

Introduction to Project Management

Introduction

The planning and execution of successful projects has increasingly become part of the common day-to-day routine for most organisations.

Introducing a computer system, implementing a new information system, launching a new product, constructing a building or managing an internal consulting project are just some examples of management activities which can be enhanced by the application of project management principles.

Project Management has become an essential management skill.

Definition of Projects

Projects can be large or small, one-off tasks where funds, labour, equipment and materials are brought together for a job.

The project form of operations is concerned with the provision of a specific service or production of a unique product.

A wide range of activities fall into this category, where the purpose of all the associated activities is the successful achievement of a single objective, a completed project.

These include:

- Building and Civil Engineering Construction
- Design and Implementation of a Computer System
- Building a large item such as a Ship or submarine
- Construction of Manufacturing/Processing Plants;
- Maintenance Activities - Plant Shutdowns/Turnarounds;
- Major events –Open Day, Grand Prix, Olympic Games etc.;
- Selection and implementation of major IT systems;
- Consulting Assignments.

There are several characteristics about the nature of an activity or endeavour, which clearly identify it as a project, as distinct from an ongoing operational process or program.

The key characteristics of a project are as follows:

- An identifiable client/sponsor
- A clear objective to be achieved
- A specific timeframe within which to achieve the objective
- A predetermined funding limit for the achievement of the objective
- Defined start and end dates
- Provide a particular outcome which may be a product or service
- Consume labour, time, money, equipment, materials
- Require the contribution of a selected group of people – usually but not always team based.

Tangible and Intangible Projects

In most organisations, projects are initiated and progressed at the discretion of management to meet perceived needs as they arise. This usually involves the requisitioning and expenditure of funds, which are additional to routine operational requirements.

Tangible Projects

Projects which result in the creation of a tangible product or outcome, eg. equipment installation, facility construction etc. usually result in the creation of an asset which must be reported in the balance sheet of the company's financial reports and for which the company may claim depreciation.

Expenditure on these types of projects adds to the organisation's assets or "capital" and so the terms "Capital Funds" and "Capital Expenditure" are applied to the funding of such projects.

Capital Expenditures or the Capital Costs of activities (usually projects) are defined as the total original cost of installed facilities that cannot be deducted as current expenses for tax purposes in the year of purchase, but can be depreciated over the life of the project.

The Capital Cost of a project includes not only the original cost of the physical equipment installed but also includes the costs related to:

- Scoping and Design
- Project Management Overheads
- Direct Labour
- Supervision
- Materials consumed during start-up.

Alterations and additions to existing plant that increase the fixed asset value are also capital costs.

Intangible Projects

Other projects are less tangible.

For example, at one end of the spectrum might be the introduction of a new type of "software" based manufacturing technology, IT systems, through to management consulting projects involving organisational change and changes to management practices.

These projects are treated as pure expense and are paid for out of current operating budgets or allocations for such projects.

Why do we have Projects?

All projects are set up to improve a process, upgrade a system, construct a new facility, introduce new plant and equipment to improve the overall performance of the organisation.

The organisation includes the business owners (shareholders), the management, employees and the members of the community in which the business operates.

The senior management team must play a key role in project management.

The senior management team decide on the allocation of funds on behalf of the business owners. It is their role to ensure only projects which improve the overall organisational performance are progressed, and those that do not, are stopped.

From the business owner's perspective, for every project that requires capital (or expense) funds to be allocated to it, there is a choice to make. The owners may either choose to fund the project and benefit from the income and other benefits that arise from it, or they may take those same funds and invest them elsewhere eg. leave them in a high interest bank account, stock market based portfolio, or other market securities and bonds etc.

Therefore it is essential to evaluate every project that is put forward in sufficient level of detail to ensure the income stream and benefits to the business arising from projects, firstly:- exceed what could be obtained by not doing the project and investing the money elsewhere, and secondly:- that projects can be ranked in order of merit, to ensure projects generating the greater benefits are done first.

The basic requirements of all projects as defined previously leads to projects such as:

- New installations and to exploit new lines of business;
- New product development to exploit new markets;
- Equipment, plant and technology upgrades/expansions improve competitiveness in existing lines of business;
- Operations and management systems improvements eg. IT systems implementation, teams implementation, quality improvement;
- Major maintenance projects to guarantee the performance of the installed plant;
- Environmental and Safety based projects to protect the community and employees.

The Project Management Cycle

The project management cycle consists of the following elements to ensure that everything is done to make the project succeed:

- Establish the Objective. Define with the customer the business need and the project objective;
- Develop a Plan of what needs to be done;
- Organise a team and resources necessary to get the job done;
- Motivate the team and delegate effectively;
- Monitor Progress and initiate action to overcome problems;
- Manage project communications through action meetings.

This cycle is represented in Figure 1 below

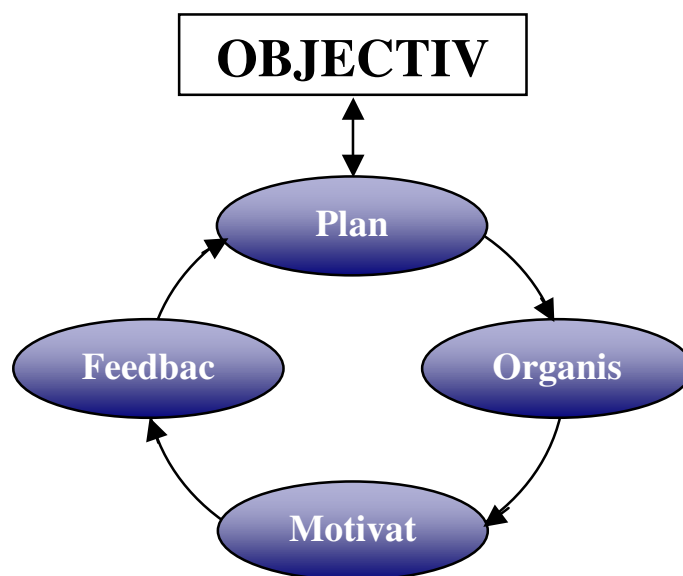


Figure 1. Project Management Cycle

The Project Life Cycle

We stated earlier, that two of the distinguishing characteristics of projects are defined start and end dates. This means projects have a finite life.

Within this life-span activities are progressed according to a set pattern, consuming various levels of resources which taper off until the project is completed. This progress of project activities from beginning to end is referred to as the ***project life-cycle***.

As it happens, project life cycles tend to follow a regular pattern which see them progress through four key phases. These are:

- Concept
- Development
- Undertake Project
- Finalisation.

A typical project life cycle is illustrated in the Figure below.

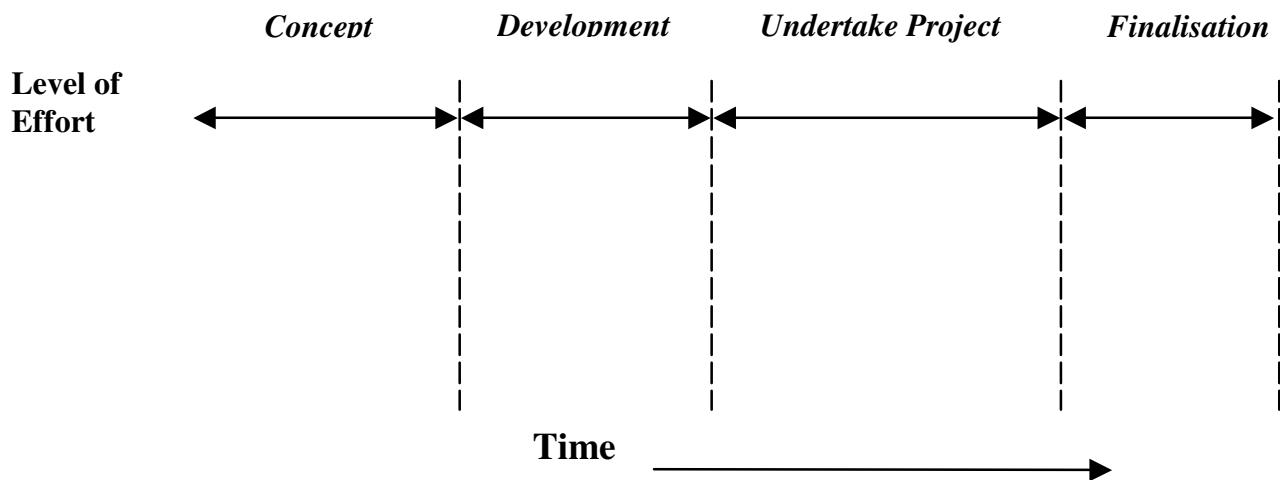


Figure 2. A Typical Project Life Cycle

The types of activities which are usually undertaken at the various stages of the project life cycle are as follows.

The Concept Stage

During this stage of a project, the key tasks include:

- Identifying the need;
- Identification and consideration of stakeholders;
- Establishing goals and objectives;
- Preliminary scoping and assessment of:
 - Project economics;
 - Fit with overall company environment and business strategy
 - Resource requirements;
 - Feasibility;
 - Risks;
 - Alternative strategies and options
- Identify potential team members and project structure
- Prepare and present project proposal.

The objectives of this stage are not to conduct detailed assessments of project costs, benefits, requirements etc. or to consume significant resources, as there may still be a strong possibility that the project may not proceed.

The major objectives of this stage are to:

- Review the project ideas, identify and disqualify any project ideas which are obviously not viable and that no further resources are expended on them;
- Make a solid enough case to justify the expenditure required to progress to the next step, while knowing full well that the project stands a chance of being disqualified as a result of that progression;
- Identify and quantify, in overview form, the timings, costs and resources required to progress the project;
- Identify in detail, the timings, costs and resources required to execute the Development Stage of the project.

The Development Stage

During this stage of the project, the main activities and tasks will include:

- Identification of likely team members
- Conduct of the required detailed feasibility, economic, technical studies
- Development of detailed definitions of project outcomes, standards and resources requirements;
- Risk analysis and contingency plan development;
- Development of outline project plan, budgets and cashflows;
- Development of scope of work and execution options ie. subcontract vs internal work;
- Establish policies and procedures for management and control;
- Confirm the viability and justification for the project;
- Prepare and present project brief;
- Obtain approval to proceed with the project.

Depending on the type of project, a significant amount of resources (costs) may be used during the development stage. The objective being to either clearly identify that the project is not viable or otherwise, obtain approval to proceed with the actual project.

Undertake Project Stage

During this stage of the project, typical activities will include:

- Establish full project team and project organisation;
- Confirm detailed requirements;
- Develop detailed schedules;
- Establish detailed work packages, project controls and information systems;
- Initiate external purchasing activities;
- Issue and execute work packages;
- Ongoing monitoring and control of project progress, timing, costs, quality and variations between planned and actual scope of work;
- Resolution of issues and problems.

It is during this stage of a project that people management issues become significant, as it is during the implementation stage that the project manager may be responsible for a large number of people to manage as well as the technical tasks associated with

progressing the project.

The Finalisation Stage

At this stage of the project activities predominantly revolve around:

- Finalisation of project end product(s)/outcomes
- Handover to the client
- Review and acceptance by client/customers/end users;
- Finalisation and settlement of accounts;
- Transfer of ownership and responsibility for physical assets/products/outcomes;
- Commissioning, testing and acceptance of physical assets/systems etc. where relevant;
- Release and re-assignment of internal resources, release of external resources;
- Reassignment of the project team members;
- Prepare and submit final project report;
- Arrange modifications, alterations if required by client;
- Review, post-audit and evaluate to promote organisational learning.

The Use of Resources

Every project has a defined start and finish and in between resources are consumed. These resources may be people's time, materials and money which are used at different rates throughout the project.

The concept and development stage are relatively low users of resources, but are important stages. These early stages may consume only about 15% of the overall cost but strongly influence the undertake project/implementation phase which accounts for up to 80% of the overall cost. It is therefore vital to ensure that the preliminary planning is completed correctly.

The typical 'S' curve showing how resources are usually consumed through a project is shown in Figure 3.

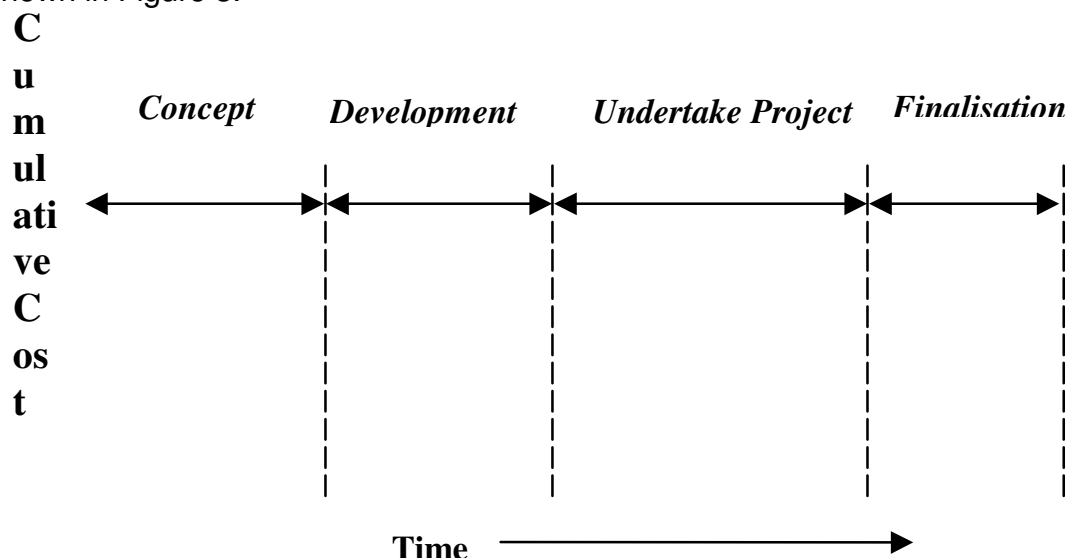


Figure 3. Typical Project 'S' Curve

The Scope of Project Management

The scope of project management can be defined as the management of all activities and tasks required to progress the project life cycle, for a particular project, so as to achieve the project objective(s) within the time and cost constraints.

To facilitate the management of the key stages of the project life cycle and the integration of project management activities to routine organisational decision making processes, most organisations identify key activities/sub-stages, reporting structures and milestones requiring management level approvals, authorisations etc. as a mechanism for controlling what are often many projects being progressed simultaneously. An example of a "generic" project management process, and its relationship to the project life cycle is shown in Figure 4 below.

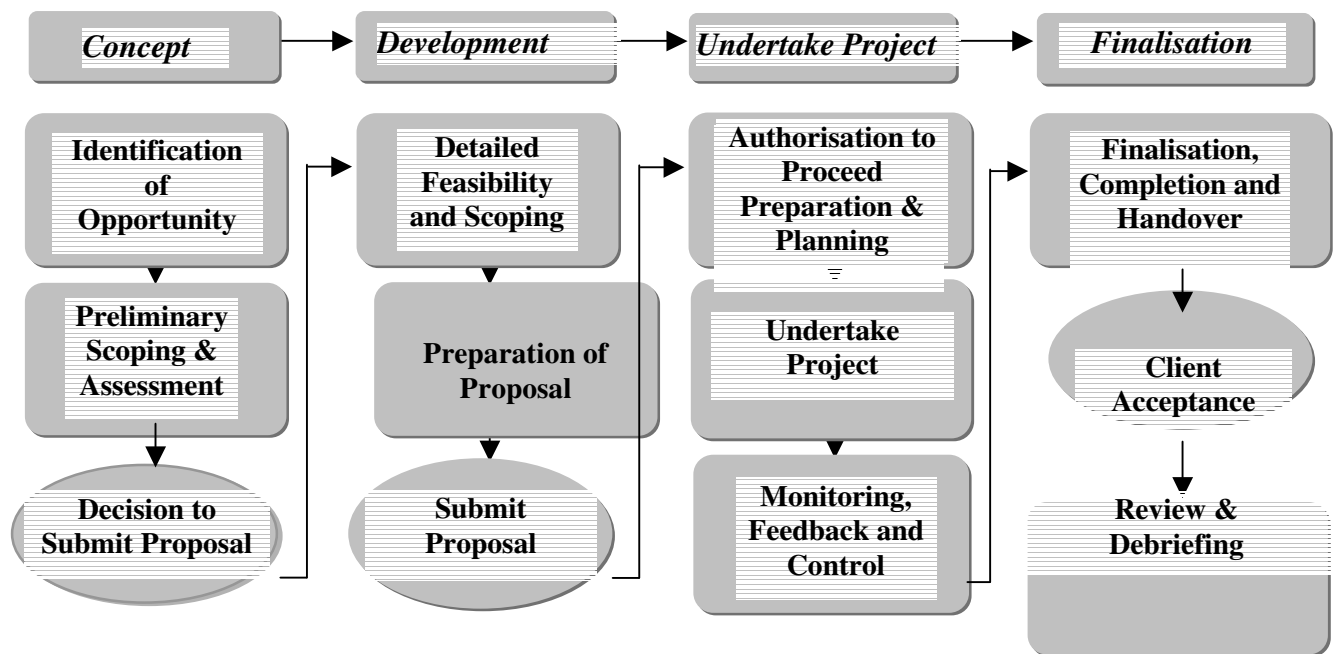


Figure 4. Overview of the Project Management Process

Project Management as an Organisational Discipline

A key feature of projects, is that they bring together teams of people who must work together towards a common goal.

Project teams often work across departments and other traditional organisation boundaries, with work needing to flow horizontally across the organisation to achieve the project objectives, in contrast to the vertical (hierarchical) management and organisational structures that are in place to manage day-to-day operations.

A formal definition of project management given by Kerzner¹:

Project Management is the planning, organising, directing and controlling of company resources for a relatively short-term objective, that has been established to complete specific goals and objectives. Furthermore, project management utilises a systems approach to management by having functional personnel (the vertical hierarchy) assigned to a specific project (the horizontal hierarchy).

Project management as a discipline provides the processes, tools and techniques to make better use of resources by balancing the need for project work to flow horizontally and the work of day-to-day operations to flow vertically.

This approach should not undermine flow of work implemented through the operational organisation structure, required to run an operation on a day-to-day basis, but simply requires that the line organisations talk to one another horizontally so that work will be accomplished more smoothly.

¹ Kerzner, Harold. Project Management, A Systems Approach to Planning, Scheduling and Controlling

The vertical flow of work is the responsibility of line managers, the horizontal flow of work is the responsibility of project managers. Their primary responsibility is to communicate and coordinate activities horizontally between the line organisations.

This is illustrated in Figure 5.

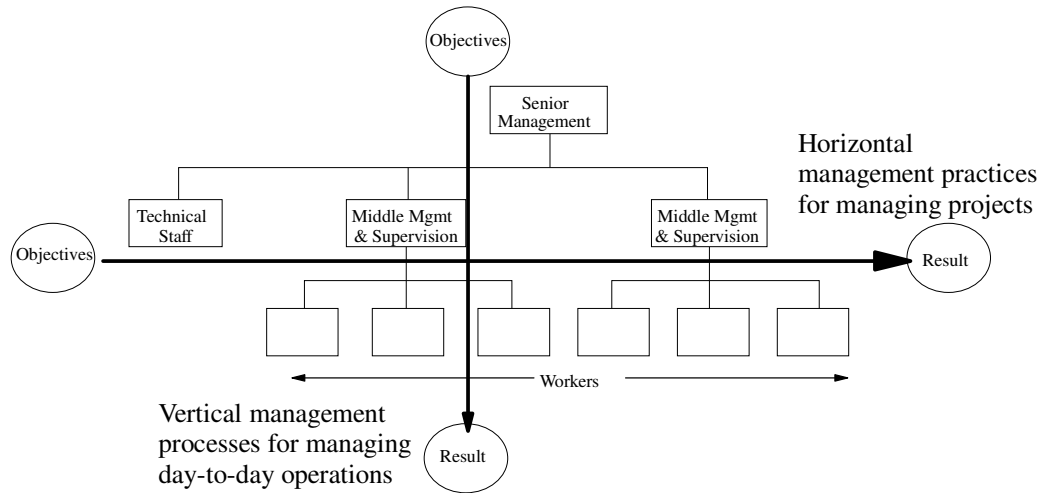


Figure 5. Project vs. Functional Management

Various techniques are available to assist the Project Manager and the project team to manage projects and resolve the issues which may arise.

Many organisations establish decision models and procedures that provide some structure and impartiality for executing the concept and much of the development stages of a project. The feasibility and scoping study phases in particular.

This is particularly so when significant capital expenditures are to be made.

Critical Path based project planning and control techniques can be applied to assist with project implementation.

Formalising and standardising the finalising, commissioning and handover stages by developing appropriate checklists and outcomes, in the form of predefined documentation, can contribute greatly to the effectiveness of commissioning and handover.

The Project Manager is responsible for managing this whole process and providing the leadership and integration required, to get the project team working effectively to progress the project.