



Management of Development Projects: Constraints and Challenges

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Abstract:

Development organizations cannot be successful unless they implement a project management methodology that is applicable to their projects. There are many ways to execute a project, most of which provide for a less than an optimum solution. Only when using a standard methodology of processes and techniques, organizations can coordinate resources to achieve predictable results. However, project management is not an exact science, and is not a 100% guarantee for project completion. Since project involves people, there are always complexity and uncertainty that cannot be absolutely controlled.

Keywords: Project Management, constraints, PERT, CPM

1. Introduction

The foundation of an enterprise is the project. Hence, the success or failure of an enterprise largely depends upon the projects. In simple words, a project is an idea or plan that is intended to be carried out.

Newman *et.al* define that "a project typically has a distinct mission that is designed for achievement of the mission."¹

Gillinger defines project: "as a whole complex of activities involved in using resources to gain benefits."²

There are many definitions for what constitutes a project, some of these definitions describe the nature of a project, and how it differs from other type of work. The most common descriptions used to define a project include the following:

- A project is a temporary process, has a beginning and an end.
- A project has limited resources.
- A project follows a planned, organized method to meet its objectives with specific goals of quality and performance.
- Every project is unique.
- A project has a manager responsible for its outcomes.

2. Definition of a Development Project

A development project is designed to deliver a specific output aiming to improve the economic and social conditions of a group of people. Examples of development projects are: reduction in child mortality, improvement in maternal health, or combat HIV/ AIDS, malaria and other diseases.

A development project needs to respond to a series of different stakeholders, each with different needs and priorities, and operate in difficult environments, which increases its complexity and risk. Development projects vary in size and orientation, most share the common goal of helping people and benefiting society. The goal of all development projects is to help improve people's lives through skills training and other livelihood programs. Development organizations prepare and implement development

projects and work to strengthen the capabilities of local institutional and promote community self-reliance through sustainable strategies. Funding for projects comes through private and public donations, government assistance, and a variety of other sources. Development projects may consist of a single, transformative project to address a specific problem or a series of projects targeted at addressing several problems.³

Today's development projects are more complex and require the participation of more stakeholders, the coordination between different specialist from different fields, and the needs to innovate different approaches to solve complex problems.

Many years of experience managing projects have convinced us of the need to increase the use of project management practices in development organizations.

3. The objectives of management for developed project

1. To help development organizations understand the need to quickly adapt to new challenges and invest their limited resources in the best way possible in order to achieve recurring successes; for which they can use a proven, but flexible, project management methodology.
2. To help development organizations understand that in order to implement projects successfully, project management must become part of the organizational culture; because, the effective utilization of the project management methodology depends upon the integration of key knowledge areas with project management processes.
3. To provide a common framework and terminology across Development Organizations, especially Non Governmental Organizations (NGO's); as it is through a common methodology, and a common language, that project managers in development organizations can increase their knowledge in the subject and build their competencies.

Development Project Management proposed premise of this document is that organization that systematically applies project management methodologies can ensure that donor, organizational and beneficiary resources is used in the most efficient, and effective manner; which help increase the chances of the project to meet its objectives. This document has three main audiences:

1. For Project Managers, who have been assigned with the responsibility to manage a project, within a certain time, budget, and scope, and for whom the guidance provided should be useful for building the range of skills appropriate for effective project management.
2. For Development Organizations, to whom the arguments presented should demonstrate the benefits of a structured methodology in the process of selecting the right projects, in addition to helping them do the projects right.
3. For Project Staff, in charge of implementing the project's plans, as they need clear guidelines to help them do their job in the most efficient manner.⁴

4. Management of Development Projects

Project management is more than just implementing the activates identified in a log frame; it includes managing all the components that make up a project from its resources, risks and changes, to ensure that the project meets its objectives within the expected quality, schedule, and budget, at the same time of meeting the expectations of its stakeholders. Development projects face constant demands to do more with less, project managers are responsible to deliver outcomes in conditions where security risks are high and goods and services are limited. While at the same time development workers assigned to manage projects are often not sufficiently equipped with the necessary project management skills and are more interested in the immediate tangible outputs of the project rather than in the less tangible processes required to ensure that the project is managed effectively.

This complex project environment requires appropriate project management skills; it requires a new type of competencies from project managers that go beyond a technical expertise. Project managers require the

skills to manage limited budgets, to monitor shrinking schedules, and monitor unpredictable outcomes, while at the same time dealing with people and organizational issues.

Currently, there is not a widely defined standard for managing development projects; for that reason, each organization or project manager define their own approach to managing a project. Excessively on the technical components and ignore the processes that facilitate the management of a project. This is why; project management is often understood as something that can be achieved just by monitoring the project's budget or schedule. If development projects want to be successful it will require a comprehensive application of management practices, processes, and tools to manage the limited resources, increased challenges, and issues that impact all projects. Moreover, the lack of a consistent project management methodology result in the duplication of efforts, which affect the bottom line of the organization's development goals by producing outcomes at higher costs, with increased risk, and within a environment of distrust from donors and stakeholders.⁵

In recent years, there has been an increase in the accountability requirements of development organizations from the international cooperation and donor agencies, leading to a greater focus on effectiveness and efficiency on the way projects are planned an implemented. In the rapidly changing environment with a diverse range of issues and challenges, project management can support the achievement of project and organizational goals, and give greater assurance to stakeholders that sources are managed effectively.

Many development projects fail to deliver the expected outcomes or fail to produce the desired impact on the communities they serve. The most common causes are:

- Objectives not properly defined or agreed.
- Stakeholders do not understand the project objectives.
- Objectives not properly defined in measurable terms.
- Insufficient planning and coordination of resources.
- Poor estimation of duration and cost
- Incomplete, unrealistic and outdated project plan.
- Lack of communication with stakeholders and management.
- Weak project leadership, vague lines of responsibility and authority.
- Inadequate definition of roles.
- Poor commitment to the project by the team, the organization, and the beneficiaries.
- Weak control processes and feedback mechanisms to detect problems early.
- Lack of analysis of major risk factors and inadequate risk response strategies.
- Lack of quality control.

All of these causes could be addressed by the application of project management tools and techniques. Applying a formalized project management framework, or methodology can help with clarification of objectives, identify the right skills, reduce the impact of risks, foster a focus on results, improve communications, and increase the chances for success. It is through the effective use of a project management methodology that organizations can ensure a cost effective use of limited.

5. Resources to achieve the planned objective

Project Management Process - Key Activities

Initiating	Planning	Executing	Monitoring & Controlling	Closing
<ul style="list-style-type: none"> Identifying business needs Creating a Project Charter Formal authorization to start project Articulate the high level project scope deliverables, duration, cost assumption and constrain etc. Identify stakeholder and create register 	<ul style="list-style-type: none"> Business Requirement Gathering Break down work and create WBS Select and define project team roles Develop project Schedule Determine Budget and Quality Standards Identify risk and create risk response plan 	<ul style="list-style-type: none"> Complete work packages perform QA Acquire and develop project team Organize team building activities Vendor Solicitation and Selection. Implement approved changes and defect repair. Project meetings and creating status reports 	<ul style="list-style-type: none"> Measure against performance baseline. Recommend preventive/corrective actions. Ensuring Quality Control. Implementing change control Controlling key parameters like cost, schedule and scope. Identify root cause. Conflict Resolution 	<ul style="list-style-type: none"> Obtain acceptance by the customer or sponsor to family closing the project. Complete contract closure Update lesson learned database. Archiving project records in the PMIS Perform team member's assessments and release project resources.

6. Project Management Constraints

Every project has to manage four basic constraint's scope, schedule, budget and quality. The success of a project depends on the skills and knowledge of a project manager to take into consideration these constraints and develop the plans and processes to keep them in mind.

- Balance
- Scope
- Schedule budget
- Quality

Scope is what the project is trying to achieve, it entails all the work involved in delivering the project outcomes and the processes used to produce them; it is the reason and the purpose of the project. Scope is the boundary of a project, it is what the beneficiaries, and the donors expect from the project, nothing more, and nothing less.

Budget or the costs approved for the project including all required expenses needed in order to deliver the project. In development project managers have to balance between not running out of money and not under spending, because many projects receive funds or grants that have contract clauses with a 'use it or lose it' approach to project funds. Poorly executed budget plans can result in a last minute rush to spend the allocated funds.

Schedule is defined as the time required for completing a project.

Quality is the fourth constraint and it is defined as delivering the project outcomes according to the stated or implied needs and expectations of the project beneficiaries and donor agency, in order to meet stakeholder satisfaction. It also means complying with quality standards that are either mandated by the donor, local government (such as laws and regulations), or by professional standards (such as health).⁶

Managing these constraints is the main responsibility of the project manager. Each constraint has a specific goal and a project is deemed successful when it achieves all four, failure of any of them has an impact on the others, a delay on a project has an impact on its cost, and an increase in scope has an impact in both time and budget. Managing the four constraints also involve making trade-offs. All projects are implemented using estimates to establish the schedule and budget needed to deliver a specific objective; therefore, projects are implemented with many uncertainties and exposed to many risks, which requires revisions to the original plans along with negotiations with the different stakeholders. Changes in the social and natural environment can delay a project, increase its costs, or reduce its scope forcing the project manager to evaluate her alternatives and negotiate with the donors and the beneficiaries for modifications.⁷

7. The Need for a Project Management Methodology

In this type of environment, organizations need a methodology that allows a great degree of flexibility to accommodate the constantly changing environment of the project; a methodology that promotes optimal standards of performance, and reinforces the organizational capacity to deliver its services in a transparent and effective manner. Without a project management methodology organizations risk to lose the knowledge and skills they gain from completed projects. The high staff turnover in development organizations makes it hard to build institutional memory to improve the efficiency of development projects and to implement lessons learned in future projects.

A methodology is a method to capture the best practices around project management and disseminate them in the organization. It is a system of principles, practices, and procedures. It is the collection of practical ideas and proven practices. Defining and implementing a good methodology is essential for development organizations who want a project management approach for performing project activities in a coherent, consistent, accountable, and repeatable manner.

The best methodologies are the ones that are built based on the experience of its practitioners; organizations that build a learning cycle in its methodologies will benefit by incorporating the knowledge of its project managers and thus will have a methodology that reflects its current best practices. With this approach, organizations will have a comprehensive methodology for successful project management.

8. Benefits of Project Management

The use of a systematic project management methodology gives development organization a strategic tool; gives organizations the means to practice established and time-tested practices of project management to help them achieve successful outcomes. The process that a methodology delivers help organizations keep focus and deliver solutions that project beneficiaries and its communities desperately need them. Among the main benefits is an increase in the level of collaboration among all project stakeholders, the delivery of consistent results of predicable quality and defined roles and responsibilities that ensure proper accountability.

Other benefits include

- A common language and a consistent discipline for how projects are planned and implemented in the organization.
- A standard project terminology, understood by all stakeholders.
- Provides project stakeholders confidence on how projects are done in the organization.
- Permits accurate predictions of project resource requirements and potential risks.
- Stipulates clear procedures for developing project plans that allow better control of the project throughout its life cycle.

- Assists the project manager to integrate, coordinate, and track project activities, by describing the basic practices, procedures, and techniques.⁸

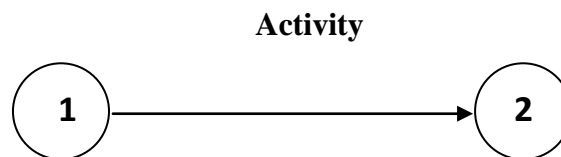
9. Project Management with CPM and PERT

9.1 Definition

- A project is defined by a set of *activities*.
- Each activity is defined by its duration (time to complete the activity) and its *predecessors* (activities that must be completed before the activity can start).
- CPM (Critical Path Method) is used to assist the project manager in scheduling the activities (i.e., when should each activity start). It assumes that activity durations are known with certainty.
- PERT (Program Evaluation and Review Technique) is used to assist in project scheduling similar to CPM. However, PERT assumes that activity durations are random variables (i.e., probabilistic).

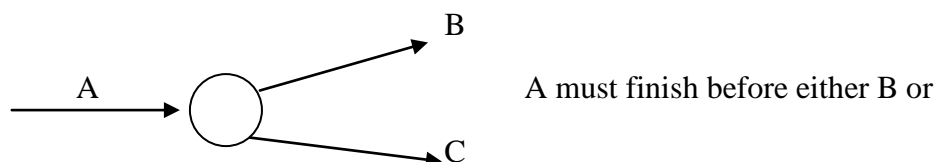
9.2 Project Network

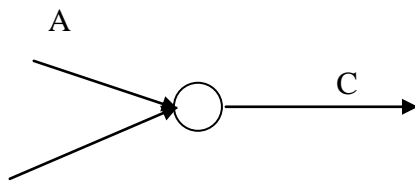
- The first step in CPM/PERT is to construct a project network.
- In the project network each activity is represented by an arc connected by two nodes. The first node represents the start of the activity and the second node represents the end of it.



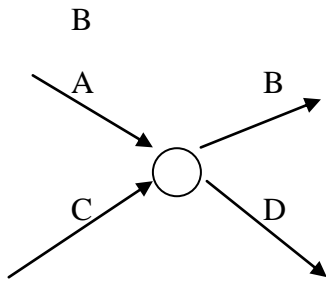
- The network should reflect activities precedence relations.
- Given a list of activities and predecessors, the following rules should be followed to construct a project network:
 1. Node 1 represents the start of the project. An arc should lead from it is represent activities with no predecessors.
 2. A unique finish node representing the completion of the project should be included in the network.
 3. Number the nodes in such a way that the node representing completion of an activity always has a larger number than the node representing beginning of the activity.
 4. An activity should not be represented by more than one arc.
 5. Two nodes could be connected by at most one arc.
 6. Each node should have at least one entering arc and at least one leaving arc.
 7. Use the least possible number of nodes (optional).
- To avoid violation of rules (4)- (6) a dummy activity with zero duration (represented by a dotted arc) may be introduced.⁹

9.3 Examples of network construction

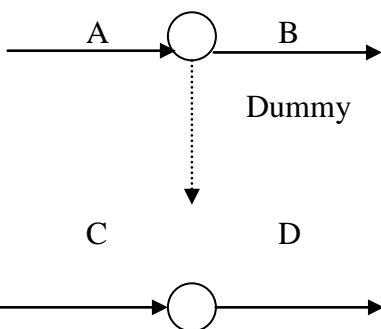




Both A and B must finish before C can start



Both A and C must finish before either of B or D can start



A must finish before B can start

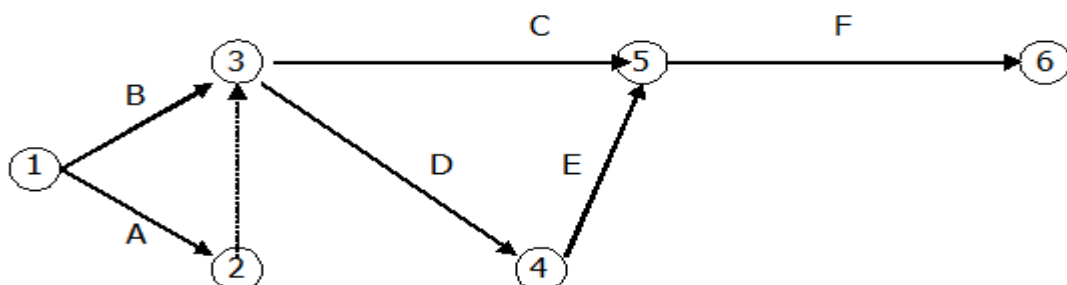
both A and C must finish before D can start

Example 1

A project to manufacture a product is composed of the following activities:

Activity	Predecessors	Duration (days)
A= train workers	--	6
B= purchase raw material	--	9
C= manufacture product 1	A, B	8
D= manufacture product 2	A,B	7
E= test product 2	D	10
F= Assemble products 1 and 2	C,E	12

9.4 Project network

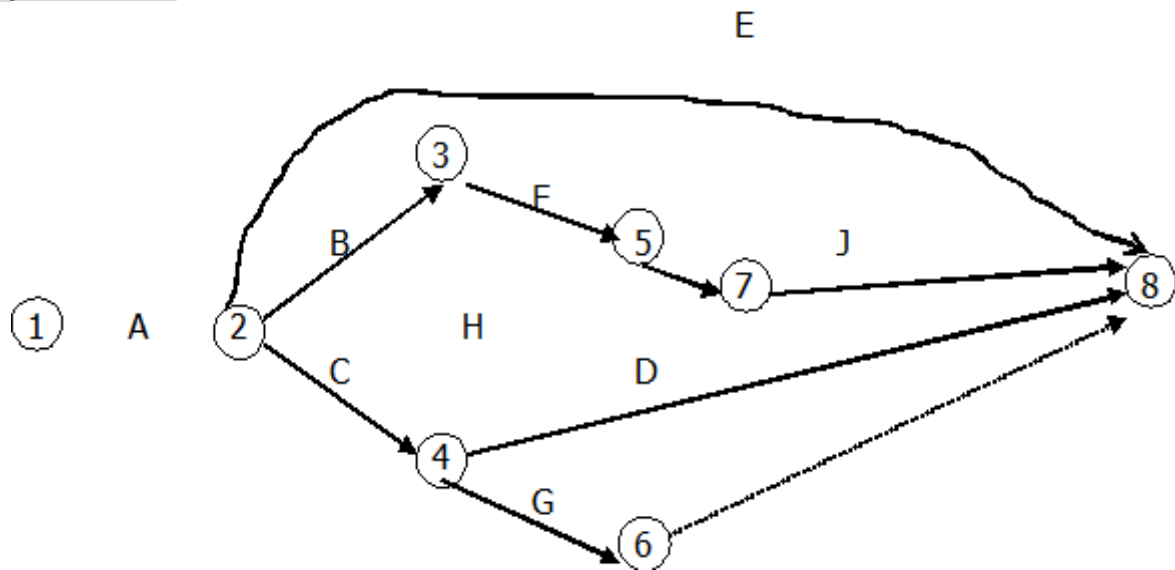


Example 2

The promoter of a rock concert must perform the following tasks before the concert can be held. Durations are in days.

Activity	Predecessors	Duration (days)
A= find site	--	3
B= find engineers	A	2
C= hire opening act	A	6
D= set radio and TV ads	C	3
E= set up tickets agents	A	3
F= pepare electronics	B	3
G= print advertising	C	5
H= Set up transportation	C	1
I= rehearsals	F, H	1.5
J= last minute details	I	2

9.5 Project network



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