

1

Introduction to Project Management

Learning Outcomes

After reading this chapter, you should be able to;

Understand the definition of a project and the definition of project management

Explain the process of management-by-projects

Outline the project management standards

Project management offers a structured approach to managing projects. The purpose of this book is to outline the latest planning and control techniques used by industry, commerce, sport and domestic projects. It also covers the techniques referred to in the body of knowledge (APM and PMBOK), and particularly the techniques used by the **project planning software**.

As the use of projects becomes more pervasive so more managers are entering the field of project management. Their success will be helped by their ability to develop a fully integrated information and control system to plan, instruct, monitor and control large amounts of data, quickly and accurately to facilitate the problem-solving and decision-making process. To achieve these goals the project manager needs a comprehensive **toolkit** - just as a plumber works with a bag of tools, so the project manager works with a computer producing organisation charts, work breakdown structures, barcharts, resource histograms and cashflow statements.

1. What is a Project?

The PMBOK defines a project as: *'.... a temporary endeavour undertaken to create a unique product or service. Temporary means that every project has a definite end. Unique means that the product or service is different in some distinguishing way from all similar products or services.'*

Traditionally work in the construction industry and defence procurement were seen as projects, but in recent years most proactive companies are structuring their work as projects (management-by-projects) and using project management techniques to ensure successful completion.

Projects range in size, scope, cost and time from mega international projects costing millions of dollars over many years - to small domestic projects with a low budget taking just a few hours to complete. Consider the following projects:

- Career development (education and training courses).
- Designing and constructing a building, a house or a yacht.
- Designing and testing a new prototype (a car or a washing machine).
- The launch of a new product (advertising and marketing project).
- Implementing a new computer system (IT project, or upgrade).
- Designing and implementing a new organisational structure (HR project).
- Planning and conducting an audit (quality management project).
- Disaster recovery (limiting the damage of fires, floods etc.).
- Olympics, or Springboks' tour of New Zealand (a sports project).
- Rolling Stones' world tour (an entertainment project).
- Moving house or going on holiday (a domestic project).

Other distinctive features of a project include:

- A **start and finish** (sometimes difficult to define - the start may have crystallised over a period of time and the end may be a slow phase out).
- A **lifecycle** (a beginning and an end, with a number of distinct phases in between).
- A **budget** with an associated cashflow.
- Activities that are essentially unique and **non-repetitive**.
- Use of **resources** from different departments which need co-ordinating.
- A **single point of responsibility** (i.e. the project manager).
- **Fast tracking** - getting your product to market before your competitors.
- **Team roles** and relationships that are subject to change and need to be developed, defined and established (team building).

Within the context of this book a project may be defined as a beneficial change which uses the special project management techniques to plan and control the scope of work in order to deliver a product to satisfy the client's and stakeholders' needs and expectations.

2. Project Management

Project management is defined by the PMBOK as: '*..... the application of knowledge, skills, tools and techniques to project activities in order to meet stakeholder's needs and expectations from a project.*' In other words the project manager must do whatever is required to **make the project happen** - one could not have a wider all encompassing job description!

This definition clearly identifies that the purpose of the 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 analyse their needs and expectations to define, at the outset, the purpose of the project, its scope of work and objectives (this will be developed in the *Feasibility Study* chapter).

The discipline of project management can be described in terms of its component processes, conveniently defined by the PMBOK as nine knowledge areas:

- Scope
- Time
- Cost
- Quality
- HRM
- Communication
- Risk
- Procurement
- Integration

A brief description of the nine knowledge areas are discussed later in this chapter.

The APM bok defines project management as '*...the most efficient way of introducing change achieved by:*

- *Defining what has to be accomplished, generally in terms of time, cost, and various technical and quality performance parameters;*
- *Developing a plan to achieve these and then working this plan, ensuring that progress is maintained in line with these objectives;*
- *Using appropriate project management techniques and tools to plan, monitor and maintain progress;*
- *Employing persons skilled in project management - including normally a project manager - who are given [single] responsibility for introducing the change and are accountable for its successful accomplishment.'*

Companies performing projects will generally subdivide their projects into several phases or stages to provide better management control. Collectively these project phases are called the project lifecycle. Along with the project lifecycle some of the other special project management techniques that form part of the project management integrative process are:

- Work breakdown structure (WBS)
- Critical path method (CPM)
- Resource smoothing
- Earned value
- Configuration control.

3. Management-by-Projects

Many organisations are changing in nature as more of them are accomplishing their business through projects. This management-by-projects approach has been used in engineering, construction, aerospace and defence for many years, and now we see other organisations buying into the process; pharmaceutical, medical, telecommunications, software development, systems development, energy, manufacturing, educational and service organisations. The management-by-projects approach encourages:

- organisation flexibility
- decentralised management responsibility
- holistic view of problems
- goal-orientated problem solution processes.

Time Magazine identifies these profound changes happening in the job market. *'Full-time, full-year workers are no longer as dominant as they were. There is more self-employment, more part-time employment and the beginnings of what might be called task employment.'* I would call this project employment. Therefore, for employer and employee to make the most of the new employment patterns a working understanding of *management-by-projects* and project team dynamics is essential.

Oracle: *'The business world is moving increasingly towards projects orientation operation to measure the true costs and perfectibility of any business endeavour.'* It is very difficult, if not impossible, to quantify costs if they are grouped together and shared - the only way would be a sharing percentage.

Programme Management: Where the project management office (PMO) is managing a large capital project (e.g. new Airbus), it may be subdivided into a number of smaller related projects to achieve a single common goal, for example, the body, the wings, the engines and the electronics.

Portfolio Management: Defines a project management office (PMO) that is running a number of unrelated projects. For example, this could be managing the repairs and maintenance of a large telecom type company, a power station or a water utility.

Small Projects: Managing small projects has its own unique problems. Although small projects may appear to be simple, they are often associated with a lack of definition (no drawings, no specifications and no contract), instructions are given verbally, and minimum standards are not established. There are no arbitration mechanisms, no exit strategies, and as small projects often have a short duration this does not allow time to establish a management system.

General Management: Although this book is about project management, the successful project manager must also be competent in a wide range of general management skills in addition to the nine knowledge areas. These would include:

- recruiting and personnel
- economics
- computer systems
- legal contracts
- personnel and human resources
- sales and marketing
- accounting and salaries.

The project manager would obviously not be expected to be an expert in all these fields, but for a project to be successful all these topics may need to be addressed at one time or another. And, as the single point of responsibility, the project manager will be responsible for either performing the work, or delegating it (see figure 1.1).

Production Management: Although projects are deemed to be unique, in reality they usually consist of groups of repetitive tasks. Henry Ford emphatically showed years ago that production lines are the quickest, and most cost effective way to manufacture thousands of cars. The same rule applies to projects, if there are repetitive tasks, then setting up a production line to carry them out would be more efficient and cost effective.

Technical Management: The technical aspects of the project also need to be managed. On smaller projects the project manager may be expected to be the technical expert as well as the manager. In fact, early on in ones career a young person will probably only be appointed as project manager if they are a technical expert.

There is usually a certain amount of skills overlap between project management, general management and technical management. This can be simply presented as intersecting circles (figure 1.1).

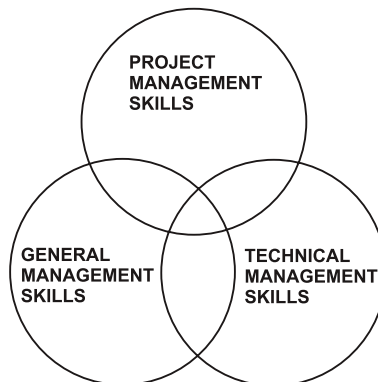


Figure 1.1: Intersecting Management Skills - shows the overlap between the different management skills

Project Management Environment: The project environment directly impacts the project and how it should be managed. Projects are not carried out in a vacuum, they are influenced by a wide range of stakeholders and issues. Consider the following:

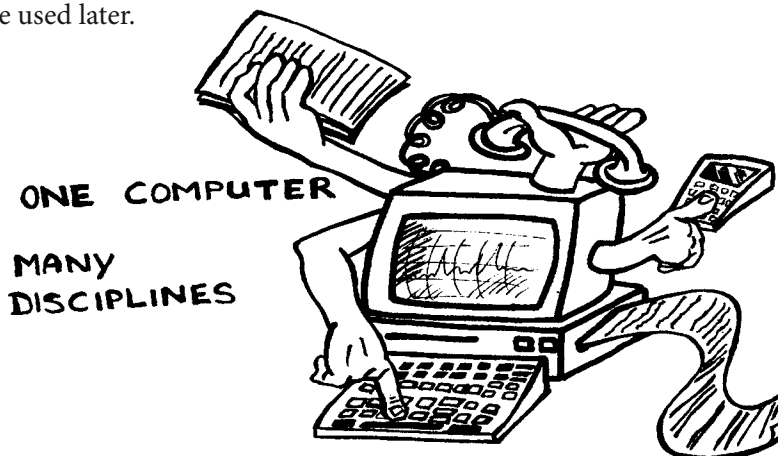
- Stakeholders (all interested parties)
- Client / sponsor's requirements
- A company's organisation structure
- Market requirements
- Competitors
- New technology
- Rules and regulations (Health and Safety)
- Politics (both internal and external)
- Cultural, social and religious backgrounds
- Economic cycle.

The project environment consists of the numerous stakeholders and players that have an input or are impacted by the project. All must be managed as any one person could derail the project (see stakeholder analysis in the *Feasibility Study* chapter). For project managers to be effective they must have a thorough understanding of the project environment which may well be changing and the goal posts continually shifting.

4. Project Management Software

Today, powerful but inexpensive project management software is readily available for the personal computer. This has essentially moved project management computing away from the data processing department to the project manager's desk. This represents a major shift in the management of information.

Whilst project planning software will certainly help the project manager plan and control their projects, its application will only be effective if the planning and control techniques are clearly understood. The purpose of this text is, therefore, to develop these techniques through manual exercises, but with the assumption that computer systems will be used later.



5. Project Management Associations

A number of project management associations and institutions have formed chapters around the world to encourage the development of project management as a profession. These project management chapters organise regular meetings and newsletters to keep their members informed about project management issues, such as:

- Body of knowledge
- Certification of project managers (PMP)
- Unit standards
- Ethics
- Global forum.

Body of Knowledge: Over the past fifty years a considerable body of knowledge has built up around project management tools, skills and techniques. This database of information has been developed into the following:

- The APM's bok - Association of Project Managers (UK)
- The PMI's PMBOK - Project Management Institute (USA)
- The IPMA's BOK - International Association of Project Managers (formerly called INTERNET)
- The AIPM's Competency Standards for Project Management (Australia)
- ISO 10006 '*Guideline to Quality in Project Management*' - to assist clients evaluating the effectiveness of the project management system
- South African unit standards.

The purpose of a body of knowledge is to identify and describe best practices that are applicable to most projects most of the time, and for which there is widespread consensus about their value and usefulness of the best practices. The body of knowledge is also intended to provide a common lexicon and terminology within the profession of project management - locally and internationally. As a relatively young international profession there is still a need to converge on a common set of terms. The PMBOK describes project management under the following nine knowledge areas:

- **Project Scope Management:** Is the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. It is primarily concerned with defining and controlling what is or is not included in the project, to meet the clients's and stakeholders' goals and objectives. It consists of authorisation, scope planning, scope definition, scope change management and scope verification.
- **Project Time Management:** Includes the process required to ensure timely performance of the project. It consists of activity definition, activity sequencing, duration estimating, schedule development and time control.

- **Project Cost Management:** Includes the process required to ensure that the project is completed within the approved budget. It consists of resource planning, cost estimating, cost budgeting, cashflow and cost control.
- **Project Quality Management:** Includes the process required to ensure that the project will satisfy the needs for which it was undertaken. It consists of determining the required condition, quality planning, assurance and control.
- **Project Human Resource Management:** Includes the process required to make the most effective use of the people involved with the project. It consists of organisation planning, staff acquisition and team development.
- **Project Communications Management:** Includes the process required to ensure proper collection and dissemination of project information. It consists of communication planning, information distribution, project meetings, progress reporting and administrative closure.
- **Project Risk Management:** Includes the process concerned with identifying, quantifying, and responding to project risk. It consists of controlling the risk management plan and being prepared for disaster recovery.
- **Project Procurement Management:** Includes the process required to acquire goods and services from outside the company. It consists of procurement planning, solicitation, source selection, contract administration and contract closeout.
- **Project Integration:** Integrates the three main project management processes of planning, execution and control - where inputs from several knowledge areas are brought together.

The body of knowledge can be subdivided into four core elements which determine the **deliverable** objectives of the project:

- Scope
- Time
- Cost
- Quality

The other knowledge areas provide the **means of achieving** the deliverable objectives, namely:

- Integration
- Human resources
- Communication
- Risk
- Procurement and contract.

APM bok: The APM bok takes a much broader approach than the PMBOK, by subdividing project management into 55 knowledge areas. It incorporates not only inward focused project management topics (such as planning and control techniques), but also broader topics in which the project is being managed (such as social and ecological environment), as well as specific areas (such as technology, economics, finance, organisation, procurement and people, as well as general management). The topics are described at an outline level, leaving the details to recommended texts (on their book list) to explain the working of the knowledge areas (see www.apm.org.uk).

Certification of Project Managers (PMP): The certification process offers a means for experienced project managers to gain a formal qualification in project management. There is a trend away from the knowledge based examinations which assess a person's knowledge, towards competence based examinations which assess a person's ability to perform. The PMI's certification is called the Project Management Professional (PMP). There is an increasing recognition of certification and for some projects it is being made a mandatory pre-qualification.

Competency is a mixture of explicit knowledge derived from formal education, tacit (implied) knowledge and skills derived from experience. For young professionals, explicit knowledge is more important, but the other competencies will become increasingly important as they progress in their careers. The PMI's (PMP) is a single level certificate programme, which measures explicit knowledge directly through a multi-choice test, and tacit knowledge and skill indirectly by assessing the candidate's work experience. It is therefore aimed at an early to mid-career professional.

The IPMA and AIPM (Australia), on the other hand, have developed a multi-stage programme. At the first stage explicit knowledge is measured directly through a multi-question test. This is aimed at the professional managers starting their careers. At the second stage tacit (implied) knowledge and skill are measured directly. This is early to mid stage certification, equivalent to PMP. At the third stage, the programme measures performance of senior project managers directly. And IPMA has a fourth stage to measure the performance of project directors.

Global Project Management Forum: Some of the key topics discussed at the global project management forum included:

- What industries or types of projects are the main users of modern project management in your country?
- What industries or areas of application in your country have the greatest need for more or better project management?
- What industries or organisations offer the greatest opportunities for growth of professional project management in your country?

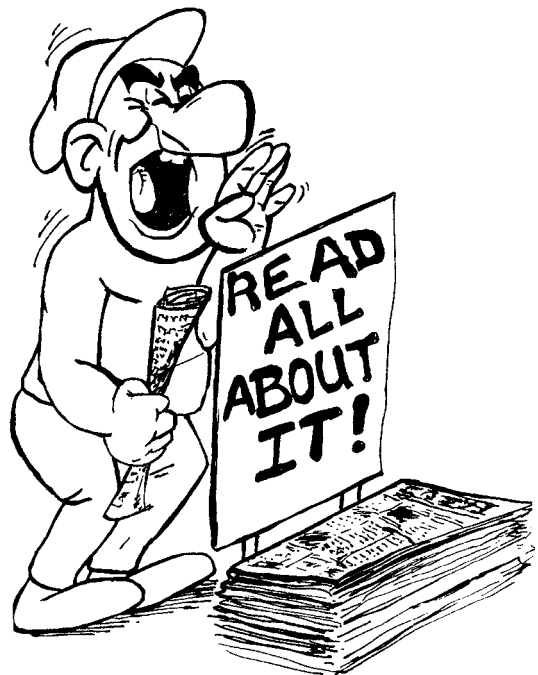
The answers to these and other questions relating to standards, certification, a global PMBOK and advancing the project management profession see the PMI's publication, *The Global Status of the Project Management Profession*.

6. Benefits of Project Management

The benefits of using a project management approach, obviously follows on from addressing the needs of the project. The project manager is responsible for developing a plan through which the project can be tracked and controlled to ensure the project meets preset objectives. To do this effectively the project manager requires accurate and timely information. This information should be supplied by the planning and control system, which outlines the scope of work and measures performance against the original plan.

Although the planning and control systems will incur additional management costs (project team), it should be appreciated that lack of information could be even more expensive if it leads to poor management decisions, mistakes, rework and overrun. Listed below are some of the main benefits associated with a fully integrated project planning and control system:

- **Client:** The project manager is the project's *single point of responsibility* and the company's representative to the client (and other stakeholders). During meetings with the client the planning and control system will provide information about every aspect of the project.
- **Single Point of Responsibility:** With the project manager responsible for the complete project, this should limit scope overlap and scope underlap.
- **Estimating:** The estimate forms the basis of the project plan. If you cannot estimate and measure it, how can you manage it?
- **CPM:** The critical path method calculates all the activities start dates, finish dates and floats. Activities with zero float form the critical path which determines the duration of the project - delaying a critical activity will delay the project.
- **Fast Track:** Brings a new product to the market quickly before the competitors.
- **Schedule Gantt Chart:** Communicates the what, where, when and who.
- **Project Integration:** Co-ordinates and integrates the contribution of all the project participants.
- **Reporting Interfaces:** The planning and control system's database can be structured around the work breakdown structure (WBS) for project reporting and around the organisation breakdown structure (OBS) for corporate reporting. Without an integrated system the two reporting requirements would have to be processed separately.



- **Response Time:** Timely response on project performance is essential for effective project control. The project planning and control system can adjust the content and frequency of the feedback to address the needs of the project, while the corporate systems may be less flexible.
- **Trends:** Projects are best controlled by monitoring the progress trends of time, cost and performance. This information may not be available to the project manager if the trend parameters are derived from a number of different functional sources and not communicated.
- **Procedures:** The planning and control system enables the project manager to develop procedures and work instructions which are tailored to the specific needs of the project.
- **Project Management Office (PMO):** Offers a centre for project management excellence.

Although there are many benefits from using project management techniques, senior management should tread carefully if the project management culture is not already established within the company, as a resistance to change could derail the project.

7. Role of the Project Manager

It is appropriate to conclude this chapter with a few words on the role of the project manager. Experience has shown that the selection of the project manager is a key appointment which can influence the success or failure of the project. As the *single point of responsibility*, it is the project manager who integrates and co-ordinates all the contributions, and guides them to successfully complete the project.

The role of the project manager should be outlined in the **project charter** (see *Scope Management* chapter) along with the purpose of the project. The successful project manager should be able to:

- Select and develop an operational team from a standing start
- Lead the project team and manage information
- Anticipate problems, solve problems and make decisions
- Integrate and network with project stakeholders
- Be operationally flexible and be able to spot entrepreneurial opportunities
- Plan, expedite and get things done
- Gain power through negotiation and persuasion
- Understand the environment within which the project is being managed
- Review, monitor, assess performance and apply control
- Administer the contract, the scope of work and scope changes
- Manage within an environment of constant change
- Create a positive working environment
- Keep the client happy.

We are witnessing a silent revolution - the transition from conventional functional management to project management. I hope you are on-board!

Case Study and Exercises:

You have been appointed by the CEO of an international telecommunications company to make a short presentation to the board of directors about the benefit of using a *management-by-projects* approach on the company's next project. Your short presentation (written and/or verbal) should consider the following:

1. Explain what project management is, and why it is different to other forms of management.
2. Explain how project management can be applied to your company's projects.
3. Point out the trend towards professional project management and your local project management society / association who are supporting certification.
4. Outline the role of the project manager.
5. Suggest a small pilot project on which you can develop your project management systems.



"...I've got all the tools now where's the project?..."