



**NATIONAL OPEN UNIVERSITY OF NIOGERIA**

**SCHOOL OF AGRICULTURAL SCIENCE**

***COURSE CODE: AEA 506***

***COURSE TITLE: AGRICULTURAL PROJECT  
APPRAISAL, MANAGEMENT AND  
EVALUATION***

**COURSE  
GUIDE**

**AEA 506  
AGRICULTURAL PROJECT APPRAISAL,  
MANAGEMENT AND EVALUATION**

**Course Team** Dr. ADEDEJI, Israel Ajibade (Course  
Developer/Writer)- Landmark University Kwara  
State



**NATIONAL OPEN UNIVERSITY OF NIGERIA**

National Open University of Nigeria  
Headquarters  
14/16 Ahmadu Bello Way  
Victoria Island, Lagos

Abuja Office  
5 Dar es Salaam Street  
Off Aminu Kano Crescent  
Wuse II, Abuja

e-mail: [centralinfo@nou.edu.ng](mailto:centralinfo@nou.edu.ng)

URL: [www.nou.edu.ng](http://www.nou.edu.ng)

Published by  
National Open University of Nigeria

Printed 2014

ISBN: 978-058-033-7

All Rights Reserved

Printed by

<b>MAIN COURSE</b>		
<b>CONTENTS</b>		<b>PAGE</b>
<b>Module 1</b>	<b>Project: Characteristics and Types.....</b>	<b>1</b>
Unit 1	Plan and Why do we Plan?.....	1
Unit 2	Project and why Project?.....	4
Unit 3	Project versus Process.....	11
Unit 4	Project Characteristics.....	13
Unit 5	Project Management.....	19
Unit 6	Attribute of a Good Project Manager.....	24
Unit 7	Project Taxonomy/Classifications.....	29
Unit 8	Project Management and General Management.....	39
<b>Module 2</b>	<b>Project Identification, Formulation and Implementation.....</b>	<b>44</b>
Unit 1	Project Cycle.....	44
Unit 2	Project Objectives.....	49
Unit 3	Project Identification.....	52
Unit 4	Project Preparation.....	57
Unit 5	Project Direction.....	61
Unit 6	Project Coordination.....	65
Unit 7	Project Control.....	69
Unit 8	Project Time Management.....	72
Unit 9	General Overview of a Feasibility Study.....	77
Unit 10	Tax Incentives and Project Investment Decisions.....	86
<b>Module 3</b>	<b>Gender Importance in Agricultural Projects</b>	<b>90</b>
Unit 1	Why Gender Makes a Difference in Agricultural Projects?.....	90
Unit 2	Gender Analysis in Project Design.....	95
Unit 3	Improving Agricultural Development Projects Through Gender Analysis.....	98
Unit 4	Economic Analysis of Agricultural Projects .....	102

<b>Module 4</b>	<b>Project Appraisal and Project Evaluation.....</b>	<b>117</b>
Unit 1	Project Appraisal – Types and their Meanings	117
Unit 2	Project Evaluation – Meaning and Objectives	134
Unit 3	Types of Project Evaluation and Project Evaluation Process.....	137
Unit 4	Post Project Evaluation.....	145
Unit 5	Project Cost Control.....	152
Unit 6	Process of Evaluating Agricultural Projects.....	156
Unit 7	Method of Project Evaluation.....	160
Unit 8	Financial Analysis of Projects.....	167

## **MODULE 1 PROJECT CHARACTERISTICS AND TYPES**

Unit 1	Plan and why do we Plan?
Unit 2	Project and why Project?
Unit 3	Project versus Process
Unit 4	Project Characteristics
Unit 5	Project Management
Unit 6	Attribute of a Good Project Manager
Unit 7	Project Taxonomy/Classifications
Unit 8	Project Management and General Management

### **UNIT 1 PLAN AND WHY DO WE PLAN?**

#### **CONTENTS**

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	Meaning of a Plan
3.2	Why do we Plan?
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	Reference/Further Reading

#### **1.0 INTRODUCTION**

This unit is very important because it gives the basic definition of a plan and explains what it entails. It describes what one need to do before a programme and project can be conducted. It provides the foundation and general understanding of the course as a whole. It will also help you to understand subsequent units.

#### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- define a plan
- describe development plan
- explain how agriculture as a programme can further be broken down
- give reasons for planning and why planning becomes expedient in developing countries.

### 3.0 MAIN CONTENT

#### 3.1 Meaning of a Plan

A plan is organising oneself in order to know what to do in future with stated objectives. A plan may be at individual or governmental levels. At the governmental levels, a plan is the summary of sectoral programme e.g. development plans. Development plans show what government's programmes are. Nigeria had operated four major development plans known as first to fourth development plans. They show what government's intentions are in terms of national economic development. For instance, they show the programs of agriculture, education, defence, works, industry etc. Agriculture as a program can further be broken down into smaller programs like irrigation, livestock, forestry, crop development and land settlement. These subsets of agriculture are referred to as projects; they are not as big and as detailed as programs.

Anything one does, one needs a plan. Plan starts with a step e.g. family plan, a plan to set up a big estate, business plan etc. Because of frequent changes in certain things, we may not be able to plan for a very long time and these make shorter plans better than longer plans.

#### 3.2 Why do we Plan?

The following are some of the reasons for planning:

1. For optimal utilisation of resources
2. To meet some set of objectives
3. To know the scope of the market
4. For time specificity
5. For finance
6. To minimise the risk of failure
7. To ensure good management and to maximise profit
8. To minimise waste and increase efficiency e.g. in yield.

Planning becomes appropriate in developing countries for the following reasons:

- a. The rate of growth is not fast and in order to accelerate it, we need to plan
- b. In most developing countries, ability to plan is limited
- c. Personnel is also limited, ignorance of planners and little information
- d. Execution is the greatest problem that the developing countries faced.

## **SELF-ASSESSMENT EXERCISE**

- i. Define a plan.
- ii. Explain the necessity for planning in developing countries.

## **4.0 CONCLUSION**

In this unit, you have learnt about the meaning and the reason why we need to plan and why planning becomes more important.

## **5.0 SUMMARY**

In this unit, you have learnt what plan and planning is all about and you have also learnt that:

- planning shows what to do in future with stated objectives;
- agriculture as a program can further be broken down into smaller programs like irrigation, livestock, forestry, crop development and land settlement.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What is a plan?
2. Give five reasons, why we plan.
3. Give two reasons, why planning becomes appropriate in developing Countries.

## **7.0 REFERENCE/FURTHER READING**

Little, I. M. D. & Mirrleas, J. A. (1969). *Manual of Industrial Project Analysis in Developing Countries*, Vol 11, Organisation for Economic Co-operation and Development. Paris.



## UNIT 2 PROJECT AND WHY PROJECT?

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Meaning of Project
  - 3.2 Examples of Projects
  - 3.3 Project Attributes
  - 3.4 Project Constraints
  - 3.5 Why Project?
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### 1.0 INTRODUCTION

It is important to understand the concept of a project. A **project** is “a temporary endeavour undertaken to create a unique product, service, or result.” Operations, on the other hand, is work done in organisations to sustain the business. Projects are different from operations in that they end when their objectives have been reached or the project has been terminated.

### 2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the growing need for better project
- explain project
- provide examples of projects
- list various attributes of projects
- describe project constraints.

### 3.0 MAIN CONTENT

#### 3.1 Meaning of Project

The term “Project” has a wider meaning. A project is accomplished by performing a set of activities. For example, construction of a house is a project. The construction of a house consists of many activities like digging of foundation pits, construction of foundations, construction of walls, construction of roof, fixing of doors and windows, fixing of

sanitary fittings, wiring etc. The construction of a house is accomplished by performing the set of activities. Another aspect of “project” is the non-routine nature of activities. Each project is unique in the sense that the activities of a project are unique and non-routine.

A project consumes resources. The resources required for completing a project are men, material, money and time. The nature of resources is that they are limited and scarce. If a person wants to construct a house, the first thing that comes to his mind is the financial budget within which the work should be completed. Thus, resource constraint is a feature of all projects. If one wants to construct a house at an estimated cost of 10 million and within a period of six months, the project should be completed subject to these constraints. Thus, we can define a project as an organised programme of pre determined group of activities that are non-routine in nature and that must be completed using the available resources within the given time limit.

According to Harison, a project can be defined as a non-routine, non-repetitive, one-off undertaking, normally with discrete time, financial and technical performance goals. Project Management institute, USA defines project as ‘a system involving the co-ordination of a number of separate department entities throughout the organisation and which must be completed within prescribed schedules and time constraints.

According to the **Encyclopaedia of Management**, project is ‘an organised unit dedicated to the attainment of goal—the successful completion of a development project on time, within budget, in conformance with pre-determined programme specifications’.

According to Little & Mirrless, a project is any scheme or part of a scheme for investing resources which can be reasonably analysed and evaluated as an independent unit.

Though Project Management is in the process of getting evolved as a separate branch of study, projects are not new to the earth. One of the Seven Wonders of the World the Pyramids date back to 2650 BC, which stand as the hall mark of Egyptian civilisation. The period of construction of the Taj Mahal, another wonder of the world is reported to be during 1626-1648 A.D. It is reported that about 20,000 persons worked for nearly 22 years to complete this spectacular structure, which stands today as mankind’s proudest creation. One can imagine the extent of resources and expertise that would have been put forth for the completion of such magnificent projects.

Project management is an organised venture for managing projects. It involves scientific application of modern tools and techniques in

planning, financing, implementing, monitoring, controlling and coordinating unique activities or tasks to produce desirable outputs in accordance with the pre-determined objectives within the constraints of time and cost.

Project management consists of the following stages.

- Project planning
- Project scheduling
- Project implementation, controlling and monitoring.

Every person, every organisation and every nation is concerned with project management. An individual builds a house. It is his project. He performs marriages for his children. These are also projects that he undertakes in his life time. An organisation sets up a new factory. It is a project for the organisation. The Government of a country builds highways, dams, thermal power plants, hydro power plants, airports etc. These are all projects that the country undertakes.

Project management as a technique is assuming greater importance since it aims at optimum utilisation of resources. Every person is practising project management in his day to day life. When a person uses the shortest route to reach his office, it involves all the stages of project management, viz., planning, scheduling, implementing, controlling and monitoring. He plans for the shortest route; he schedules his starting time; he controls the speed of his vehicle to reach his destination in time. By choosing the shortest route, he tries to optimise the usage of fuel for his car and he also tries to reach the office at the shortest possible time. When a Government plans to build an express highway connecting two important cities covering a distance of several kilometers, it is a project of a greater magnitude than the project of house construction. As a project becomes larger in magnitude; its complexities with regard to planning, scheduling, implementing, controlling and monitoring increases. For effective management of larger and complex projects, systematically devised techniques are followed.

Project management has grown into a separate branch of management since the traditional management techniques are found inadequate to handle projects effectively. Managing projects require specialised forms of organisational structure, specialised techniques that aid in completion of the projects within the time frame and within the budget and managers who have the skills required to use the appropriate project management techniques, to handle the special nature of human relations problems that are specific to projects etc.

### 3.2 Examples of Projects

Projects can be large or small and involve one person or thousands of people. They can be done in one day or take years to complete. Examples of projects include the following:

- A young couple hires a firm to design and build them a new house
- A retail store manager works with employees to display a new clothing line
- A college campus upgrades its technology infrastructure to provide wireless
- Internet access
- A construction company designs and constructs a new office building for a
- client
- A school implements new government standards for tracking student
- achievement
- A group of musicians starts a company to help children develop their
- musical talents
- A pharmaceutical company launches a new drug
- A television network develops a system to allow viewers to vote for
- contestants and provide other feedback on programs
- The automobile industry develops standards to streamline procurement
- A government group develops a program to track child immunizations.

### 3.3 Project Attributes

As you can see, projects come in all shapes and sizes. The following attributes help to define a project further:

- A project has a unique purpose. Every project should have a well-defined objective. For example, many people hire firms to design and build a new house, but each house, like each person, is unique.
- A project is temporary. A project has a definite beginning and a definite end. For a home construction project, owners usually have a date in mind when they'd like to move into their new homes.

- A project is developed using progressive elaboration or in an iterative fashion. Projects are often defined broadly when they begin, and as time passes, the specific details of the project become clearer. For example, there are many decisions that must be made in planning and building a new house. It works best to draft preliminary plans for owners to approve before more detailed plans are developed.
- A project requires resources, often from various areas. Resources include people, hardware, software, or other assets. Many different types of people, skill sets, and resources are needed to build a home.
- A project should have a primary customer or sponsor. Most projects have many interested parties or stakeholders, but someone must take the primary role of sponsorship. The **project sponsor** usually provides the direction and funding for the project.
- A project involves uncertainty. Because every project is unique, it is sometimes difficult to define the project's objectives clearly, estimate exactly how long it will take to complete, or determine how much it will cost. External factors also cause uncertainty, such as a supplier going out of business or a project team member needing unplanned time off. This uncertainty is one of the main reasons project management is so challenging.

It should not be difficult to explain the goals or purpose of a project. As described in the next chapter, it is important to work on projects for the right reasons. You should not work on projects just because you think they are cool; projects should add value to individuals or organisations in a cost-effective manner.

### 3.4 Project Constraints

Every project is constrained in different ways. Some project managers focus on scope, time, and cost constraints. These limitations are sometimes referred to in project management as the **triple constraint**. To create a successful project, a project manager must consider scope, time, and cost and balance these three often-competing goals. He or she must consider the following:

- *Scope*: What work will be done as part of the project? What unique product, service, or result does the customer or sponsor expect from the project?
- *Time*: How long should it take to complete the project? What is the project's schedule?
- *Cost*: What should it cost to complete the project? What is the project's budget? What resources are needed?

Other people focus on the quadruple constraint, which adds quality as a fourth constraint.

- *Quality*: How good does the quality of the products or services need to be?
- What do we need to do to satisfy the customer?
- *Risk*: How much uncertainty are we willing to accept on the project?

### 3.5 Why Project?

Projects create productive assets. It is only through projects that resources are converted into productive assets. Since projects convert resources that lie idle into productive assets, projects act as prime movers of economic development of any country. In the process of creating productive assets, projects optimise the process of resource allocation. Since projects can be successfully completed only with a focused attention on goals by the project team members, a project creates an environment for participatory endeavours. From the point of view of an organisation, projects act as a means for consolidating the experience and expertise of the organisational members effectively, creates a learning environment, encourage team spirit and help to achieve organisational objectives.

Businesses becoming more and more competitive, the focus of organisations shift towards ensuring customer satisfaction. This can be achieved by cutting down costs, improving quality, improving product features and ensuring timely delivery. Though mass production has its advantages in terms of cost reduction, when every player in the field switches over to mass production, the cost differences between organisations get narrowed down. To win over the situation, there needs to be a shift towards custom production of products and services to meet the specific customer requirements of different sector of customers. Such a situation will necessarily require a team-based approach to issues where in project management becomes the only option.

Projects automation and office automation cuts down the lengthy organisational hierarchy and reduces the need for middle management and supervisory staff considerably. Instead, employees are assigned with more and more of specific problems like improving product features, designing new products, finding out cost-effective techniques of production etc. All such specific and time bound issues can be effectively handled only by project based organisations. As an organisation starts handling more of projects (which are necessitated by the changing business scenario as explained above), the bureaucratic

organisational set up with a large hierarchy will have to eventually give way to team-based organisational set up where project teams will be formed to execute specific projects; once the project execution is over, the team will be dissolved and a fresh team will be formed to handle a new project and so on. Thus, handling organisational activities as a combination of many projects have come to stay.

### **SELF-ASSESSMENT EXERCISE**

- i. What is a project?
- ii. What are its main attributes?
- iii. What are the project constraints?

## **4.0 CONCLUSION**

In this unit, you have learnt about the meaning of project, example of project. You have learnt about the attributes and the constraints of project.

## **5.0 SUMMARY**

- it describes project is a temporary endeavour undertaken to create a unique product, service, or result.
- Projects are developed incrementally; they require resources, have a sponsor, and involve uncertainty.
- The triple constraint of project management refers to managing the scope, time, and cost dimensions of a project.
- It also gives reasons why project are important.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What is a project?
2. What are its main attributes?
3. What is the triple constraint?
4. Why is project necessary?

## **7.0 REFERENCES/FURTHER READING**

Project Management Institute, Inc. (2008). *A Guide to the Project Management Body of Knowledge (PMBOK Guide)* (4th ed.). p.5.

Jennifer Krahn (2006). "Effective Project Leadership: A Combination of Project Manager Skills and Competencies in Context." PMI Research Conference Proceedings (July).

## **UNIT 3 PROJECT VERSUS PROCESS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project versus Process
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

It can be seen that managing a project is a more challenging task involving high degree of novelty and uncertainty than managing a process wherein the things to be done are more or less well-defined and standardised.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- classify activities that fall under the ambit of ‘process’
- classify activities that fall under the ambit of ‘project’
- discuss the interrelationship between project and process.

### **3.0 MAIN CONTENT**

#### **3.1 Project versus Process**

The activities that people carry out in an organisation can be either a project activity or a process activity. Consider an organisation that is engaged in production of some product, say mobile phones. In this organisation, employees will be performing many routine activities that will be repeated over and over again. For example, the production of mobile phones might be standardised with a series of activities, one following the other. There may be some activities that will be required to be carried out in parallel with some other activities. The entire set of activities involved in the manufacturing process will follow a routine and will get repeated over and over again. All such activities that are interrelated and that are repeated in a set pattern fall under the ambit of ‘process’. Suppose the organisation proposes to expand its production capacity and set up additional manufacturing facilities. All the activities that are to be performed to complete setting up of the additional



production capacity fall under the ambit of ‘project’. These activities are carried out only once and not repeated again. Similarly, when the organisation upgrades its product by entering into a tie up with another player in the field and modifies/upgrades its production facilities in tune with the production of upgraded product, the activities that are carried out fall under the ambit of ‘project’. Once the required modification in the production facilities are carried out, the renewed production process for the production of upgraded products will be in place and the activities that are contained in the renewed production process will be repeated over and over again. The activities that are contained in the renewed production process are ‘process’ activities. Thus, it can be seen that managing a project is more challenging task involving high degree of novelty and uncertainty than managing a process wherein the things to be done are more or less well-defined and standardised.

### **SELF-ASSESSMENT EXERCISE**

- i. What are project activities?
- ii. What are process activities?

## **4.0 CONCLUSION**

In this unit, you have learnt about project activities, the process activities and the one that is more challenging to manage out of the two.

## **5.0 SUMMARY**

In this unit, you have learnt that:

- All such activities that are interrelated and that are repeated in a set pattern fall under the ambit of ‘process’.
- All the activities that are to be performed to complete setting up of the additional production capacity fall under the ambit of ‘project’.
- The activities that are contained in the renewed production process are ‘process’ activities.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Discuss the project activities mentioned above.
2. Discuss the process activities mentioned above.

## **7.0 REFERENCE/FURTHER READING**

Nagarajan, K. (2012). Project Management. New Delhi: New Age International (P) Limited, Publishers.

## **UNIT 4 PROJECT CHARACTERISTICS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
  - 3.1 Project Characteristics
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Major project characteristics are based on objectives, lifecycle, definite time limit, uniqueness, team work, complexity, sub-contracting, risk and uncertainty, customer specific nature, change, response to the environment, forecasting, rational choice, principle of succession, optimality, control mechanism, multidisciplinary, conflicts and part of a large programme.

### **2.0 OBJECTIVE**

At the end of this unit, you should be able to:

- identify all the major characteristics of a project.

### **3.0 MAIN CONTENT**

#### **3.1 Project Characteristics**

Major project characteristics are as below:

##### **(a) Objectives**

A project has a set of objectives or a mission. Once the objectives are achieved, the project is treated as completed. For example, the objective of a project may be construction of a highway connecting two cities 'A' & 'B', covering a distance of 20 kilometers. Once the construction of the highway is completed, the project comes to an end.

**(b) Life Cycle**

A project has a life cycle. The life cycle consists of the following stages:

- Conception stage: Where project ideas are conceived.
- Design stage: Where detailed design of different project areas are worked out.
- Implementation stage: Where the project is implemented as per the design.
- Commissioning stage: Where the project is commissioned after implementation

Commissioning of a project indicates the end of its life cycle.

**(c) Definite Time Limit**

A project has a definite time limit. It cannot continue forever. Construction of a highway connecting two cities is a project which is to be completed within a given time limit. Maintenance of the highway is an ongoing process and it will continue forever. Hence, highway maintenance will not come under the purview of project.

**(d) Uniqueness**

Every project is unique and no two projects are similar. Setting up a Cement plant and construction of a highway are no doubt two different projects having unique characteristics. Constructing a highway between cities A & B and constructing another highway between cities C & D are also unique in themselves, in view of the differences existing in the organisation, infrastructure, location, technical specifications and the people behind the projects.

**(e) Team Work**

A project normally consists of diverse areas. There will be personnel specialised in their respective areas. Any project calls for the services of experts from a host of disciplines. Co-ordination among the diverse areas calls for teamwork. Hence a project can be implemented only with teamwork.

**(f) Complexity**

A project is a complex set of activities relating to diverse areas. Technology survey, choosing the appropriate technology, procuring the appropriate machinery and equipment, hiring the right kind of people, arranging for financial resources, execution of the project in time by

proper scheduling of the different activities etc. contribute to the complexity of the project.

**(g) Sub-contracting**

This characteristic stems forth in view of the complexity of functions and activities of a project. Some of the activities are entrusted to sub-contractors to reduce the complexity of the project. Sub-contracting will be advantageous if it reduces the complexity of the project so that the project manager can coordinate the remaining activities of the project more effectively. In general, the greater the complexity of the project, the larger will be the extent to which sub-contracting will be resorted to. Sub-contracting is also helpful if the sub-contractors are specialised in their field of activity since this will improve the quality of the project.

**(h) Risk and Uncertainty**

Risk and uncertainty go hand in hand with project. A risk free project cannot be thought of. Even if a project appears to be risk free, it only means that the risk element is not apparently visible on the surface and it will be hidden underneath. The risk factor will come to surface when conditions become conducive to it. Some of the risk elements can be foreseen and the project can be strengthened to encounter the risk as and when it emerges. Some other risk elements cannot be foreseen. For example, assume that putting up a cotton yarn-spinning mill is the project on hand. If during the project feasibility study it is learnt that there has been a gradual shift among consumers from the usage of cotton yarn to the usage of synthetic yarn, and if it is apprehended that at one stage synthetic yarn will rule over, the machinery can be so chosen that they can be used for both types of yarns. If this is not entirely possible, the choice of machinery can be so done as to avoid major conversion cost while switching over from the manufacture of cotton yarn to the manufacture of synthetic yarn in case the need arises. Such eventualities can be foreseen and planned for. On the other hand, the sudden entry of a strong competitor who can upset all our forecasts and projections cannot be anticipated. Sudden fall of Government in a country, which is not anticipated may turn the calculations wrong and make the forecasts/projections meaningless.

**(i) Customer Specific Nature**

A project is always customer specific. This is because the products produced or services offered by the project are necessarily to be customer oriented. It is the customer who decides upon the product to be produced or services to be offered and hence it is the responsibility of any organisation to go for projects/services that are suited to customer needs.

**(j) Change**

A project is not rigid in its life span. Changes occur throughout the life span of a project as a natural outcome of many environmental factors. The changes may vary from minor changes which may have very little impact on the project to major changes which may have a big impact or even may change the very nature of the project.

During the course of implementation, the technology would have improved further and equipments with the latest technology would have already started arriving. In such a case, if the equipment originally planned had not yet been procured, it would be wise to switch over to the equipment with the latest technology. There could also be latest technological innovations in the manufacturing process which may deserve a switch over. All such changes are necessitated in order to keep the project updated.

**(k) Response to Environments**

Projects take shape in response to environments. Nigeria Government soon after independence set up major projects in the public sector, in the sectors of iron and steel, coal, power generation, heavy equipments manufacture etc. This was in tune with the then need for the development of infrastructures and heavy industries.

**(l) Forecasting**

Forecasting the demand for any product/service that the project is going to produce is an important aspect. Only if the forecast gives positive indications, the project is taken up for further study. Thus, all projects involve forecasts and in view of the importance attached to forecasts, they must be accurate and based on sound fundamentals.

**(m) Rational Choice**

Since a project is a scheme for investing resources, the choice of a project is done after making a study of all the available avenues for investing resources and a rational choice among the available avenues is made.

**(n) Principle of Succession**

How a project is going to be implemented is not fully known beforehand. More about a project is known as intricacies come to light only with the passage of time and hence, project components get

modified and finalised successively with the passage of time as the project progresses.

**(o) Optimality**

A project is always aimed at optimum utilisation of resources for the overall development of the organisation/economy. Resources are scarce and resources have a cost. Hence, optimum utilisation of resources is a must for any project. Many project management concepts have evolved with the aim of achieving optimum utilisation of available resources.

**(p) Control Mechanism**

All projects will have pre-designed control mechanisms in order to ensure completion of projects within the time schedule, within the estimated cost and at the same time achieving the desired level of quality and reliability.

**(q) Multidisciplinary**

Projects are multidisciplinary in nature. They make use of the knowledge and expertise of different kinds of people

**(r) Conflicts**

Some projects make use of multidisciplinary teams, they are characterised by conflicts. Conflicts may arise between project schedule and budget, between clients and members of the project team, between members of the project team and those members of the organisation who are not directly connected with the project and even between members of the project team themselves.

**(s) Part of a Large Programme**

Projects are part of a larger entity called 'programme'. Many projects put together constitute a programme. For example, putting a satellite in an orbit in space is a programme which will consist of many interrelated projects.

**SELF-ASSESSMENT EXERCISE**

- i. Enumerate all project characteristics.

## **4.0 CONCLUSION**

You have learnt in this unit that project has a lot of characteristics such as objectives, life cycle, conflict, forecasting etc.

## **5.0 SUMMARY**

In this unit, you have learnt that:

- A project has a set of objectives or a mission.
- A project has a life cycle.
- A project has a definite time limit.
- Every project is unique and no two projects are similar.
- A project normally consists of diverse areas.
- A project is a complex set of activities relating to diverse areas.
- Some of the activities are entrusted to sub-contractors to reduce the complexity of the project.
- Risk and uncertainty go hand in hand with project.
- A project is always customer specific.
- A project is not rigid in its life span.
- Projects take shape in response to environments.
- Forecasting the demand for any product/service that the project is going to produce is an important aspect.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Briefly discuss the characteristics of project you know.

## **7.0 REFERENCE/FURTHER READING**

Claude Besner & Brian Hobbs (2006). "The Perceived Value and Potential Contribution of Project Management Practices to Project Success," PMI Research Conference Proceedings (July).

## **UNIT 5 PROJECT MANAGEMENT**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Management
  - 3.2 Project Stakeholders
  - 3.3 Project Management Knowledge Areas
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Many people and organisations today have a new or renewed interest in project management. In the past, project management primarily focused on providing schedule and resource data to top management in just a few industries, such as the military and construction industries. Today's project management involves much more, and people in every industry and every country manage projects. New technologies have become a significant factor in many businesses, and the use of interdisciplinary and global work teams has radically changed the work environment.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- describe project management
- discuss key elements of the project management framework, including project stakeholders
- describe the project management knowledge areas.

### **3.0 MAIN CONTENT**

#### **3.1 Project Management**

Obviously, Project Management refers to the management of projects, which are temporary, non-routine, one-time endeavour undertaken for producing a definite product or offering a unique service. It uses a set of tools, techniques, principles and methods for planning and executing the project work effectively with the objective of completing the project in time, within the budget and according to the laid-down specifications.



Project management is “the application of knowledge, skills, tools and techniques to project activities to meet the project requirements.” Project managers must not only strive to meet specific scope, time, cost, and quality requirements of projects, they must also facilitate the entire process to meet the needs and expectations of the people involved in or affected by project activities.

### **3.2 Project Stakeholders**

Stakeholders are the people involved in or affected by project activities and include the project sponsor, project team, support staff, customers, users, suppliers, and even opponents to the project. These stakeholders often have very different needs and expectations. For example, there are several stakeholders involved in a home construction project.

- The project sponsors would be the potential new homeowners. They would be the people paying for the house and could be on a very tight budget, so they would expect the contractor to provide accurate estimates of the costs involved in building the house. They would also need a realistic idea of when they could move in and what type of home they could afford given their budget constraints. The new homeowners would have to make important decisions to keep the costs of the house within their budget. Can they afford to finish the basement right away? If they can afford to finish the basement, will it affect the projected move-in date? In this example, the project sponsors are also the customers and users for the product, which is the house.
- The project manager in this example would normally be the general contractor responsible for building the house. He or she needs to work with all the project stakeholders to meet their needs and expectations.
- The project team for building the house would include several construction workers, electricians, carpenters, and so on. These stakeholders would need to know exactly what work they must do and when they need to do it. They would need to know if the required materials and equipment will be at the construction site or if they are expected to provide the materials and equipment. Their work would need to be coordinated since there are many interrelated factors involved. For example, the carpenter cannot put in kitchen cabinets until the walls are completed.
- Support staff might include the employers of the homeowners, the general contractor’s administrative assistant, and other people who support other stakeholders. The employers of the homeowners might expect their employees to complete their work but allow some flexibility so they can visit the building site or take phone calls related to building the house. The contractor’s

administrative assistant would support the project by coordinating meetings between the buyers, the contractor, suppliers, and other stakeholders.

- Building a house requires many suppliers. The suppliers would provide the wood, windows, flooring materials, appliances, and other items. Suppliers would expect exact details on what items they need to provide, where and when to deliver those items, and similar information.
- Additional stakeholders would include the city council and mayor, who would be interested in increasing revenues. They might suggest certain guidelines for the minimum value of the homes for providing adequate property taxes. The city may also have regulations to ensure the safety of the public in the area of the construction site. The local housing inspector would also be a stakeholder, concerned with ensuring that everything meets specific codes and regulations.
- There may or may not be opponents to a project. In this example, there might be a neighbour who opposes the project because the workers are making so much noise that she cannot concentrate on her work at home, or the noise might awaken her sleeping children. She might interrupt the workers to voice her complaints or even file a formal complaint. Alternatively, the neighbourhood might have association rules concerning new home design and construction. If the homeowners did not follow these rules, they might have to halt construction due to legal issues.

As you can see from this example, there are many different stakeholders on projects, and they all have different interests. Stakeholders' needs and expectations are important in the beginning and throughout the life of a project. Successful project managers develop good relationships with project stakeholders to understand and meet their needs and expectations.

### **3.3 Project Management Knowledge Areas**

Project management knowledge areas describe the key competencies that project managers must develop. The four core knowledge areas of project management include project scope, time, cost, and quality management. These are core knowledge areas because they lead to specific project objectives. Brief descriptions of each core knowledge area are as follows:

- Project scope management involves working with all appropriate stakeholders to define, gain written agreement for, and manage all the work required to complete the project successfully.

- Project time management includes estimating how long it will take to complete the work, developing an acceptable project schedule given cost effective use of available resources and ensuring timely completion of the project.
- Project cost management consists of preparing and managing the budget for the project.
- Project quality management ensures that the project will satisfy the stated or implied needs for which it was undertaken.

The four facilitating knowledge areas of project management are human resources, communications, risk, and procurement management. These are called facilitating areas because they are the processes through which the project objectives are achieved. Brief descriptions of each facilitating knowledge area are as follows:

- Project human resource management is concerned with making effective use of the people involved with the project.
- Project communications management involves generating, collecting, disseminating, and storing project information.
- Project risk management includes identifying, analysing, and responding to risks related to the project.
- Project procurement management involves acquiring or procuring goods and services for a project from outside the performing organisation.

Project integration management, the ninth knowledge area, is an overarching function that coordinates the work of all other knowledge areas. It affects and is affected by all of the other knowledge areas. Project managers must have knowledge and skills in all the nine areas.

### **SELF-ASSESSMENT EXERCISE**

- i. Define project management.
- ii. How are the project stakeholders?
- iii. What are the four core knowledge areas of project management?

## **4.0 CONCLUSION**

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Stakeholders are the people involved in or affected by project activities.

## **5.0 SUMMARY**

In this unit, you have learnt that:

- Project Management refers to the management of projects, which are temporary, non-routine, one-time endeavour undertaken for producing a definite product or offering a unique service.
- Stakeholders' needs and expectations are important in the beginning and throughout the life of a project. Successful project managers develop good relationships with project stakeholders to understand and meet their needs and expectations.

## **6.0 TUTOR- MARKED ASSIGNMENT**

1. Discuss project management.
2. What are project stakeholders?
3. List four core knowledge areas of project management.

## **7.0 REFERENCE /FURTHER READING**

Claude Besner & Brian Hobbs (2006). "The Perceived Value and Potential Contribution of Project Management Practices to Project Success," PMI Research Conference Proceedings (July).

## **UNIT 6     ATTRIBUTE OF A GOOD PROJECT MANAGER**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Attributes of a Good Project Manager
  - 3.2 Project Management Tools and Techniques
  - 3.3 Project Success
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0     INTRODUCTION**

As you can imagine, good project managers should have a variety of skills. Good program and portfolio managers often need additional skills and experience in managing projects and understanding organisational strategies. This section describes some of the skills that help you manage projects, and you will learn many more throughout this text. If you are serious about considering a career in project management, you should consider becoming a certified Project Management Professional. You should also be familiar with some of the project management software products available in the market today.

### **2.0     OBJECTIVES**

At the end of this unit, you should be able to:

- describes some of the skills that help you manage projects
- describes all project management tools and techniques
- describes project success.

### **3.0     MAIN CONTENT**

#### **3.1     Attributes of a Good Project Manager**

An effective project manager is one who should have the following skills/capacities:

- Planning and organisational skills
- Personnel management skills

- Communication skills
- Change orientation
- Ability to solve problems in their totality
- High energy levels
- Ambition for achievement
- Ability to take suggestion
- Understanding the views of project team members and having a sympathetic attitude towards them
- Ability to develop alternative actions quickly
- Knowledge of project management methods and tools
- Ability to make self-evaluation
- Effective time management
- Capacity to relate current events to the project/project management
- Ability to handle project management software tools/packages
- Flair for sense of humour
- Solving issues/problems immediately without postponing them
- Initiative and risk taking ability
- Familiarity with the organisation
- Tolerance for difference of opinion, delay, ambiguity
- Knowledge of technology
- Conflict resolving capacity
- Team building skills
- Resource allocation skills
- Entrepreneurial skills.

### 3.2 Project Management Tools and Techniques

<b>Knowledge Area/Catego</b>	<b>Tools and Techniques</b>
Integration management	Project selection methods, project management methodologies, stakeholder analyses, project charters, project management plans, <b>project management software, change requests</b> , change control boards, project review meetings, <b>lessons-learned reports</b>
Scope management	<b>Scope statements, work breakdown structures</b> , mind maps, statements of work, <b>requirements analyses</b> , scope management plans, scope verification techniques, and scope change controls
Time management	<b>Gantt charts</b> , project network diagrams, critical-path

	analyses, crashing, fast tracking, schedule performance measurements
Cost management	Net present value, return on investment, payback analyses, earned value management, project portfolio management, cost estimates, cost management plans, cost baselines
Quality management	Quality metrics, checklists, quality control charts, Pareto diagrams, fishbone diagrams, maturity models, statistical methods
Human resource management	Motivation techniques, empathic listening, responsibility assignment matrices, project organisational charts, resource histograms, team building exercises
Communications management	Communications management plans, <b>kickoff meetings</b> , conflict management, communications media selection, <b>status and progress reports</b> , virtual communications, templates, project Web sites
Risk management	Risk management plans, risk registers, probability/impact matrices, risk rankings
Procurement management	Make-or-buy analyses, contracts, requests for proposals or quotes, source selections, supplier evaluation matrices

### Common project management tools and techniques by knowledge area

Source: Schwalbe, Information Technology Project Management, (6th ed.). 2010

### 3.3 Project Success

How do you define the success or failure of a project? There are several ways to define project success. The following outlines a few common criteria for measuring project success as applied to the example project of building a new 2,000 square foot home within six months for \$300,000:

- The project met scope, time, and cost goals. If the home was 2,000 square feet and met other scope requirements, was completed in six months, and cost \$300,000, we could call it a successful project based on these criteria.
- The project satisfied the customer/sponsor. Even if the project met initial scope, time, and cost goals, the couple paying for the house might not be satisfied. Perhaps the project manager never returned their calls and was rude to them or made important decisions without their approval. Perhaps the quality of some of the construction or materials was not acceptable. If the customers were not happy about important aspects of the project, it would be deemed a failure based on this criterion. Many organisations implement a customer satisfaction rating system for projects in order to measure project success.
- The results of the project met its main objective, such as making or saving a certain amount of money, providing a good return on investment, or simply making the sponsors happy. If the couple liked their new home and neighbourhood after they lived there for a while, even if it cost more or took longer to build or the project manager was rude to them, it would be a successful project based on this criterion. As another example, suppose the owners really wanted to keep the house for just a few years and then sell it for a good return. If that happened, the couple would deem the project a success, regardless of other factors involved. Note that for many projects done to meet ROI objectives, financial success cannot be determined until sometime after the project is completed.

Project managers play a vital role in helping projects succeed. Project managers work with the project sponsors, the project team, and the other people involved in a project to meet project goals. They also work with the sponsor to define success for that particular project. Good project managers do not assume that their definition of success is the same as the sponsors' definition. They take the time to understand their sponsors' expectations. For example, if you are building a home for someone, find out what is most important:

- meeting scope, time, and cost goals of the project to build the home
- satisfying other needs, such as communicating in a certain way
- being sure the project delivers a certain result, such as providing the home of the owners' dreams or a good return on investment.

The success criteria should help you to develop key performance indicators needed to track project progress.



## SELF-ASSESSMENT EXERCISE

- i. List five Skills that Effective Project Manager should have.
- ii. What are the Tools and Techniques for Cost Management?

## 4.0 CONCLUSION

In this unit, you learnt that:

- An effective project manager is one who should have some skills/capacities.
- Project management tools and techniques assist project managers and their teams in carrying out work in all nine knowledge areas. For example, some popular time-management tools and techniques include Gantt charts, project network diagrams, and critical path analysis.
- Project managers play a vital role in helping projects succeed. Project managers work with the project sponsors, the project team, and the other people involved in a project to meet project goals. They also work with the sponsor to define success for that particular project. Good project managers do not assume that their definition of success is the same as the sponsors' definition. They take the time to understand their sponsors' expectations.

## 5.0 SUMMARY

In this unit, you have learnt:

- The attributes of a good project manager.
- Project management tools and techniques.

## 6.0 TUTOR-MARKED ASSIGNMENT

1. List five attributes of a good project manager.
2. List three Tools and Techniques for scope management?

## 7.0 REFERENCE/ FURTHER READING

Project Management Institute, Inc. (2008). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* (4th ed.). p.9.

## **UNIT 7 PROJECT TAXONOMY/CLASSIFICATIONS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Taxonomy/Classifications
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

The term ‘taxonomy’ refers to the science of classifying things by naming and identifying them. Projects can be classified under different heads, some of which are explained below.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- classify project under different headings
- explain project under different categories.

### **3.0 MAIN CONTENT**

#### **3.1 Project Taxonomy/Classifications**

The term ‘taxonomy’ refers to the science of classifying things by naming and identifying them. Projects can be classified under different heads, some of which are explained below.

##### **1. Based on the Type of Activity**

Under this category, projects can be classified as industrial projects and non-industrial projects. Industrial projects are set up for the production of some goods. Projects like health care projects, educational projects, irrigation projects, soil conservation projects, pollution control projects; highway projects, water supply projects etc. come under the category of non-industrial projects.

Investments in non-industrial projects are made by the Government and the benefits from such projects are enjoyed by the entire society of

people. It is difficult to quantify the benefits enjoyed by the society out of non-industrial projects.

## **2. Based on the Location of the Project**

Under the category, projects can be classified as national projects and international projects. National projects are those set up within the national boundaries of a country, while international projects are set up in other countries. International projects may be either project set up by the Government or by the private sector. The following are the major forms of international projects.

- Setting up of fully owned subsidiaries abroad
- Setting up of joint ventures abroad
- Setting up of projects abroad by way of mergers & acquisitions.

Handling of international projects needs more expertise and greater efforts in view of higher risk proportion and procedural formalities involved.

## **3. Based on Project Completion Time**

Based on the constraints on project completion time, projects can be classified into two types, normal projects and crash projects. Normal projects are those for which there is no constraint on time. Crash projects are those which are to be completed within a stipulated time, even at the cost of ending up with a higher project cost. For example, construction of canal lining with the condition that the work should be completed before the monsoon starts is a crash project.

## **4. Based on Ownership**

Based on ownership, projects can be classified into private sector projects, public sector projects and joint sector projects. A private sector project is one in which the ownership is completely in the hands of the project promoters and investors. Profit maximisation is the prime objective of private sector projects since the investors invest their money in such projects only with the sole idea of earning better returns.

Public sector projects are those that are owned by the state. The evolution and growth of public sector enterprises is the natural consequences of the efforts of Governments for undertaking development in a country. The growths of public sector enterprises vary from country to country. In a country that follows only the system of private enterprises (USA, for example) there is hardly any public sector enterprise except for essential sectors like defence sectors, public utility

services etc. In socialist countries (China, for example) public enterprises dominate the economy and they have become public property. In countries that follow a system of mixed economy (India, for example) both private and public sector enterprises exist.

An enterprise is considered as public enterprise when the state or any other national, regional or local authority holds at least 51% of its capital and the enterprise is under the control of the state. In India, public sector undertakings can be owned either by the Central Government or by the State Governments. Government undertakes investment in public sector enterprises due to many reasons.

- Both developing and under-developed countries need a planned economy for their sustained growth. The Government announces industrial and trade policies in tune with its plans to direct the growth of the economy in the desired direction. It becomes imperative for the Government to invest in growth sector.
- Private sector in developing and under-developed countries are not willing to take up investments in many planned sectors (sectors that the Government considers as thrust areas for the development of the economy) either due to huge investments required or due to unattractive returns from the investments in such projects. Hence, it becomes the responsibility of the Government to invest and nurture industries in such planned sectors.
- Investment in strategic sectors (defence, space research, atomic research etc.) cannot be given to the private sector for obvious reasons. Also, public utility services sectors can also be not left fully to the private sector since the private sector by nature is oriented only towards profit maximisation and not in welfare maximisation.
- The natural resources of a country are the properties of the Government. The natural resources can be exploited only by the public sector enterprises since the investment required is huge and the ownership of the resources rests with the Government (example: mining, construction of dams for irrigation purposes, hydro power plants).

Joint sector projects are those in which the ownership is shared by the Government and by private entrepreneurs. The main consideration for the Government's investment in joint sector projects is to make use of the managerial talents, entrepreneurial capabilities and marketing skills of the private entrepreneurs. Joint sector offers hope to the private entrepreneurs since the Government shares the investment required for the project.

## 5. Based on Size

Projects can be classified based on the size into three categories, small projects, medium sized projects and large projects. The size is normally expressed in terms of the amount of investment required. The investment limit for the different categories of projects are announced by the Government and this undergoes periodical changes keeping in view the inflation, the decision to offer certain incentives to projects categorised as 'small' scale projects etc. As per the directives of the Government of Nigeria, projects with investment on plant and machinery up to one million are categorised as 'small scale projects' while those with investment in plant and machinery above 100 million are categorised as 'large scale projects'. Projects with investment limit between these two categories are 'medium scale projects'.

## 6. Based on Need

Projects can be classified under the following groups, based on the need for project.

- a. **New project** - A new project idea is conceived and implemented to meet customer needs. The whole concept of business can be viewed as:
  - (i) Finding a gap in terms of customer needs for goods and services.
  - (ii) Filling the gap.

A new project can be one that identifies a new product for which there is demand from the customers or it can be a project for the production of a product that is already in the market but the demand for which is in excess of the supply, leaving a gap to be filled in. Identification and formulation of a new project requires special knowledge and skill.

- b. **Balancing project** - Projects in general have many production units that are linked with one another. The flow of material through different production units shall be such that the output of one production unit exactly matches the input requirement for the subsequent production unit. If this is so, the efficiency of the production line will be the maximum and there will not be any under utilisation of production capacity. However, if the production capacity of any particular production unit is less, then this particular production unit sets the maximum limit of production possible for all other units.

Let us illustrate the above concept by an example.

Consider the production of steel furniture. For the simplicity of explaining the concept, let us assume a project for the manufacture of steel cupboards. Let the following be the types of operations involved in the production. (Again, for the sake of simplicity the operations are restricted to only four).

- (a) Cutting of steel sheets to the required sizes.
- (b) Folding of steel sheets as per the design requirements.
- (c) Welding the parts.
- (d) Painting.

Operation (a) above will need cutting machines (technically called shearing machines) operation (b) will need folding machines; operation (c) will need welding machines and operation (d) will need air compressors, painting booth, paint spray guns and other related equipments.

If we plan to install a plant with a production capacity of say, 50 Nos. of steel cupboards per shift of 8 hours, it would be ideal if all the above four production departments have capacity to handle 50 Nos. of cupboards per shift. In such a situation, the production line is said to be perfectly balanced.

However, this cannot be the case in view of many limitations and practical problems. Most of the machinery is manufactured to standard specifications and sizes. In the example quoted above, the folding machine available in the market may be of certain standard capacity. For example, purchasing of one machine may not be sufficient for the required production capacity, while purchasing two machines may be in excess of the planned capacity. A compromise is required to be made. If we plan a production capacity of 50 steel cupboards per shift and if the folding machines are available in the capacities of 80, 40 and 30 cupboards per shift (i.e., the folding capacity is adequate to produce 80, 40 and 30 cupboards per shift respectively), we should not necessarily go for the combinations of machines having 40 and 30 cupboards/shift capacity, in which case there will be an excess capacity of 20 cupboards (70-50) in the folding section.

As far as possible, the capacities of the other production units can be increased to match or at least to come nearer to the capacity of the folding section. But, other considerations like the total investment available for the project, the market demand for the product, the standard sizes in which other manufacturing facilities are available etc.,

impose limitations. Hence it is not uncommon to come across projects that have unutilised capacities in one or more production units.

Cost consideration of investments in manufacturing facilities and demand pattern of products are the two main reasons as to why projects that are newly set up have unutilised capacity in certain production units. A project may foresee a particular production capacity at which it can confidently market its entire production. Having decided upon a particular production capacity, the project is to be so designed that all the production facilities match the planned production capacity. In case a particular production facility (folding section, as in the example given above) can be installed only at a higher level of capacity than what is required, there is no other way except to accept the same. Increasing the production capacity of all other production units in tune with the increased capacity of such unmatched production units may not be practicable for implementation since this will mean both increases in production capacity and increase in investment limits. The management may be averse to both these options because of its own reasons based on other considerations. Hence, the project implemented with such constraints will result in under utilisation of production capacity of certain production units.

- c. Expansion project** - An expansion project is one that is aimed at increasing the plant capacity for the current product range. Assume that a company is engaged in the production of wrist watches and that the plant capacity is 50,000 Nos. of wrist watches per annum. If the company, anticipating further growth in the market demand for wrist watches, plans and implements a project for enhancing the plant capacity from the present level of 50,000 Nos. of wrist watches to 75,000 Nos. per annum, the company is said to embark upon an expansion project.

Expansion of plant capacity can be done in two ways, by:

- (a) establishing additional plant capacity.
- (b) acquisition of another organisation in same line of activity.

Expansion projects are warranted only where there is definite upward trend in the demand for the product and only after the management of the organisation is doubly confident about the long term prospects of the expansion scheme. If there is any short term spurt in the demand for the product which is not expected to last long, is it advisable to plan for expansion? Prudence will indicate that such short term increase in order to be executed by diverting a part of the work to outsiders on jobs contract basis, rather than hurrying through an expansion project.

**d. Modernisation project** - Technological innovation is a continuous process. When a new technology is evolved and becomes commercially operative, the existing technology becomes obsolete. Any project is set up with the latest available technology. However, with the passages of time, in view of continuing technological up gradation, the projects, become obsolete in technology.

There are two aspects of technological obsolescence that deserve consideration, viz:

- (i) The production process would have become obsolete in view of the latest technological innovations. For example, for painting of metal components, 'brush painting' was used long ago which was replaced by 'spray painting'. Spray painting method gave improved finishing and also resulted in economical use of paint. 'Powder coating', a further advanced process of painting gave additional advantages and this replaced spray painting process in many important areas of application. 'Vapocure', which is another improvement over powder coating technology, is now being used in many applications.
- (ii) More advanced features would have been incorporated in the plant and machinery, with the result, the existing old plant and machinery might have become obsolete in technology. For example, CNC Lathes ("Computerised Numeric Control" Lathes) incorporate advanced features which facilitate improved machining operations. With the introduction of CNC lathes, the old-modelled lathes, which did not have any computerised automation features, become obsolete in technology.

Thus, whenever either the plant and machinery becomes obsolete or whenever the production process becomes obsolete, there is a need for modernisation.

### **Importance of Modernisation**

Ignoring the need for modernisation will result in reduction of profit margin, which in the course of time may even lead to closure of the organisation. Modernisation when ignored will result in either of the following two situations.

- (a) The organisation that has ignored modernisation will be producing products which are inferior in quality as compared to the products produced by its competitors.
- (b) The cost of production would be higher than that of competitors, though there is no difference in quality.



It is also likely that both the above two factors may coexist. Hence for the survival of any organisation, modernisation of project keeping in tune with the latest developments is a must. Ignoring the need for modernisation will only mean that the organisation is moving towards its end.

- e. **Replacement project** - Replacement project involves replacing some of the old machinery with new machinery of the same capacity. Due to ageing and wear and tear of machinery, the maintenance-cost starts mounting up and a stage will come when it will be no more advantageous to keep the worn-out machinery in the production line in view of abnormally high maintenance costs, poor quality of output, reduction in capacity of output, break-down etc.

Hence, a replacement project is implemented to reduce the maintenance cost of old machinery and to keep the production going without any obstruction so that delivery schedules are met in time.

Thus, replacement projects are undertaken with a view to maintaining the same level of operational efficiency or even to better the level of operational efficiency wherever possible.

- f. **Diversification project** - When a manufacturer wants to offer more than one product, it is described as product diversification and the project meant for this purpose is the diversification project. Diversification is generally of two types viz.
  - (a) Related diversification.
  - (b) Unrelated diversification.

Related diversification means making closely related diversifications to the product line. A manufacturer in the line of manufacturing wrist watches may go for adding manufacturing facilities meant for the manufacture of time pieces and alarm clocks, which is an example for related diversification. When a company's proposed product range is different from the existing ones, we call that the company embarks upon unrelated diversification. Godrej, has a wide range of products like office furniture, cosmetics, edible oil, locks, agro foods, office automation products etc., which is an example for unrelated diversification.

Diversification projects are necessitated by the urge to explore market potentials in unattempted areas with a view to improving upon the profitability of the organisation. It may be noted that diversification project is almost like a new project for an organisation but for the fringe benefits that the organisation may derive from the infrastructure already available.

- g. Backward integration project** - Any manufacturing organisation procures raw materials. The raw materials undergo a series of operations resulting into transformation to the form of finished product. The raw material that an organisation purchases may be in different forms ranging from crude raw material to value added raw material. For example, iron ore is the raw material for a smelting unit. The smelting unit extracts iron out of the iron ore. Iron may become the raw material for a foundry. The foundry unit produces components of different nature using iron. Iron components molded in a foundry unit may become the raw material for a machinery manufacturing unit. The machinery manufacturing unit purchases components from foundry units, and finishes the components to suit the requirements, add additional design features and use them in assembling machinery. Thus the output of one industry becomes the raw material for another industry.

If an industry that uses a value added raw material goes for the implementation of a project for the production of this value-added raw material within its production line, the industry is said to be on backward integration.

- h. Forward integration project** - While backward integration is done by adding manufacturing/ processing facilities at the beginning stages of a product line, forward integration is done by adding additional manufacturing/processing facilities at the end of the production line. By including additional manufacturing/processing facilities at the end of production line, the products that are currently produced undergo further processing resulting in further value addition.

#### **SELF-ASSESSMENT EXERCISE**

- i. Classify project based on type of activity.
- ii. Classify project based on location of the Project.

#### **4.0 CONCLUSION**

You have learnt in this unit that project can be classify into so many categories based on certain factors.

## 5.0 SUMMARY

In this unit, you have learnt the following:

- Projects can be classified as industrial projects and non-industrial projects.
- Projects can be classified as national projects and international projects.
- Projects can be classified into two types, normal projects and crash projects.
- Projects can be classified into private sector projects, public sector projects and joint sector projects.
- Projects can be classified based on the size into three categories, small projects, medium sized projects and large projects.
- Projects can be classified based on the need for project.

## 6.0 TUTOR-MARKED ASSIGNMENT

- i. Briefly describe project based on need.
- ii. Briefly describe project based on size.

## 7.0 REFERENCE/FURTHER READING

Little, I. M. D. & Mirrleas, J. A. (1969). *Manual of Industrial Project Analysis in Developing Countries*, Vol 11, Organisation for Economic Co-operation and Development. Paris.

## **UNIT 8 PROJECT MANAGEMENT AND GENERAL MANAGEMENT**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Management vs General Management
  - 3.2 Program and Project Portfolio Management
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Many people and organisations today, have a new—or renewed—interest in project management. Until the 1980s, project management primarily focused on providing schedule and resource data to top management in the military, computer, and construction industries. Today's project management involves much more, and people in every industry and every country manage projects. New technologies have become a significant factor in many businesses. Computer hardware, software, networks, and the use of interdisciplinary and global work teams have radically changed the work environment.

Project management in the modern sense began in the early 1950s, although it has its roots further back in the latter years of the 19th century. The driver for project management was businesses realising the benefits of organising work around projects and the critical need to communicate and co-ordinate work across departments and professions.

General management involves being responsible, on a day-to-day basis, for the direction of a business, or part of a business, against the backdrop of an increasingly global market place. It's varied, hands on and challenging with responsibility not only for the output of a team of staff but also to more senior managers for achieving project based work and management targets. Consequently, roles are invariably very busy but also stimulating and rewarding.

Management activities typically include:

- Defining objectives, allocating resources and monitoring progress against targets

- Planning and implementing projects, delegating work appropriately and taking responsibility for the outcome
- Recruiting, supervising, motivating and developing staff, to ensure effective team working
- Communicating effectively with colleagues, customers and suppliers
- Controlling finances and managing budgets
- Problem solving and dealing with complaints and managing change during the introduction of new work systems.

## **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- define the project management
- define the general management
- discuss the relationship between project, program, and portfolio management and their contribution to enterprise success.

## **3.0 MAIN CONTENT**

### **3.1 Project Management vs General Management**

The question may arise as to the need to look at project management as a separate field of study. The reason is simple and obvious. Project identified are entrusted to a team of personnel and they are expected to see to it that the project completed within the time frame and making use of the allotted resources. Thus, the project personnel are assigned with the responsibility of completing the project within the limits of time and resource constraints and they are given the required authority to carry out their functions. Thus, the reasons for forming a project team is to assign authority and to fix responsibility for achievements on a small group of personnel ( project team members) where the jobs to be performed by them in completing the project activities do not clearly fall within the definition of routine organisational work.

The major difference between a general manager and a project manager is that a general manager manages mostly routine organisational activities while a project manager manages non-routine activities.

In other words, a general manager manages 'non-project'. A general manager comes across non-routine activities only very rarely. Hence, a general manager can manage by exception. Almost every routine activity is handled by subordinates since there are well laid out, clearly defined courses of actions to be performed in handling routine activities. The general manager has to tackle those non-routine activities that occur

only rarely. He can delegate management of routine activities to his subordinate and he has to deal only with the exceptions.

While a general manager comes across exceptional non-routine activities rarely, every activity that a project manager comes across is an exception. Hence a project manager needs to be highly flexible and should have high degree of adaptability.

### 3.2 Program and Project Portfolio Management

About one-quarter of the world's gross domestic product is spent on projects. Projects make up a significant portion of work in most business organisations or enterprises, and successfully managing those projects is crucial to enterprise success. Two important concepts that help projects meet enterprise goals are the use of programs and project portfolio management.

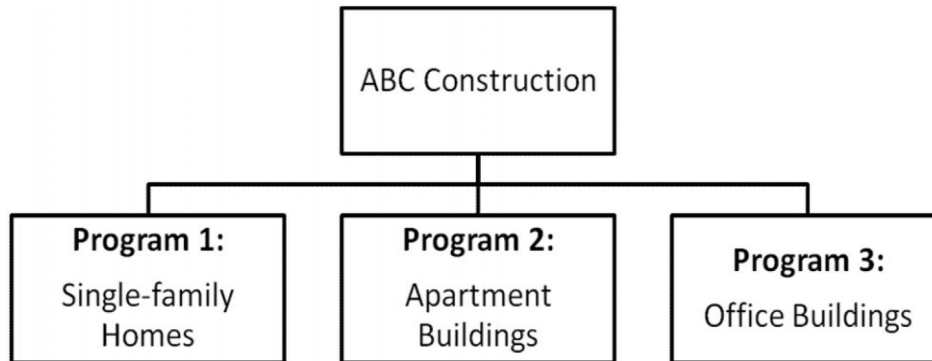
#### Programs

A **program** is “a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually.” As you can imagine, it is often more economical to group projects together to help streamline management, staffing, purchasing, and other work.

The following are examples of programs:

- A construction firm has programs for building single-family homes, apartment buildings, and office buildings, as shown in Figure below. Each home, apartment building, and office building is a separate project for a specific sponsor, but each type of building is part of a program. There would be several benefits to managing these projects under one program, For example, for the single-family homes, the program manager could try to get planning approvals for all the homes at once, advertise them together, and purchase common materials in bulk to earn discounts.
- A clothing firm has a program to analyse customer-buying patterns. Projects under this program might include one to send out and analyse electronic surveys, one to conduct several focus groups in different geographic locations with different types of buyers, and a project to develop an information system to help collect and analyse current customers' buying patterns.
- A government agency has a program for children's services, which includes a project to provide pre-natal care for expectant mothers, a project to immunise newborns and young children,

and a project for developmental testing for pre-school children., to name a few.



**Fig.8.1**

A **program manager** provides leadership and direction for the project managers heading the projects within the program. Program managers also coordinate the effort of project teams, functional groups, suppliers, and operations staff supporting the projects to ensure that project products and processes are implemented to maximise benefits. Program managers are responsible for more than the delivery of project results; they are change agents responsible for the success of products and processes produced by those projects.

Program managers often have review meetings with all their project managers to share important information and coordinate important aspects of each project. Many program managers worked as project managers earlier in their careers, and they enjoy sharing their wisdom and expertise with their project managers. Effective program managers recognise that managing a program is much more complex than managing a single project. They recognise that technical and project management skills are not enough. In addition to skills required for project managers, program managers must also possess strong business knowledge, leadership capability, and communication skills.

### **SELF-ASSESSMENT EXERCISE**

- i. Who is project manager?
- ii. Who is a general manager?

### **4.0 CONCLUSION**

You learnt about the relationship between the project management and general management. You also learnt the program and project portfolio management and the roles of program managers.

## 5.0 SUMMARY

The major difference between a general manager and a project manager is that a general manager manages mostly routine organisational activities while a project manager manages non-routine activities.

A **program** is “a group of related projects managed in a coordinated way to obtain benefits and control that is not available from managing them individually.”

## 6.0 TUTOR- MARKED ASSIGNMENT

1. What is the difference between project manager and general manager?
2. What are the roles of program managers?

## 7.0 REFERENCE/FURTHER READING

Teriba, O. & Kayode, M.O. (1977). Industrial Location and Development Policy In Nigeria, In Mabogunje, Akin L. & Faniran, A. (1977). *Regional Planning and National Development* Ibadan: Ibadan University Press.



## **MODULE 2      PROJECT IDENTIFICATION, FORMULATION AND IMPLEMENTATION**

Unit 1	Project Cycle
Unit 2	Project Objectives
Unit 3	Project Identification
Unit 4	Project Preparation
Unit 5	Project Direction
Unit 6	Project Coordination
Unit 7	Project Control
Unit 8	Project Time Management
Unit 9	General Overview of a Feasibility Study
Unit 10	Tax Incentives and Project Investment Decisions

### **UNIT 1      PROJECT CYCLE**

#### **CONTENTS**

1.0	Introduction
2.0	Objectives
3.0	Main Content
	3.1    Meaning of Project Cycle
	3.2    The Phases of the Project Cycle
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	Reference/Further Reading

#### **1.0    INTRODUCTION**

The way in which projects are planned and carried out follows a sequence beginning with an agreed strategy, which leads to an idea for a specific action, oriented to-wards achieving a set of objectives, which then is formulated, implemented, and evaluated with a view to improving the strategy and further action.

Project Cycle Management is an approach to managing projects. It determines particular phases of the Project, and outlines specific actions and approaches to be taken within these phases. The PCM approach provides for planning and review processes throughout a cycle, and allows for multiple project cycles to be supported.

The project cycle also provides a structure to ensure that stakeholders are consulted and relevant information is available throughout the life of the project, so that informed decisions can be made at key stages in the life of a project.

## 2.0 OBJECTIVES

At the end of this unit, you should be able to:

- define project cycle
- explain the phases of the project cycle
- describe all the phases of the project cycle.

## 3.0 MAIN CONTENT

### 3.1 Meaning of Project Cycle

The way in which projects are planned and carried out follows a sequence that has become known as the project cycle. The cycle starts with the identification of an idea and develops that idea into a working plan that can be implemented and evaluated. Ideas are identified in the context of an agreed strategy. It provides a structure to ensure that stakeholders are consulted and relevant information is available, so that informed decisions can be made at key stages in the life of a project.

The generic project cycle has six phases: Programming; Identification; Formulation; Financing; Implementation; and Evaluation. The details of what occurs during each phase differ between institutions, reflecting differences in procedures. However, within all institutions, the cycle shares three common themes:

1. The cycle defines the key decisions, information requirements and responsibilities at each phase.
2. The phases in the cycle are progressive – each phase needs to be completed for the next to be tackled with success.
3. The cycle draws on evaluation to build experience from existing projects into the design of future programmes and projects.

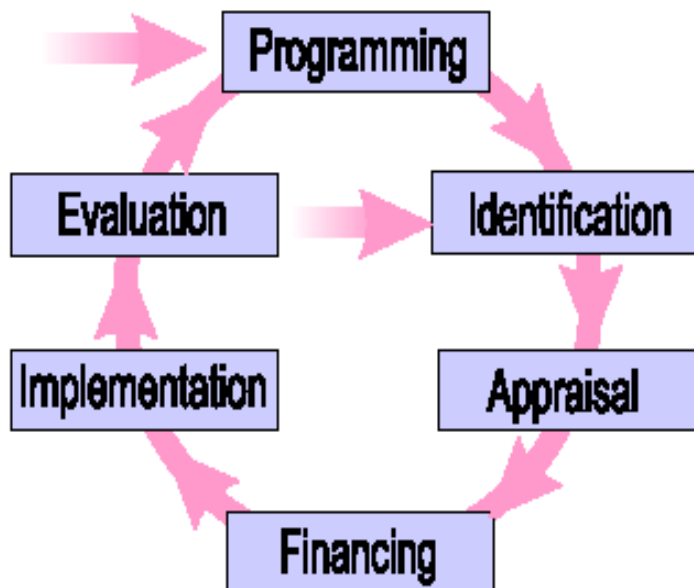
### 3.2 The Phases of the Project Cycle

The different phases of the project cycle can be described as follows:

1. During the **Programming** phase, the situation at national and sectoral level is analysed to identify problems, constraints and opportunities which development cooperation could address. This involves a review of socio-economic indicators, and of national

and donor priorities. The purpose is to identify and agree the main objectives and sectoral priorities for development cooperation, and thus to provide a relevant and feasible programming framework within which projects can be identified and prepared. For each of these priorities strategies will be formulated that take account of the lessons of past experience.

2. During the **Identification** phase, ideas for projects and other development actions are identified and screened for further study. This involves consultation with the intended beneficiaries of each action, an analysis of the problems they face, and the identification of options to address these problems. A decision can then be made on the relevance of each project idea (both to the intended beneficiaries and to the programming framework), and on which ideas should be further studied during the Formulation phase.
3. During the **Formulation** phase, relevant project ideas are developed into operational project plans. Beneficiaries and other stakeholders participate in the detailed specification of the project idea that is then assessed for its feasibility (whether it is likely to succeed) and sustainability (whether it is likely to generate long term benefits for the beneficiaries). On the basis of this assessment, a decision is made on whether to draw up a formal project proposal and seek funding for the project.



**Fig.1.1: Phases of a Project Life Cycle**

4. During the **Financing** phase, project proposals are examined by the funding agency, and a decision is taken on whether to fund the project. The funding agency and partner country agree on the modalities of implementation and formalise these in a legal

document which sets out the arrangements by which the project will be funded and implemented.

5. During the **Implementation** phase, the project is mobilised and executed. This may require the tendering and award of contracts for technical assistance or works and supplies. During implementation, and in consultation with beneficiaries and stakeholders, project management assesses actual progress against planned progress to determine whether the project is on track towards achieving its objectives. If necessary, the project is re-oriented to bring it back on track, or to modify some of its objectives in the light of any significant changes that may have occurred since its formulation.
6. During the **Evaluation** phase, the funding agency and partner country assess the project to identify what has been achieved, and to identify lessons that have been learned. Evaluation findings are used to improve the design of future projects or programmes. Although, in the generic cycle, the evaluation phase comes after implementation, it is common practice also to conduct a mid-term evaluation during implementation, to identify lessons that can be applied during the remaining life of the project.

### **SELF-ASSESSMENT EXERCISE**

- i. Discuss the six phases of the project cycle with the aid of diagram.

## **4.0 CONCLUSION**

You learnt about all the phases of the project cycle.

## **5.0 SUMMARY**

In this unit, you have learnt that project cycle comprises the following phases:

- Programming
- Identification
- Formulation
- Financing
- Implementation
- Evaluation

## **6.0 TUTOR- MARKED ASSIGNMENT**

1. Define the following terms in project management:
  - a. Programming
  - b. Identification
  - c. Formulation
  - d. Financing

## **7.0 REFERENCE /FURTHER READING**

Leon Ikpe (1999). *Project Analysis and Evaluation*. Lagos: Impressed Publishers.

## **UNIT 2 PROJECT OBJECTIVES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
  - 3.1 Project Objectives
  - 3.2 Social Objectives
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

The basic purpose for initiating a project is to accomplish some goals. The reason for organising the task as a project is to focus the responsibility and authority for the attainment of the goals on an individual (project manager) or a small group (project team).

### **2.0 OBJECTIVE**

At the end of this unit, you should be able to:

- explain the major objectives of project.

### **3.0 MAIN CONTENT**

#### **3.1 Project Objectives**

The objectives (or goals) of any project will be to:

- complete the project within the allotted (or budgeted) funds
- complete the project within the scheduled time limit
- execute the project in such a way that the project meets the quality standards
- ensure that the project is completed to the satisfaction of the end users.

Project objectives are to be kept in mind by all the members of the project team throughout the period of project implementation. All decisions, whether a major decision or a minor one are to be taken

keeping in view the project objectives. The project objectives shall remain as the guiding force for the project team.

### **3.2 Social Objectives**

There are certain projects that are implemented purely with social objectives. Such projects, though may have cost, time and quality objectives, rank social objectives as the prime objective. Public health projects, Rural Development projects, irrigation projects etc., are some of the projects that have social objective as the prime objective. In such social projects, the objectives other than the social objective may even be relaxed at times, if that could help achieve the social objectives. For example, if the social objective of irrigating 10000 hectares of land can be fulfilled only if the cost of the project is increased by say, 10% more than what was originally planned, a conscious decision to accommodate the increased cost can be taken as such a decision will help achieve the social objective.

### **SELF-ASSESSMENT EXERCISE**

What are project objectives that you know?

### **4.0 CONCLUSION**

You learnt that certain projects are implemented purely with social objectives. Such projects, though may have cost, time and quality objectives, rank social objectives as the prime objective.

### **5.0 SUMMARY**

In this unit, you have learnt that:

- Public health projects, rural development projects, irrigation projects etc., are some of the projects that have social objective as the prime objective.

### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Explain what you understand by the project influenced by social objective.
2. List three project objectives.

## **7.0 REFERENCE/FURTHER READING**

Bakouros, Y. & Kelessidis, V. ( 2000). “Project Management”  
INNOREGIO: Dissemination of Innovation and Knowledge  
Management Techniques. January.



## **UNIT 3 PROJECT IDENTIFICATION**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Identification
  - 3.2 The Identification Test
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

The scope of initiating a project, which is the first step, is very wide. It involves identification and formulation of projects, appraisal of projects and getting formal approval from the competent authority. A detailed account of project identification, project formulation, project cost estimation and project appraisal are discussed in the following units.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- explain project identification
- list the sources from which new project ideas may emerge.

### **3.0 MAIN CONTENT**

#### **3.1 Project Identification**

Identifying a new worthwhile project is a complex problem. It involves careful study from many different angles. The following are some of the sources from which new project ideas may emerge.

#### **Performance of Existing Industries**

Performances of existing industries provide a good indication about the health of a particular industry. An analysis of the profitability and break-even point of different industries will offer adequate information about the financial health of different industrial sectors. Though, these provide an overall picture of industrial health, one should not be simply carried away by the present performance alone.

One should be shrewd enough to read the stage of business cycle in which the different industries stand at a particular time. For example, a particular industrial sector might be performing well, but it might have already crossed its saturation stage and might have already fallen into the decline stage of its business cycle. Entering into such an industry will prove to be disastrous. Similarly, the financial performance of another industrial sector that is not so encouraging might have the potential to grow rapidly, since the industry is only in the beginning stage of its business cycle. Such factors are to be carefully analysed before making a final choice.

### **Availability of Raw Materials**

Easy availability of good quality raw materials at cheaper prices is a definite indication that some projects that can make use of those raw materials may be undertaken. For example in an area where agriculture is the predominant activity and where agricultural produces (like cereals, vegetables and fruits) are available in plenty, the potential can be made use of by setting up food processing industries. Availability of minerals may give lead to chemical industries.

### **Availability of Skilled Labour**

Based on the locally available skilled labour force, suitable industries that can make better use of the skilled manpower can be identified.

### **Import/Export Statistics**

Import/Export statistics may reveal the potential that remain untapped. Higher proportion of import of a particular product and increasing trend in its import indicates that a product, which can serve as an import substitute can be produced locally. Similarly, higher proportion of export of a particular product and increasing trend in its export indicates high export potential for the product.

### **Price Trend**

The trend in the price of various products/services may give an indication about the demand-supply relationship. If the general price level is rising during the past few years and if the rise in price level of a particular product is steeper than the rise in general price level, it may indicate a demand-supply gap. Further detailed study may be undertaken to ascertain the extent of demand-supply gap.

## **Data from Various Sources**

Various publications of Government, banks and financial institutions, consultancy organisations, manufacturer's associations, export promotion councils, research institutions and international agencies contain data and statistic which may indicate prospective ventures. A study of the working results and balance sheets of existing companies will be useful in knowing the sectors of industry that are performing well. Study of profitability, break-even level, Earnings Per Share (EPS) of various industries may indicate those industries where opportunities exist for new investments.

## **Research Laboratories**

Research laboratories that are engaged in identifying new products/processes often offer new avenues or commercial exploitation. However, proper care should be taken before attempting to go for large scale production of products that have been proved in the laboratory to ensure that conditions under which the products are developed in the laboratory can be simulated in the actual production line also. Failure to correctly simulate laboratory conditions may lead to failure when the product is produced in a large scale.

## **Consumption Abroad**

Those entrepreneurs who are willing to take higher risks can identify projects for the manufacture of products or supply of services which are new to the country, but extensively used abroad. Thus, observing the consumption pattern abroad will help to identify projects with export potential.

## **Identifying Unfulfilled Psychological Needs**

For well established, multi-brand product groups, there may be unsatisfied psychological needs, though the physical needs of the consumers might have been satisfied. Consumer goods like cosmetics, bathing soaps, toothpastes etc., come under this group. New products of this group being introduced and accepted by the consumers indicate the unfulfilled psychological needs of the consumers.

## **Plan Outlays and Government Guidelines**

The Government plays an important role in the economy of a country. Government's plan outlays in different sectors provide useful pointers towards possible investment opportunities. They indicate the potential demand for goods and services by the different sectors of the economy.

The Department of Industrial Development, Government of Nigeria, publishes Guidelines to Industries annually which is a valuable source of information to identify the scope for new investments. This publication provides information about production performance of different sectors of industries, the licensed and installed capacity, scope for future exports, location and structure of industries etc.

### **Analysis of Economic and Social Trends**

An analysis of the economic and social trends of the society will be very much helpful in identifying and projecting the demands for various goods and services. For example, the growing desire for leisure points to investment opportunity in recreational activities, rest-houses, resorts etc. The growing awareness of the value of time points to growing demands for fast-foods, high-speed vehicles, better mode of transport, ready-made garments etc.

### **Possibility of Reviving Sick Units**

In any economy there are many industrial units that might have become sick, that are becoming sick, that are in the verge of death and that are weak. An industry that has become weak/sick might still have the capacity to become a financially viable proposition provided the reason for the weakness/sickness are purely due to factors that are internal to the organisation. A promising entrepreneur who has the required entrepreneurial skills can take over a weak/sick unit, revive it and make it to turn around. Infusion of further capital, provision of complementary inputs, revamping the organisational structure etc., are some of the corrective measures that need to be done to nurse an ailing industrial unit and to bring it back to life.

## **3.2 The Identification Test**

A proposal may be deemed to have passed the identification test and be ready for detailed preparation when:

- Major options and alternatives have been identified and some initial choices made
- The principal institutional and policy issues affecting project outcome have been identified and deemed amenable to solution
- The project options selected are expected to be justified, given rough estimates of the expected costs and benefits
- There is justifiable expectation that the project will have adequate support from the relevant political authorities, other stakeholders and the intended beneficiaries.

## **SELF-ASSESSMENT EXERCISE**

What does the scope of initiating a project involves?

### **4.0 CONCLUSION**

You learnt that the scope of initiating a project involves identification and formulation of projects, appraisal of projects and getting formal approval from the competent authority.

### **5.0 SUMMARY**

In this unit, you have learnt that new project ideas may come from the following:

- Performance of Existing Industries
- Availability of Raw Materials
- Availability of Skilled Labour
- Import/Export Statistics
- Price Trend
- Data from Various Sources
- Research Laboratories
- Consumption Abroad
- Identifying Unfulfilled Psychological Needs
- Plan Outlays and Government Guidelines
- Analysis of Economic and Social Trends
- Possibility of Reviving Sick Units.

### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Discuss the three areas which make project identification possible?
2. When is a proposal deemed to have passed the identification test?

### **7.0 REFERENCE/FURTHER READING**

Meredith, J.R. & Mantel, S.J. (1995). "Project Management." J. Wiley & Sons.

## **UNIT 4 PROJECT PREPARATION (PROJECT FORMULATION)**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Preparation (or Project Formulation)
  - 3.2 Pre-feasibility Study
  - 3.3 Support Studies (Functional Studies)
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Project formulation is defined as taking first look carefully and critically at a project idea by an entrepreneur to build up an all round beneficial to project after carefully weighing its various components.

After having identified a project that prima-facie appears to be a worthwhile project, the project promoter has to further analyse the project to ensure that it has the potential and the investment on it would not go wasted, but would yield attractive returns.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- explain pre-feasibility study
- discuss the importance of pre-feasibility study.

### **3.0 MAIN CONTENT**

#### **3.1 Project Preparation (or Project Formulation)**

Project preparation consists of four stages viz.

- (a) Pre-feasibility study
- (b) Functional studies (or support studies)
- (c) Feasibility study
- (d) Detailed project analysis (leading to the preparation of detailed project report).

### 3.2 Pre-feasibility Study

A pre-feasibility study has the following main objectives:

- (a) To determine whether the project offers a promising investment opportunity.
- (b) To determine whether there are any aspects of the project that are critical requiring in-depth investigation by way of market surveys, laboratory test, pilot plant test etc.

The preliminary feasibility study should examine:

- a. The market potential for the selected product/service, the competitors in the field
- b. and their market share, the market forecast, the trading practices in the industry in
- c. terms of pricing, credit, distribution, Government controls etc.,
- d. The technologies available and the technology suitable for the project, the
- e. manufacturing facilities required in terms of plant and machinery.
- f. The availability, cost and sources of raw materials.
- g. The plant location.
- h. The plant capacity.
- i. The man power requirement in terms of labour, staff and management personnel,
- j. their availability and costs.
- k. The investment required, the return on investment expected, the means of financing the project, the cost of production and commercial profitability.

Pre-feasibility study usually arrives at major parameters like location of project, production capacity, raw material and other inputs etc. It also provides rough estimates of project cost, means of financing, cost of production, sales revenue, financial profitability, social benefits etc. If the pre-feasibility study indicates that the project is a worthwhile proposition, a feasibility study is taken up. If the pre-feasibility indicates certain areas of the project that need a detailed study, such studies are taken up before taking up feasibility study. Such studies are also known as support studies or functional studies.

### 3.3 Support Studies (Functional Studies)

Support studies may be conducted in any of the following areas:

- Market study
- Raw material/input study

- Project location study
- Plant size study
- Equipment selection study etc.

Pre-feasibility study might arrive at a conclusion that the success of the venture depends upon successfully marketing the product in view of the stiff competition prevailing. In such a case, the need for a detailed market study arises. If the detailed market study reveals that marketing the proposed product successfully would be a difficult proposition, there is no point in taking up feasibility study and the project can be better shelved.

The need for a raw material study might arise when there are many different raw materials available for producing the same product and whose cost of procurement, cost of transportation, continuous availability, quality etc., vary widely.

Project location study might look into aspects like nearness of raw material source, nearness of market for the finished product, cost of transportation of raw material/finished product, nearness to air ports/sea ports, availability of labour etc.

Plant size study is undertaken when there are several technologies available, each with a different economic plant size. The study should also take into account the cost of production with each technology, the extent of market that is available for the finished product etc.

Equipment selection study is undertaken when the sources of supply of equipments and the costs vary very much. The capital cost of the equipments, the operational cost, the after-sales support, the operational efficiency of the plant etc., are some of the factors that are studied under equipment selection study.

### **SELF-ASSESSMENT EXERCISE**

Discuss the importance of pre-feasibility study.

## **4.0 CONCLUSION**

We can conclude that if the pre-feasibility study indicates that the project is a worthwhile proposition, a feasibility study is taken up. If the pre-feasibility indicates certain areas of project that need a detailed study, such studies are taken up before taking up feasibility study. Such studies are also known as support studies or functional studies.



## **5.0 SUMMARY**

In this unit, you have learnt the:

- importance or roles of pre-feasibility study.
- main objectives of pre-feasibility study.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Briefly discuss the importance of pre-feasibility study.
2. List the five main objectives of pre-feasibility study.

## **7.0 REFERENCE/FURTHER READING**

UNEP Project manual: formulation, approval, monitoring and evaluation.

## **UNIT 5 PROJECT DIRECTION**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Direction
  - 3.2 Causes of Project Failure
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Directing refers to guiding people as to what to do and ensuring that they do their work to the best of their ability.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able:

- explain how project managers direct a project
- list the causes of project failure.

### **3.0 MAIN CONTENT**

#### **3.1 Project Direction**

Directing refers to guiding people as to what to do and ensuring that they do their work to the best of their ability. Thus, directing includes assignment of jobs to the individual employees, explaining to them the procedures to be followed in carrying out their jobs, giving guidance and instructions on the job, issuing directives and guidelines to be followed and correcting errors noticed, if any, in time.

In other words, directing refers to giving the correct orientation. Since personnel from different functional department with different skills and calibre are involved in executing a project, they must be given the right direction. If a project has many managers headed by project director, the project director is responsible for giving proper direction to the project manager who works under his control. If a close observation of the way in which the project activities are proceeding is not made, it will be difficult to provide the correct direction. Project direction becomes crucial and complicated if the organisation structure is such that the

project personnel are under the dual control of the project department and the functional departments. Under such conditions, unless the project personnel are carefully and properly directed, the project implementation will suffer.

A project manager directs his team by virtue of the formal authority that he derives from the organisation. In an organisation structure, every manager draws formal authority by way of delegation of authority from those who occupy organisational positions at higher level. Power is often used along with authority. Power is the ability to influence the behaviour of other. A project manager's ability to direct his team is a combination of his organisational structure; he uses his authority along with his power to exact obedience. While authority is official in nature, power is something personal. The organisational structure can provide a project manager with an official authority. The project manager should possess the ability to lead, should have intelligence and expertise, should possess moral values and should set examples for his team mates to emulate. These qualities give the project manager the power to use his authority effectively in directing his team mates towards the achievement of project objectives.

Though, project management structure creates a web of relationship that can cause chaos in the internal authority structures and in delegation of authorities. It is however the project manager's responsibility to direct his team members in the right path towards the accomplishment of project objectives.

Regarding completion of the project in time, the project manager has to give the required direction to his team. In this connection, he should give attention to the following aspects:

- Top priority shall be given to complete the critical activities since any delay in completion of the critical activities will delay the project completion time leading to time over-run, which in turn may lead to cost over-run.
- Apart from the critical activities, among the non-critical activities, the project manager shall identify those activities that consume expensive resources and that are of longer durations and he should study the scope for reduction of cost and time respectively so that the resources saved can be profitably deployed in other activities. Proper direction to this effect can be given only by the project manager.
- Trade-off between time and cost as well as trade-off between performance and cost are the two aspects that require conscious decisions to be taken based on the prevailing conditions. As project may be required to be finished earlier than planned even it

involves additional cost. Similarly, there may be shortage of men and material resources and time constraint may not prevail. Such situation will need reallocation of resources. The revised time schedule for the completion of activities and the revised allocation of resources are to be made known to the project team members. Without right direction being given to the persons on the field who are in charge of execution of project activities, the desired results cannot be achieved.

- Since projects are dynamic in nature, the project manager should keep vigil on the project performance and watch for the warning signal. He should accordingly introduce the required changes in project implementation and should direct his team members in such a way that the required changes are recognised and acted upon.
- The project manager should see to it that directions for project execution do not emanate from any other persons in the hierarchy who do not have the authority to do so. Especially, outsiders should not be allowed to direct the project team members. Though those from functional departments and the external specialists/consultants can give their suggestions, recommendations and views, the directions to the team members should emanate only from the project manager.

### **3.2 Causes of Project Failure**

- Failure to establish upper-management commitment to the project
- Lack of organisation's commitment to the system development methodology
- Taking shortcuts through or around the system development methodology
- Poor expectations management
- Premature commitment to a fixed budget and schedule
- Poor estimating techniques
- Over-optimism
- The mythical man-month (Brooks, 1975)
- Inadequate people management skills
- Failure to adapt to business change
- Insufficient resources
- Failure to "manage to the plan."

#### **SELF-ASSESSMENT EXERCISE**

Briefly discuss aspects of project direction.

## **4.0 CONCLUSION**

You have learnt about what is called directing in project management and cause of project failure.

## **5.0 SUMMARY**

In this unit, you have learnt that:

- Project direction becomes crucial and complicated if the organisation structure is such that the project personnel are under the dual control of the project department and the functional departments. Under such conditions, unless the project personnel are carefully and properly directed, the project implementation will suffer.
- Thus, directing includes assignment of jobs to the individual employees, explaining to them the procedures to be followed in carrying out their jobs, giving guidance and instructions on the job, issuing directives and guidelines to be followed and correcting errors noticed, if any, in time.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Briefly discuss the aspects which project manager should give attention to when it comes to project direction.
2. Give five causes of project failure.

## **7.0 REFERENCE/FURTHER READING**

LAUTECH:An Introduction to Project Appraisal and Management, Teaching Manual.

## **UNIT 6 PROJECT COORDINATION**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Coordination
  - 3.2 Effective Coordination Activities
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Project coordination is the framework that supports project planning, resource scheduling, progress tracking, and status reporting. Most organizations expect the project manager (PM) to spend some portion of their time performing the project coordination functions, and most project managers are too busy to do it comprehensively. A PM can spend up to 50% of their time in project management tool activities during the planning phase and up to 20% during implementation.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- explain the essential conditions necessary for project coordination
- discuss some of the activities to be coordinated in managing projects.

### **3.0 MAIN CONTENT**

#### **3.1 Project Coordination**

Coordination is the process by which the efforts of the members of a team are synchronised in such a way that the desired goals are achieved easily. To coordinate means to unite all the activities.

Coordinating the activities of a project is highly complex in nature and the success of a project lies in proper coordination. Coordinating the activities of a project is a difficult task because several agencies/department are responsible for the different components of a project. Hence, unless the mode of coordinating the different

agencies/department is pre-planned and monitored, implementation of project will get affected and this will lead to both wastage of resources and delay in project implementation. The first thing that the top management should do for proper coordination of project activities is to appoint the project manager at the earliest, identify the project team early and to assign them with clearly defined responsibilities. Project manager's prime responsibility is to coordinate the efforts of all the project participants and it is due to this responsibility that is cast upon him, the project manager is given the authorisation to cut across several organisational lines in order to get things done.

Some of the activities to be coordinated in managing projects are as follows:

- Trying up men and material and making the resources available at the right point of time
- Trying up of contractors
- Engagement of consultants
- Receipt and storage of materials/equipments and release of materials/equipments from the store to the project sites in time.

There must be periodical meetings between the project manager and the functional heads to sort out problem areas and out-standing issues. Since the authority structure of project management has the inherent nature of creating confusion in the delegation of authority, identify the person concerned who has the authority to deal with certain problem areas will be an elusive task and such issues can be solved by informal discussions between the project manager and the functional heads.

### **3.2 Effective Coordination Activities**

The project manager has to pay attention to the following areas for effective coordination of the activities:

- Carrying out adequate pre-contract appraisal and choosing the appropriate contract strategy.
- Setting up an effective communication network between the project team members, functional heads, outside stake holders and other key participants before the commencement of the project.
- Ensuring that the different activities of the projects are carried out in their logical sequence, in relation to their importance and without any conflict.
- Continuous evaluation of progress on comparison with the plans and re-planting on a periodical basis as per the needs.

- The project manager shall keep in mind that he has to coordinate three different types of participants, viz., the direct participants, the indirect participants and the external participants. All the three groups of participants need to be given equal importance. Ignoring any one of the group will jeopardize the project. Direct participants in the project include all those who are involved in project planning and implementation like the project team members who are in charge of execution, the contractors, the experts/consultants, materials/equipment suppliers etc. The indirect participants are those who are indirectly responsible for the project execution, like the personnel in the project directorate, personnel of other functional department like finance, marketing, sales, planning, HRD etc. The external participants include statutory and regulatory authorities, ESI/Health department personal etc., and other institutions like banks, financial institutions and insurance companies.
- Since the project manager is required to cut across organisational lines/authorities to get his work done, he must establish good rapport with the employees and heads of all the functional departments so that smooth coordination of project activities can be achieved.
- Since the external experts/specialist/consultants also have their role to play in the execution of projects, the project manager should build good rapport with them and should act as a bridge between the external participants and the internal project team members.

### **SELF-ASSESSMENT EXERCISE**

Discuss the areas that project coordination need to pay attention to for effective coordination of the activities

## **4.0 CONCLUSION**

You learnt that coordinating the activities of a project is highly complex in nature and the success of a project lies in proper coordination. Some of the activities to be coordinated in managing projects are listed as:

- Trying up men and material and making the resources available at the right point of time
- Trying up of contractors
- Engagement of consultants
- Receipt and storage of materials/equipments and release of materials/equipments from the store to the project sites in time.



## 5.0 SUMMARY

In this unit, you have learnt that it is essential for project manager to pay attention to the following areas for effective coordination of the activities.

- Carrying out adequate pre-contract appraisal and choosing the appropriate contract strategy.
- Setting up an effective communication network between the project team members, functional heads, outside stake holders and other key participants before the commencement of the project.
- Ensuring that the different activities of the projects are carried out in their logical sequence, in relation to their importance and without any conflict.
- Continuous evaluation of progress on comparison with the plans and re-planting on a periodical basis as per the needs.
- The project manager shall keep in mind that he has to coordinate three different types of participants, viz., the direct participants, the indirect participants and the external participants.

## 6.0 TUTOR- MARKED ASSIGNMENT

1. What is the first thing that the top management should do for proper coordination of project activities?
2. Give seven areas that project manager have to pay attention to for effective coordination of the activities.

## 7.0 REFERENCE/FURTHER READING

"Project Administration Methodology: Achieving Schedule Control on a Large Project - The Somers Project," pmNETwork, Project Management Institute, July 1991, pp. 9-33.

## **UNIT 7 PROJECT CONTROL**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Project Control
  - 3.2 Control System
  - 3.3 Requirements for a Good Control System
  - 3.4 Some Examples of the Control System
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

The term 'control' refers to verifying if the project progresses as per the plan and to regulate deviation found, if any.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- identified the three aspects to be controlled in managing of projects  
explain control system  
give the requirements of a good control system.

### **3.0 MAIN CONTENT**

#### **3.1 Project Control**

In managing of projects, the three aspects to be controlled are:

- (a) cost
- (b) time and
- (c) quality/technical performance.

For effectively controlling a project, suitable control plans are to be formulated well in advance, suitable standards for project work packages are to be developed and suitable information system is to be set up. Project can be controlled by gathering the required information from the project information system and comparing the actual performance with the planned performance. When deviations between the actual performance and the planned performance are noticed,

immediate corrective actions are to be taken to realign the project back on the right track.

### **3.2 Control System**

Control system is an arrangement that offers the project manager with details about deviations of the project from what was planned and also recommends corrective actions needed for rectifying the deviations.

Control systems are designed to monitor three major factors, viz., cost, time and quality parameters. In other words, control systems help in identifying cost over-run situations, time over-run situations and deviations from quality parameters. Since projects are dynamic in nature, project control systems are to be more sophisticated than the control system meant for functional departments. The sophistication of the control system depends on the nature and complexity of projects and also on the ability of the project participants to administer it.

### **3.3 Requirements for a Good Control System**

The following are the basic requirements of a good control system:

- It must be easy to understand by those who use it
- It must be easy to extract data/information by those who use the systems and the control system must act as an indicator for pointing out deviations
- It must be reduced to the form of tables/graphs/charts so that it will offer a visual displays that are easy for interpretation, this feature will improve the utility of the control system
- The control system should report deviations (of time, cost and quality) from the plan on a timely basis and must have the capacity to anticipate or predict deviations so that timely action can be taken to correct the deviations
- The control system is to be designed by the active participant of all the major executives of the project team so that the system can satisfy the actual requirements.

### **3.4 Some Examples of the Control System**

Some examples of the control system are as follows:

- Work breakdown structure
- Bar chart/Mile stone chart
- Programme progress chart
- Monthly status reports

- Line of Balance (LOB) chart
- Earned Value Analysis
- Forecasting Funds Requirement (PERT-Cost system)
- Network Plan
- Graphical Evaluation Review Techniques (GERT)
- Network simulation
- Review meetings.

### **SELF-ASSESSMENT EXERCISE**

- i. What is control system?
- ii. List three requirements of a good control system.

### **4.0 CONCLUSION**

We can conclude control systems are designed to monitor three major factors, viz., cost, time and quality parameters.

### **5.0 SUMMARY**

In this unit, you have learnt:

- the importance project control.
- what control system is all about.

### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Briefly discuss what is meant by control system.
2. List three requirements of a good control system.

### **7.0 REFERENCE / FURTHER READING**

Jennifer Krahn (2006). "Effective Project Leadership: A Combination of Project Manager Skills and Competencies in Context," PMI Research Conference Proceedings (July).

## UNIT 8 PROJECT TIME MANAGEMENT

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Reducing Project Duration
  - 3.2 Scheduling Overtime
  - 3.3 Crashing Project
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### 1.0 INTRODUCTION

Any project consists of activities of diverse nature, requiring different skills and resources. An organisation that is venturing upon a new project may not be having all the required resources and skill in-house. The options available are either the organisation can build the required resources and skills within the organisation or it can outsource certain project tasks for which the in-house resources/skill available are inadequate. Outsourcing has its own advantages, viz.

- (a) Outside agencies who have developed expertise in the line can handle the tasks more efficiently.
- (b) Recruiting specialists/training the existing personnel in the special tasks will involve cost. The cost incurred on recruitment/training will add to the overheads of the organisations which may be no longer required once the project is completed. When special tasks are decided to be outsourced, the organisation can call upon the services of the outside agency only when necessary. This system of 'get what you pay for when you need it' will cut down the cost considerably.
- (c) Mobilising/training the man power in special skills may take a long time which will have a bearing on the project completion time. Hence outsourcing non-core activities can help complete projects on time.
- (d) Project personnel are freed of their time and they can focus on their core activities, this will add more value to the organisation.

Thus, judicious and carefully planned outsourcing will add to the competitive advantage of organisations.

## 2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain outsourcing
  - enumerate the importance of outsourcing in project management

## 3.0 MAIN CONTENT

### 3.1 Reducing Project Duration

In recent years, emphasis on time –to- market has taken on new importance because of intense global competition and rapid technological advances. The market imposes a project duration date. For example, a rule of thumb for moderate – to high- technology firms is that a six month delay in bringing a product to market can result in a gross profit, loss or market share of about 30%. In these cases, high-technology firms typically assume that the time savings and avoidance of lost profits are worth any additional cost to reduce time without any formal analysis. It is interesting to observe how more serious analysis occurs in reception periods when cash flows are tight.

Incentive contracts in partnering arrangements can make reduction of project time regarding –usually for both the project contractor and owner. For example, a contractor finished a bridge across a lake 18 months early and received more than \$6 million for the early completion. The availability of the bridge to the surrounding community 18 months early to reduce traffic gridlock make the incentive cost to the community seen small to users. In another example, in a partnering continuous improvement arrangement, the joint effort of the owner and contractor resulted in early completion of a river lock and a 50/50 split of the savings to the owner and contractor.

Another reason for reducing project time occurs when unforeseen delays –for example, adverse whether design flaws and equipment breakdown a cause substantial delays midway in the project. Getting back on schedule usually requires compressing the time on some of the remaining critical activities the additional costs of getting back on schedule need to be complied with the cost of being late.

Sometimes, very high overhead or good will costs are recognised before the project begins. In these cases, it is prudent to examine direct costs of shortening the critical path versus the overhead end /or goodwill cost savings, usually there are opportunities to shorten a few critical activities at less than the daily overhead rate or perceived goodwill cost,

under specific conditions (which are not rare), huge saving are possible with little risk.

Managers have several effective methods for crashing specific projects activities when resources are not constrained. Several of these are summarised below:

### **Adding resources**

The most common method for shortening project time is to assign addition staff and equipment to activities; there are limits, however, as to how much speed can be gained by adding staff. Doubling the size of the work force will not necessarily reduce completion time by half.

### **Outsourcing project work**

A common method for shortening the project time is to subcontract an activity. The subcontract may have access to superior technology or expertise that will accelerate the completion of the activity.

## **3.2 Scheduling Overtime**

The easiest way to add more labour to a project is not to add more people, but to schedule overtime. If a team works 50 hours a week instead of 40, it might accomplish 25 percent more .By scheduling overtime you avoid the additional costs of coordination and communication encountered when new people are added. If people involved are salaried workers, there may be no real additional cost for the extra work. Another advantage is that there is less distraction when people work outside normal hours.

Overtime has disadvantages. First, hourly workers are typically paid time and a half for overtime and double time for weekends and holidays. Sustained overtime work by salaried employees may incur intangible costs such as divorce, and turnover.

## **3.3 Crashing Project**

- In order to reduce the project time, the duration of critical activities have to be reduced (by increasing resources etc.)
- The reduction in duration will generally increase the cost of the project.

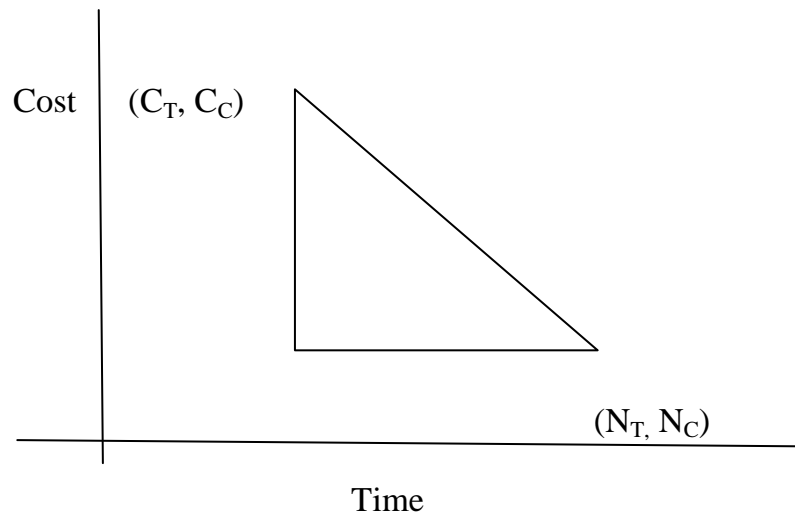
**Terminology:**

$N_T$  = Normal Time (duration) of Activity

$N_C$  = Crash Time (duration) of Activity

$C_T$  = Cost of Activity at  $N_T$

$C_C$  = Cost of Activity at  $N_C$



**Cost Slope =  $\tan \theta = \frac{C_C - C_T}{N_T - N_C}$**

- In order to curtail the duration of the activity, cost slope values have to be viewed carefully.
- Least cost slope activity must be curtailed first and so on.
- If more than one critical path is generated after Crashing then duration of activities on all paths have to be curtailed. The following example will explain the technique of Crashing.

**SELF-ASSESSMENT EXERCISE**

1. What is outsourcing in project management?
2. What can you do to reduce the project time?

**4.0 CONCLUSION**

You have learnt the following in this unit:

- What outsourcing is all about
- Scheduling overtime
- Crashing project.



## 5.0 SUMMARY

In this unit, you learnt that:

- Outsourcing has its own advantages
- Managers have several effective methods for crashing specific projects activities when resources are not constrained
- The easiest way to add more labour to a project is not to add more people, but to schedule overtime
- to reduce the project time, the duration of critical activities have to be reduced (by increasing resources etc.)

## 6.0 TUTOR-MARKED ASSIGNMENT

1. Briefly discuss outsourcing project work.
2. As a project manager, what can you do in order to reduce the project time?

## 7.0 REFERENCE/FURTHER READING

Little, I. M. D. & Mirrleas, J. A. (1969). *Manual of Industrial Project Analysis in Developing Countries*, Vol 11, Organisation for Economic Co-operation and Development. Paris.

## **UNIT 9 GENERAL OVERVIEW OF A FEASIBILITY STUDY**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 General Overview of a Feasibility Study
  - 3.2 Feasibility Report Components
  - 3.3 Reasons given not to do a Feasibility Study
  - 3.4 Reasons to do a Feasibility Study
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

As the name implies, a feasibility study is an analysis of the viability of an idea. The feasibility study focuses on helping to answer the essential question of “should we proceed with the proposed project idea?” All activities of the study are directed toward helping to answer this question.

Feasibility studies can be used in many ways but primarily focus on proposed project ventures. Farmers and others with a project idea should conduct a feasibility study to determine the viability of their idea before proceeding with the development of the project.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- discuss feasibility study
- define technical feasibility
- explain economic feasibility
- discuss commercial feasibility
- write a good feasibility report.

### **3.0 MAIN CONTENT**

#### **3.1 General Overview of a Feasibility Study**

A feasibility study is an investigation into the potential outcome of a project i.e. whether the project is going to be practicable and profitable. The word feasibility is from the verb feasible i.e. practicable or viable. Before making a final decision to take up a project, the technical, economic, commercial and financial justification of the chosen project shall be ascertained in concrete terms. Feasibility study is also known by the term 'techno-economic feasibility study'. A feasibility study may be used as a planning device or as a technical document. When used as a planning document, important decisions necessary for the success of the project are highlighted. These include the type of technology to be used, the facilities in form of infrastructure needed, the financial requirements and the sources in finance. When it is used as a technical document, important steps concerning the channel the product will take to get to the customers, the knowledge of the macro-economic system which will tell the writer how the macro-economic environment fare and the policies that shape this environment are taken into consideration. The researcher will also need to exhibit financial skills which can advice the investor on alternative options of raising money for the intended project. These skills are also needed to draw up financial statements that can summarise the activities involved at particular point in time such as cash flow, profit and loss account and balance sheet. Also technical skills that will predict the types of equipment, the technology to be used in terms of efficiency, the production process, the types of raw materials to be used, the layout of equipment and how spare part can be sourced for them. The last technical aspect is the management skill which should be embedded in the feasibility study. This will enable the investor to know what category of personnel that will be involved and the types of experience, qualification and other suitable characteristics they possess. Since feasibility study is used to raise money or fund from banks and the finance houses, it should be bankable. This means that it should be realistic enough for the bank to accept.

#### **Data Collection**

A feasibility study starts with data collection. Data are collected from two main sources; primary and secondary. Primary data is first hand by the researcher through the use of questionnaires, interview schedule, through observation or through experimentation. Secondary data already exist and can be from library, NBS, CBN, Center for management studies, Chamber of commerce, Ministries and others.

## Data Analysis

Having generated the needed data, the researcher analyses data so as to find out the validity of the project concerning the following:

- **Technical feasibility:** It is normally seen that while most of the projects get a fine screening on their financial prospects, the technical feasibility does not get the required attention. For projects concerning manufacturing activities, the technology proposed to be adapted needs careful consideration. In this connection, the technical feasibility can be evaluated by answering the following questions:
  1. Is the technology proposed to be adapted, the latest one?
  2. What is the likelihood of the proposed technology becoming obsolete in the near future?
  3. Is the technology proposed to be adapted, a proven technology?
  4. Is the technology proposed to be adapted available indigenously?
  5. In case of imported technology, is the technology available freely?
  6. In simple terms, technical feasibility study aims to analyse whether the technology proposed to be adapted is capable of producing the intended goods/services to the requirement and specifications and to the complete satisfaction of the consumers without becoming obsolete in the near future and at the same time proving to be cost effective in the long run.
- **Economic feasibility:** In simple terms, economy viability is a cursory examination as to whether the investment made on the project will give a satisfactory return to the economy. The major aspects to be looked into are as to whether the project will make better use of available raw material, whether the project will reduce/eliminate the use of some scarce/valuable resources, whether the community as a whole will stand to gain as a result of the project etc.
- **Commercial feasibility:** Before embarking upon any product/service, the scope for successfully marketing the product/service shall be carefully and accurately assessed. If the product/service proposed is new to the industry, conducting a systematic market survey is a pre-requisite for assessing the probable estimates of likely sales. The likely sales estimated shall be well above the proposed plant capacity in order to overcome pitfalls if any that may remain unnoticed in the estimates made. If the product proposed to be manufactured is one that is already being manufactured by many others, the competitive edge that

can be gained in terms of quality, price and consumer acceptability etc., needs to be studied.

- **Financial feasibility:** The financial feasibility examines the workability of project proposal in respect of raising finance to meet the investment required for the project, be it equity, (by way of public issue of shares or by other means) or debt, (by way of term loans from financial institutions or by other means). This apart, the financial feasibility also consists of calculations of cost of debt, cost of procuring capital, cost of servicing the debt and equity and anticipated profits to check-up whether the financial benefits expected are in excess of the financial costs involved.

### 3.2 Feasibility Report Components

This involves arrangement of relevant information concerning the project in a descriptive form to facilitate easy reading, understanding and reference in business language. Feasibility study has two broad parts:

#### A. The Executive Summary

The executive summary shows what the whole report is all about at a glance. It reveals the overview of the report by pointing attention to the most salient points of the project like the following:

1. The sponsor's names and biological data if the business has been existing, the names of the directors, main shareholders and other partners if they exist.
2. Location and siting. You state the main reasons for justifying the choice of the site.
3. Nature of the project, the anticipated level of production e.g. at full capacity or otherwise, the difference between the product and its competitors.
4. The business goal.
5. The market and marketing. Concerning the market, demand for the project and proposed selling price are considered while marketing arrangement should include channels to be utilised e.g. wholesalers or direct selling to consumers.
6. The total project cost- this will show the fixed investment, the preliminary and pre-operating expenses, the working capital needs in both local and foreign currencies and the total cost.

Local currency	Foreign currency	Total
Fixed investment		
Pre-operating expenses		
Working capital		
Total		

7. The financial plan that will show the equity contribution and funds from other sources like banks, friends and relatives and the proportions should be stated.
8. Security for loans and overdrafts. All assets to be tendered as security guaranties/collaterals for the loan should be stated.
9. Earning/ profitability and cash flow projections for the first five years should be reflected and subjected to evaluation using NPV, BCR, IRR and the break-even point.
10. Management expertise- the background of the management staff, qualifications and experience.
11. Commissioning date.
12. Implementation schedule e.g. phases and the sequence involved in the release of funds.

### B. The Main Body

This is an elaboration of the executive summary e.g.

1. **Introduction:** - How the project idea came about. How the promoters made effort to set it up.
2. **The promoters:** - Their qualification, experience, management ability e.t.c.
3. **The product/service:**
  - a. The nature, proprietary rights like patents, copyright or other legal aspects. Compare the product with the closest competing product or service and what distinguishes it from others, scale of operation, the quantity expected daily, weekly, monthly and annually at full capacity.
  - b. The manufacturing and production process- list of raw materials and their sources. Other material needed to transform the raw material, description of what step the raw material pass through before becoming the finished product, technical skill needed, location and siting, advantages and disadvantages of the location, proximity to raw materials, market and public utilities e.g. seaports, airports, roads, railway lines, power, water and their requirements.
4. **The market analysis** e.g. the target audience e.g. children, women, youths e.t.c.

How the demand is affected by the environment can be divided into the following:

**i. Economic environment**

You state the GDP and disposable income i.e. the purchasing power of the people, the structure of the interest rate, the rate of inflation, unemployment level, standard of living, foreign exchange and its availability, government spending structure, raw material supply, currency devaluation, wages and salaries, competition behaviour.

**ii. The socio-cultural environment**

Lifestyle of the people, family system and size, changes in social values, attitude to authority.

**iii. Demographic trend**

Population growth, age distribution, rural urban migration, life expectancy, birth rates, ethnic and religious composition.

**iv. Political and legal environment**

Government regulation, price control system, payment of taxes, expatriate quotas, customs and excise tariffs.

**v. Technological environment**

Availability of machinery and maintenance.

**Other aspects of market analysis will include:**

Total market volume, trend in the industry, identifying target market, nature of competition, demand forecast for five years.

**5. Marketing:** Strategy to be pursued e.g. product strategy, pricing strategy and policy channels of distribution promotion to be embarked upon, packaging and branding methods.

**6. Management plan:** Form of business ownership (sole, partnership limited liability, Plc etc.), organisation structure, drawing up of a chart showing management staffing, plan and the growth in staffing for five years.

## **7. Financial data:**

- i. Capital cost i.e. monetary expression of resources sunk in the physical and other arrangement made to execute the plan. The capital expenditure incurred when assets are acquired.
- ii. Financial statements: Profit and loss account projections covering five years. Project that is in its first year is on quarterly basis while that of two to five years should be done annually. Balance sheet projections should be for five years, and cash flow statement also for five years.
- iii. Sensitivity analysis will tell you how sensitive your financial statement are to adverse changes e.g. a 10% rise in price of raw materials, a drop in price, increase in loan interest.

### **3.3 Reasons given not to do a Feasibility Study**

Project leaders may find themselves under pressure to skip the “feasibility analysis” step and go directly to building a project. Individuals from within and outside of the project may push to skip this step.

#### **Reasons given for not doing feasibility analyses include:**

- We know it’s feasible. An existing project is already doing it.
- Why do another feasibility study when one was done just a few years ago.
- Feasibility studies are just a way for consultants to make money.
- The feasibility analysis has already been done by the project that is going to sell us the equipment.
- Why not just hire a general manager who can do the study.
- Feasibility studies are a waste of time. We need to buy the building, tie up the site and bid on the equipment.

The reasons given above should not dissuade you from conducting a meaningful and accurate feasibility study. Once decisions have been made about proceeding with a proposed project, they are often very difficult to change. You may need to live with these decisions for a long time.

### **3.4 Reasons to do a Feasibility Study**

Conducting a feasibility study is a good business practice. If you examine successful businesses, you will find that they did not go into a new business venture without first thoroughly examining all of the issues and assessing the probability of business success.



**Below are other reasons to conduct a feasibility study**

- Gives focus to the project and outline alternatives
- Narrows business alternatives
- Surfaces new opportunities through the investigative process
- Identifies reasons not to proceed
- Enhances the probability of success by addressing and mitigating factors early on that could affect the project
- Provides quality information for decision making
- Helps to increase investment in the company
- Provides documentation that the business venture was thoroughly investigated
- Helps in securing funding from lending institutions and other sources.

The feasibility study is a critical step in the project assessment process. If properly conducted, it may be the best investment you ever made.

**SELF-ASSESSMENT EXERCISE**

1. What is Technical Feasibility?
2. What is Economic Feasibility?
3. What is Commercial Feasibility?

**4.0 CONCLUSION**

You have learnt in this unit, how to prepare a good feasibility report.

**5.0 SUMMARY**

In this unit, you have learnt that:

- Before making a final decision to take up a project, the technical, economic, commercial and financial justification of the chosen project shall be ascertained in concrete terms.
- Feasibility study is also known by the term ‘techno-economic feasibility study’. A feasibility study may be used as a planning device or as a technical document.
- A feasibility study starts with data collection. Data are collected from two main sources; primary and secondary.
- Having generated the needed data, the researcher analyses data so as to find out the validity of the project concerning the following: Technical feasibility, Economic feasibility and Commercial feasibility.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Give five reasons why you need to conduct a feasibility study for a project.
2. Give five reasons why you should not conduct a feasibility study for a project.

## **7.0 REFERENCES/FURTHER READING**

Ronda Apramz (2006). *How you can Start your Small Project in Two Weeks*. Saudi Arabia.

Kazem Gasem Al Esawi (2005). *Economic Feasibility Study and Projects Estimation*, (2nd ed.). Jordan.

Jrejori F.kishil & Patrishia Jantrkishil (2007). *How to Set up, Manage and Maintain Commercial Project* , Saudi Arabia.

## **UNIT 10 TAX INCENTIVES AND PROJECT INVESTMENT DECISIONS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Tax Incentives and Project Investment Decisions
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

Classical economists were generally of the view that the State should not intervene through its instruments of economic policy to influence the level of investment in the economic system.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- explain induce investment
- determine the incentives that result due to certain policy by the government.

### **3.0 MAIN CONTENT**

#### **3.1 Tax Incentives and Project Investment Decisions**

Classical economists were generally of the view that the State should not intervene through its instruments of economic policy to influence the level of investment in the economic system. Till the 1920's, taxes were considered by the States only as resources to maintain internal law and order and to overcome external threats. The Great Depression that swept through the world during the 1930's brought about a radical change in the economic thinking. Lord Keneys, the proponent of monetary economics observed in his famous work "General theory of employment" as under:

...For my own part, I am now somewhat skeptical of the success of a merely monetary policy directed towards influencing the rate of interest. I expect to see the State which is in a position to calculate the marginal efficiency of capital goods on the basis of general social advantage,

taking an ever-greater responsibility for directly organising investment; since it seems likely that the fluctuations in the market estimation of the marginal efficiency of different types of capital, calculated on the principles I have described above, will be too great to be offset by any practicable changes in the rate of interest....

During the course of time, tax became an effective weapon in the hands of the States of socialistic economies to induce and direct investments. Even in the capitalistic economies, the States started using tax as an instrument for inducing and regulating investments through various tax incentive and tax control measures. For inducing investments, incentives are offered by the States and these incentives for investment stem forth from the following policies of the state:

- Fiscal policy
- Monetary policy
- Commercial policy

### **Fiscal Policy**

Fiscal policy is an important instrument to overcome recession and to control inflation in the economy. In Nigeria, fiscal policy of the Government is announced through Budgets. Budget proposals are eventually enacted as statutes by the parliament and periodical amendments are made thereof (e.g. Income tax Act).

Examples of incentives that result due to fiscal policy are:

- Depreciation
- Tax holiday
- Investment allowance

### **Monetary Policy**

Monetary policy is concerned with changing the supply of money stock and the rate of interest, for the purpose of stabilising the economy at full potential output level. At times of recession, monetary policy is used to increase the money supply and reduce the interest rate in order to stimulate aggregate demand in the economy. At times of inflation, monetary policy is used to reduce the aggregate spending by reducing the money supply and raising the interest rate. Interest rate and lending policy are announced by the Central Bank of the Nigeria.

Examples of incentives that result due to monetary policy are:

- Interest rate concession
- Repayment moratorium
- Participation in risk capital
- Reduced security margin
- Refinancing facilities
- Amortisation of preliminary expenses

### **Commercial Policy**

Federal Government announces major commercial policies e.g. Industrial Policy. These apart, Federal and State Governments announce selective, adhoc policies.

Examples of incentives that result due to commercial policy are:

- Octroi exemptions
- Subsidised rate for electric power consumed by industries
- Capital investment subsidy
- Sale tax incentives for new industries
- Production tax incentives

### **SELF-ASSESSMENT EXERCISE**

Give the examples of incentives that result due to fiscal policy.

## **4.0 CONCLUSION**

You have learnt how to predict several incentives that can come out from different policy formulated by the government.

## **5.0 SUMMARY**

In this unit, you have learnt that:

For inducing investments, incentives are offered by the States and these incentives for investment stem forth from the following policies of the state:

- Fiscal policy
- Monetary policy
- Commercial policy

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Give five examples of incentives that result due to monetary policy of the government.
2. Give five examples of incentives that result due to commercial policy of the government.

## **7.0 REFERENCE/FURTHER READING**

Setephen D. Shetraws (2007). *Perfect Guide for Small Projects*. Saudi Arabia.

## **MODULE 3      GENDER IMPORTANCE IN AGRICULTURAL PROJECTS**

Unit 1	Why Gender Makes a Difference in Agricultural Projects
Unit 2	Gender Analysis in Project Design
Unit 3	Improving Agricultural Development Projects through Gender Analysis
Unit 4	Economic Analysis of Agricultural Projects

### **UNIT 1      WHY GENDER MAKES A DIFFERENCE IN AGRICULTURAL PROJECTS**

#### **CONTENTS**

1.0	Introduction
2.0	Objective
3.0	Main Content
3.1	Why Gender Makes a Difference in Agricultural Projects
3.2	Importance of Gender Analysis in Extension Work
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Reading

#### **1.0      INTRODUCTION**

Agricultural projects especially those financed by Agricultural Development Projects (ADP) and other funding agencies indicate that considerations related to gender issues and women participation influence the overall success and sustainability of such projects.

Women are major contributions to the economy both through their remunerative work on farm and through unpaid work they traditionally render at home and in the community. Yet, in many societies, they are systematically excluded from access to resource, essential services and decision making.

#### **2.0      OBJECTIVE**

At the end of this unit, you should be able to:

- explain why gender makes a difference in agriculture projects.

### 3.0 MAIN CONTENT

#### 3.1 Why Gender Makes a Difference in Agricultural projects

Women are, of course, an integral part of farming households. They produce over half the food in many developing countries, bear most responsibility for household food security, and contribute to household well-being through their income-generating activities. Yet, women usually have more limited access to resources and opportunities and *their productivity remains low relative to their potential*. In some regions, men and women have different farming systems, different domains - for example, crops or livestock - different access to resources, and different status. In general, compared to men within the same household, women have:

- A wider range of tasks and enterprises
- Different production objectives
- Dissimilar production constraints

Econometric evidence on gender differences in agricultural productivity points to the importance of investing in women by increasing their human capital through education and extension, and by increasing their access to physical and financial inputs. Key findings are:

- *Women farmers are as efficient as men farmers, once other characteristics and input levels are controlled for.*

It suggests that increasing women's physical and human resource capital to the level of men's would bring significant gains in agricultural production. Limited access to inputs combined with cultural constraints on women's farm work tends to reduce women's labour productivity and their participation in high productivity agricultural work.

- *Women farmers underperform* in agricultural production because they lack access to information, credit, extension, inputs, and markets and by household and child care tasks limit the time they have available. This underperformance occurs despite the longer hours they work than men in traditional farming systems.
- The gradual *feminization of agriculture* in many countries makes attention to women farmers' necessary in implementing agricultural policy and programs. As men move out of agriculture into other sectors, women remain on the farm, gradually feminizing the agricultural labour force.
- *Attention to gender facilitates economic and social objectives.* Improving women's access to resources, control over income,



and education, while reducing their time burden generates both efficiency and welfare gains.

- *Conversely, ignoring gender concerns can lead to project failure.* Ignoring gender issues can result in projects that are technically successful but negatively affect both women and children. Cotton projects funded by the International Development Association (IDA) in three francophone African countries, for example, achieved their production objectives and benefited farmers. The impact evaluation, however, showed the projects had affected women and children adversely, reinforced the power of men household heads, and increased social and economic stratification. In households growing cotton, women's labour input increased, polygamy increased, and some women became financially less self-sufficient.

### **3.2 Importance of Gender Analysis in Extension Work**

Gender analysis is important in development programmes for many reasons. It helps to do a systematic assessment of males and females often different needs, preferences, activities, and preferences as well as different access and control over resources by males and females, sexual division of labour, and income-generating activities and participation of men and women in development opportunities. The importance of gender analysis is summarised below:

1. It provides information recognising gender and its relationship with race, ethnicity, culture, class, age, disability and other statuses.
2. It helps in planning issues relating to livelihood. This will assist in achieving viable and sustainable livelihood strategies.
3. This can be used in raising awareness of gender issues. This helps to inform policy makers and provide gender training materials. All these will assist in monitoring different impact of policy, project and budget commitment on both male and female.
4. Gender analysis helps to identify the needs of male and female.
5. It helps to identify different problems facing the participation of both male and female.
6. Gender analysis helps to identify various ways in which male and female do or do not benefit from livelihood interventions.
7. It provides reasons for the current division of responsibilities and benefits and their effect on the distribution of rewards and incentives.
8. It helps to provide insights on how gender equality can be prioritised within efforts of sustainable development to ensure maximum efficiency in pursuing development goals.

9. Gender analysis helps to identify the roles and responsibilities of male and female (e.g. productive roles, reproductive roles); seasonal patterns (community participation, community politics), Assets (e. g. human assets, natural assets, social assets, physical assets and financial assets) power and decision making, needs and priorities (e.g. women's and men's needs and priorities).

### **SELF-ASSESSMENT EXERCISE**

Mention and discuss five importance of gender analysis.

### **4.0 CONCLUSION**

You have learnt why Gender Makes a Difference and Importance of gender analysis in extension work.

### **5.0 SUMMARY**

In this unit, you have learnt that:

- Agricultural projects especially those financed by Agricultural Development Projects (ADP) and other funding agencies indicate that considerations related to gender issues and women participation influence the overall success and sustainability of such projects.
- Gender analysis is important in development programmes for many reasons. It helps to do a systematic assessment of males and females often different needs, preferences, activities, and preferences as well as different access and control over resources by males and females, sexual division of labour, and income-generating activities and participation of men and women in development opportunities.

### **6.0 TUTOR-MARKED ASSIGNMENT**

Mention and discuss five importance of gender analysis.

### **7.0 REFERENCE/FURTHER READING**

Afolabi, M. M. (2008). "Women as Pillars of National Economy in Nigeria: A Study of Economic Activities of Rural Women in Six Local Government Areas of Ondo State." IAFFE Summer Conference, International Association for Feminist.

Buckland, L. Haleegoah, J. (1996). Gender Analysis in Agricultural Production. IITA Research Guide 58

Food and Agriculture Organisation of the United Nations (FAO) (1991a). Nigeria ' Rural Roads and Marketing Project. Identification Report Rome.

## **UNIT 2 GENDER ANALYSIS IN PROJECT DESIGN**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
  - 3.1 Gender Analysis in Project Design
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

During program and project design, gender analysis is the process of assessing the impact that a development activity may have on females and males, and on gender relations (the economic and social relationships between males and females which are constructed and reinforced by social institutions). It can be used to ensure that men and women are not disadvantaged by development activities, to enhance the sustainability and effectiveness of activities, or to identify priority areas for action to promote equality between women and men. During implementation, monitoring and evaluation, gender analysis assists to assess differences in participation, benefits and impacts between males and females, including progress towards gender equality and changes in gender relations. Gender analysis can also be used to assess and build capacity and commitment to gender sensitive planning and programming in donor and partner organisations; and to identify gender equality issues and strategies at country, sectoral or thematic programming level.

### **2.0 OBJECTIVE**

At the end of this unit, you should be able to:

- describe gender analysis in project design.

### **3.0 MAIN CONTENT**

#### **3.1 Gender Analysis in Project Design**

Evidences from many countries shows that women usually do not benefit automatically from agricultural development projects. Gender-neutral programs can sometimes bypass or be detrimental to women. Gender analysis as defined below will, therefore, more often need to

focus on women than on men. Special steps to include women and overcome constraints to their participation are usually needed.

Gender analysis can significantly increase efficiency, sustainability, and equity in interventions for rural and agricultural project development. *The aims of using gender analysis in agriculture are to:*

- Generate economic and social gains
- Improve overall project performance
- Overcome gender barriers that constrain agricultural productivity
- Promote equality of opportunity according to gender differences and needs
- Increase the participation of both men and women in project activities
- Ensure that new technologies will not adversely affect women.

At its simplest, gender analysis entails *seeing what our eyes have been trained not to see*. It is asking questions about the differences between men's and women's activities, roles, and resources to identify their developmental needs. Assessing these differences makes it possible to determine men's and women's constraints and opportunities within the farming system. By doing this, gender analysis can help ensure the provision of agricultural services that are needed by men and women farmers and are appropriate to their circumstances. This requires understanding men's and women's roles in farming by analysing quantitative and qualitative information about the following:

- *Activities*
  - i. Who within the household carries out which agricultural tasks and how rigid is the gender division of labour?
  - ii. What are the daily and seasonal variations in labour availability?
- *Resources and constraints*
  - i. Who has access to and control over productive resources, such as land and finance or human capital resources such as education, knowledge, time, mobility, and energy?
  - ii. What are the implications for those with limited access or control?
  - iii. What decisions do men and women make in the family and community?
  - iv. How do constraints under which men and women operate differ?

- *Benefits and incentives*
  - i. Who controls production?
  - ii. Who receives wages or benefits from production?
  - iii. Who controls income - that is, what are the incentives for different family members and who receives them?
  - iv. Which expenditures are men and women responsible for?

### **SELF-ASSESSMENT EXERCISE**

What are the aims of using gender analysis in agriculture projects?

### **4.0 CONCLUSION**

You have learnt the reasons for using gender analysis in agriculture projects.

### **5.0 SUMMARY**

In this unit, you have learnt the quantitative and qualitative information that need to be analysed and also learnt the aims of using gender analysis in agriculture projects.

### **6.0 TUTOR-MARKED ASSIGNMENT**

What are the aims of using gender analysis in agriculture project?

### **7.0 REFERENCES/FURTHER READING**

UNDP (1980). *Rural Women's Participation in Development*. New York: pp. 80-86.

Moock, J. L. (1986). *Understanding Africa's Rural Households and Farming Systems*. Boulder: Westview Press.



“male” or “female.” In some settings, a rigid division of labour exists between men and women: household members have separate incomes and expenditures and reciprocal or skewed rights and obligations. In others, the division of labour and specialisation of tasks is less rigid and not as skewed. In general, however, women tend to have a wider range of activities and enterprises than men. On the one hand, they have productive activities in agriculture and livestock management; on the other, they have chief responsibility for reproductive activities, that is, the bearing and rearing of children and maintenance of the household. Although, the gender-based division of labour in the farming system varies widely, it still affects responses to agricultural innovation everywhere.

### **3.2 Collecting Information on Gender**

Appropriate strategies to achieve desired country, sector, or project objectives can only be identified when good baseline information and gender-disaggregated data are available. Data are needed, on the one hand, to identify issues and, on the other, to determine prevalence and practice in the population in the intended project area. Data are also needed during implementation so that improvements can be identified and interventions monitored and evaluated from a gender perspective.

### **3.3 Incorporating Gender Issues in Agriculture Sector Work**

This section outlines key gender issues in economic and sector work in agriculture, poverty and gender-focused assessments, and country assistance strategies. As impact analyses of both project and structural adjustment programs have shown, actions to address the main national sector constraints may have different implications by gender. When men and women are affected differently by an intervention, they constitute separate categories of stakeholders and need to be accounted for as such in policy and project design. In addition, all women are not affected in the same way; like men, they will respond differently depending on age, class, ethnicity, and agricultural production system. Agricultural policymaking will, therefore, benefit from an analysis of the gender aspects of major economic indicators and key economic issues, both for the economy as a whole and the agricultural sector. Policymakers need to identify gender-based differences in the ability to respond to proposed policies and modify subsequent actions or include compensatory actions to liberalise markets and allow both men and women to benefit.



### **3.4 Gender Issues in Agriculture Projects**

Programs and projects that ignore gender-specific barriers to resources, opportunities, and benefits risk excluding a large proportion of farmers and the farming community. For example, studies of structural adjustment have found that gender differences have hindered women from responding to incentives.

It is never too early to include a gender perspective. The earlier a gender perspective is included, the greater will be the benefits. For example, the Asia and Africa regions in the World Bank systematically review initial executive project summaries to identify projects that would benefit from gender analysis. Projects with good potential, serious risk or need of support from gender specialists are monitored throughout preparation and guidance, and technical inputs are offered as needed. At the same time, no point exists in the project cycle when it is too late to consider gender issues. Even at project completion, gender analysis can help explain success or failure and draw useful lessons for future interventions.

#### **SELF-ASSESSMENT EXERCISE**

What do you understand by gender roles in the farming system?

### **4.0 CONCLUSION**

You have learnt about how agricultural development projects can be improved through gender analysis

### **5.0 SUMMARY**

In this unit, you have learnt that:

- Women tend to concentrate their agricultural activities around the homestead, primarily because of their domestic and reproductive roles; they play a critical role in food production, post-harvest activities, livestock care, and increasingly in cash cropping.
- Appropriate strategies to achieve desired country, sector, or project objectives can only be identified when good baseline information and gender-disaggregated data are available.

### **6.0 TUTOR-MARKED ASSIGNMENT**

What do you understand by gender issues in agriculture projects?

## **7.0 REFERENCES/FURTHER READING**

UNDP/UNIFEM (2009). A User's Guide to Measuring Gender-Sensitive Basic Service Delivery.

Socio-Economic and Gender Analysis Programme (SEAGA) (2001). Project Cycle Management Technical Guide.

## **UNIT 4 ECONOMIC ANALYSIS OF AGRICULTURAL PROJECTS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Economic Analysis of Agricultural Projects
  - 3.2 Tangible Benefits of Agricultural Projects
  - 3.3 Other Kinds of Tangible Benefits
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

We undertake economic analyses of agricultural projects to compare costs with benefits and determine which among alternative projects have an acceptable return.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- identify the costs and benefits of a proposed project
- list some tangible benefits of agricultural projects.

### **3.0 MAIN CONTENT**

#### **3.1 Economic Analysis of Agricultural Projects**

The costs and benefits of a proposed project therefore must be identified. Furthermore, once costs and benefits are known, they must be priced, and their economic values determined. All of this is obvious enough, but frequently it is tricky business.

#### ***Objectives, Costs, and Benefits***

In project analysis, the objectives of the analysis provide the standard against which costs and benefits are defined. Simply put, a cost is anything that reduces an objective, and a benefit is anything that contributes to an objective.

The problem with such simplicity, however, is that each participant in a project has many objectives. For a farmer, a major objective of participating is to maximise the amount his family has to live on. But this is only one of the farmer's interests. He may also want his children to be educated; as a result, they may not be available to work full time in the fields. He may also value his time away from the fields: a farmer will not adopt a cropping pattern, however remunerative, that requires him to work 10 hours a day 365 days a year. Taste preference may lead a farmer to continue to grow a traditional variety of rice for home consumption even though a new, high-yielding variety might increase his family income more. A farmer may wish to avoid risk, and so may plan his cropping pattern to limit the risk of crop failure to an acceptable level or to reduce the risk of his depending solely on the market for the food grains his family will consume. As a result, although he may be able to increase his income over time if he grows cotton instead of wheat or maize, he would rather continue growing food grains to forestall the possibility that in any one year, the cotton crop might fail or that food grains might be available for purchase in the market only at a very high price. All these considerations affect a farmer's choice of cropping pattern and thus the income-generating capacity of the project. Yet, all are sensible decisions in the farmer's view.

For private business firms or government corporations, a major objective is to maximise net income, yet both have significant objectives other than simply making the highest profit possible. Both will want to diversify their activities to reduce risk. The private store owner may have a preference for leisure, which leads him to hire a manager to help operate his store, especially during late hours. This reduces the income—since the manager must be paid a salary—but it is a sensible choice. For policy reasons, a public bus corporation may decide to maintain services even in less densely populated areas or at off-peak hours and thereby reduce its net income.

A society as a whole will have as a major objective increased national income, but it clearly will have many significant, additional objectives. One of the most important of these is income distribution. Another is simply to increase the number of productive job opportunities so that unemployment may be reduced which may be different from the objective of income distribution itself. Yet another objective may be to increase the proportion of savings in any given period so there will be more to invest, faster growth, and, hence, more income in the future. Or, there may be issues to address broader than narrow economic considerations such as the desire to increase regional integration, to upgrade the general level of education, to improve rural health, or to safeguard national security. Any of these objectives might lead to the

choice of a project (or a form of a project) that is not the alternative that would contribute most to national income narrowly defined.

### ***"With" and "Without" Comparisons***

Project analysis tries to identify and value the costs and benefits that will arise with the proposed project and to compare them with the situation as it would be without the project. The difference is the incremental net benefit arising from the project investment. This approach is not the same as comparing the situation "before" and "after" the project. The before-and-after comparison fails to account for changes in production that would occur without the project and thus leads to an erroneous statement of the benefit attributable to the project investment.

A change in output without the project can take place in two kinds of situations. The most common is when production in the area is already growing, if only slowly, and will probably continue to grow during the life of the project. The objective of the project is to increase growth by intensifying production. In Syria, at the time the First Livestock Development Project was appraised, for example, production in the national sheep flock was projected to grow at about one percent a year without the project. The project was to increase and stabilise sheep production and the incomes of semi nomadic flock owners and sheep fatteners by stabilising the availability of feed and improving veterinary services. With the project, national flock production was projected to grow at the rate of three percent a year. In this case, if the project analyst had simply compared the output before and after the project, he would have erroneously attributed the total increase in sheep production to the project investment.

A change in output can also occur without the project if production would actually fall in the absence of new investment. In Guyana, on the north coast of South America, rice and sugarcane are produced on a strip of clay and silt soil edging the sea. The coast was subject to erosion from wave action. Under the Sea Defense Project, the government of Guyana has built seawalls to prevent the erosion. The benefit from this project, then, is not increased production but avoiding the loss of agricultural output and sites for housing. A simple before-and-after comparison would fail to identify this benefit.

In some cases, an investment to avoid a loss might also lead to an increase in production, so that the total benefit would arise partly from the loss avoided and partly from increased production. In Pakistan, many areas are subject to progressive salinization as a result of heavy irrigation and the waterlogging that is in part attributable to seepage from irrigation canals. Capillary action brings the water to the surface

where evaporation occurs, leaving the salt on the soil. If nothing is done to halt the process, crop production will fall. A project is proposed to line some of the canals, thus to reduce the seepage and permit better drainage between irrigations. The proposed project is expected to arrest salinization, to save for profitable use the irrigation water otherwise lost to seepage, and to help farmers increase their use of modern inputs. The combination of measures would not only avoid a loss but also lead to an increase in production. Again, a simple before-and-after comparison would fail to identify the benefit realised by avoiding the loss.

Of course, if no change in output is expected in the project area without the project, then the distinction between the before-and-after comparison and the with-and-without comparison is less crucial. In some projects, the prospects for increasing production without new investment are minimal. In the Kemubu Irrigation Project in north-eastern Malaysia, a pump irrigation scheme was built that permitted farmers to produce a second rice crop during the dry season. Without the project, most of the area was used for grazing, and with the help of residual moisture or small pumps some was used to produce tobacco and other cash crops. Production was not likely to increase because of the limited amount of water available. With the project now in operation, rice is grown in the dry season. Of course, the value of the second rice crop could not be taken as the total benefit from the project. From this value must be deducted the value forgone from the grazing and the production of cash crops. Only the incremental value could be attributed to the new investment in pumps and canals.

Another instance where there may be no change in output without the project is the obvious one found in some settlement projects. Without the project there may be no economic use of the area at all. In the Alto Turi Land Settlement Project in north-eastern Brazil, settlers established their holdings by clearing the forest, planting upland rice, and then establishing pasture for production of beef cattle. At the time the settlers took up their holdings the forest had not been economically exploited nor was it likely to be, at least for many years, in the absence of the project. In this case, the output without the project would be the same as the output before the project.

### ***Direct Transfer Payments***

Some entries in financial accounts really represent shifts in claims to goods and services from one entity in the society to another and do not reflect changes in national income. These are the so-called direct transfer payments, which are much easier to identify if our definition of costs and benefits is kept in mind. In agricultural project analysis four

kinds of direct transfer payments are common: taxes, subsidies, loans, and debt service (the payment of interest and repayment of principal).

Take taxes, for example. In financial analysis, a tax payment is clearly a cost. When a farmer pays a tax, his net benefit is reduced. But the farmer's payment of tax does not reduce the national income. Rather, it transfers income from the farmer to the government so that this income can be used for social purposes presumed to be more important to the society than the increased individual consumption (or investment) had the farmer retained the amount of the tax. Because payment of tax does not reduce national income, it is not a cost from the standpoint of the society as a whole. Thus, in economic analysis we would not treat the payment of taxes as a cost in project accounts. Taxes remain a part of the overall benefit stream of the project that contributes to the increase in national income. Of course, no matter what form a tax takes, it is still a transfer payment whether a direct tax on income or an indirect tax such as a sales tax, an excise tax, or a tariff or duty on an imported input for production. But some caution is advisable here. Taxes that are treated as a direct transfer payment are those representing a diversion of net benefit to the society. Quite often, however, government charges for goods supplied or services rendered may be called taxes. Water rates, for example, may be considered a tax by the farmer, but from the standpoint of the society as a whole they are a payment by the farmer to the irrigation authority in exchange for water supplied. Since building the irrigation system reduces national income, the farmer's payment for the water is part of the cost of producing the crop, the same as any other payment for a production input. Other payments called taxes may also be payments for goods and services rendered rather than transfers to the government. Some charges at the port is not a tax but a payment for services and so would not be treated as a duty would be. Whether a tax should be treated as a transfer payment or as a payment for goods and services depends on whether the payment is a compensation for goods and services needed to carry out the project or merely a transfer, to be used for general social purposes, of some part of the benefit from the project to the society as a whole.

Subsidies are simply direct transfer payments that flow in the opposite direction from taxes. If a farmer is able to purchase fertilizer at a subsidized price, that will reduce his costs and thereby increase his net benefit, but the cost of the fertilizer in the use of the society's real resources remains the same. The resources needed to produce the fertilizer (or import it from abroad) reduce the national income available to the society. Hence, for economic analysis of a project we must enter the full cost of the fertilizer.

Again, it makes no difference what form the subsidy takes. One form is that which lowers the selling price of inputs below what otherwise would be their market price. But a subsidy can also operate to increase the amount the farmer receives for what he sells in the market, as in the case of a direct subsidy paid by the government that is added to what the farmer receives in the market. A more common means to achieve the same result does not involve direct subsidy. The market price may be maintained at a level higher than it otherwise would be by, say, levying an import duty on competing imports or forbidding competing imports altogether. Although it is not a direct subsidy, the difference between the higher controlled price set by such measures and the lower price for competing imports that would prevail without such measures does represent an indirect transfer from the consumer to the farmer.

Credit transactions are the other major form of direct transfer payment in agricultural projects. From the standpoint of the farmer, receipt of a loan increases the production resources he has available; payment of interest and repayment of principal reduce them. But from the standpoint of the economy, things look different. Does the loan reduce the national income available? No, it merely transfers the control over resources from the lender to the borrower. Perhaps one farmer makes the loan to his neighbour. The lending farmer cannot use the money he lends to buy fertilizer, but the borrowing farmer can. The use of the fertilizer, of course, is a cost to the society because it uses up resources and thus reduces the national income. But the loan transaction does not itself reduce the national income; it is, rather, a direct transfer payment. In reverse, the same thing happens when the farmer repays his loan. The farmer who borrowed cannot buy fertilizer with the money he uses to repay the loan his neighbour made, but his neighbour can. Thus, the repayment is also a direct transfer payment.

Some people find the concept of transfer payments easier to understand if it is stated in terms of real resource flows. Taking this approach in economic analysis, we see that a tax does not represent a real resource flow; it represents only the transfer of a claim to real resource flows. The same holds true for a direct subsidy that represents the transfer of a claim to real resources from, say, an urban consumer to a farmer. This line of reasoning also applies to credit transactions. A loan represents the transfer of a claim to real resources from the lender to the borrower. When the borrower pays interest or repays the principal, he is transferring the claim to the real resources back to the lender-but neither the loan nor the repayment represents, in itself, use of the resources.



### ***Costs of Agricultural Projects***

In almost all project analyses, costs are easier to identify (and value) than benefits. In every instance of examining costs, we will be asking ourselves if the item reduces the net benefit of a farm or the net income of a firm (our objectives in financial analysis), or the national income (our objective in economic analysis).

#### ***Physical goods***

Rarely will physical goods used in an agricultural project be difficult to identify. For such goods as concrete for irrigation canals, fertilizer and pesticides for increasing production, or materials for the construction of homes in land settlement projects, it is not the identification that is difficult but the technical problems in planning and design associated with finding out how much will be needed and when.

#### ***Labour***

Neither will the labour component of agricultural projects be difficult to identify. From the highly skilled project manager to the farmer maintaining his orchard while it is coming into production, the labour inputs raise less a question of what than, of how much and when. Labour may, however, raise special valuation problems that call for the use of a shadow price. Confusion may also arise on occasion in valuing family labour.

#### ***Land***

By the same reasoning, the land to be used for an agricultural project will not be difficult to identify. It is generally not difficult to determine where the land necessary for the project will be located and how much will be used. Yet problems may arise in valuing land because of the very special kind of market conditions that exist when land is transferred from one owner to another.

#### ***Contingency allowances***

In projects that involve a significant initial investment in civil works, the construction costs are generally estimated on the initial assumption that there will be no modifications in design that would necessitate changes in the physical work; no exceptional conditions such as unanticipated geological formations; and no adverse phenomena such as floods, landslides, or unusually bad weather. In general, project cost estimates also assume that there will be no relative changes in domestic or international prices and no inflation during the investment period. It would clearly be unrealistic to rest project cost estimates only on these

assumptions of perfect knowledge and complete price stability. Sound project planning requires that provision be made in advance for possible adverse changes in physical conditions or prices that would add to the baseline costs. Contingency allowances are thus included as a regular part of the project cost estimates.

Contingency allowances may be divided into those that provide for physical contingencies and those for price contingencies. In turn, price contingency allowances comprise two categories, those for relative changes in price and those for general inflation. Physical contingencies and price contingencies that provide for increases in relative costs underlie our expectation that physical changes and relative price changes are likely to occur, even though we cannot forecast with confidence just how their influence will be felt. The increase in the use of real goods and services represented by the physical contingency allowance is a real cost and will reduce the final goods and services available for other purposes; that is, it will reduce the national income and, hence, is a cost to the society. Similarly, a rise in the relative cost of an item implies that its productivity elsewhere in the society has increased; that is, its potential contribution to national income has risen. A greater value is forgone by using the item for our project; hence, there is a larger reduction in national income. Physical contingency allowances and price contingency allowances for relative changes in price, then, are expected-if unallocated-project costs, and they properly form part of the cost base when measures of project worth are calculated.

General inflation, however, poses a different problem in project analysis, the most common means of dealing with inflation is to work in constant prices, on the assumption that all prices will be affected equally by any rise in the general price level. This permits valid comparisons among alternative projects. If inflation is expected to be significant, however, provision for its effects on project costs needs to be made in the project financing plan so that an adequate budget is obtained. Contingency allowances for inflation would not, however, be included among the costs in project accounts other than the financing plan.

### ***Taxes***

Recall that the payment of taxes, including duties and tariffs, is customarily treated as a cost in financial analysis but as a transfer payment in economic analysis (since such payment does not reduce the national income). The amount that would be deducted for taxes in the financial accounts remains in the economic accounts as part of the incremental net benefit and, thus, part of the new income generated by the project.

### ***Debt service***

The same approach applies to debt service—the payment of interest and the repayment of capital. Both are treated as an outflow in financial analysis. In economic analysis, however, they are considered transfer payments and are omitted from the economic accounts.

Treatment of interest during construction can give rise to confusion. Lending institutions sometimes add the value of interest during construction to the principal of the loan and do not require any interest payment until the project begins to operate and its revenues are flowing. This process is known as "capitalising" interest. The amount added to the principal as a result of capitalising interest during construction is similar to an additional loan. Capitalising interest defers interest cost, but when the interest payments are actually due, they will, of course, be larger because the amount of the loan has been increased. From the standpoint of economic analysis, the treatment of interest during construction is clear. It is a direct transfer payment the same as any other interest payment, and it should be omitted from the economic accounts. Often interest during construction is simply added to the capital cost of the project. To obtain the economic value of the capital cost, the amount of the interest during construction must be subtracted from the capital cost and omitted from the economic account.

In economic analysis, debt service is treated as a transfer within the economy even if the project will actually be financed by a foreign loan and debt service will be paid abroad. This is because of the convention of assuming that all financing for a project will come from domestic sources and all returns from the project will go to domestic residents. This convention, as noted earlier, separates the decision of how good a project is from the decision of how to finance it. Hence, even if it were expected that a project would be financed, say, by a World Bank loan, the debt service on that loan would not appear as a cost in the economic accounts of the project analysis.

### ***Sunk costs***

Sunk costs are those costs incurred in the past upon which a proposed new investment will be based. Such costs cannot be avoided, however poorly advised they may have been. When we analyse a proposed investment, we consider only future returns to future costs; expenditures in the past, or sunk costs, do not appear in our accounts.

In practice, if a considerable amount has already been spent on a project, the future returns to the future costs of completing the project would probably be quite attractive even if it is clear in retrospect that the

project should never have been begun. The ridiculous extreme is when only one dollar is needed to complete a project, even a rather poor one, and when no benefit can be realised until the project is completed. The "return" to that last dollar may well be extremely high, and it would be clearly worthwhile to spend it. But the argument that because much has already been spent on a project it therefore must be continued is not a valid criterion for decision. There are cases in which it would be preferable simply to stop a project midway or to draw it to an early conclusion so that future resources might be freed for higher-yielding alternatives.

For evaluating past investment decisions, it is often desirable to do an economic and financial analysis of a completed project. Here, of course, the analyst would compare the return from all expenditures over the past life of the project with all returns. But this kind of analysis is useful only for determining the yield of past projects in the hope that judgments about future projects may be better informed. It does not help us decide what to do in the present. Money spent in the past is already gone; we do not have as one of our alternatives not to implement a completed project.

### **3.2 Tangible Benefits of Agricultural Projects**

Tangible benefits of agricultural projects can arise either from an increased value of production or from reduced costs. The specific forms, in which tangible benefits appear, however, are not always obvious, and valuing them may be quite difficult.

#### ***Increased production***

Increased physical production is the most common benefit of agricultural projects. An irrigation project permits better water control so that farmers can obtain higher yields. Young trees are planted on cleared jungle land to increase the area devoted to growing oil palm. A credit project makes resources available for farmers to increase both their operating expenditures for current production-for fertilizers, seeds, or pesticides-and their investment-for a tube well or a power thresher. The benefit is the increased production from the farm.

In a large proportion of agricultural projects, the increased production will be marketed through commercial channels. In that case, identifying the benefit and finding a market price will probably not prove too difficult, although there may be a problem in determining the correct value to use in the economic analysis.

In many agricultural projects, however, the benefits may well include increased production consumed by the farm family itself. Such is the case in irrigation rehabilitation projects along the north coast of Java. The home-consumed production from the projects increased the farm families' net benefit and the national income just as much as if it had been sold in the market. Indeed, we could think of the hypothetical case of a farmer selling his output and then buying it back. Since home-consumed production contributes to project objectives in the same way as marketed production, it is clearly part of the project benefits in both financial and economic analysis. Omitting home-consumed production will tend to make projects that produce commercial crops seem relatively high-yielding, and it could lead to a poor choice among alternative projects. Failure to include home-consumed production will also mean underestimating the return to agricultural investments relative to investments in other sectors of the economy.

When home-consumed crops will figure prominently in a project, the importance of careful financial analysis is increased. In this case, it is necessary to estimate not only the incremental net benefit-including the value of home-consumed production and money from off-farm sales-but also the cash available to the farmer. From the analysis of cash income and costs, one can determine if farmers will have the cash in hand to purchase modern inputs or to pay their credit obligations. It is possible to have a project in which home-consumed output increases enough for the return to the economy as a whole to be quite attractive, but in which so little of the increased production is sold that farmers will not have the cash to repay their loans.

### *Quality improvement*

In some instances, the benefit from an agricultural project may take the form of an improvement in the quality of the product. For example, the analysis for the Livestock Development Project in Ecuador, which was to extend loans to producers of beef cattle, assumed that ranchers would be able not only to increase their cattle production but also to improve the quality of their animals so that the average live price of steers per kilogram would rise from S/5.20 to S/6.40 in constant value terms over the twelve-year development period. (The symbol for Ecuadorian sucres is S/.) Loans to small dairy farmers in the Rajasthan Smallholder Dairy Improvement Project in India are intended to enable farmers not only to increase output but also to improve the quality of their product. Instead of selling their milk to make ghee (cooking oil from clarified butter), farmers will be able to sell it for a higher price in the Jaipur fluid milk market. As in these examples, both increased production and quality improvement are most often expected in agricultural projects, although both may not always be expected. One word of warning: both the rate

and the extent of the benefit from quality improvement can easily be overestimated.

### ***Change in time of sale***

In some agricultural projects, benefits will arise from improved marketing facilities that allow the product to be sold at a time when prices are more favourable. A grain storage project may make it possible to hold grain from the harvest period, when the price is at its seasonal low, until later in the year when the price has risen. The benefit of the storage investment arises out of this change in "temporal value."

### ***Change in location of sale***

Other projects may include investment in trucks and other transport equipment to carry products from the local area where prices are low to distant markets where prices are higher. For example, the Fruit and Vegetable Export Project in Turkey included provision for trucks and ferries to transport fresh produce from southeastern Turkey to outlets in the European Common Market. The benefits of such projects arise from the change in "locational value."

In most cases, the increased value arising from marketing projects will be split between farmers and marketing firms as the forces of supply and demand increase the price at which the farmer can sell in the harvest season and reduce the monopolistic power of the marketing firm or agency. Many projects are structured to ensure that farmers receive a larger part of the benefit by making it possible for them to build storage facilities on their farms or to band together into cooperatives, but an agricultural project could also involve a private marketing firm or a government agency, in which case much of the benefit could accrue to someone other than farmers.

### ***Changes in product form (grading and processing)***

Projects involving agricultural processing industries expect benefits to arise from a change in the form of the agricultural product. Farmers sell paddy rice to millers who, in turn, sell polished rice. The benefit to the millers arises from the change in form. Canners preserve fruit, changing its form and making it possible at a lower cost to change its time or location of sale. Even a simple processing facility such as a grading shed gives rise to a benefit through changing the form of the product from run-of-the-orchard to sorted fruit. In the Himachal Pradesh Apple Marketing Project in northern India, the value of the apples farmers produce is increased by sorting; the best fruit is sold for fresh

consumption while fruit of poorer quality is used to make a soft drink concentrate. In the process, the total value of the apples is increased.

### ***Cost reduction through mechanisation***

The classic example of a benefit arising from cost reduction in agricultural projects is that gained by investment in agricultural machinery to reduce labour costs. Examples are tube wells substituting for hand-drawn or animal-drawn water, pedal threshers replacing hand threshing, or (that favourite example) tractors replacing draft animals. Total production may not increase, but a benefit arises because the costs have been trimmed (provided, of course, that the gain is not offset by displaced labour that cannot be productively employed elsewhere).

### ***Reduced transport costs***

Cost reduction is a common source of benefit wherever transport is a factor. Better feeder roads or highways may reduce the cost of moving produce from the farm to the consumer. The benefit realised may be distributed among farmers, truckers, and consumers.

### ***Losses avoided***

In discussing with-and-without comparisons in project analyses earlier in this unit, we noted that in some projects the benefit may arise not from increased production but from a loss avoided. This kind of benefit stream is not always obvious, but it is one that the with-and-without test tends to point out clearly. In Jamaica, lethal yellowing is attacking the Jamaica Tall variety of coconut. The government has undertaken a large investment to enable farmers to plant Malayan Dwarf coconuts, which are resistant to the disease. Total production will change very little as a result of the investment, yet both the farmers and the economy will realise a real benefit because the new investment prevents loss of income. The Lower Egypt Drainage Project involves the largest single tile drainage system in the world. The benefit will arise not from increasing production in the already highly productive Nile delta, but from avoiding losses due to the water logging caused by year-round irrigation from the Aswan High Dam.

Sometimes a project increases output through avoiding loss—a kind of double classification, but one that in practice causes no problem. Proposals to eradicate foot-and-mouth disease in Latin America envision projects by which the poor physical condition or outright death of animals will be avoided. At the same time, of course, beef production would be increased.

### 3.3 Other Kinds of Tangible Benefits

Although we have touched on the most common kinds of benefits from agricultural projects, those concerned with agricultural development will find other kinds of tangible, direct benefits most often in sectors other than agriculture. Transport projects are often very important for agricultural development. Benefits may arise not only from cost reduction, as noted earlier, but also from time savings, accident reduction, or development activities in areas newly accessible to markets. If new housing for farmers has been included among the costs of a project, as is often the case in land settlement and irrigation projects, then among the benefits will be an allowance for the rental value of the housing. Since this is an imputed value, there are valuation problems that will be noted later.

#### *Secondary costs and benefits*

Projects can lead to benefits created or costs incurred outside the project itself. Economic analysis must take account of these external, or secondary, costs and benefits so they can be properly attributed to the project investment. (Of course, this applies only in economic analysis; the problem does not arise in financial analysis.)

When market prices are used in economic analysis, as has been the custom in the United States for water resource and other public works projects, it is necessary to estimate the secondary costs and benefits and then add them to the direct costs and benefits.

Instead of adding on secondary costs and benefits, one can either adjust the values used in economic analysis or incorporate the secondary costs and benefits in the analysis, thereby in effect converting them to direct costs and benefits. This is the approach taken in most project analyses carried out by international agencies, in the systems based on shadow prices proposed in more recent literature on project analysis, and in the analytical system presented here.

#### *Intangible costs and benefits*

Almost every agricultural project has costs and benefits that are intangible. These may include creation of new job opportunities, better health and reduced infant mortality as a result of more rural clinics, better nutrition, reduced incidence of waterborne disease as a result of improved rural water supplies, national integration, or even national defence. Such intangible benefits are real and reflect true values.



In most cases of intangible benefits arising from an agricultural project, the costs are tangible enough: construction costs for schools, salaries for nurses in a public health system, pipes for rural water supplies, and the like. Intangible costs, however, do exist in projects. Such costs might be incurred if new projects disrupt traditional patterns of family life, if development leads to increased pollution, if the ecological balance is upset, or if scenic values are lost. Again, although valuation is impossible, intangible costs should be carefully identified and if possible quantified. In the end, every project decision will have to take intangible factors into account through a subjective evaluation because intangible costs can be significant and because intangible benefits can make an important contribution to many of the objectives of rural development.

### **SELF-ASSESSMENT EXERCISE**

- i. Give example of direct transfer payments in project analysis.
- ii. Give two divisions of contingency allowances.

## **4.0 CONCLUSION**

In this unit, you have learnt of the costs and benefits in agricultural projects and also learnt how to determine which among alternative projects have an acceptable return.

## **5.0 SUMMARY**

In this unit you have learnt that in economic analyses of agricultural projects, the costs and benefits of a proposed project therefore must be identified. Furthermore, once costs and benefits are known, they must be priced, and their economic values determined

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What do you understand by "With" and "Without" Comparisons?
2. What do you understand by Intangible Costs and Benefits?

## **7.0 REFERENCES/FURTHER READING**

Olukosi, J.O. & Alamu, J.F. (2013). *Introduction to Agricultural Finance: Principles and Applications*. Zaria Nigeria: Great Glory Publishers, pp. 20-40.

Reddy, S. S. & Ram, P.R. (2004). *Agricultural Finance and Management*. New Delhi: Oxford & IBH Publishing Co. PVT. LTD.

## **MODULE 4 PROJECT APPRAISAL AND PROJECT EVALUATION**

Unit 1	Project Appraisal – Types and their Meanings
Unit 2	Project Evaluation – Meaning and Objectives
Unit 3	Types of Project Evaluation and Project Evaluation Process
Unit 4	Post Project Evaluation
Unit 5	Project Cost Control
Unit 6	Process of Evaluating Agricultural Projects
Unit 7	Method of Project Evaluation
Unit 8	Financial Analysis of Projects

### **UNIT 1 PROJECT APPRAISAL – TYPES AND THEIR MEANINGS**

#### **CONTENTS**

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	Technical Appraisal
3.2	Commercial Appraisal
3.3	Economic Appraisal
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	Reference/Further Reading

#### **1.0 INTRODUCTION**

Project appraisal is a process of detailed examination of several aspects of a given project before recommending the same. The institution that is going to fund the project has to satisfy itself before providing financial assistance for the project. The lending institution has to ensure that the investment on the proposed project will generate sufficient returns on the investment made and that loan amount disbursed for the implementation of the project will be recovered along with interest within a reasonable period of time. The concept of security oriented lending has given way for the introduction of purpose oriented lending. Purpose oriented lending can be successful only if a detailed appraisal of the project is done before committing funds on the project.

## 2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain technical appraisal
- discuss commercial appraisal
- enumerate on economic appraisal.

## 3.0 MAIN CONTENT

### 3.1 Technical Appraisal

Technical appraisal broadly involves a critical study of the following aspects;

#### 1. Selection of Process/Technology

For manufacturing a product, more than one process/technology may be available. For example, steel can be manufactured either by the Bessemer process or by the open-hearth process. Cement can be manufactured either by the wet process or by the dry process.

The choice of technology also depends upon the quality and quantity of the product proposed to be manufactured. If the quantity required to be produced is large, mass production techniques should be followed and the relevant technology is to be adopted. The quality of the product depends upon the use to which it is meant for. A product of pharmaceutical grade or laboratory grade should have high quality and hence sophisticated production technology is required to achieve the desired quality. Products of commercial grade do not need such high quality and the technology can be chosen accordingly. There is no point in choosing a sophisticated production technology meant for getting high quality products, where the product is meant for commercial use for which high quality is not required. Such unwarranted emphasis on quality will only land the project in trouble since the consumers will not be ready to pay higher price merely for the sake of high quality which they do not really need.

In the choice of technology, as far as possible, the latest technology should be chosen provided there are no other constraints. However, in choosing the latest technology, it must be seen that the technology has been proved successful for large scale production at factory level. Relying only on the technology proven in the laboratory is to be avoided.

A new technology that is protected by patent right etc., can be obtained either by licensing arrangement or the technology can be purchased outright. Under licensing arrangement, the right to use the patented technology and to get the related technical know-how are mutually agreed upon between the licensor and the licensee. Getting a technology under licensing arrangement is suited when the cost of purchasing the technology outright is huge/when there is a rapid technological advancement in the field with the result that there is every possibility of the technology becoming outdated shortly.

Technology can be purchased outright if the cost of acquisition is affordable, if there is no likelihood of significant improvement in technology in the foreseeable future and if the technology can be implemented and maintained without the need for continuous support from the seller of the technology.

**Appropriate technology:** A technology appropriate for one country may not be the ideal one for another country. Even within a country, depending upon the location of the project and other features, two different technologies may be ideal for two similar projects set up by two different firms at two different locations. The choice of a suitable technology for a project calls for identifying what is called the 'appropriate technology'. The term 'appropriate technology' refers that technology that is suitable for the local economic, social and cultural conditions. Appropriate technology can be identified by asking the following questions.

- Does the technology make use of the locally available raw materials?
- Can the technology be implemented and maintained by the locally available man power?
- Is the technology in turn with the local social and cultural conditions?
- Does the technology protect ecological balance etc?

For example, textile yarn spinning frames manufactured in Europe were designed in such a way that the manual labour requirement to operate the machine is kept at the minimum while the electric power consumption by the machine is allowed to stand at a higher level. This technology is suited for European conditions where the cost of electric power is comparatively cheaper while getting manual labour is comparatively costlier. Indian conditions demand an opposite proposition since manual labour can be procured at a comparatively cheaper cost while the cost of electric power is comparatively higher. Hence, the choice of appropriate technology should be dealt with adequate care.

## 2. Scale of Operations

Scale of operations is signified by the size of the plant. The plant size mainly depends on the market for the output of the project. Economic size of the plant varies from project to project. Economic size of the plant for a given project can be arrived at by an analysis of capital and operating cost as a function of the plant size. Though the economic size of the plant for a given project can be theoretically arrived at by the above process, the final decision on the plant size is circumscribed by a number of factors, the main factor being the promoter's ability to raise the funds required to implement the project. If the fund required to implement the project at its economic size is beyond the promoter's capacity to arrange for and if the economic size is too big in size for the promoter to manage, the promoter is bound to limit the size of the project to the size that will suit his finance and managerial capabilities. Whenever a project is proposed to be set up at a size below its economic size, it must be analysed carefully as to whether the project will survive at the proposed size (which is below the economic size).

Other factors like special problems of fabrication of equipments, transportation and erection of equipments, problems associated with availability of production inputs on a sustained basis etc, is also impose restriction on the plant size.

## 3. Raw Materials

A product can be manufactured using alternative raw materials and with alternative processes. The process of manufacture may sometimes vary with the raw materials chosen. If a product can be manufactured by using alternative raw materials, the raw materials that are locally available may be chosen. Since the manufacturing process and the machinery/equipment to be used also to a large extent depend upon the raw materials, the type of raw materials to be used should be chosen carefully after analysing various factors like the cost of different raw materials available, the transportation cost involved, the continuous availability of raw materials etc. Since the process of manufacture and the machinery/equipment required depend upon the raw materials used, the investment on plant and machinery will also to some extent depend upon the raw materials chosen. Hence, the cost of capital investments required on plant and machinery should also be studied before arriving at a decision on the choice of raw material.

For example, precipitated calcium carbonate can be produced using either limestone or shell-lime as the raw material. Shell-lime will be available near seashore while limestone will be available in areas with lime stones deposit. Since the quantity of raw material to be handled is

comparatively large, the cost of transporting the raw material from the place of availability to the factory site will also be considered. Also, though the end product is the same, there will be minor changes in the plant and machinery requirement for processing the different raw materials *viz.*, limestone and shell lime. All these factors are to be analysed before choosing the raw material to be used and the appropriate process of manufacture.

#### **4. Technical Know-how**

When technical know-how for the project is provided by expert consultants; it must be ascertained whether the consultant has the requisite knowledge and experience and whether he has already executed similar project successfully. Care should be exercised to avoid self-styled, inexperienced consultants. Necessary agreement should be executed between the project promoters and the know-how supplier incorporating all essential features of the know-how transfer. The agreement should be specific as to the part played by the know-how supplier (like taking out successful trial run, acceptable quality of final product, imparting necessary training to employees in the production process, taking out successful commercial production, performance guarantee for a specified number of years after the start of commercial production etc). The agreement should also include penalty clauses for non-performance of any of the conditions stipulated in the agreement. Payment of the know-how fee should as far as possible be made in stages along with the progress of the project and it is the normal practice of retain a portion of the know-how fee and to release the same only after compliance of all the conditions stipulated in the agreement.

#### **5. Collaborative Agreement**

If the project promoters have entered into agreement with foreign collaborators, the terms and conditions of the agreement may be studied and explained above for know-how supply agreement.

Apart from this, the following additional points deserve consideration.

- (a) The competence and reputation of the collaborators need to be ascertained through possible sources including the embassies abroad and the collaborator's bankers.
- (b) The technology proposed to be imported should suit to the local conditions. A highly sophisticated technology, which does not suit local conditions, will be detrimental to the project.
- (c) The collaboration agreement should have necessary approval of the Government of Nigeria

- (d) There should not be any restrictive clause in the agreement that import of equipment/machinery required for the project should be channelized through the collaborators. There should also be no clause for payment of commission and fee for the procurement of imported equipment/machinery.
- (e) The design of the machinery should be made available to the project promoter to facilitate future procurement and fabrication of the machinery in Nigeria at a later stage. Knowledge of the design of the machinery will also help in proper maintenance of the machinery.
- (f) The agreement should provide a clause that any dispute arising out of interpretation of the agreement, failure to comply with the clause contained in the agreement etc shall be decided only by courts within Nigeria.
- (g) The collaboration agreement should not impose any restriction on the exports of goods produced. It must be open to the project promoter to explore any market that is advantageous to him, including export markets in any part of the globe.
- (h) It must be ensured that the collaboration agreement does not infringe upon any patent rights.
- (i) If there is financial participation in the projects by the collaborator, its effect on the management of the unit and transfer of payment/payment of interest to the collaborators may also be studied.
- (j) It is better to have a buy-back arrangement with the technical collaborator. This is to ensure that the collaborator would be serious about the transfer of correct know-how and would ensure quality of the output. Buy-back arrangement also helps the unit to release the pressure on the need for valuable foreign exchange. Since there is an assured market for the output, the promoter need not worry about identifying market for his product immediately after the project is on stream. Market for the product, both indigenous and export market, can be explored during the course of time.

## 6. Product Mix

Customers differ in their needs and preferences. Hence, variation in size and quality of products are necessary to satisfy the varying needs and preference of customers in order to enable the project to produce goods and of varying size nature and quality as per the requirement of the customers, the production facility should be planned with an element flexibility.

Such flexibility in the production facilities will help the organisations to change the product mix as per customer requirements, which is very

essential for the survival and growth of any organisation. Adding flexibility with the production facilities is not without any cost. It involves additional cost.

However, a cost benefit analysis keeping in view long-term benefits will indicate the need for such additional cost to be incurred.

For example, a plastic container manufacturing industry can be planned to have more number of dies of different sizes, so that goods of different sizes can be produced according to the market requirement. This will give the unit a competitive edge.

### **Selection Procurement of Plant and Machinery**

**Selection of machinery:** The machinery and equipment required for project depends upon the production technology proposed to be adopted and the size of the plant proposed.

Capacity of machinery is to be decided by making the following rough estimates, thumb rules should be avoided.

- a. Take into consideration the output planned.
- b. Arrive at the machine hours required for each type of occasion.
- c. Arrive at the machine capacity after giving necessary allowances for machinery maintenance / break down, rest time for workers, set up time for machines, time lost during change of shifts etc.
- d. After having arrived at the capacity of the machinery as above, make a survey of the machinery available in the market with regard to capacity and choose that capacity which is either equal to or just above capacity theoretically arrived at.

In case of process industries, the capacity of the different machines used in various stages should be so selected that they are properly balanced.

The following points should be considered for selection of machinery:

- a) Apart from the main process machinery, equipment required for supply of utilities, quality control, effluent disposal, material handling equipment shall also be identified and purchased.
- b) Along with the purchase of main machinery, adequate numbers of tools and spares are also to be purchased and stocked.
- c) If necessary, standby arrangement should be made for critical equipment.
- d) Where the investment on a particular machine is high and its utility does not justify the huge investment, the chances of getting



- such work done through job orders from outside should be explored so that the heavy investment can be safely avoided.
- e) As far as possible, machinery suppliers or their authorized agents shall be asked to attend the erection work of the machinery since they will know the intricacies involved.
  - f) Practical constraints that exist are to be given due attention before selecting certain machinery. If availability of power is limited in the proposed location of the factory, care should be exercised in selection power intensive equipment like electric ovens, electric furnaces etc. so that their power requirement matches with the power availability. If necessary, replacing such power intensive machine with oil fired machinery (which use furnace oil as fuel instead of electricity) may be thought of. Similarly, while selecting sophisticated machinery which require highly skilled personnel to operate them, the availability of skilled manpower should be studied.
  - g) If the promoters proposed to purchase second hand machinery, its working conditions, estimated future life and its value are to be ascertained through a competent engineer. It must be ensured that the machinery is free from any charge to banks, financial institutions or other creditors.

**Procurement of machinery:** plant and machinery form any back bone of any industry. The quality of output depends upon the quality of machinery used in processing the raw materials (apart from the quality of the raw material itself). Uninterrupted production is again ensured only by high quality machines that do not break down so often. Hence no compromise should be made on the machinery available in the market. The performance of the machinery functioning elsewhere may be studied to have firsthand information before deciding upon the machinery supplier. Comparison of price quoted by a few standards and reputed machinery suppliers is normally done before deciding upon the supplier. It is not always necessary to choose the supplier who has quoted the least price among all. Other factor like reputation of the supplier, delivery schedule, after sales-services offered, performance guarantee, payment terms etc. need consideration before choosing a supplier.

### **Plant layout**

The efficiency of manufacturing operation depends upon the layout of the plant and machinery, plant-layout is the arrangement of the various production facilities within the production area. Plant layout should be so arranged that it ensures steady flow of production and minimise the overall cost.

The following should be considered while deciding plant-layout:

- a) The layout should be such that future expansion can be done without much alteration of the existing layout.
- b) The layout should facilitate effective supervision of work.
- c) Equipment causing pollution should be arranged to be located away from other plant and machinery. For example, generator is a major source of noise pollution. Generator cannot be placed amidst other machinery since the noise generated will spoil the entire atmosphere of the plant. Hence generally generator is housed in a separate shed away from the main plant. Equipments that generate fumes are normally placed separately, preferably along the side of walls so that proper exhaust and ducting arrangements can be made easy for driving out the fumes.
- d) There should be adequate clearance between adjacent machinery and between the wall and machinery to enable undertaking of regular inspection and maintenance work.
- e) The plant layout should ensured smooth flow of men and material from one stage to another.
- f) The plant layout should be one that offers maximum safety to the personnel working inside the plant.
- g) The plant layout should provide for proper lighting and ventilation.
- h) The plant layout should properly accommodate utilities like power and water connections and provision for effluent disposals.

### **Location of project**

Choosing a location for a new project is to be done taking many factors into account.

The study for plant location is done in two phases. First, a particular region/territory is chosen that is best suited for the project. Then, within the chosen region, the particular site is selected. Thus, we may say that there are two major factors viz., regional factors and site factors, to be considered.

### **Regional factors**

- (a) **Raw material:** raw material normally constitute about 50 to 60 percent of the cost of the final product. Hence, it is important that the cost of raw material should be minimum. To procure raw material at minimum cost, the plant must be located near to the place where raw material is available so that transportation cost will be reduced. The transportation cost will constitute a major portion of raw material cost if the raw material is bulky and

procured from distant places. This is the reason why sugar factories where located in the sugarcane growing areas, cement factories are located nearer to areas where lime stone is available and steel mills are located nearer to places where iron ore and coal deposits are available. Another common example is bricks and tile industry which is setup on the land where clay suitable for the manufacture brick/tile is available. If the raw material is bulky and is imported from abroad, the idea location of plant will be nearer to port, thus, the nearness of raw material acts as a major deciding factor in choosing the plant location.

- (b) **Proximity to market:** if transportation of the finished product is more difficult (due to the special nature of the finished product) than transporting the finished product is more as compared to the transportation cost of raw material, it is advantageous to locate the plant nearer to the consumers i.e., nearer to the market. 'Special nature of finished product' mentioned above deserve special consideration. The finished product may be one that is fragile and difficult to handle (glassware, clay ware/porcelain products): the finished product may be one that is perishable in short duration (cake, bread, pastry products). Such products of special nature make it mandatory to locate the plant nearer to the market.

Soft drink bottling plant is another example for locating the plant nearer to the market. The soft drink concentrate which is a major raw material is not bulk in quantity or can be transported to the plant with ease, whereas after manufacture, the quality of the soft drink increase manifold (since the soft drink concentrate is diluted during the manufacturing process) and more over, transportation of soft drinks in bottles is to be done with care.

- (c) **Availability of labour:** though unemployed people are plenty in our country, this does not mean that there will be no problem in getting that labour force required for the project. Availability of skilled labour is what is the criterion rather than availability of unemployed who are unemployable. If the project needs skills of general nature, people can be recruited and trained to the requirement. If the project needs skills of special nature, getting adequate skilled labour will not pose any problem if the plant is located where skilled labour force is available. People in different areas develop special skills in different activities by virtue of works culture prevailing in their respective areas. Skilled labourers required for running hosiery garment making factories are available in plenty in Tirupur (a town situated near Coimbatore). This is because of the reason hosiery garment

industry is existence in Tirupur for over 40 years. It is not always impossible to hire skilled labourers from distant places.

However, the following difficulties may be encountered.

1. The labourers may demand a higher wage since they would like to be compensated for leaving their birth place and migrating to a new location.
2. Continuous availability of skilled labourers may be affected.
3. The organisation may have to provide additional benefits like housing and recreational facilities in order to retain the labourers.

This may add to the cost of the project as well as cost of production.

- (d) **Availability of supporting industries:** if the firm has proposed to get some of the production operations done from outside, there must be suitable industries existing in the surrounding area to undertake such subcontracting works. For example, a project may envisage producing a product that may require a smooth finish for which it may need a surface finishing machine. The promoter may feel that the cost of surface finishing machine is on the higher side and it is more economical to get surface finishing job done from outside by contractors, instead of investing heavily on the machine. This can be made possible only if there are firms around that are ready to undertake such subcontract works.

The reverse phenomenon is also true i.e., if a project is setup mainly with the idea of subcontract work to a major industrial establishment, the project should be located as far as possible nearer to the major industry that is going to offer subcontracts. This can be seen by the existence of many ancillary industrial units surroundings major industrial establishment like BHEL, NTPC, etc.

- (e) **Availability of infrastructure facilities:** availability of power, water and transport facilities are the important aspects to be considered under this heading.

**Power:** power intensive industries should be located at places where regular power supply is available. It must be seen whether power supply in the area is made available through industrial feeder line (there are places where power line may have be agriculturally feeder lines. Power supplies through agricultural feeder lines are available only for a shorter period of time in a day).

If the manufacturing process is such that sudden power failure may disturb the manufacturing activities and may cause considerable losses, it is advisable to keep power generators as a standby. In such cases, the

cost of generator should be included in the project cost. For example, in plastic goods manufacturing industries, if there is sudden power failure, the molten material in the extruder will get cooled and solidified. After the resumption of power supply, the extruder is required to be heated up for considerable length of time to bring the machine to operation. This also will result in wastage of raw materials. In such situations, if power generator is available, the production can be continued without any interruption even if there is sudden power failure. In each case of power intensive industries, power supply is given from high tension power lines for which a voltage step down transformer is required to be erected. The cost of the step down transformer and other related installations are to be borne only by the project promoters and hence these should be provided for the while surviving at the project cost.

**Water:** water requirement for the project should be correctly arrived at. After having arrived at the water requirement, it must be checked if the required quantity of ground water can be obtained from the site. The level of ground water table may be checked by observing the open wells nearby. The likely depth of water table and the likely yield of water from the site can be ascertained with the services of qualified water diviners. Apart from the quantity of waters, the quality of water also must be suitable. If the industry is going to use water in its manufacturing process and if the quality of water to be used has a bearing on the quality of the output, the quality of the ground water is to be tested in the laboratory to ascertain its suitability. For example, dyeing industries need soft water for their manufacturing process. The chances of getting soft water suitable for the process from outside are to be found out. Alternatively, the hardness of the ground water can be removed by installing a water softening plant. The comparative cost of advantages of the two alternatives is to be worked out before deciding upon the alternatives best suited for the industry.

Steam boilers that are used in many processing industries need only soft waters. If the water available is not soft in nature, a water softening unit to treat the feed water to be used in the boiler is to be necessarily included in the project. Using of hard water for boilers will lead to formation of scales inside the boilers which will reduce the efficiency of the boiler and may even jeopardise the safety of boiler operation.

**Transport facilities:** transport cost are incurred in two stages. Firstly, for the transport of raw materials and fuel into the factory site, and secondly, for the movement of the finished goods from the factory site. Thus, if the site is so located that the industry is to incur additional transportation cost (which is recurring in nature), this will add to the cost of finished product. Hence, easy and cheap transport facilities are the most desired features.

- (f) **Locating industries in backward/most-backward areas, growth centre areas:** Government identifies regions which are lacking in industrial development and notify them as backward areas, most backward areas etc. Government also notifies growth centre which have potential for high growth. The Government offers many incentives in the form of capital subsidy, sale tax concessions, concessional financing assistance etc. for industries setup in these areas with the objective of ensuring dispersal of industrial activity throughout the country and to reduce regional disparities in industrial development. The incentives offered by the government can be availed by setting up projects in such notified areas. However, the project promoter should not merely get carried away by the attractiveness of the incentives and concessions available, but should make a judicious and unbiased analysis of other factors. Normally, such notified areas lack infrastructure and other facilities, which is the reason why these areas remain undeveloped and industrially backward. If the advantage outweighs the short comings, locations coming under notified backward areas can be chosen for the project.
- (g) **Climatic factors:** climatic factors have some influence in certain part of industries. Textiles spinning mills, for example require high humidity for the spinning of cotton yarn. Hence places with high ranges of humidity are suitable for locating cotton spinning mills. Though in areas of lesser humidity, cotton spinning mills can be setup by installing humidification plants; this will only add to the capital investment on plant and machinery and will also increase the cost of production due to increase expenses towards electric power for operating the humidification plant. Similarly, paper board industries find hot and dry climatic more suitable since paper board that are in wet conditions immediately after production can be sun-dried in open atmosphere.

**Site factors:** after having chosen a region that is comparatively more advantageous for the location of a project, for choosing a particular site in the chosen region, consideration like cost of land, suitability of land, availability and suitability of ground water, facilities for effluent disposal etc. are to be taken into account.

In general, industrial projects require considerable extent of land. If the unit cost of land is high, the investment required to be made on land may become prohibitively high, which should be looked into. Apart from cost of land, the soil suitability also plays a major role. Since industrial projects mostly involve heavy machinery which need strong foundations, the load bearing capacity of the soil should be sufficient to withstand the pressure. Clay and black cotton soil are not suitable

because of poor load bearing capacity and because of swelling nature when exposed to nature.

The nature of effluents depends upon the type of industry. If the effluent is of polluting nature, it has to be properly treated before disposal. Necessary consent for effluent disposal should be obtained from the concerned authorities. If the effluent is of polluting nature (as in the case of leather industries, chemical industries, paper plants etc.) there may be restrictions even for the disposal of the treated effluent if the location of the factory is nearer to the water course. Pollution control authorities sometimes stipulates conditions that major polluting industries should not be located within a minimum stipulated distance from natural water course. Hence, before choosing the site location for polluting industries, the possibility of getting consent from the concerned authorities should be ascertained beforehand. In case of projects that produce effluents that are permitted to be disposed off only after proper treatment, necessary effluent treatment plants should be included in the cost of the project.

**Choice of location:** decision on the choice of location for the given project is to be made after considering the points enumerated above. In view of the number of factors involved, deciding upon the project location is a complex problem. The problem is compounded further because of the existence of both tangible and intangible factors. If there are only tangible factors, the solution to the problem can be arrived at by mathematical means. Arriving at a decision combining the tangible and intangible factors involve subjective estimate.

**Choice of location based on tangible factors:** when tangible factors alone are considered, an ideal location is one for which the cost of setting up the project, cost of procuring raw materials, cost of processing the raw material into finished products and cost of distributing the finished product to the customers are minimum.

### **Project Scheduling**

Scheduling is nothing but the arrangement of activities of the project in the order of time in which they are to be performed.

The schedule which broadly indicates the logical sequence of events would be as:

- Land acquisition
- Site development
- Preparing building plans, estimates, designs, getting necessary approvals and entrusting the construction work to contractors

- Construction of building, machinery foundation and other related civil works and completion of the same
- Placing order for machinery
- Receipt of machinery at site
- Erection of machinery
- Commissioning of plant and taking trial runs
- Commencement of regular commercial production.

Each of the above mentioned activities consume resources viz., time, money and effort. The sequence of activities should be planned as to minimise the resource consumption. Without proper scheduling, resources are very likely to be wasted. As a part of technical appraisal, the financial institutions call for a detailed project implementation schedule indicating there in the various steps to be taken up in the project implementation in chronological order and time required for the completion of each stage.

### **3.2 Commercial Appraisal**

The commercial appraisal is concerned with market for the product/service. The very idea of promoting a project is to produce some product/service and to market the same to the consumers and earning a profit thereby. Hence, market appraisal occupies a prime place in project appraisal. In fact in modern management concept, marketing management receives more attention than in earlier years. This is because of the reason that the very survival and success of any project depends on the question as to whether the product/service offered by the project is successful commercially.

Commercial appraisal (or market appraisal) of a project is done by studying the commercial successfulness of the product/service of the project from the following angles.

- (a) Demand for the product
- (b) Supply position for the product
- (c) Distribution channels
- (d) Pricing of the product
- (e) Government policies.

### **3.3 Economic Appraisal**

Economic appraisal measures the effect of the project on the whole economy. Developing countries and underdeveloped countries face scarcity of capital and foreign exchange. Hence in the overall interest of the country, the limited stocks of capital and foreign exchange should be put into the best possible use. Policy makers should therefore be



concerned as to where the scarce resources can be directed to maximise economic growth of the country. So, among the alternative projects, the policy makers should make choice based on the economic return. This is true irrespective of whether resources are committed to a large project undertaken by the government or to a smaller project undertaken by an individual entrepreneur. But an individual entrepreneur, when left free to choose, is more likely to be interested in his profit rather than having a broader perspective of the economic returns of the project.

For example, let an entrepreneur own a granite quarry consisting of high quality granite stone. If the entrepreneur is not aware of the potentials of granite stone use in form of polished slabs/tiles, he may choose to exploit the granite quarry by setting up a stone crushing unit which will produce stone jelly to be used as a raw material for say, laying of road, preparing concrete mix etc. even if the entrepreneur is aware of the potential of granite stone, if he is not mentally prepared to venture into a high-tech project for the production of polished slabs/tiles which can have very good export potential, he may settle for a low-tech stone crushing project, producing stone jelly. He may be even satisfied with the return from the stone crushing unit though setting up a unit for the production of polished granite slabs/tiles will maximise the economic growth of the country as a whole by earning valuable foreign exchange in view of its export potential.

In other words a private entrepreneur may not be interested in studying the social cost-benefit analysis of a project. Social cost-benefit analysis is also referred to as socio-economic analysis which deserves consideration especially in public projects.

### **SELF-ASSESSMENT EXERCISE**

- i. Discuss the various types of project appraisal.
- ii. Explain what is meant by collaborative agreement.

## **4.0 CONCLUSION**

You have learnt about the following three types of project appraisal.

- Technical Appraisal
- Commercial Appraisal and
- Economic Appraisal.

## **5.0 SUMMARY**

In this unit, you have learnt that:

- Project appraisal is a process of detailed examination of several aspects of a given project before recommending the same.
- Commercial appraisal (or market appraisal) of a project is done by studying the commercial successfulness of the product/service of the project from the following angles.
  - Demand for the product
  - Supply position for the product
  - Distribution channels
  - Pricing of the product
  - Government policies.
- Economic appraisal measures the effect of the project on the whole economy.

## **6.0 TUTOR-MARKED ASSIGNMENT**

- i. Discuss the technical appraisal of a project.
- ii. What is project scheduling?

## **7.0 REFERENCE/FURTHER READING**

Morris, P.W.G. (1997). *The Management of Projects*. London: Thomas Telford (New Paperback Edition).

## **UNIT 2 PROJECT EVALUATION – MEANING AND OBJECTIVES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Meaning of Project Evaluation
  - 3.2 Objectives of Project Evaluation
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

Evaluation can be seen as synonymous with tests, descriptions, documents, or even management. Many definitions have been developed, but a comprehensive definition presented by the Joint Committee on Standards for Educational Evaluation (1994) holds that evaluation is “systematic investigation of the worth or merit of an object.”

This definition centers on the goal of using evaluation for a purpose. Accordingly, evaluations should be conducted for action-related reasons, and the information provided should facilitate deciding a course of action.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- define project evaluation
- describe the objectives of evaluation.

### **3.0 MAIN CONTENT**

#### **3.1 Meaning of Project Evaluation**

To evaluate means to assess. Thus, project evaluation is an assessment of the project during the course of implementation. It is an interim assessment at major milestones. Evaluating the project at major milestones during the course of implementation will steer the project in the right direction. Project evaluation is an attempt to determine if the overall status and progress of the project is acceptable as compared to

what was planned earlier and if the objectives are being achieved. The ultimate aim of project evaluation is to bring about all-round improvements in project planning and execution.

Over the years, evaluation has frequently been viewed as an adversarial process. Its main use has been to provide a “thumbs-up” or “thumbs-down” about a program or project. In this role, it has all too often been considered by program or project directors and coordinators as an external imposition that is threatening, disruptive, and not very helpful to project staff. While that may be true in some situations, evaluations need not be, and most often are not, conducted in an adversarial mode.

The current view of evaluation stresses the inherent interrelationships between evaluation and program implementation. Evaluation is not separate from, or added to, a project, but rather is part of it from the beginning. Planning, evaluation, and implementation are all parts of a whole, and they work best when they work together.

### **3.2 Objectives of Project Evaluation**

The objectives of project evaluation are to:

- verify if the progress of project implementation is as planned and to take corrective measures if the project progress lags behind the schedule.
- ascertain whether the actual cost are within the budgeted costs at the different stages of implementation and to take steps to contain costs if the actual costs escalate over the budgeted costs.
- ensure that the quality standards of the project are reached without any compromise.
- identify any unexpected problem areas and to plan for managing such situation appropriately.
- appraise the clients about the progress of the project and to keep them informed about the project status.
- bring about overall improvement in project performance.
- watch whether the project objectives are met and to suggest corrective measures if the objectives are found to get defeated.
- give confidence to the project team members and to reassure the organisation’s commitment to the project.

#### **SELF-ASSESSMENT EXERCISE**

- i. Discuss project evaluation.
- ii. Discuss two objectives of project evaluation.

## 4.0 CONCLUSION

In this unit, you have learnt about eight objectives of project evaluation, and what project evaluation is all about.

## 5.0 SUMMARY

In this unit, you have learnt that:

- Project evaluation is an attempt to determine if the overall status and progress of the project is acceptable as compared to what was planned earlier and if the objectives are being achieved.
- Evaluation provides information for communicating to a variety of stakeholders. It allows projects to better tell their story and prove their worth. It also gives managers the data they need to report “up the line,” to inform senior decision makers about the outcomes of their investments.

## 6.0 TUTOR-MARKED ASSIGNMENT

1. Mention and fully discuss five objective of project evaluation.
2. What is project evaluation?

## 7.0 REFERENCES/FURTHER READING

Frechtling, J., Stevens, F., Lawrenz, F., & Sharp, L. (1993). *The User-Friendly Handbook for Project Evaluation: Science, Mathematics and Technology Education*. NSF 93-152. Arlington, VA: NSF.

Frechtling, J., & Sharp, L. (1997). *The User-Friendly Handbook for Mixed-Method Evaluations*. NSF 97-153. Arlington, VA: NSF.

## **UNIT 3 TYPES OF PROJECT EVALUATION AND PROJECT EVALUATION PROCESS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Types of Project Evaluation
  - 3.2 The Evaluation Process
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

The information in this unit has been developed primarily for the use of project directors and principal investigators, although project evaluators may also find it useful. Our aim is to provide tools that will help those responsible for the examination of individual projects gain the most from their evaluation efforts.

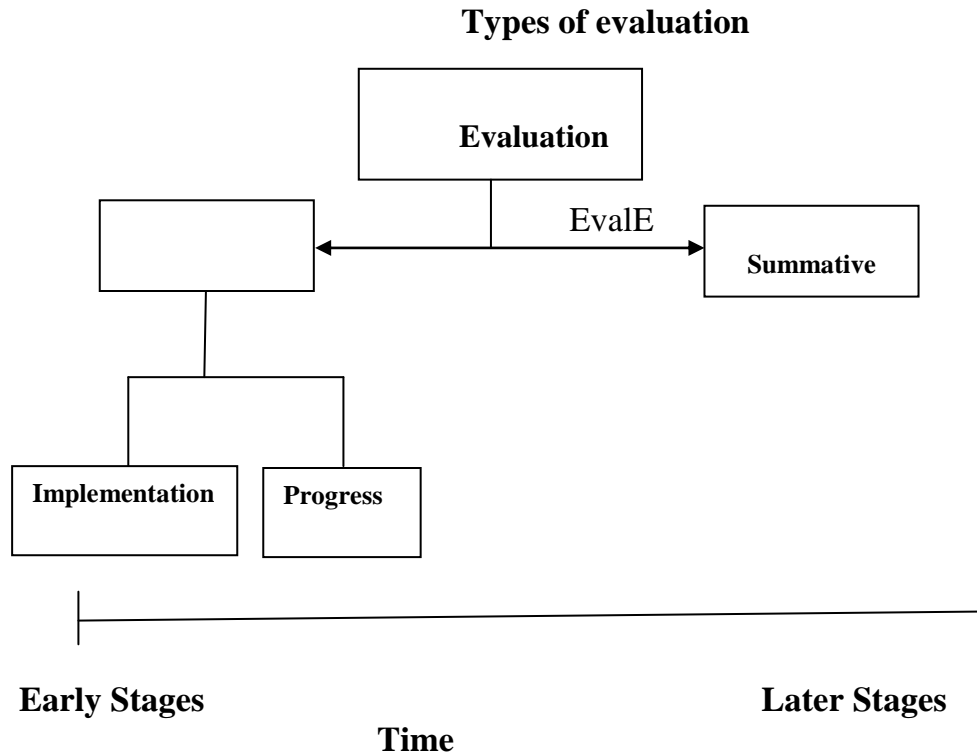
### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- list the types of evaluation
- describe how to carry out an evaluation, expanding on the steps in evaluation design and development.

### 3.0 MAIN CONTENT

#### 3.1 Types of Project Evaluation



#### FORMATIVE EVALUATION

Formative evaluation begins during project development and continues throughout the life of the project. Its intent is to assess ongoing project activities and provide information to monitor and improve the project. It is done at several points in the developmental life of a project and its activities.

Formative evaluation has two components: implementation evaluation and progress evaluation.

**Implementation Evaluation:** The purpose of implementation evaluation is to assess whether the project is being conducted as planned. This type of evaluation, sometimes called “process evaluation,” may occur once or several times during the life of the program. The underlying principle is that before you can evaluate the outcomes or impact of a program, you must make sure the program and its components are really operating and, if they, are operating according to the proposed plan or description.

Sometimes the terms “implementation evaluation” and “monitoring evaluation” are interchanged. They are not the same. An implementation evaluation is an early check by the project staff, or the evaluator, to see if all essential elements are in place and operating. Monitoring is an external check. The monitor typically comes from the funding agency and is responsible for determining progress and compliance on a contract or grant for the project. Although the two differ, implementation evaluation, if effective, can facilitate project implementation and ensure that there are no unwelcome surprises during monitoring.

**Progress Evaluation:** The purpose of a progress evaluation is to assess progress in meeting the goals of the program and the project. It involves collecting information to learn whether or not the benchmarks of participant progress were met and to point out unexpected developments. Progress evaluation collects information to determine what the impact of the activities and strategies is on participants, curriculum, or institutions at various stages of the intervention. By measuring progress, program staff can eliminate the risk of waiting until participants have experienced the entire program to assess likely outcomes. If the data collected as part of the progress evaluation fail to show expected changes, the information can be used to fine tune the project. Data collected as part of a progress evaluation can also contribute to, or form the basis for, a summative evaluation conducted at some future date.

### **SUMMATIVE EVALUATION**

The purpose of summative evaluation is to assess a mature project’s success in reaching its stated goals. Summative evaluation (sometimes referred to as impact or outcome evaluation) frequently addresses many of the same questions as a progress evaluation, but it takes place after the project has been established and the timeframe posited for change has occurred.

Summative evaluation collects information about outcomes and related processes, strategies, and activities that have led to them. The evaluation is an appraisal of worth, or merit. Usually this type of evaluation is needed for decision making. The decision alternatives may include the following: disseminate the intervention to other sites or agencies; continue funding; increase funding; continue on probationary status; modify and try again; and discontinue.

In most situations, especially high-stakes situations or situations that are politically charged, it is important to have an external evaluator who is seen as objective and unbiased. If this is not possible, it is better to have



an internal evaluation than none at all. One compromise between the external and the internal model is to conduct an internal evaluation and then hire an outside agent to both review the design and assess the validity of the findings and conclusions.

When conducting a summative evaluation, it is important to consider unanticipated outcomes. These are findings that emerge during data collection or data analyses that were never anticipated when the study was first designed.

### **3.2 The Evaluation Process**

Whether they are summative or formative, evaluations can be thought of as having six phases:

- Develop a conceptual model of the project and identify key evaluation points
- Develop evaluations questions and define measurable outcomes
- Develop an evaluation design
- Collect data
- Analyse data
- Provide information to interested audiences.

However, all six phases are critical to providing useful information. If the information gathered is not perceived as valuable or useful (the wrong questions were asked), or the information is not seen to be credible or convincing (the wrong techniques were used), or the report is presented too late or is not understandable (the teachable moment is past), then the evaluation will not contribute to the decision making process.

#### **Develop a Conceptual Model of the Project and Identify Key Evaluation Points**

Every proposed evaluation should start with a conceptual model to which the design is applied. This conceptual model can be used both to make sure that a common understanding about the project's structure, connections, and expected outcomes exists, and to assist in focusing the evaluation design on the most critical program elements.

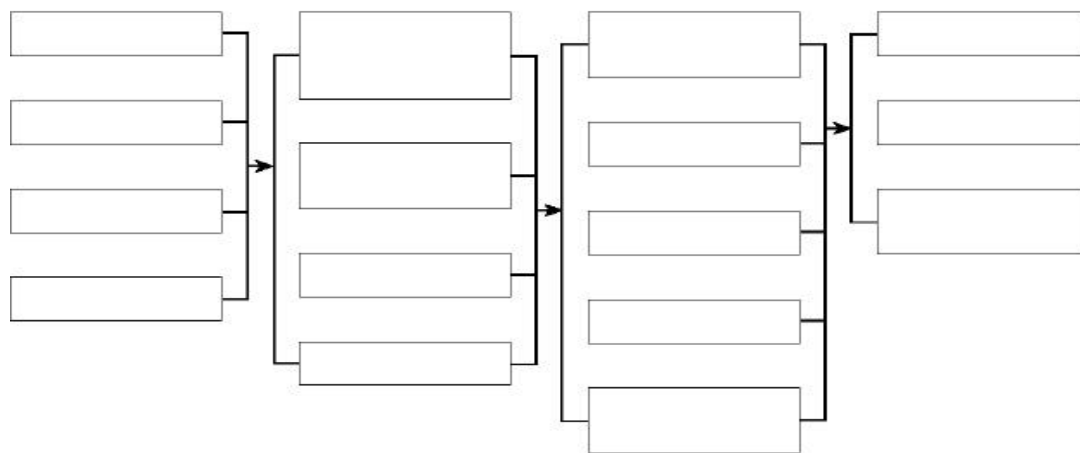
The figure below presents the shell for a particular kind of conceptual model, a "logic model." The model describes the pieces of the project and expected connections among them.

A typical model has four categories of project elements that are connected by directional arrows. These elements are:

- Project inputs
- Activities
- Short-term outcomes
- Long-term outcomes.

### Logic Model

Inputs    Activities            Short-term outcomes    long-term outcomes



Project inputs are the various funding sources and resource streams that provide support to the project. Activities are the services, materials, and actions that characterise the project’s thrusts. Short-term impacts are immediate results of these activities. Long-term outcomes are the broader and more enduring impacts on the system.

A logic model identifies these program elements and shows expected connections among them. It provides a framework for monitoring the flow of work and checking whether required activities are being put in place.

The first step in doing an evaluation is to describe the project in terms of the logic model.

- One set of inputs is the funds that project owner provides. Other inputs may come from other federal funding sources, local funding sources, partnerships, and in-kind contributions.
- The activities depend on the focus of the project. Potential activities include the development of curricula and materials, provision of professional development, infrastructure

development, research experiences, mentoring by a senior scientist, or public outreach, alone or in combinations.

- Short-term outcomes in a variety of shapes and sizes. One type of outcome is sometimes called an “output.” An output is an accounting of the numbers of people, products, or institutions reached. The other type of outcome looks at short-term changes that result from the experience.
- Long-term outcomes are the changes that might not be expected to emerge until sometime after the experience with the project.

The logic model shows a process that flows from inputs to long-term outcomes. In developing a model for your project, it may be useful to reverse this flow.

### **Develop Evaluation Questions and Define Measurable Outcomes**

The development of evaluation questions builds on the conceptual model and consists of several steps:

- Identifying key stakeholders and audiences
- Formulating potential evaluation questions of interest to the stakeholders and audiences
- Defining outcomes in measurable terms
- Prioritising and eliminating questions.

### **Develop an Evaluation Design**

The next step is developing an evaluation design. Developing the design includes:

- Selecting a methodological approach and data collection instruments
- Determining who will be studied and when.

### **Conducting Data Collection**

Once the appropriate information-gathering techniques have been determined, the information must be gathered. Both technical and political issues need to be addressed.

- Obtain necessary clearances and permission.
- Consider the needs and sensitivities of the respondents.
- Make sure your data collectors are adequately trained and will operate in an objective, unbiased manner.
- Obtain data from as many members of your sample as possible.

- Cause as little disruption as possible to the ongoing effort.

### **Analysing the Data**

Once the data are collected, they must be analysed and interpreted. The steps followed in preparing the data for analysis and interpretation differ, depending on the type of data. The interpretation of qualitative data may in some cases be limited to descriptive narratives, but other qualitative data may lend themselves to systematic analyses through the use of quantitative approaches such as thematic coding or content analysis.

Analysis includes several steps:

- Check the raw data and prepare them for analysis.
- Conduct initial analysis based on the evaluation plan.
- Conduct additional analyses based on the initial results.
- Integrate and synthesise findings.

### **Reporting**

The next stage of the project evaluation is reporting what has been found. This requires pulling together the data collected, distilling the findings in light of the questions the evaluation was originally designed to address, and disseminating the findings.

Formal reports typically include six major sections:

- Background
- Evaluation study questions
- Evaluation procedures

## **SELF-ASSESSMENT EXERCISE**

With the aid of diagram, write short notes on types of evaluation.

### **4.0 CONCLUSION**

You learnt about the types of evaluation and the process involves in thorough project evaluation exercise.

### **5.0 SUMMARY**

In this unit, you have learnt that evaluation is divided into two parts namely formative and summative. Also evaluation process whether summative or formative involves six phases:

- Develop a conceptual model of the project and identify key evaluation points
- Develop evaluation questions and define measurable outcomes
- Develop an evaluation design
- Collect data
- Analyse data
- Provide information to interested audiences.

## **6.0 TUTOR-MARKED ASSIGNMENT**

With the aid of diagram discuss types of evaluation?

## **7.0 REFERENCES/FURTHER READING**

American Evaluation Association. (1995). *Guiding Principles for Evaluators*. New Directions for Program Evaluation, No. 66. San Francisco, CA: Jossey-Bass.

Joint Committee on the Standards for Educational Evaluation (1994). *The Program Evaluation Standards*. Thousand Oaks, CA: Sage Publication, Inc.

## **UNIT 4 POST PROJECT EVALUATION**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Post Project Evaluation (Post Audit)
  - 3.2 Objectives of Post Audit
  - 3.3 Phases of Post Audit
  - 3.4 Types of Post Audit
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Smaller projects may be evaluated by direct observation and by getting first-hand information from the field staff, specialists and others connected with the project implementation. Evaluation based on periodic written reports is done for major projects. The written reports may be supplemented with charts, graphs and illustrations to add values to the reports.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- discuss the post project evaluation (post audit)
- list some objectives of post audit
- explain the phases of post audit
- name the types of post audit
- design a specimen project evaluation form.

### **3.0 MAIN CONTENT**

#### **3.1 Post Project Evaluation (Post Audit)**

Post project evaluation is also known as post audit or post completion audit. It is an evaluation of the project after its completion. At the time of the project appraisal, estimates are made for project cost and for project completion time. After the project is completed, project audit is carried out to assess the actual project cost and the actual time taken for project completion. Thus, while project appraisal is an estimate for the

‘future’, post project evaluation is an assessment of the ‘past’. Ideally, a project will be considered successful if it gets completed on time, within the budget and gives the expected level of performance. In respect of public projects, apart from studying the variations in project cost and project completion time, post project evaluation also makes an assessment of the actual social cost benefit factors and the extent up to which the project’s objectives are achieved.

### 3.2 Objectives of Post Audit

Experience is the greatest teacher. The knowledge gained during the process of project implementation is of great value to all concerned. The project owner and the project management team learn a lot during the course of project implementation and they become a store house of knowledge which they can share with others or use them in their future ventures.

By carrying out post project evaluation, the financial institution that has funded a project can identify the pitfalls, if any, in its project appraisal and the control mechanism that should have been followed for effective project monitoring. For example, the financial institution might have estimated the project implementation time for a particular project during its appraisal, based on which it would have provided for ‘interest during implementation’ as a component of the project cost. Further, the financial institution would have fixed the commencement of loan repayment schedule, keeping in view the estimated project implementation time. If the actual project implementation period exceeds the estimated made, the time-overrun would result in cost-overrun of the project. The loan repayment schedule also might need rephasing in view of delayed project implementation. The financial institution can learn from reality, the factors to be considered for correctly assessing the project implementation time.

Post project evaluation by financial institutions will also throw light on the following aspects:

- The adequacy of ‘contingency’ provision made in the project cost estimate to take care of unforeseen expenditures
- The normal project implementation time for different projects
- The comparative project cost for similar projects.

A contractor who has executed a project and completed the project in time might have incurred additional expenditures than what was originally envisaged by him. This will enlighten him to be cautious while quoting his bid for subsequent projects. He can also make use of his experience to guard against uncertainties in future.

Based on the point discussed above, the objectives of post audit can be summed up as under:

- Building up an information base to help proper estimation of project cost and time.
- Educating all those concerned with the project about the realities of project management.
- Establishing correct time-cost relationship.
- Creation of appropriate standards for work based on suitable work techniques.
- Sharing of project audit information among all concerned, in order to build up better understanding and better comprehension of the project and its problem areas so that lapses could be avoided in future.

### 3.3 Phases of Post Audit

Post audit is carried out in two phase, *viz.*, immediately after the completion of the project and after the lapse of some time (say two or three years) since the completion of the project.

Post audit that is carried out immediately after project completion is done for:

1. studying the difference between the actual project cost and the estimated project cost.
2. studying the difference between the actual time taken for project implementation and the estimated time.
3. locating the areas that have contributed to the variances in project cost and time.
4. identifying the reasons for such variances, classifying them into avoidable and unavoidable variances.
5. analysing the steps that could have been taken to avoid the avoidable variances.
6. analysing in depth the factors that have caused the unavoidable variances and examining the possibilities of their removal in future by adopting suitable methodology.

Post audit that is carried out after the lapse of two to three years is done with a wider perspective. This study is done for the following reasons:

1. studying whether the product goals and objectives are achieved.
2. knowing whether the project produces products of acceptable quality.
3. knowing whether the estimated output is achieved.



4. knowing whether the products is accepted by the market and whether the production volume is commensurate with the market share planned to achieve.

The post project evaluation, whether done immediately after the project completion or after the lapse of sometime has the main aim of studying the pitfalls and gray areas and identifying the required corrective measures.

### 3.4 Types of Post Audit

1. **Technical evaluation (or Technical Audit):** Technical evaluation refers to the evaluation of quality and quantity of production, the opening costs in production etc. A comparison of these factors is done between what is presented in the feasibility report/detailed project report and what has been the actual achievement. As regards the rated output, certain projects are expected to give the estimated rated output immediately on commissioning. Such projects can be evaluated, for the variations in output if any, immediately after commissioning. In respect of certain other projects, the output will stabilise only after some time. These are the cases where the output depends upon the quality of raw materials, the skill of the personnel operating the plant etc. The operation of the plant is to be studied by varying these parameters and observing the output till the production is stabilised at the maximum level. Evaluation of output can be done only after these *i.e.*, only after all the inputs are synchronised and the production stabilised.

Apart from evaluating the actual output *vis-à-vis* the rated output, the other areas of interest are the evaluating of utilities consumed by the plant, like power, fuel, water, steam, consumables, spare etc. An evaluation of these aspects is made and compared with what was estimated/projected at the time of project appraisal. Technical evaluation also includes evaluation of the quality of the output and checking-up if the quality standards as envisaged are reached.

2. **Financial evaluation (or Financial Audit):** Financial projections/estimates are made at the time of project appraisal as to the project cost under various heads, operating costs of the project, maintenance costs, profitability estimates, cash flow and fund flow estimates, sources and application of funds for the project etc. Financial evaluation is done to verify whether the actual project cost, operating costs, profitability, cash/fund flows etc., are as per the estimates and projections made at the time of appraisal. While the assessment of actual project cost can be done

immediately after the completion of the project, other financial parameters can be studied only after the lapse of say, two to three years since the record of actual operating cost, profits etc., would be available only after the project is in operation for some time.

- 3. Economic evaluation (or Economic Audit):** Economic evaluation is the most difficult to make since it involves many subjective aspects which are difficult to be quantified. The evaluator should have an ‘eye’ for identifying the social costs and benefits of the project. Economic evaluation is more relevant for public sector and community development projects since such projects are undertaken with social objective in mind, apart from financial and other objectives.

A public sector project would have been implemented with the aim of achieving certain social benefits. The social costs and social benefits, though subjective in nature are quantified using some techniques while doing Social Cost Benefit Analysis (SCBA) at the appraisal stage of the project. The project audit from social cost benefit angle should analyse whether the social benefits envisaged are achieved and whether there are any adverse effects that the project has brought in, which were not originally foreseen. Such unforeseen adverse effects have the nature of adding to the social cost of the project. Though SCBA at the appraisal stage has grown into a well laid out system of appraisal in the recent past, post project evaluation from social cost benefit angle is yet in an infant stage.

**3.4 Specimen Project Evaluation Form**

Name of the project:  
 Audit done by: \_\_\_\_\_ Date of audit: / /  
 Period of audit: From ..... To .....  
**Evaluation:** Tick whichever is applicable

Progress of implementation	Budget vs. actual expenditure	Quality aspects of project
<input type="checkbox"/> Proceeding as per target <input type="checkbox"/> Proceeding ahead of target <input type="checkbox"/> Lags behind target	<input type="checkbox"/> Expenditure is as per budget <input type="checkbox"/> Expenditure is below budget <input type="checkbox"/> Expenditure is above budget	<input type="checkbox"/> As planned <input type="checkbox"/> Better than planned <input type="checkbox"/> Worse than planned
If lags behind, reason thereof:	If expenditure is above target, reason thereof:	If quality is worse than planned, reason thereof:

_____	_____	_____
Corrective steps to be taken to overcome the above	Corrective steps to be taken to overcome the above	Corrective steps to be taken to overcome the above
_____	_____	_____
Problems anticipated, if any that may delay implementation:	Problems anticipated, if any that may delay implementation:	Problems anticipated, if any that may delay implementation:
_____	_____	_____
Precaution to avoid the above:	Precaution to avoid the above:	Precaution to avoid the above:
_____	_____	_____
_____	_____	_____

Changes experience, if any, in business climate:
Change/modification needed in project objectives in view of the above:
Additional/unanticipated problems that are come across:
Comments:

**SELF-ASSESSMENT EXERCISE**

- i. Explain two types of post audit evaluation.
- ii. Explain phases of post audit evaluation.

**4.0 CONCLUSION**

You have learnt how to define post audit evaluation, why is post audit evaluation done and the phases involves in post audit evaluation.

**5.0 SUMMARY**

In this unit, you have learnt the objectives of post audit which can be summed up as:

- Building up an information base to help proper estimation of project cost and time.
- Educating all those concerned with the project about the realities of project management.
- Establishing correct time-cost relationship.
- Creation of appropriate standards for work based on suitable work techniques.

- Sharing of project audit information among all concerned, in order to build up better understanding and better comprehension of the project and its problem areas so that lapses could be avoided in future.

## **6.0 TUTOR-MARKED ASSIGNMENT**

- i. Explain two objectives of post audit evaluation.
- ii. Explain phases involves in post audit evaluation.

## **7.0 REFERENCE/FURTHER READING**

Van Horne (1989). *Financial Management and Policy*. New Delhi: Prentice Hall.

## UNIT 5 PROJECT COST CONTROL

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Costs on Project
  - 3.2 Returns from the Project
  - 3.3 Some Evaluation Concepts
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### 1.0 INTRODUCTION

The main reason for evaluating projects is just to find out whether the projects are profitable or not. Evaluation helps the decision maker to sharpen their judgement on investment decisions. Two decisions are crucial here:

- a. The decision on whether to invest on a project or not
- b. The decision on what arrangements to make especially on management, financial and technical.

When decision to invest in a project is taken, data on expected costs and returns are crucial.

### 2.0 OBJECTIVES

At the end of this unit, you should be able:

- explain costs – fixed, variable, and total cost
- discuss returns
- explain some evaluation concepts.

### 3.0 MAIN CONTENT

#### 3.1 Costs on Project

They are expenditures incurred on a project. They are of two types; fixed and variable cost.

**Fixed Cost:** These are incurred on durable assets e.g. cars, foundation stock, building, generating plants, lantern, hoes and cutlass etc.

**Variable Cost:** They vary as output e.g. labour, raw materials, fertilizer, fertilizer, feed, depreciation, maintenance, repair cost, selling, administration, taxes, and interest payments on borrowed funds.

**Total Cost:** Total cost includes the fixed and variable costs including depreciation.

**Depreciation** is wears and tears of any fixed asset. The useful life or the lifespan is taken into consideration. The remaining aspect after the useful life is known as **salvage value** or **junk value**. Depreciation depends mainly on the intensity of use. Straight line method of depreciation is one of the methods used in project evaluation. For example, if the useful life is five years and cost of purchase is N5000.00. Depreciation for each year is N5000.00 divided by 5 which is equal to N1000/year, i.e.  $N5000.00/5 = N1000/year$ .

### 3.2 Returns from the Project

These are benefits expected from a project. Most of these are products that the project yields. To achieve good returns, the following point has to be taken into consideration:

1. Types of production to be undertaken which may be in livestock, crop production, fishery etc.
2. Quality i.e. grade of the products e.g. small, medium, large.
3. Quantity available for sale
4. Quantity available for personal and home consumption
5. Time of marketing whether during festive periods
6. Price of the product.

### 3.3 Some Evaluation Concepts

**Market Survey:** This involves going round the town, outside the country or anywhere one can get prices of things to use in a project and consider the relative prices of other goods in the area. You notice the wages of labour and product prices as you move round. Labour cost is referred to as wages.

**Concept of Man-day:** This is the number of hours an average man works per day and it is usually considered to be eight hours. Many factors determine this e.g. age, stress, taking alcohol etc. In paying wages, woman and children output may be lower to that of an adult male so it is customary to take one hour work of a woman to be 0.66 of an adult male while the output of children is put as 0.50 of an adult male. It should be noted however, that women perform certain farm operation faster than men.

**Price Rate:** You pay workers according to their capacity to work, If 200 heaps cost N100.00 and a man makes 600 heaps/day, he get  $N100 \times 3$  which gives N300.00

**Stock:** Unused stocks should be valued at the current or prevailing market price; value of the remaining stock is got by multiplying the number by the unit price.

**Point of first sale:** All other things being equal, the best place to value the output of a project are at the point of first sale and it is the farm gate in agriculture.

**Farm gate price:** This is the price the farmer receives when he sells his produce at the boundary of his farm. Value is added when marketing and processing are carried out. The value added goes to labour and capital engaged in processing, marketing and selling. The farm gate price is also used to value home consumed production. In some cases, the farm gate price may be skewed especially when part of the price is taken off for development purposes. During the time of the marketing boards, the price the farmers was paid was well below the international market price of the commodities concerned (cocoa, coffee and groundnut). In this wise, the evaluator resorts to the use of the shadow price (opportunity cost).

**Seasonal fluctuation:** These affect prices of products and inputs so the best time to choose price to use for analysis is at the peak of the harvest season. Grades need to be taken into consideration and the best price is the average price of the various grades expected.

**Inflation:** Make contingency allowance for inflation and this is usually 10% of the total cost.

### **SELF-ASSESSMENT EXERCISE**

- i. Give two examples of fixed cost.
- ii. Give two examples of variable cost.
- iii. Kindly, explain a concept of Man-day.

## **4.0 CONCLUSION**

You have learnt about some key concepts of evaluations and costs and returns involved in projects.

## **5.0 SUMMARY**

In this unit, you have learnt that total cost is divided into fixed and variable cost including depreciation. Moreover, depreciation is wears and tears of any fixed asset. The useful life or the lifespan is taken into consideration. The remaining aspect after the useful life is known as salvage value or junk value.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What is farm gate price?
2. What do you understand by market survey?

## **7.0 REFERENCE/FURTHER READING**

Nelson, A.G. & Murray, W.G.(1968). *Agricultural Finance* Iowa, U.S.A.: Iowa State University Press, Ames.



## **UNIT 6      PROCESS OF EVALUATING AGRICULTURAL PROJECTS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Individuals Projects
  - 3.2 Organisational Projects
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Evaluation of agricultural projects is usually an interdisciplinary work, because no one possesses all the knowledge needed to carry out detailed evaluation with only few exceptions.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- explain how an individual can undertake agricultural projects
- explain how an organisation can undertake agricultural projects.

### **3.0 MAIN CONTENT**

#### **3.1 Individuals Projects**

For individuals wanting to undertake project, feasibility report may not be needed in that the individuals will know what project to undertake considering the amount of money available which will dictate the magnitude of the project. In case an individual accepts to carry out a feasibility study, then the evaluator asks some questions on certain ingredients such as availability of land and its location, the amount of capital that is available or can be made available, the experience of the investor on what he intends to do, visiting the site of the proposed project and collecting information about the envisaged project is the next stage. You calculate the estimated number of kilometres from the man's house or your office to the site. Look at the terrace and the vegetation both right and left. If you are undertaking a maize project for instance, look whether people grow maize in the area which can cross-pollinate your pop-corn for example. Here you can encourage them to

plant pop-corn or payoff the small farmers in order not to disturb your program.

If your land is not enough, you can decide to encourage the investor either to lease, rent or purchase, if there is a settlement around the place, here labour may be recruited and if there is none, a labour line needs to be recommended. The analyst will have to ascertain whether there is a stream around, if the stream can flood, you can guess the time to plant before the land get flooded or decide whether to plant twice. If the land runs into several hectares, you have to take soil samples for soil testing.

You also carry out a socio-economic survey of the adjoining settlements e.g. asking questions on how much they earn per day, when labour goes on holidays or during which festival they may likely not be around to work. You can find the statistics of weather in the area and the next local Government. Looking at the terrace, you know whether the place can be cleared mechanically or manually.

### 3.2 Organisational Projects

For organisations like governments' river basin authorities or agricultural credit corporation, they have array of projects included in their programme. You narrow this program down in order to select those projects that would accelerate the rate of development. Here a pre feasibility study may be advisable. Pre-feasibility studies help to identify the resources that are available and also help to narrow down the reasonable limits projects that could be considered for inclusion in the preparation of the full feasibility report. Clients can give clear-cut terms of reference if pre-feasibility studies are available. This will cut down the cost of carrying detailed feasibility studies, which may not be necessary after all. As soon as a project is identified, the project analyst will categorise it. Is it a livestock project or a crop project or a mixture of the two, let's say it is a **crop project**, the following steps should be taken: Visit the site, the project analyst finds out what types of crops can be grown in the area or whether such crops have been grown there before and what yields were realised.

You find out whether there are markets for the crops in the area, the types of roads leading to the project area and the storage facilities in case of excess production. What inputs are necessary for the production of these crops, are they available, what types of machinery? You also decide the capacity, whether it is going to be small scale, medium and large scale.

You decide on how to get the machine or whether they can be fabricated locally or you have to import them. If there is need for importation, you

locate the country of origin and write the manufacturers. You can also consult commercial advertisers to give you the address of the manufacturers. Is labour for different operations available and at what cost? The weather conditions of the area especially the rainfall and the existence of pests and diseases.

If you are embarking on a vegetable farm for instance, you find out whether there is enough water for all year production or whether there can be water from streams or boreholes for irrigation. In case of blocking the stream and disturbing local community, you may need to sink deep wells for them and count the cost as part of the cost of your client. You should also know whether your client/proposed manager have knowledge of crop production. Since this type of project covers a very big area of land, you need a soil test which can be done by a soil scientist. This will enable the analyst to determine the suitability of the land for the proposed crops. It can also help determine what type of crop rotation to be practiced, what type of fertilizer to use and the application rate. In case the investor requires bank support a perimeter survey of the area is necessary.

**For livestock project**, similar steps like that of crop will be followed. The site must be visited. Other things to note include: Distance of the project to the nearest market, state of road as well as availability of water and electricity among others. You also find out whether there are other livestock farms around. If there are, how far and what type of livestock are kept. In case of poultry, note the direction of wind so as to aid the sitting of poultry house. Find out the source of feed, day old chicks, point of lay, and their prices. Other equipments like the broiler processors and infrastructures must be listed and prices attached to them. Prices of most of the items are available from the suppliers. Take the most current prices.

### **SELF-ASSESSMENT EXERCISE**

Discuss how an individual can undertake crop projects.

## **4.0 CONCLUSION**

You have learnt about a new project: You make assumptions on prices, about input and output coefficient because we are looking into the future, look at the general price index as well as current rate of inflation. Historical increment in price will enable analyst to safe guards about violent price fluctuations.

## **5.0 SUMMARY**

In this unit, you learnt that you have to visit the site, take inventory of resource in the area, consider marketing of the products and also the relationship of the project to similar projects in the area must be ascertained. Armed with data collected from the field, existing published works, add your initiative and experience, you then consider the project in monetary terms and write your reports before embarking on any agricultural project.

## **6.0 TUTOR-MARKED ASSIGNMENT**

List the factors that are necessary for the creation of livestock project.

## **7.0 REFERENCE/FURTHER READING**

Smith, N. J. (1995). *Project Cost Estimating*. London: Thomas Telford.

## **UNIT 7     METHOD OF PROJECT EVALUATION**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Payback Period
  - 3.2 Peak-Period Method
  - 3.3 Average Profit Method
  - 3.4 Inadequacy of the Methods
  - 3.5 Investment Decision Criteria
  - 3.6 Calculation of NPV, BCR, IRR
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Decisions of a firm or entrepreneur are important. So, decisions must be made carefully. We will therefore agree that there should be a model or method for selecting which projects to select and those to reject. The selection criteria that will be used must be such that they should possess certain characteristics as follows:

- It should provide the project evaluator the simple means of distinguishing between acceptable and unacceptable investment projects.
- It should be able to assist the project evaluator to choose between alternative projects especially where there is a financial constraint.
- It should also be able to rank projects in their order of desirability.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- describe the method of project evaluation
- extrapolate how you can use them to rank projects.

### 3.0 MAIN CONTENT

#### 3.1 Payback Period

In this method, one should choose the projects which can repay the amount invested within a chosen number of years e.g. below are the returns from two enterprises.

S/N	CROP	LIVESTOCK
1.	3000	3000
2.	3000	3000
3.	4000	3000
4.	2000	3000
5	1000	3000
<b>Total</b>	<b>13000</b>	<b>15000</b>

If N10000 is invested in each enterprise in year 0, and we take three years payback period, crop will be chosen enterprise while in five years payback, livestock will be chosen enterprise.

#### 3.2 Peak-Period Method

It is a guide to the average profitability of a project.

S/N	CROP	LIVESTOCK
1.	3000	3000
2.	3000	3000
3.	4000	3000
4.	2000	3000
5	1000	3000
<b>Total</b>	<b>13000</b>	<b>15000</b>

The level of profit in the best year is expressed as a rate of return on the sum invested e.g. the best year in the above table is the 3rd i.e.  $4000/10000 = 40\%$  and any of the years for livestock i.e.  $3000/10000 = 30\%$ .

#### 3.3 Average Profit Method

The methods consider profit over the whole period of project life and expresses it as a rate of return on invested capital e.g. in the example above, profitability for crop = N3000 and N5000 for livestock.

S/N	CROP	LIVESTOCK
1.	3000	3000
2.	3000	3000

3.	4000	3000
4.	2000	3000
5	1000	3000
<b>Total</b>	<b>13000</b>	<b>15000</b>

The average profit for crop = N3000/5 and N5000/5 for livestock.

### 3.4 Inadequacy of the Methods

These methods are faulty in that they did not consider the time value of money. They assume N1 today is equivalent to N1 next year or in three years time. This is wrong in that N1 today is worth more than N1 next year. However, discounting method overcomes these shortcomings.

**THE DISCOUNTING METHOD:** Here, the future is taken care of, the method considers all returns over the life span of the project in their present value (PV) i.e. what returns expected from the project in future are worth today.

$$PV = \frac{\text{future nominal value}}{(1 + r)^n}$$

Where  $r$  = interest rate and it is expressed as a percentage

PV = (future nominal value) (discount factor). Discount factor may be found in calculation tables. These concepts are better than the methods earlier treated in that discounting is embedded in them. Concepts to be calculated under the method include:

- a. NPV = Net present value
- b. IRR = Internal rate of return
- c. BCR = Benefit cost ratio

NPV of a project is the value today of the surplus that the firm makes over and above what it could make by investing at its marginal rate.

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

B<sub>t</sub> = benefit in each project year

C<sub>t</sub> = Cost in each project year

n = number of years

r = interest (discount) rate

t = individual project year

IRR of a project is the interest rate of return, which is the rate that is being earned on capital.

$$IRR = NPV = \sum_{t=1}^n \frac{Bt - Ct}{(1+r)^t} = 0$$

- Bt = benefit in each project year
- Ct = Cost in each project year
- n = number of years
- r = interest (discount) rate
- t = individual project year

BCR of a project is the total discounted benefit divided by total discounted cost.

$$BCR = \frac{\sum_{t=1}^n \frac{Bt}{(1+r)^t}}{\sum_{t=1}^n \frac{Ct}{(1+r)^t}}$$

### 3.5 Investment Decision Criteria

- (a) IRR - A project should be undertaken if the IRR is above the interest rate charge by the bank.
- (b) NPV - A project should be undertaken if the NPV is positive.
- (c) BCR - A project should be undertaken if the BCR is greater than 1. If it is equal to 1, it may be considered if there is wide unemployment but when it is below 1, it is better to save the money at the prevalent interest rate than to invest. Profit as mentioned in the above scenario is not used in an accounting sense but a net flow of funds i.e. all revenues from the sale minus all costs including initial investment that took place. The scrap value of equipment should be added to the last year of project life and no deduction should be made for depreciation as it is entered for by the internal rate of return (IRR).

### 3.6 Calculation of NPV, BCR, IRR

To estimate NPV and BCR, a discount rate must be given. This is usually related to the interest rate operating in the open market e.g. If the current interest rate in Nigeria is about 15%, the discount factor (DCF) at 15% is used.

**Table showing, cash flow and analysis for mixed farming**

Year	Costs	Revenue	Incremental benefit	Discount factor at 15%	Discount costs	Discount revenue	NPV at 15%
1.	5000	2000	-2800	0.876	4350	1914	-



2.	4000	5000	1000	0.756	3024	3780	243
3.	3000	4500	1500	0.658	1974	2961	6
4.	2000	3500	1500	0.572	1144	2002	756
5	2000	4000	2000	0.497	994	1988	987
					11,486	12,645	858
							994
							1,159

From the calculations, NPV = N1159 i.e. summation of the discounted benefits.

$$BCR = \frac{\text{Discount revenue}}{\text{Discount cost}}$$

$$= \frac{12,645}{11,486}$$

$$= 1.10$$

IRR is obtained by trial and error in that different discount factors are tried until one obtains a value where the NPV is zero or near zero.

Year	Discount factors at 30%	NPV at 30%	Discount factors at 40%	NPV at 40%
1.	0.769	-2153.2	0.714	-199.2
2.	0.592	592.0	0.510	510.0
3.	0.455	682.5	0.364	546.0
4.	0.350	525.0	0.260	390.0
5.	0.269	538.0	0.186	372.0
		184.3		-18.12

This table shows that IRR lies between 30% and 40%. Precisely IRR can be worked out by this formula

$$IRR = DRP + \frac{DVP}{DVP + DVN} (DRN - DRP)$$

(Absolute value)

$$\text{i.e. } 30 + \frac{184.3}{365.5} (40 - 30)$$

$$= 30 + (0.504) (10) = 35.04\%$$

IRR can be obtained as accurately as possible through the use of a computer programme. The IRR is compared with the cost of capital in order to arrive at an investment decision e.g. if the current interest rate is

15% and the farm can earn 35% rate of returns, it means that project is very profitable i.e. for every N1 invested, investor will receive N1.35. After paying 15kobo on the Naira to the lender, in this case which is the bank, he will be better off by 20 kobo.

If the analyst wants to prepare a feasibility study for the bank, in addition to estimating all measures of project valuation described earlier, a financial plan is also prepared. This sets out in detail, the amount of equity capital, loan capital, income as well as its sources, loan repayment schedule, the use to which loan will be put and what the overall cash flow for the investment period will look like. Usually, bank gives a moratorium (grace period) of a year especially year 0 when return may not be forthcoming for some projects. This year, the borrower pays only interest on the loan while principal is to be paid as from the second year.

### **SELF-ASSESSMENT EXERCISE**

Briefly discuss the following:

- i. The payback period
- ii. Peak profit method
- iii. The average profit method
- iv. The discounting method.

## **4.0 CONCLUSION**

You have learnt about the payback period, peak profit method, the average profit method, the discounting method and their inefficiencies.

## **5.0 SUMMARY**

In this unit, you have learnt that:

- A project should be undertaken if the IRR is above the interest rate charge by the bank.
- A project should be undertaken if the NPV is positive.
- A project should be undertaken if the BCR is greater than 1. If it is equal to 1, it may be considered if there is wide unemployment but when it is below 1, it is better to save the money at the prevalent interest rate than to invest.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What is the discounting method trying to do?
2. What is moratorium?

## 7.0 REFERENCES/FURTHER READING

Reddy, S. S. & Ram, P.R. (2004). *Agricultural Finance and Management*. New Delhi. Oxford & IBH Publishing Co. PVT. LTD.

Pandey, I. M. (2002). *Financial Management*. (8th ed.). New Delhi: Vikas.

## **UNIT 8 FINANCIAL ANALYSIS OF PROJECTS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Financial Analysis of Projects
  - 3.2 Project Cost Analysis
  - 3.3 Example of Project Cost Analysis
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

In this unit, we will discuss financial analysis of projects. This unit is one of the most important in this course so therefore, you are requested to study this unit properly and make sure you understand it.

### **2.0 OBJECTIVES**

At the end of this unit, you should be able to:

- describe the concept of financial analysis of projects
- explain the core items in financial analysis of projects.

### **3.0 MAIN CONTENT**

#### **3.1 Financial Analysis of Projects**

The study of financial analysis of projects is a massive area. So, we will take the topic in a manner to enhance learning. Every project must involve costs both fixed and variable. The construction of an expressway from Ogbomoso to Ilorin will involve a lot of financial implications involving huge sums of money. The construction and operation of a modern teaching hospital will also involve the construction of good medical wards, good theatres, good pharmacy, good mini mart, well constructed mortuary, and good fitness centers etc.

A firm building a new standard petroleum filling station will undertake a lot of capital expenditures and recurrent expenditures. So based on this, finance is involved. Financial analysis of projects focuses proper attention on the financial aspects of a project and tries to answer the following questions:

- What is the total cost involved in the project?
- What are the various components of the cost?
- Which costs are fixed out of the cost involved?
- Which costs are variable out of the cost involved?
- Where is the source of finance for the project?
- What returns will the project yield?
- What amount of expenditures will the project consumed?
- What is the residual profit of the project?
- What are the financial risks attached to the project?
- How can the risk be averted?

These are the questions that financial analysis of the project is trying to find solution to.

### **3.2 Project Cost Analysis**

Project cost analysis provides the basic framework for calculating the total cost of any given project. For example, a firm wishing to establish a pharmaceutical plant in Ibadan to serve the present population must first estimate the cost of the pharmaceutical plant well, in advance. The purpose will be to determine whether the firm will be able to afford the total costs involved and if need be, seek financial assistance from a bank.

To direct our thinking, we will define project costs as all those costs that are incurred in the process of setting up a project. The project costs will contain a total list of items that will be required in a project and the attached costs. It will be significant to arrange the cost items in a consistent and orderly manner so that like items will stay together.

To make our work easy, we shall divide project costs items into the following sub-headings:

- Cost of land for the building of plant station
- Cost of buildings it
- Cost of machinery and equipment necessary for production
- Cost of utilities necessary for production
- Cost of furniture and other fittings necessary for production
- Cost of vehicles for marketing and distribution of the final products
- Pre-operational expenses
- Running capital.

Although we have listed some of the sub-headings, the project analyst should go ahead and prepare a check list that will ensure that no crucial cost is missing in the analysis.

### 3.3 Example of Project Cost Analysis

Tolalant Industries Limited wants to set up a plastics factory at Ilorin. Below is a sample of the project analyst’s checklist for the project. The checklists are itemised as tables below. You are requested as a student project analyst to study the checklists meticulously and make sure you will be able to prepare such a checklist for a similar or different project.

#### A. Costs of land checklist

	Have you included this in your costs?
Cost of land purchase Cost of surveying the land Cost of stumping Cost of certificate of occupancy Cost of legal documentation Cost of perimeter fence.	

#### B. Costs of building checklist

	Have you included this in your costs?
Cost of architectural designs Cost of structural designs Cost of electrical designs Cost of factory buildings Cost of offices Cost of building plan.	

#### C. Costs of machinery checklist

	Have you included this in your costs?
Cost of locally fabricated machines Cost of imported machines Freight and insurance costs Cost of Custom duties and VAT Cost of Installation of the machine	

Cost of Commissioning and test run	
------------------------------------	--

#### D. Costs of utilities checklist

	Have you included this in your costs?
Cost of factory generator Installation cost of generator Cost of water bore-hole.	

#### E. Costs of vehicles checklist

	Have you included this in your costs?
Cost of vehicles for top management Cost of vehicles for other staff Cost of distribution and marketing vans Cost of distribution lorries for large supply	

#### F. Costs of working capital checklist

	Have you included this in your costs?
Cost of raw materials - Chemicals Cost of diesel/fuel for the generator Cost of salary and wages Administrative costs Selling costs Running cost – Cash at hand	

Going through the checklists that we have prepared, you will discover that the checklists contain to a large extent, all the key cost items that one is likely to encounter in a private sector project.

#### SELF-ASSESSMENT EXERCISE

List ten items that you think should appear in project cost analysis of a public hospital.

## **4.0 CONCLUSION**

In this unit, we discussed financial analysis of projects. We have understood the nature of the financial analysis and the type of items that should be captured in the financial analysis. Finally, we used worked examples to throw more light on how to prepare it in a table format.

## **5.0 SUMMARY**

In this unit, you have learnt that the purpose of financial analysis of project is to determine whether the firm will be able to afford the total costs involved for the project and if need be, seek financial assistance from a bank.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What is project cost analysis?
2. List ten cost that you think should appear in project cost analysis of a Public hospital.

## **7.0 REFERENCES/FURTHER READING**

Leon Ikpe (1999). *Project Analysis and Evaluation*. Lagos: Impressed Publishers.

Wearne, S. H. (1989). *Control of Engineering Projects*. London: Thomas Telford.