**Chapter One- General Introduction**

**1.1 Meaning and definition of project**

Turner defines a project as “…. An endeavor in which human, (or machine) material and financial resources are organized in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to deliver beneficial change defined by qualitative and quantitative objects.

Wysocki R. defined a project as “a sequence of unique, complex and connected activities having one goal or purpose and that must be completed by a specific time, within budget, and according to specification.”

**Sequence of activities:**

A project comprises a number of activities that must be completed in some specified order, or sequence.

According to Kerzner, a project can be considered to be any series of activities and tasks that:

* Have a specific objective to be completed within certain specifications
* Have defined start and end dates
* Have funding limits (if applicable)
* Consume human and nonhuman resources (i.e., money, people, equipment)
* Are multifunctional (i.e., cut across several functional lines)

**Unique activities**: The activities in a project must be unique.A project has never happened be­fore, and it will never happen again under the same conditions. Something will always be different each time the activities of a project are repeated. Usually the variations will be random in nature-for example, a part is delayed, someone is sick, a power failure occurs. These are random even that can happen, but we never are sure of when, how, and with what impact on the schedule. These random variations are the challenge for the project manager.

According to Maylor Harvey, a project can be defined as a non-repetitive activity. This needs to be augmented by other characteristics:

* + It is goal oriented.
	+ It is being pursued with a practical end or goal in mind.
	+ It has a practical set of constraints-usually centered around time and resource
	+ The output of the project is measurable
	+ Something has been changed through the project being carried out

wider all encompassing job description.

**Complex activities:** The activities that make up the project are not simple, repetitive acts. They are complex*.* For example, designing an intuitive user interface to an application system is a complex activity.

**Connected Activities:** Connectedness implies that there is a logical or technical relationship between pairs of activities. There is an order to the sequence in which the activities that make up the project must be completed. They are considered connected because the output from one activity is the input to another. For example, we must design the computer program before we can program it.

**One goal :** Projects must have a single goal .Very large or complex projects may be divided into several subprojects,each of which is a project in its own right. This division makes for better management control. For example, sub-projects can be defined at the department, division, or geographic level.

This artificial decomposition of a complex project into subprojects often simplifies the scheduling of resources and reduces the need for inter­-departmental communications while a specific activity is worked on. The downside is that the projects are now interdependent. Even though interdependency adds another layer of complexity and communication, it can be handled.

**Specified Time :** Projects have a specified completion date.This date can be self-imposed by management or externally specified by a customer or government agency. The deadline is beyond the control of anyone working on the project. The project is over whether or not the project work has been completed.

**Within Budget :** Projects also have resource limits,such as a limited amount of people, money, or machines that are dedicated to the project. While these re­sources can be adjusted up or down by management, they are consid­ered fixed resources to the project manager. Senior management can change the number of resources, but that luxury is not available to the project manager.

**Specification :** The customer, or the recipient of the project's deliverables, expects a cer­tain level of functionality and quality from the project. These expecta­tions can be self-imposed, such as the specification of the project completion date, or customer-specified, such as producing the sales re­port on a weekly basis.

Although the project manager treats the specifications as fixed, the real­ity of the situation is that any number of factors can cause the specification to change. For example, the customer may not have defined the requirements completely, or the business situation may have changed (happens in long projects). It is unrealistic to expect the specification to remain fixed through the life of the project. Systems specifications can and will change, thereby presenting special challenges to the project manager.

The purpose of a project is to meet the stakeholders’ needs and expectations. It is therefore a fundamental requirement for the project manager to establish who are the stakeholders (besides the client) and analyze their needs expectations to define, at the outset, the project’s scope of work and objectives.

* 1. **Features/ Characteristics/ of Projects**

There are different types of projects: public, private, private individual, small, large, agricultural, industrial, etc. Each of them represents a scheme for investing resources, which can be analyzed and appraised reasonably independently. In all project types there are basic characteristics of capital expenditure (also referred to as a capital investment or capital project or just project).

A project is the **smallest operational element unit**. A project can be planned, financed and implemented as a unit. Often projects are the subject of special financial arrangements and have their own management. Despite the fact that a project constitutes many activities and tasks, it is defined as the smallest operational unit. The major reasons why a project is defined as the smallest operational unit are the fact that a project is bounded by different factors. The boundaries of projects make them distinguishable from each other.

According to Turner and Müller (2003), PMBOK (2004) and Nicholas and Steyn (2008), the following features characterize a project:

**i.****Temporary –** Project is not a „going concern‟. It rather is a one-time non-routine activity that has a definite beginning and a definite end. Each project is an ad hoc organization of human, physical and financial resources, and activities assembled to accomplish a goal within a scheduled time frame. Project resources and activities are disbanded when the goals of the project are achieved or when it becomes clear that the project goals will not or cannot be met or the need for the project no longer exists. In practice, however, some projects last longer than we expect them which makes them similar to permanent organizations, thus, seriously challenges the idea that projects are temporary organizations. Turner (2006a) argued that the intention with a project is that it should be temporary and disbanded when it achieved or if it failed to achieve the change for which it was created to bring. The intention with non-project organizations, however, is that they should be permanent. We need to note that temporary does not necessarily mean that a project has short duration and it also does not generally apply to the products, services or results created by the project, which, in many projects, are expected to last long.

Turner and Müller (2003) argued that traditional organizations adopt temporary organizations (projects) over functional organizations to deliver and manage changes for the following reasons:

* projects provide impetus to overcome inertia to change that characterize functional organizations, thus, allow the change to build up momentum,
* projects are more flexible and better able to respond to uncertainties in the change process and objectives, and
* Functional organizations are designed to manage routine affairs, thus, are not suitable to manage changes.

**ii.****Unique** – Projects are said to be as unique as fingerprints. A project is considered to be a unique endeavor in various terms including its size, complexity, duration, timing, location, stakeholders, design, objective and other several variables. For example, even in a project such as construction of house, variables such as design, location, materials used, people involved and timing make it unique. Besides, project uniqueness means that each project is a distinct and separate entity which can be planned, financed and implemented as a unit. Uniqueness, however, does not mean that there is no similarity between projects; it rather means that their differences often outweigh their similarities. In relation to the level of routineness of a project, Turner (2004) identified four types of projects, namely, repeaters which are virtually routine batch processing type; runners which are quite similar to previously undertaken projects; strangers which are essentially different from previously undertaken projects but with some common elements; and aliens which are unlike any of the projects done before.

**iii.****Resources**– Project involves different resources drawn from different functions, organizations and professions that cross beyond the ordinary boundaries of an organization and its functional units (Nicholas and Steyn, 2008). An exception to this could be a project in a portfolio of projects which share common resource pool. Project resources include human, material, financial and information. A typical project may involve organizations such as the owner, user, contractor, supplier and financier. These organizations may be involved in a project through their different functional units and contribute, among others, human resources from different professions including engineering, architecture, accounting and environment, to mention some.

**iv.****Beneficial changes** – Turner (2006b) stated that a project is meant to produce an output which in its turn is meant to help its owner to achieve beneficial outcome. Collectively, project outputs and outcomes are identified as goals. Thus, each project has a specific goal that can be identified, quantified or valued. A distinction is usually made of the output and outcomes of a project. The output of a project refers to the tangible or intangible thing created by undertaking the project and the goods and services that this thing delivers. For example, the output of a construction project may be a multi-story building and accommodation services it renders. The output of a training project may include creation of awareness of say harmful traditional practices and not to practice such harmful traditions. Project outcome, on the other hand, refers to the very purpose for implementing a project and the rationale for producing project output. This could be improved health, better quality of live and creation and maximization of wealth of project stakeholders. The intermediate outcomes of a project could be financial (e.g. reduced operating costs and increased revenue) and/or non-financial benefits (e.g. enhanced product or service quality and increased market share) which the owner of a project can enjoy from using the output of a project.

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

 **Specific** – well defined and clear to anyone that has a basic knowledge of the project,

 **Measurable *–*** how do we know how far away completion is and when it has been achieved

 **Action-oriented –** indicate what should be done to achieve the objective,

 **Reliable/achievable *–*** do we have the resources (human, financial, material, information, time) to make the goal happen? Is the objective achievable with the available resources and timeframe, and

 **Time-based *–*** it should identify a definite target date for completion and/or frequencies for specific action steps that are important for achieving the goal on/within a specific time period.

### 1.3. The linkage between projects and programs

Some people use the terms “Program” and “project” as synonymous. But there is a difference. A program is usually larger in scope, is activity-oriented, and is not necessarily time bound. For example, health program, educational program, agricultural or industrial development program may consist of one or more fertilizer projects, and so on. The project objective must aim at meeting the program objectives. While program objectives may be broader, and project objectives are more specific and focused.

It is necessary to distinguish between **projects and programs** because there is sometimes a tendency to use them interchangeably. While a project refers to an investment activity where resources are used to create capital assets, which produce benefits over time and has a beginning and an end with specific objectives, a program is an ongoing development effort or plan involving a number of projects. Programs may or may not necessarily be time bounded. Yet programs cannot live forever, they have limited life cycle, which however, may or may not be explicitly stated. So in effect in terms of time delimitation, there is only relative difference between programs and projects. A development plan is a statement of action meant to realize and implement economic policy. National development plans are further disaggregated into a set of sectoral plans which involve a number of programs and projects. A development plan or a program is therefore a wider concept than a project. It may include one or several projects at various times whose specific objectives are linked to the achievement of **higher level of common objectives**. Note that projects can stand alone without being part of certain program. So, one can visualize the possibility of having: policies → development plans → projects. Projects, which are not linked with others to form a program, are sometimes referred to as “stand alone” projects.

Project formulation is an integral part of a more broadly focused and continuous process of development planning. Projects can also be understood as an activity for which more will be spent in expectation of returns and which logically seems to lend itself to planning, financing, and implementing as a unit. It is the smallest operational element prepared and implemented as a separate entity in a national plan or program. In general, thus, sound development plans require good and realistic projects for the latter are the concrete manifestation of the pan as noted above.

A project is a scheduled undertaking for the purpose of creating a product or service. Program management, on the other hand, is the act of creating and managing multiple projects, most of the projects are usually related to one another. Project management is usually short-lived with specific time constraints while program management is an ongoing process in order to achieve the goals and objectives. The job of a project manager usually involves working on finite projects or objectives. The program manager works more often with strategy**.** Project Management deals with a relatively stable environment, while Program Management deals with an ever changing environment. Program Management is about keeping all intentions and tasks in existence over time, delegating it to others, and keeping track of their deliverable.
Program Managers are accountable for the delivering of the outcome of a team. Most executives and directors are doing program management at a higher level.  A lot of their work involves getting status updates, so that they know the "what so" and cajoling, and reminding people and teams to send their updates.

The following table summarizes the main areas of difference between a project and a program.

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

**1.4. Projects Planning Process**

The project plan is indispensable. Not only is it a roadmap to how the work will be performed, but it is also a tool for decision making. The plan suggests alternative approaches, schedules, and resource requirements from which the project manager can select the best alternative.

Understand that a project plan is dynamic.We expect it to change. A complete plan will clearly state the tasks that need to be done, why they are necessary, who will do what, when it will be completed, what resources will be needed, and what criteria must be met in order for the project to be declared complete and successful

 A project consists of a set of procedures and techniques that can be applied in the process leading up to a decision whether or not to invest and in the implementing and organizing of the projects. It is necessary to take project planning to issue efficient utilization of the program and to implement the action program as to the time planned. Moreover, project planning has a far-reaching effect on economic development and good project planning is needed as a result it requires well trained people.

A project planning has two main characteristics, which are named as follow:

**a.** It is an exercise that has been done to ensure efficient utilization of resources.

**b.** It is a bridge in the transformation of national plans into concrete actions to achieve predetermined objectives.

 The project planning is frequently conceived as a series of stages as follows:

* Identification of investment possibilities
* Preliminary investigation of investment possibilities through

 a pre-feasibility study.

* More detailed investigation and implementation plan through a feasibility study
* Decision process accepting or rejecting the project.

At each steps of the project planning process a decision is required whether to commit planning resources to the subsequent more detailed stages. Once a project has been accepted further steps involve detailed design and financial negotiations, construction and commissioning, and full operation of the project. Projects that a nation chooses to implement should be ranked high priority in the national development program. They should be selected only after thorough consideration of alternatives in the economy as a whole and within the particular sector itself proper attention should be given to the linkages between the selected project growth and growths the other sectors.

There are three benefits to developing a project plan:

**Planning reduces uncertainty**. Even though we would never expect the project work to occur exactly as planned, planning the work allows us to consider the likely outcomes and to put the necessary corrective measures in place.

**Planning increases understanding**. The mere act of planning gives us a better understanding of the goals and objectives of the project. Even if we were to discard the plan, we would still benefit from having done the exercise.

**Planning improves efficiency**. Once we have defined the project plan and the necessary resources to carry out the plan, we can schedule the work to take advantage of resource availability. We also can schedule work in parallel; that is, we can do tasks concurrently, rather than in series. By doing tasks concurrently we can shorten the total duration of the project. We can maximize our use of resources and complete the project work in less time than by taking other approaches.

Not knowing the parameters of a project pre­vents measurement of progress and results in never knowing when the project is complete. The plan also provides a basis for measuring work planned against work performed.