 2 as satisfactory.

Drawback:

In DSCR, both the numerator and the denominator consist of a mixture of post tax and pre tax figures (profit after tax in the numerator and loan repayment instalment in the denominator are post tax figures and interest in both numerator and denominator is pre tax figure). It is difficult to interpret a ratio that is based on a mixture of post tax and pre tax figures.

2.5.2 Discounting Techniques

i) NPV

The difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyze the profitability of an investment or project.

NPV analysis is sensitive to the reliability of future cash inflows that an investment or project will yield.

The formula for **NPV** is:

$$NPV = \sum_{t=0}^n \frac{(\text{Benefits} - \text{Costs})_t}{(1+r)^t}$$

where:

r = discount rate

t = year

n = analytic horizon (in years)

Decision making:

If the NPV of a prospective project is positive, it should be accepted. However, if NPV is negative, the project should probably be rejected because cash flows will also be negative.

Features of NPV:

- The NPV is based on the assumption that the intermediate cash inflows of the project are re-invested at a rate of return equal to the firm's cost of capital.
- The NPV of a simple project decreases as the discount rate increases, the decrease in NPV however is at a decreasing rate.

Merits of NPV

- It takes into account the time value of money.
- It considers the cash flow stream in its entirety.
- The NPV's of various projects can be added. The NPV of a scheme consisting of two projects A and B will simply be the sum of NPV's of these projects individually.

$$\text{NPV (A+B)} = \text{NPV(A)} + \text{NPV(B)}.$$

To illustrate the calculation of net present value, consider a project which has the following cash flow stream:

Year	Cash Flow
0	-10,00,000
1	2,00,000
2	2,00,000
3	3,00,000
4	3,00,000
5	3,50,000

The cost of capital k for the firm is 10 percent. The net present value of the proposal is:

$$\begin{aligned}\text{NPV} &= \frac{10,00,000}{(1.10)^0} + \frac{2,00,000}{(1.10)^1} + \frac{2,00,000}{(1.10)^2} + \frac{3,00,000}{(1.10)^3} + \frac{3,00,000}{(1.10)^4} + \frac{3,50,000}{(1.10)^5} \\ &= -5273\end{aligned}$$

Since the decision rule associated with the net present value is to accept the project if the net present value is positive and reject if it is negative, in this example, the decision should be to reject the project.

ii) IRR

The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project. As such, IRR can be used to rank several prospective projects a firm is considering. Assuming all other factors are

equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

IRR is sometimes referred to as "economic rate of return (ERR)". It is the discounted rate in the equation:

$$0 = \frac{CF_0}{(1+r)^0} + \frac{CF_1}{(1+r)^1} + \dots + \frac{CF_n}{(1+r)^n} = \sum \frac{CF_t}{(1+r)^t}$$

CF_t = cash flow at the end of the year t

r = discount rate

n = life of the project

In the internal rate of return, we set the net present value equal to zero and determine the discount rate which would also be the internal rate of return.

E.g. Consider the cash flow of a project

Year	Cash Flow
0	-1,00,000
1	30,000
2	30,000
3	40,000
4	45,000

The internal rate of return is the value of r which satisfies the following condition.

$$1,00,000 = \frac{30,000}{(1+r)} + \frac{30,000}{(1+r)^2} + \frac{40,000}{(1+r)^3} + \frac{45,000}{(1+r)^4}$$

The calculations of r consist of a process of trial and error. We try different values of 'r' till we find that the right hand side of the above equation is equal to the left hand side. By putting the value of 'r' as 12 we get 1,07,773, for 14 it is 1,03,046, for 15 it is 1,00,802 and for 16 it is 98,641. Since at 16 percent, the value is less than 1,00,000, we conclude that the value of 'r' lies between 15 % and 16%.

A 1 percent difference (between 15 and 16 percent) corresponds to a difference of 2161 (1,00,802 – 98,641). The difference between the net present value at 15% (1,00,802) and that at present target value (1,00,000) is (1,00,802 – 1,00,000) is Rs.802. This difference will correspond to a percentage difference of $802/2161 = 0.37$.

Adding this number to 15 percent we get the value as 15.37 percent.

You can think of IRR as the rate of growth a project is expected to generate. While the actual rate of return that a given project ends up generating will often differ from its estimated IRR rate, a project with a substantially higher IRR value than other available options would still provide a much better chance of strong growth.

IRRs can also be compared against prevailing rates of return in the securities market. If a firm can't find any projects with IRRs greater than the returns that can be generated in the financial markets, it may simply choose to invest its retained earnings into the market.

The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project. As such, IRR can be used to rank several prospective projects a firm is considering. Assuming all other factors are equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

iii) Benefit-Cost Ratio (BCR)

A Benefit Cost Ratio is an indicator, used in the formal discipline of cost-benefit analysis, that attempts to summarize the overall value for money of a project or proposal. A BCR is the ratio of the benefits of a project or proposal, expressed in monetary terms, relative to its costs, also expressed in monetary terms. All benefits and costs should be expressed in discounted present values.

The benefit-cost ratio (BCR) represents the ratio of total benefits over total costs, both discounted as appropriate. The formula for calculating BCR is:

$$BCR = \frac{PV_{\text{benefits}}}{PV_{\text{costs}}}$$

where:

PV_{benefits} = present value of benefits

PV_{cost} = present value of costs

In other words, since the present value of costs is nothing but the initial investment, the BCR may be defined as the ratio of present value of benefits to initial investment.

To illustrate the calculation of this measure, let us consider a project which is being evaluated by a firm that has a cost capital of 12 percent.

The initial investment in the project is Rs1,00,000.

Year	Benefits
Year 1	25,000
Year 2	40,000
Year 3	40,000
Year 4	50,000

The benefit cost ratio of this project will be

$$BCR = \frac{\frac{25,000}{(1.12)} + \frac{40,000}{(1.12)^2} + \frac{40,000}{(1.12)^3} + \frac{50,000}{(1.12)^4}}{1,00,000}$$
$$= 1.145$$

Decision making: If BCR is >1 , the project should be accepted and would be beneficial.

If BCR = 1, we interpret it as being indifferent.

If BCR <1 , the project should be rejected.

The BC ratio is preferable to NPV as this criterion measures per rupee of outlay and it can discriminate between large and small investments.

Check Your Progress 2

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

1) What are the advantages of payback period?

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2) What is Benefit Cost ratio? What is the decision making criteria while using BC ratio?

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2.6 LET US SUM UP

In this unit we read about the meaning of projects. The unit also discusses the various aspects to be considered while preparing the project. Many people are uncertain about the difference between a project and a programme. In this unit we have discussed in detail the difference between a project and a programme. The various criterion for project appraisal, discounting and non-discounting techniques of project appraisal have also been discussed.

2.7 REFERENCES AND SELECTED READINGS

Baum W.C and Tolbert S.M. (1985) *Investing in Development: Lessons of the World Bank Experience*, Oxford: Oxford University Press.

Choudhary, S. (1988) *Project Management*, New Delhi: Tata McGraw Hill.

Harrison, F.L. (1992), *Advance Project Management*, Metropolitan, New Delhi.

Kohli, K. N (1993), *Economic analysis of investment projects: a practical approach*, Oxford University Press.

Lavagnon A. Ika, Amadou Diallo, Denis Thuillier, (2010) “Project management in the international development industry: The project coordinator’s perspective”, *International Journal of Managing Projects in Business*, Vol. 3 Iss: 1, pp.61 – 93

Layard, R. and Stephen Glaister, (eds) *Cost-Benefit Analysis, Second edition*, Cambridge.

Prasanna Chandra (1988), *Projects, Preparation, Appraisal, Budgeting and Implementation*, Tata McGraw Hill, New Delhi.

Sapru R.K., (1994), *Development Administration*, Sterling, New Delhi.

United Nations Industrial Development Organisation (1998), *Manual For Evaluation of Industrial Projects*, Oxford and IBH New York.

2.8 CHECK YOUR PROGRESS – POSSIBLE ANSWERS

Check Your Progress 1

- 1) Projects are the cutting edge of development. Projects are an investment activity in which financial resources are expended to create capital assets that produce benefits over an extended period of time.
- 2) The technical aspect of any project considers the technical feasibility. It concerns with the technical aspect of a project from both input supply side and output delivery side. For example if you want to take up an agricultural project in a region, you may have to examine the soil type of the region, water availability, crops grown, livestock breed suitable for the area, pests prevalent in the area etc.

Check Your Progress 2

- 1) Payback period is used with advantage in appraising investments for the following reasons:
 - The payback period may be considered roughly as the internal rate of return when annual cash flow is constant and the life of the project fairly long
 - The payback period is somewhat akin to the breakeven point.
 - The payback period also gives information about the rate at which the uncertainty associated with the project is resolved. The shorter the payback period, the faster the uncertainty associated with the project is resolved.
- 2) A BCR is the ratio of the benefits of a project or proposal, expressed in monetary terms, relative to its costs, also expressed in monetary terms. The benefit-cost ratio (BCR) represents the ratio of total benefits over total costs, both discounted as appropriate.

UNIT 3 PROJECT MANAGEMENT

Structure

- 3.1 Introduction
- 3.2 Project Management: Concept and Elements
- 3.3 Project Management Cycle
- 3.4 Project Management Techniques
- 3.5 Pre-requisites of Effective Project Management
- 3.6 Let Us Sum Up
- 3.7 References and Selected Reading
- 3.8 Check Your Progress: Possible Answer

3.1 INTRODUCTION

Project management has an important place in development as many of the urban development researchers and institutes are now days undertaking many research projects. Every project manger has to deal with different targets, different environment and different target groups. Appropriate knowledge and skill about the various aspects of project management will transform a project manger in to an excellent project manager. The project manager largely perform following roles: (i) plan the project along with other team members; (ii) prepare strategies, activities and arrange and allocate resources required for the achievement of project objectives; (iii) maintain relation between the project team, institution and the donor agency of the project; and (iv) successfully complete the project and disseminate its finding for the consumption of large audience. This unit deals in detail about the project management.

After reading this unit, you should be able to:

- i) Define concept and elements of project management;
- ii) Describe various steps of project management cycle;
- iii) Explain various project management techniques; and
- iv) Discuss different pre-requisites of effective project management.

3.2 PROJECT MANAGEMENT: CONCEPT AND ELEMENTS

3.2.1 Project Management Concept

Project management is an important concept and topic because now a days all organizations either big or small are involved in the implementation of various projects. Lewis has opined that although management of projects has been going on for thousands of years, the practice has been widely recognized as a discipline in its own rights for only about ten years.

Before going to explain project management, it is essential to known, what is a project? A project is generally described as an initiative to bring about change. This is done in order to achieve specific objectives, within a timescale and in a

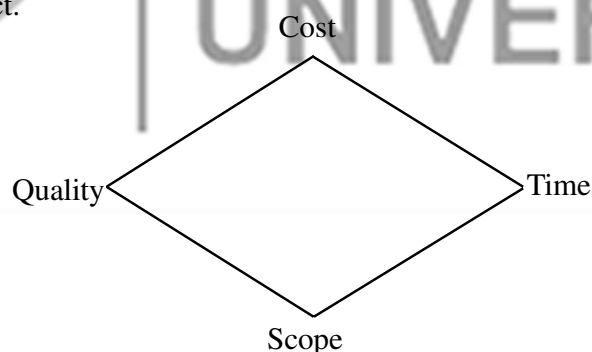
given context. A project has normally an allocated budget. According to Project Management Institute “A project is any undertaking with a defined objective by which completion is identified. In practice most projects depend on finite or limited resources by which the objectives are to be accomplished.” Viv Martin listed out following attributes of a project:

- 1) has a clear purpose that can be achieved in a limited time;
- 2) has a clear end when the outcome has been achieved;
- 3) is resourced to achieve specific outcomes;
- 4) has someone acting as sponsor who expects the outcomes to be delivered on time; and
- 5) is a one-off activity that would not normally be repeated.

Project Management has been evolved one of the important areas in the area of urban development. According to Richard Newton (2008), project management has been developed over the past few decades as it has become apparent that without a structured approach, people are not very good at completing projects successfully. The principal aim of project management is to see that projects are well formulated, effectively implemented; completed in time and end result is achieved. The project management is largely encircled in four important factors i.e cost, time, scope and quality. According to PMBOK “project management is application of knowledge, skills, tools and techniques to project activities to achieve project requirements. Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring, controlling and closing.”

3.2.2 Basic Elements of Project Management

The four basic elements of project management, which a project manager has to look into are: cost time, scope and quality. All these four elements are interconnected and have to be managed effectively for the successful implementation of the project.



- i) **Cost Management:** An efficient project manager is evaluated on his or her ability to complete the project within the stipulated budget. The costs include estimated cost, actual cost and variable cost. Besides, there is contingency cost which takes into account the influence of weather, supplier and design allowances.
- ii) **Time Management:** Time management is one important skills for any successful project manager. Most of the project fails due to poor time management by the project managers. For the effective management of

time, a project has to be broken down into number of tasks which are to be accomplished within time frame. To prepare the project schedule, the project manager has to figure out what the tasks are, how long they will take, what resources they require and in what order they should be done.

- iii) **Scope Management:** The project manager at the outset need to clearly delineate scope of the project. The scope of the project will enable the project manager to judiciously plan required resources and manpower for the project. As project is time and cost bound, therefore, scope of the project needs to be appropriately framed within these constraints. Scope management comprises following main aspects such as authorizing the job, developing a scope statement that will define the boundaries of project, sub-dividing the work into manageable components with deliverables, verifying that the amount of work has been achieved and specifying scope change control procedures (Levis, 2007).
- iv) **Quality Management:** Quality management is last but not least element of project management. The success of the project is judged by the yardstick of quality of work it has produced. The successful project manager maintains the balance between cost, quantity and quality. According Levis (2007) quality management includes both quality assurance and quality control. The former means planning to meet quality requirements and the later emphasises on the steps to be taken to monitor results to see if they conform to requirements.

In this section you studied the concept and elements of project management, now answer the questions given in Check Your Progress-1.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

- 1) What do you mean by project?

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- 2) Time management is an important element of project management- Discuss.

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3.3 PROJECT MANAGEMENT CYCLE

Project cycle has six main phases which is given in the form of cycle wheel below. The six various phases of project management cycle are:

- 1) Need Identification
- 2) Initiation
- 3) Planning
- 4) Executing
- 5) Controlling
- 6) Closing

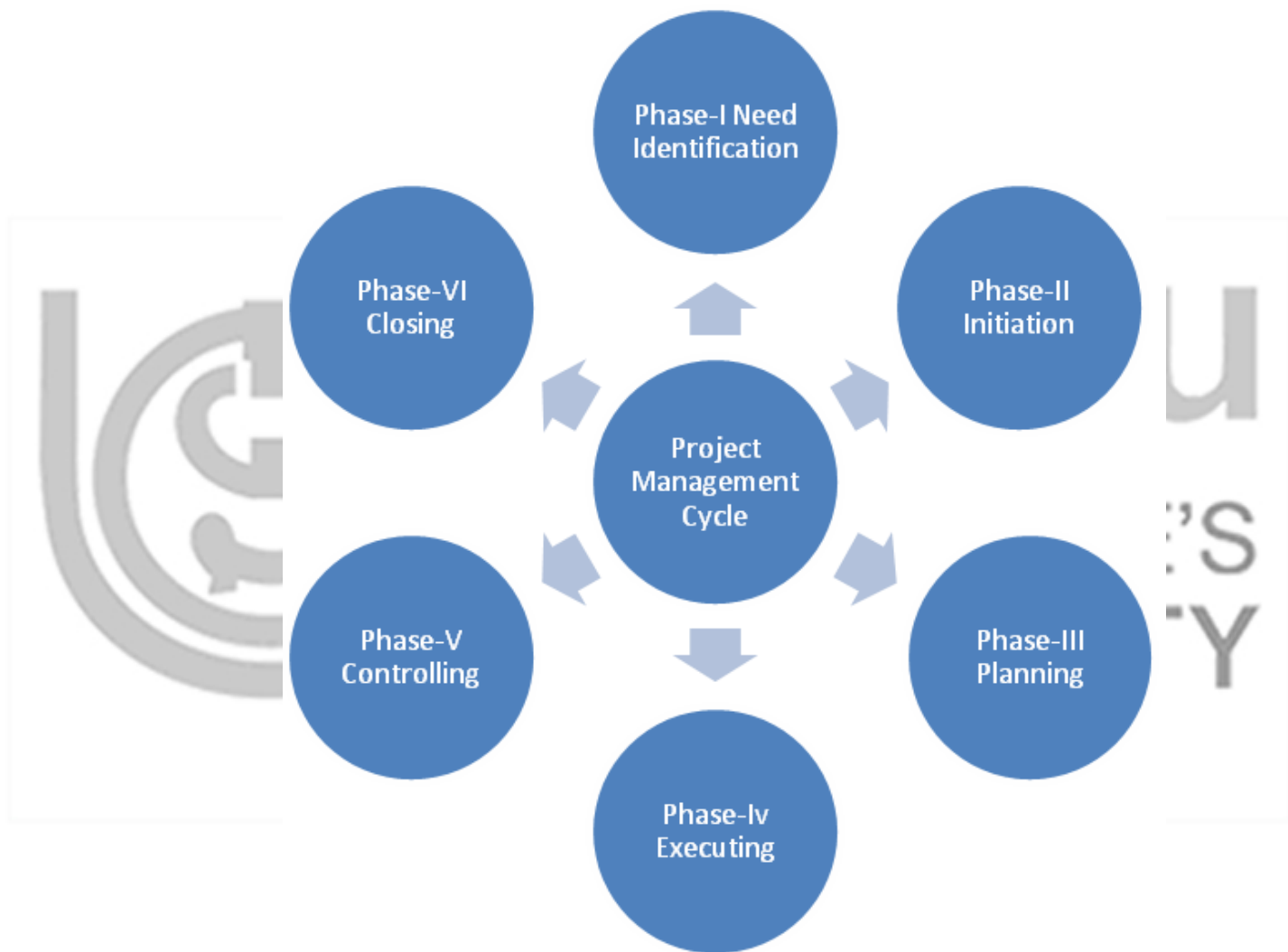


Fig. 3.1: Project Management Cycle

- 1) **Need Identification-** The development of project cycle begins with identification, whether there is a need of development project for a particular sector, area, community, etc. The identification usually comprises two main aspects i.e. situation analysis and problem analysis. Let us discuss these two important aspects in detail.

i) Situation Analysis

Understanding situation is the beginning of designing any development project or programme. Situation analysis broadly involves analysis of needs and assets, problem analysis and examining relevant interventions. According to Townen (2001) situation analysis is an activity which can firmly link planning to the realities in the field and thereby to the implementation of the project. The situation analysis may comprise analysis of the physical, economic, social, cultural and political environment within which the population live. Some of the development indicators to be used during the situation analysis of development of a project are: composition of population, housing, sanitation, health, employment, drinking water, education, land holding, industry, services etc. The context and type of information required is given in Table 3.1

Table 3.1: Information for Situation Analysis

Context	Type of Information
Socio-Demographic	➤ Population composition and distribution ➤ Household and family formation ➤ Education and health services ➤ Housing condition ➤ Sanitation and drinking water ➤ Access to communication / energy
Economic Activity	➤ Income ➤ Employment/workforce participation ➤ Wages ➤ Expenditure ➤ Standard of living/poverty
Socio-Cultural & Political	➤ Political structure ➤ Political participation ➤ Relevant laws, statutes and policies ➤ Predominant social structure ➤ Gender role in the household ➤ Decision making pattern ➤ Condition of marginalized

ii) Problem Analysis

The second step in need identification is problem analysis. For understanding a situation to be influenced by a project, it is essential to know the problem conditions which constitute development constraints as well as their causes. Problem analysis is of prime importance to developmental project planning, as it strongly influences the design of all possible developmental interventions. Problem identification is a deductive process. It is a state of affairs or facts or figures that cause difficulties and sufferings. The problem analysis not only investigates What is wrong ? but also try to understand 'Why' and 'How' it is wrong ? in order to assign priority to the problem. It seeks to answer several questions these are:

- ★ What is the problem?
- ★ Why is this a problem?
 - a) What are the probable causes of the problem?
 - b) How serious is the problem?
- ★ Who are affected by the problem?
 - a) How many are they?
 - b) Where are they located?
 - c) What are their characteristics?

According to FAO, the problem tree is a visual problem-analysis tool that can be effectively used by both the field development staff and the community to specify and investigate the causes and effects of a problem and to highlight the relationship between them. The problem tree analysis helps to find out solutions by mapping out the anatomy of cause and effect around an issue.

The roots of the tree, is the lower part of the drawing, metaphorically represent the causes of the main problem. The tree trunk at the centre of the drawing represents the main problem and the tree branches, on the upper side of the drawing, provide a visual representation of the effects of the main problem.

Tips for Problem Analysis

- ★ Describe the key problem identified and its causes and effects.
- ★ Delineate how these problems affect the target group.
- ★ Explain how addressing the causes will lead to eradication of the key problem
- ★ The description should be clear, concise and convincing
- ★ For each specific problem selected, develop a problem tree

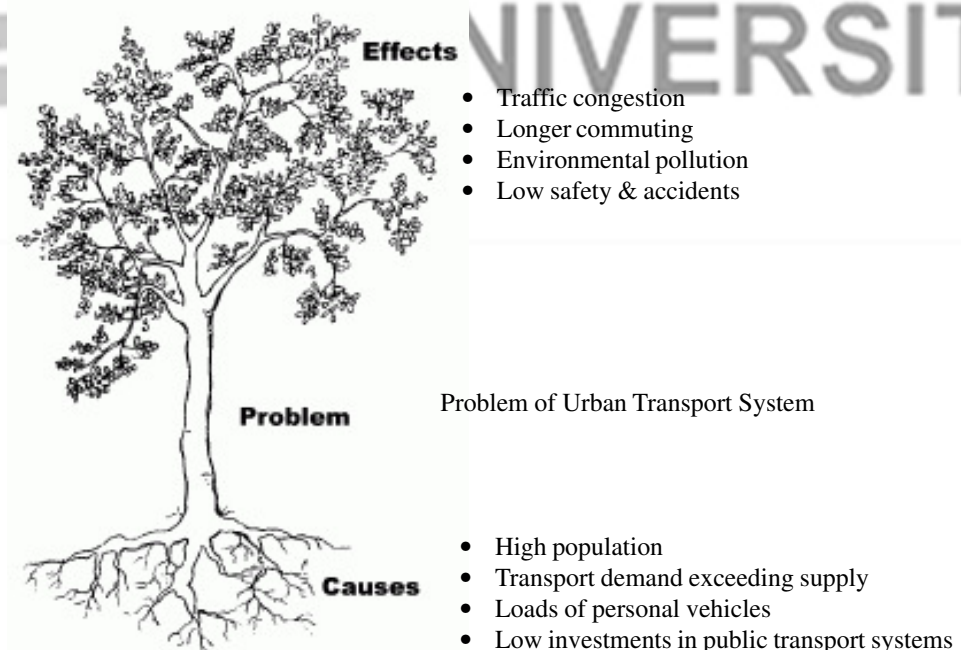


Fig. 3.2: Problem Tree of Urban Transport System

- 2) **Initiation-** Once the needs of the project are identified and decision is taken to do the project, the second step is to launch or initiate the project. There are number of activities associated in this stage. The project sponsor creates a project charter which delineates authorization of work on the project, define the authority, responsibility and accountability of the project team and establish scope boundaries of the project. The success of the project team veritably depends upon starting with complete and accurate information, management support and the authorization necessary to manage the project.
- 3) **Planning-** Planning phase is one of the important phases of the project cycle management. The project planning defines project activities that will be performed; the output that will be produced; and delineate how these activities will be accomplished and managed. Project planning defines each major task, estimates the time, resources and cost required, and provides a framework for management review and control. In other words, planning involves identifying and documenting scope, tasks, schedules, cost, risk, quality and staffing needs.

The project manager, along with his project team prepares project plan and gets it approved from the management. The project plan is a comprehensive document that allows a project team to begin and complete the work necessary to achieve the project goal and objectives. The project plan will address how the project team will manage the project elements.

- 4) **Executing-** After the project plan is prepared, it gets ready for execution or implementation. The project team acquire all necessary resources required to carry out the project and ready to perform project activities. The project manger along with the project team put their energy and efforts in participating, observing and analysing the project activities so that the output is produced and goal and objectives of the project achieved. In other words one is to execute the work that must be done to come out with the product of the project. Further, executing also refers to implementing the project plan.

In nutshell, executing refers to coordinating and managing the project resources while executing the project plan, performing the planned project activities and ensuring that they are completed efficiently.

- 5) **Monitoring/Controlling-** The functions of the project manger at this stage is to monitor and compare actual performance with the planned performance and take corrective measures to get the desired outcome when there are significant differences. By monitoring and measuring progress regularly, identifying variances from plan and taking corrective action if required, project control ensures that project activities are met.
- 6) **Closing out-** Closing out is the last but not the least phase of project cycle management. Once the output is produced to the customer's satisfaction, the project is considered finished. However, this should not be the case. A final lesson-learned review should be done before the project is considered complete. Failing to do the lessons-learned review means that future project will likely to suffer. Although project close out is a routine process, it is an important one. According to Haugey, project closure means formal acceptance of the deliverables and disbanding of all the elements that were required to run the project.

In this section you studied about the project management cycle and now answer the questions given in Check Your Progress-2.

Check Your Progress 2

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

1) Discuss the importance of problems analysis in need analysis?

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2) What are the functions of project manager during monitoring and controlling of the project.

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3.4 PROJECT MANAGEMENT TECHNIQUES

The project management techniques helps the project manager to complete the project activities successfully and effectively and achieve the project goal and objectives within the assigned time period and budget. Broadly project management techniques are two types:

- i) Bar Charts
- ii) Networks

3.4.1 Bar Chart

Bar Charts are the pictorial representation of various tasks required to be performed for accomplishment of the project objectives. The bar charts are of two types: (i) Gantt Chart and (ii) Milestone Chart

i) Gantt Chart

Henry L Gantt in 1917 developed a system of bar charts for scheduling and reporting of a project. These charts, latter were known as Gantt Charts. It is a pictorial representation specifying the start and finish time for various tasks to be performed in a project on a horizontal time scale. The Gantt chart as a tool is used:

- √ To plan time scale of a project

- ✓ To estimate resources required for a project
- ✓ For graphical illustration of schedule of tasks to be completed
- ✓ Helps to plan coordinate and track specific tasks for project
- ✓ Good for small projects when the number of tasks or activities is small and not complex i.e. good for simple projects.

Table 3.2: Task and Time Line of a Gantt Chart

Task	Table	Time
1.	Planning of survey	1-3 Months
2.	Designing of Questionnaire	1-3 Months
3.	Hiring of Personnel	1-3 Months
4.	Training of Personnel	1-4 Months
5.	Collection of Data	2-6 Months
6.	Data Entry	3-10 months
7.	Data Analysis/Interpretation	3-10 Months
8.	Report Writing	11 th Months

The activities formulated in Table 3.2 have to be converted in to bar diagram or chart form to be called as Gantt Chart. This is given below in graphical form. The horizontal axis depicts time and vertical axis represents tasks (Fig.3.3).

Task	Duration (Months)	1	2	3	4	5	6	7	8	9	10	11
1. Planning of survey	1-3 Months											
2. Designing of Questionnaire	1-3 Months											
3. Hiring of Personnel	1-3 Months											
4. Training of Peronnell	1-4 Months											
5. Collection of Data	2-6 Months											
6. Data Entry	3-10 Months											
7. Data Analysis/ Interpretation	3-10 Months											
8. Report Writing	11 th Month											

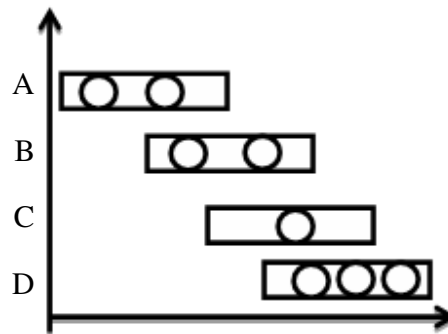
Fig. 3.3: Graphical Representation of Gantt Chart

Here the project manager has to draw bar chart as per the scheduled activities. For example activity A is project planning plotted in first bar and like wise each activity is plotted according to planned time line. Though Gnatt chart is comprehensive, convenient and very effective, it has limitation of handling complex projects.

ii) Milestone Chart

Milestone Chart is an improvisation over the Gantt Chart by introducing milestones. The milestone represents a circle over a task in the bar chart which indicates completion of a specific phase of the task. This was used because by drawing a simple bar chart one can not monitor the progress of a particular task. In a milestone chart a task is broken down into specific activities and after accomplishment of the specific activity a milestone is reached or in other words an event occurs.

Graph on Milestone



In this bar chart, milestones are represented in circle. For example in Task A, the milestone two can not be reached until the milestone one is crossed and the activity between milestone one and two is over. For example in a socio-economic survey in an urban slum, the survey can not be possible unless questionnaires are prepared. Some of the weaknesses of the milestone chart are:

- i) It does not show interdependence between tasks.
- ii) It does not indicate critical activities.
- iii) It does not consider the uncertainties associated with accomplishment of a certain task.
- iii) It will be always cumbersome to draw the chart for large projects.

3.4.2 Networks

The best-known technique for network analysis is Programme Evaluation and Review Technique (PERT) developed during 1956-1958. The PERT was developed for US navy for scheduling the research and development activities for Polaris Missiles Programme. The heart of any PERT chart is a network of tasks needed to complete a project, showing the order in which the tasks need to be completed and the dependencies between them. Some of the **key features** of net work are:

- ✓ It is a graphical depiction of project tasks and their inter-relationships.
- ✓ The important feature of network diagram is that the ordering of Tasks is shown by connecting with it predecessor and successor tasks.
- ✓ Net work diagramming is a Critical Path Scheduling Technique used for controlling resources.

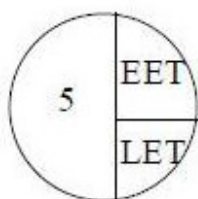
- ✓ **Critical Path Scheduling** is a technique whose order and duration of sequence of task activities directly affect the Completion date of a project.

A few **steps to be followed** in network analysis are:

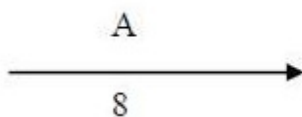
- i) Specify the individual activities:- All the activities in the project are listed and this list can be used as the basis for adding sequence and duration information in the later steps.
- ii) Determine the sequence of those activities:- Sequencing is important because some activities are dependent on the completion of other activities.
- iii) Estimate the completion time for each activity: - The time required to complete each activity can be estimated using past experience.
- iv) Draw a network diagram:- Once the activities and their sequences have been defined, the network diagram can be drawn.
- v) Identify the Critical path:- The Critical Path is the longest duration path through the network. The significance of the critical path is that the activities that lie on it cannot be delayed without delaying the project. Because of its impact on the entire project, critical path analysis is an important aspect of project planning.
- vi) Update the diagram as it progress:-As the project progress, the actual task completion times will be known and the network diagram can be updated to include this information. A new critical path may emerge and structural change made.

During the process of project implantation, some activities would be dependant on the completion of other activities. For example training of personnel for survey depends on completion of hiring of personnel, design of questionnaires and printing of questionnaire. All these activities have to be completed for achieving the milestone of training of personnel.

Symbols to be used to create a network diagram are given below:



Event



Activity



Dummy event

An **arrow** is used to represent each activity or tasks to accomplish and the duration of the activity is recorded below the arrow e.g. hours, days or months.

Each activity or task that happens, has preceding event (circle) and each circle is pre-numbered e.g. above circle '5' is used as example to how this would be the 5th event.

The **earliest event time** (EET) displays the earliest time an activity (represented by an arrow) can start, given the interdependence of other activities that would be completed beforehand.

The **latest event time** (LET) for an activity is recorded in the circle following the activity (arrow) e.g. the latest time an activity must be completed by, in order to achieve the elapsed time of the project.

A dummy activity is used when a task or activity (represented by an arrow) follows more than one preceding activity e.g. the arrow could be drawn from more than one potential circle in the diagram.

An example of network analysis is given in the tabular as well as diagrammatic form below.

Table 3.3: Project on conduction of household socio-economic survey

Activity	Duration (in Weeks)	Preceded by activity
A: Preparation of Questionnaire	5	—
B: Recruitment and Training of field investigator	4	—
C: Conduction of Survey	3	A B

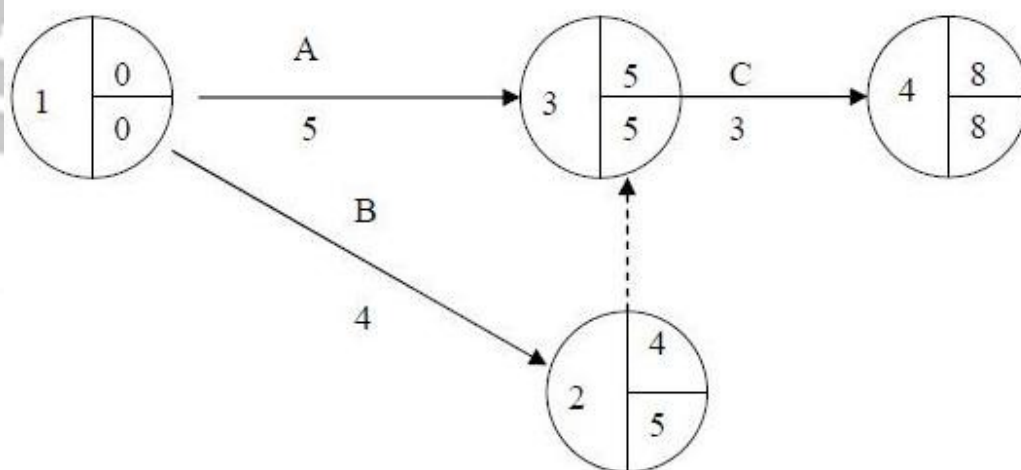


Fig. 3.3: Networking Diagram

The networking technique for the conduction of a socio-economic survey in a urban slum. Here in this project activity 'C' that is conduction of survey depends a 'A' and 'B' activities such as preparation of questionnaire and recruitment of field investigators, and their training. Whenever you see an activity with more than one preceding activity, a dummy activity (broken arrow) will be required to

preserve logic within the diagram. Here, activity B is having more than two activities.

Explanation

- The elapsed (expected completion) time of the project is 8 weeks.
- The critical path activities are A and C that is both must be completed within their predicted durations, otherwise the project will be longer in duration than 8 weeks. Notice how the EET and LET of critical activities are identical.
- Activity B is non-critical activity and would have a 'float time' of 1 week. This is because its predicted duration is 4 weeks, but it can take 5 week to complete and still leave enough time left for activity C to completed, the elapsed time of the project will still be achieved. Notice how the EET and LET of non-critical activities are different; the difference is 1 week e.g. the float time, when you deduct one from the other.
- The broken arrow (or dummy activity) preserves logic within the diagram e.g. visually you can see that both activities A and B must be completed, before C can start. Notice also that the arrow representing activity C start from circle 3 (not circle 2), this is because the earliest time for C would be 5 weeks not 4 weeks as circle 2 displays.

Some of the benefits of network technique are:

- i) It provides a graphical view of the project;
- ii) It predicts the time required completing the project;
- iii) It shows which the activities to be started simultaneous and the activities critical to the project;
- iv) It highlights 'float times' for all activities;

Definitions of a few terms required in Network analysis are given below:

- i) **Activity** – Customarily an activity consumes time and resources. It may include paper work in preparation of project proposal, conduction of survey, etc.
- ii) **Critical Path** – A critical activity or event is one which has to be performed by a certain time. The critical path is the longest path through a network and determines the earliest completion of project work.
- iii) **Events** – Beginning and ending points of activities are known as events.
- iv) **Milestone** – This is an event that represents a point in a project of special significance. Usually it is the completion of a major phase of the work.
- v) **Network** – Networks are called arrow diagrams. They provide a graphical representation of a project plan showing the relationships of the activities.

3.5 PREREQUISITES OF EFFECTIVE PROJECT MANAGEMENT

Some of the knowledge and skill required for the effective project management are as follow:

- 1) **Project Integration Management:-** Project integration management ensures that the project is properly planned, executed, and controlled. In other words, every activity of the project must be well coordinated or integrated. The project is a culmination of activities and tasks and an integrated approach will enable the project to achieve its goal and objectives effectively. There must be proper coordination at each level from the management down the line workers level. It is studied that the project fails to achieve its goal at the grassroots level because of lack of people's participation. There many project findings have suggested that the community must be integrated into the whole process of project i.e planning, formulation of strategies, implementation as well as controlling of various project activities.
- 2) **Project Time Management:-** In time completion of project not only gives a credit to the manager of but also can ensure further projects to the organization. Project time management refers to developing a time schedule that can be met and then controlling the activities to ensure that it happens. An efficient project manager tries to effectively manage the time and achieve the project tasks within the allocated time period. Taking long time adds to the inefficiency of the project. While taking too less time sometimes put question mark on the quality of the project delivery.
- 3) **Project Cost Management:-** Cost management implies that project should be completed within the formulated budget. Therefore, proper estimation of the cost of resources i.e. manpower, equipment, materials and other things like travel and other miscellaneous expenses. Cost are budgeted and tracked to keep the project within the budget. The project cost must be appropriately budgeted. For example, in most of the action research project the expenditures on project interventional activities needed to be more compared to hiring of manpower. Some times good project proposals are rejected not for the technical but for the financial bid. Therefore costing is critical to project management.
- 4) **Project Human Resource Management:-** Human resources are key to project. It is supreme over all other resources. It involves identifying the people needed to do the job, defining their roles, and responsibilities. Acquiring efficient people as per their job requirement is critical to project management. Besides training and capacity building of the manpower is also important to human resources management. The human resource management also includes the salary packages, leisure and medical and other benefits. Sometimes project staffs are less motivated to work for poor benefits. Therefore, many organization depute its efficient staff to the project by offering them higher salary and grade.
- 5) **Project Quality Management:-** The balancing between the quantity and quality of project deliverables is central to effective project management. Maintenance of quality is vital to project and any compromise with the quality will lead to dissensions among the project team and the beneficiaries. The quality of input and out put of the project must be clearly visible. The qualified and experienced manpower employed in the project can effectively and efficiently manage the project then their counter parts those were less qualified and less experienced. Nepotism in selection process is a deterrent to quality.

- 6) **Project Communication Management:-** Communication Management refers to planning, executing, and controlling the acquisition and dissemination of all information relevant to the needs of all project stakeholders. Transparency in communication is an accountability of the project manager. Democratic way of communication where all the stakeholders participate and share their opinion regarding various aspects of project is critical to a good project proposal formulation. Communication and dissemination of findings of the project not only helps the policy makers to formulate policy but also helps the organization to fetch more projects.
- 7) **Project Risk Management:-** Risk Management is a systematic process of identifying, quantifying, analysis and responding to project risk. Higher is the risk lower is the efficiency and effectiveness of the project. The efficiency and effectiveness of a project is influenced by the risk factor. For example the training of Commercial Sex Workers on HIV/AIDS in urban slum depend on the identification of CSWs which is a risk factor. According to Lewis it includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of advance events to project objectives. It is an extremely important aspect of project management.

In this section you studied about the project management technique and pre-requisites of effective project management and now answer the questions given in Check Your Progress-3.

Check Your Progress 3

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

- 1) Briefly discuss Gantt Chart

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- 2) Cost management and time management are the important prerequisites of project management- Discuss

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3.6 LET US SUM UP

Project Management is an important area of development, as all organizations big or small are implementing one or the other projects. The viability of many organization some times solely depends on projects. Besides, the funding agencies also needed to have adequate knowledge about the project management. The present unit at the outset has described the meaning and basic elements of project management. The second aspect which has been thoroughly covered in the unit is project cycle management. Later on, the project management technique which is vital to any project management has been discussed. The two techniques customarily used in project management are Gantt chart and Networks. The technicality in dealing with the project is judged from the technique used in project formulation. The last part of the unit contains the skill required for the project manager for the effective management of project.

3.7 REFERENCES AND SELECTED READINGS

Levis, J.P. (2007), *Fundamentals of Project Management*, American Management Association, New York.

Richard Newton (2008), *Project Management Step by Step*, Kindersely Pvt.Ltd., New Delhi

Duncan Haughey, An Introduction to Project Management, Project Smart.co.uk, <http://www.projectsmart.co.uk/introduction-to-project-management.html>.

What is Project Management?, <http://www.mpug.com/pages/whatisproejctmanagement.aspx>.

What is Project Management? <http://www.managementstudyguide.com/wh>

Choudury, S, *Project Management*, Tata Mc Graw Hill

Network Techniques for project Management, www.em-ea.org/.../Book-1/1.7%20project%20management.pdf

Rory B (2007), *Project Management Techniques*, Burke Publishing, UK.

Project Management Technique in Agricultural Extension, www.manage.gov.in/.../manage203/manage%20book%20203-block.

Project Management with Gantt-Chart, OpenOffice.org.20calc

Tools and Techniques of Project Management, Chapter 7, Acorn Professional Tutors, network diagram.pdf (SECURED)-Adobe Reader

2.7 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1) What do you mean by project?

A project is generally described as an initiative initiated to bring about change. This is done in order to achieve specific objectives, within a timescale and

in a given context. A project has normally an allocated budget. Viv Martin lists out the following attributes of a project:

- 6) has a clear purpose that can be achieved in a limited time;
 - 7) has a clear end when the outcome has been achieved;
 - 8) is resourced to achieve specific outcomes;
 - 9) has someone acting as sponsor who expects the outcomes to be delivered on time; and
 - 10) is a one-off activity that would not normally be repeated.
- 2) Time management is an important element of project management- Discuss.

Time management is one the important skills for any successful project manager. Most of the project fails due to poor time management by the project managers. For the effective management of time, a project has to be broken down into number of tasks which are to be accomplished within time frame. To prepare the project schedule, the project manager has to figure out what the tasks are, how long they will take, what resources they require and in what order they should be done.

Check Your Progress 2

- 1) Discuss the importance of problems analysis in need analysis?

Problem analysis is of prime importance to developmental project planning, as it strongly influences the design of all possible developmental interventions. Problem identification is a deductive process. It is a state of affairs or facts or figures that cause difficulties and sufferings. The problem analysis not only investigates What is wrong ? but also try to understand 'Why' and 'How' it is wrong ? in order to assign priority to the problem. It seeks to answer several questions these are:

- ★ What is the problem?
- ★ Why is this a problem?
 - c) What are the probable causes of the problem?
 - d) How serious is the problem?
- ★ Who are affected by the problem?
 - d) How many are they?
 - e) Where are they located?
 - f) What are their characteristics?

- 2) What are the functions of project manager during monitoring and controlling of the project.

The functions of the project manager at this stage is to monitor and compare actual performance with the planned performance and take corrective measures to get the desired outcome when there are significant differences. By monitoring and measuring progress regularly, identifying variances from plan and taking corrective action if required, project control ensures that project activities are met.

Check Your Progress 3

1) Briefly discuss Gantt Chart

Henry L Gantt in 1917 developed a system of bar charts for scheduling and reporting of a project. These charts, latter were known as Gantt Charts. It is a pictorial representation specifying the start and finish time for various tasks to be performed in a project on a horizontal time scale.

2) Cost management and time management are the important prerequisites of project management- Discuss

The cost and time management are important challenges before a project manager. The task which he/she has to perform are narrated one by one

i) **Project Time Management:** Intime completion of project not only gives a credit to the manager of but also can ensure further projects to the organization. Project time management refers to developing a time schedule that can be met and then controlling the activities to ensure that it happens.

ii) **Project Cost Management:** Cost management implies that project should be completed within the formulated budget. Therefore, proper estimation of the cost of resources i.e. peoples, equipment, materials and other things like travel and other miscellaneous expenses. Cost are budgeted and tracked to keep the project within the budget.



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