

CHAPTER

3 Project Management

LEARNING OUTCOMES

By the end of this chapter, you should be able to:

1. Define the terms project and project management;
2. Describe the causes of failed projects;
3. Describe the skills required to be an effective project manager;
4. Explain the process of project management;
5. Identify the skills and activities of a project manager during project initiation, project execution, and project closedown; and
6. List project management resources available which can assist project manager in project management.

INTRODUCTION

In the previous chapter, we have learned about information system development as well as the phases involved in system development life cycle (SDLC). In this chapter, we will look into details about the project management process.

What do you know about project management? Before we go deeply into discussing the topic, let us watch a short video clip below that shows an alternative view of project management!



Source: http://www.youtube.com/watch?v=xeEoBp_3dU0&feature=related

Project management skills are greatly in demand in the field of Information System (IS) development. Typically, IS project managers come from the ranks of experience IS developers such as system analyst. Throughout System Development Life Cycle, project manager is responsible for initiating, planning, executing and closing down the systems development projects. Effective project management helps to ensure the systems development projects meet customer expectations and delivered within the budget and time constraints.

This chapter will provide you with an understanding of the project manager's role and the project management process. It is important to gain an understanding of project management process which will become a critical skill for project managers. The discussion then turns to techniques for reporting project plans using Work Breakdown structure, Gantt charts and network diagrams. This chapter will conclude with a reference of project management resource that can be used to assist project managers in managing information system projects.

3.1 WHAT IS PROJECT MANAGEMENT?

Let us begin the lesson by watching a short video clip on Project Management.



Source: <http://www.youtube.com/watch?v=bLrnJc2Tz44>

Now, after watching the video above what do you understand about project management?

Before we can define project management, we should first define a project:

- (a) A project is a sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by specific time, within budget, and according to specification.
- (b) Project management is the process of initiating, planning, executing and closing the development of an acceptable system at a minimum cost within a specified time frame. Project management is an important aspect of information systems development and a critical skill for a project manager. The main objective of project management is to ensure that developed project will meet customer expectations and delivered within budget and time constraints.
- (c) Project manager - the person responsible for supervising a systems project from initiation to conclusion. Typically IS project managers come from the ranks of experienced IS developers such as system analysts. A project manager needs to have diverse set of skills such as management, leadership, technical, conflict management, and customer relationship management. The person is responsible for initiating, planning, executing, and closing down a project. Creating and implementing successful projects requires managing the resources, activities, and tasks needed to complete the information systems project.

Figure 3.1 below illustrates a project, project management and project manager:



Figure 3.1: A project, project management and project manager

In summary, systems development projects are undertaken for two primary reasons: to take advantage of business opportunities and to solve business problems. Taking advantage of an opportunity might mean providing an innovative service to customers through the creation of a new system. Solving a business problem could involve modifying the way an existing system processes data so that more accurate or timely information is provided to users.



Discuss the reasons why organisations undertake information system projects.

3.2 THE CAUSES OF FAILED PROJECTS

What is considered a successful project? Figure 3.2 indicates the attributes of a successful project.

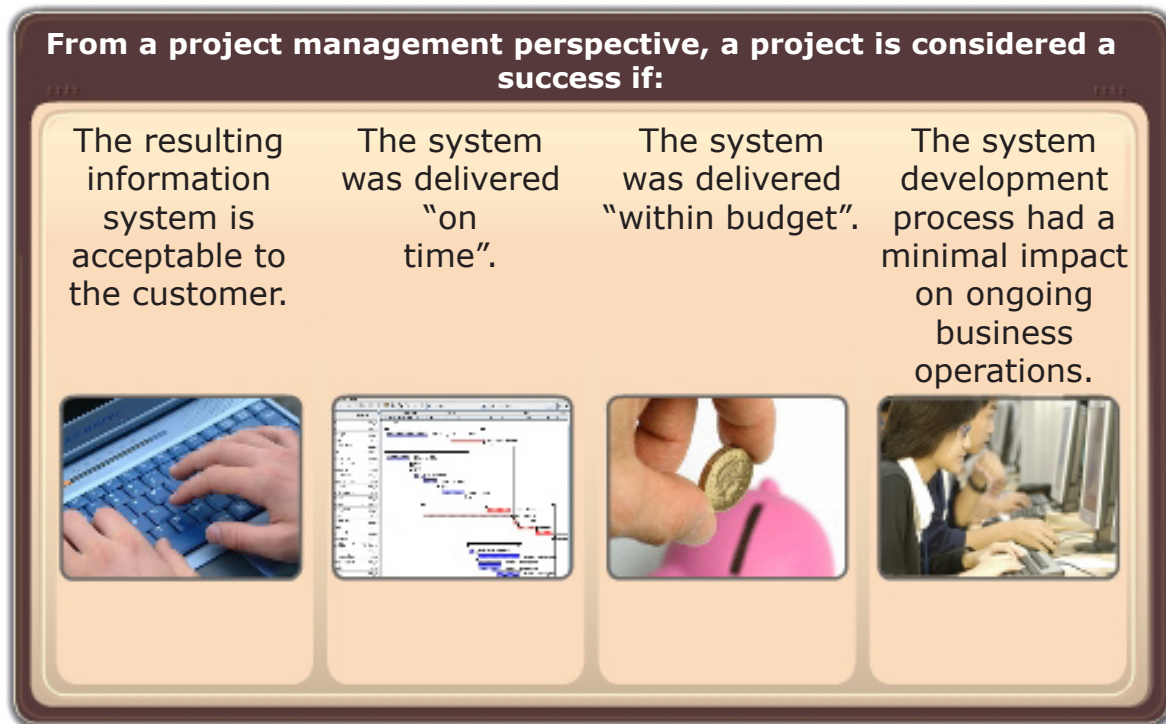


Figure 3.2: Attributes of a successful project

Not all projects meet these criteria and as a result, not all projects are successful. Failures and limited successes far outnumber successful information systems. Let's examine some of the causes of project management failure:

- (a) Failure to establish upper-management commitment to the project – sometimes commitment changes during a project.
- (b) Lack of organisation's commitment to the methodology.
- (c) Taking shortcuts through or around the methodology. Project teams often take shortcuts for one or more of the following reasons:
 - The project gets behind schedule.
 - The project is over budget.
 - The team is not trained or skilled in some of the methodology's activities and requirements.
- (d) Poor estimating technique.
- (e) Over optimism. Project manager failed to recognise that certain tasks are dependent on other tasks. Because of these dependencies, a schedule slip in one phase will cause corresponding slips in many other phases, thus contributing to cost overruns.

- (f) Insufficient resources. This could be due to poor estimating or to other priorities or staff assigned do not possess the necessary skills.
- (g) Failure to manage the plan. Various factors may cause the project manager to be sidetracked from the original project plan.

Ultimately, the major cause of project failure is that most project managers were not educated or trained to be project managers. Just as good programmers don't always go on to become good systems analysts, good systems analysts don't automatically perform well as project managers. To be a good project manager, you should be educated and skilled in the "art of project management."

According to the (Standish Group, 1995), U.S. government and businesses spent approximately \$81 billion on canceled software projects, and another \$59 billion for budget overruns. Their survey claimed that in the United States, only about one-sixth of all projects were completed on time and within budget, nearly one third of all projects were canceled outright, and well over half were considered "challenged." Of the challenged or canceled projects, the average project was 189 percent over budget, 222 percent behind schedule, and contained only 61 percent of the originally specified features.

3.3

PROJECT MANAGEMENT PROCESS

The remainder of this chapter will focus on project management process, which involves four phases, as indicated in Figure 3.3.

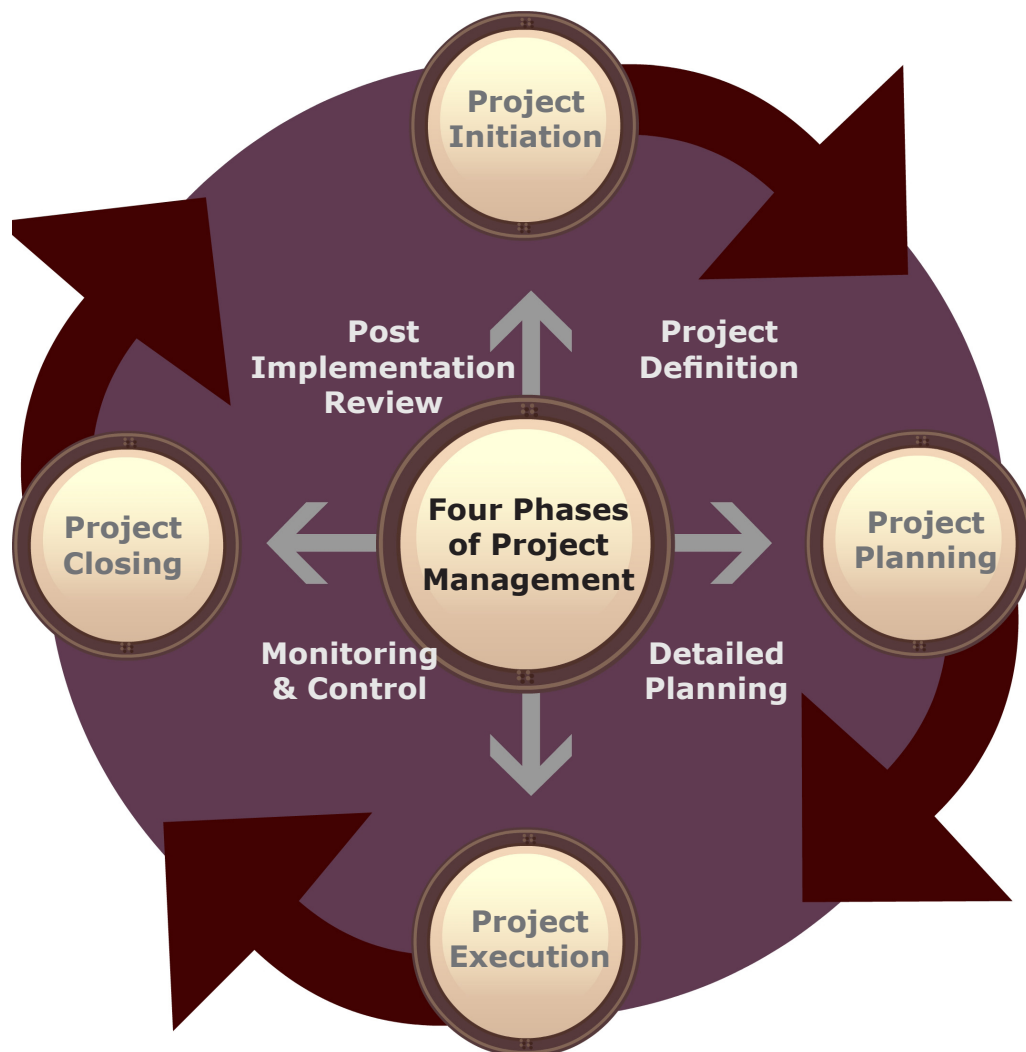


Figure 3.3: The four phases of project management

Source: http://www.bluegrassconsultancy.co.uk/client/project_management_diagram.jpg

Running Case:

Valley Furniture Company manufactures high-quality wood furniture and distributes it to retail stores. Its product lines include dinette sets, stereo cabinets, wall units, living room furniture and bedroom furniture. The company wants to create a website so that customers can easily access its catalog and place orders at any time. This new Purchasing Fulfillment System will track orders and get the right furniture and invoice to the right customers. In the rest of this section, we describe the project management process that needs to be followed in the development of the new system.

3.3.1 Project Initiation

During project initiation, project manager performs several activities to assess the size, scope and complexity of the project and to establish procedures to support subsequent activities. Depending on the project, some initiation activities may be unnecessary and some may be very involved. The process of project initiation includes, establishing and developing:

- (a) **Establishing project initiation team.** This activity help to organise an initial core of project team members to assist in accomplishing project initiation.
- (b) **Establishing a relationship with the customer.** A thorough understanding of your customer builds stronger partnerships and higher levels of trust.
- (c) **Establishing the project initiation plan.** This step defines the activities required to organise the initiation team. This initiation plan included agendas for several meetings.

These steps eventually led to the creation of **System Service Request (SSR)** form. SSR is a standard form for requesting or proposing systems development work within an organisation. It includes the contact person, a problem statement, a service request statement, and liaison contact information.

- (d) **Establishing management procedures.** Successful projects require the development of effective management procedures. In general, when establishing procedures, you are concerned with developing team communication and reporting procedures, job assignments and roles, project change procedures, and determining how project funding and billing will be handled.
- (e) **Establishing the project management environment.** This activity helps to collect and organise tools that will be used to manage project such as project workbook. **Project Workbook** as illustrated in Figure 3.4 is an online or hard-copy repository for all project correspondence, inputs, outputs, deliverables, procedures, and standards that are used.

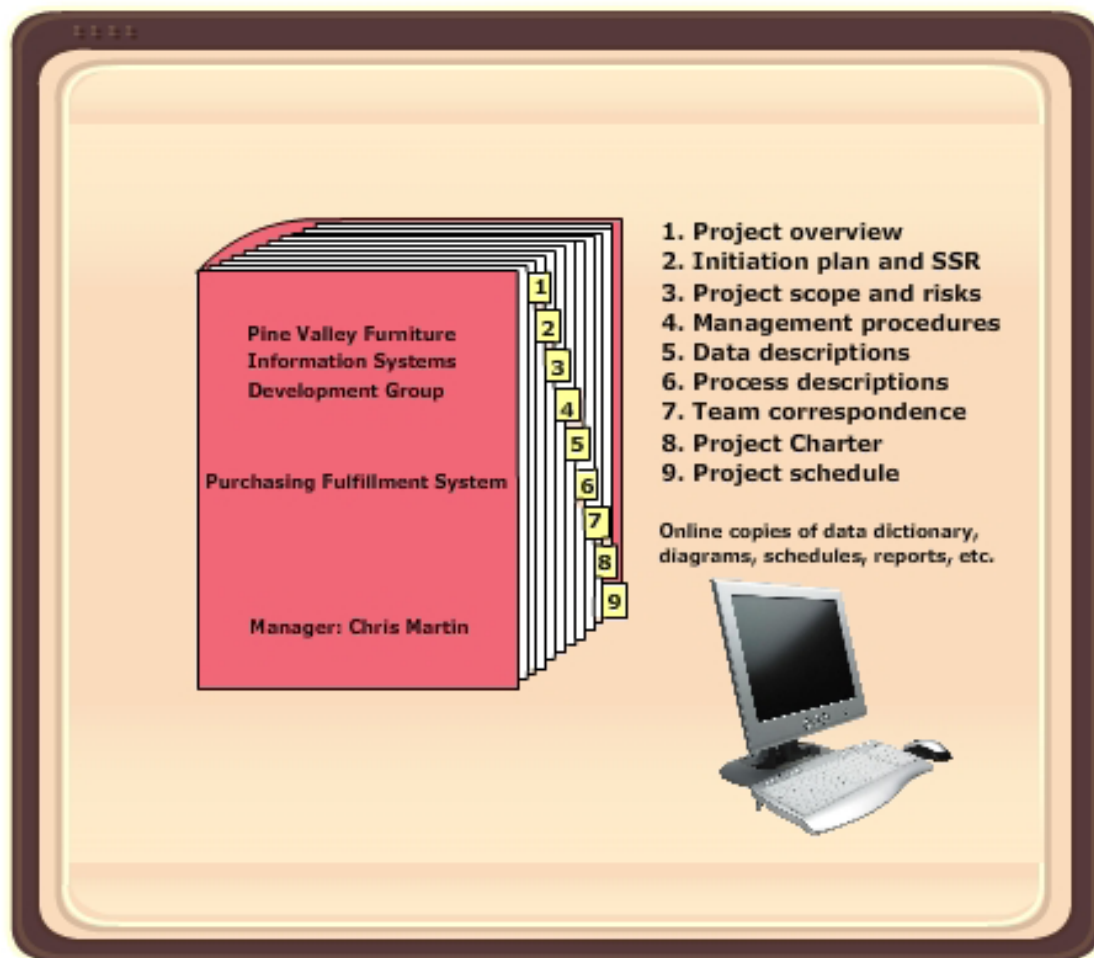


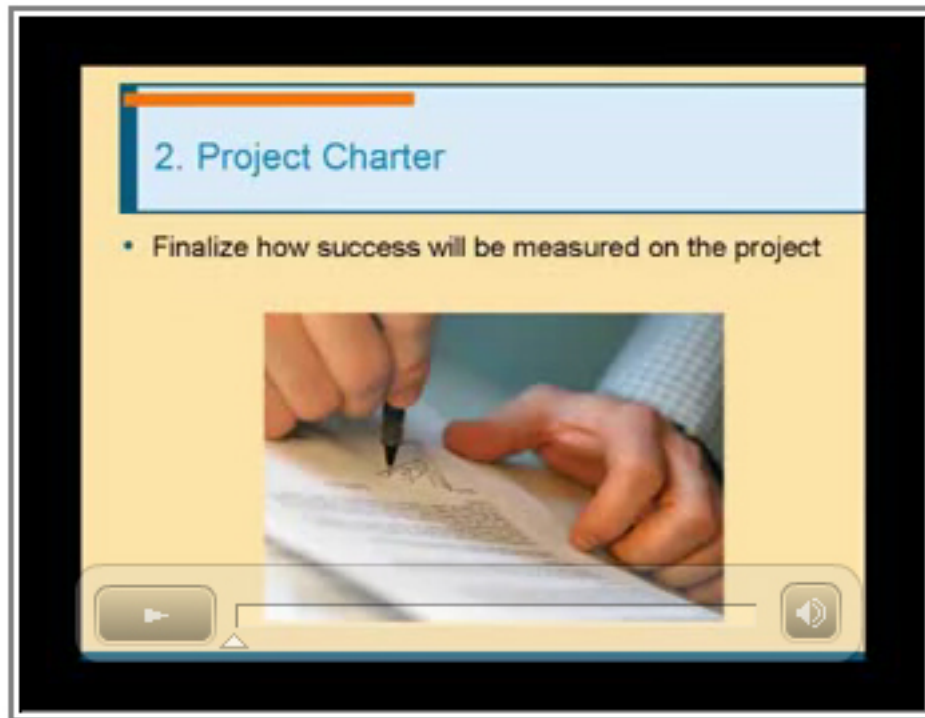
Figure 3.4: Project Workbook for Purchase Fulfillment System

Source: Adapted from Hoffer et al (2008)

The project workbook is used by all team members and is useful for project audits, orientation of new team members, communication with management and customers, identifying future projects and performing post-project reviews. The establishment and diligent recording of all project information in the workbook are two of the most important activities you will perform as project manager.

- (f) Establishing a project charter. The Project Charter is a short, high-level document prepared for both internal and external stakeholders. It formally announces the establishment of the project. It briefly describes its objectives, key assumptions and stakeholders. Project charter ensures that both you and your customer gain a common understanding of the project.

Let us watch a short video clip below to get more information on project charter.



Source: <http://www.youtube.com/watch?v=bLrnJc2Tz44>

Project initiation is complete once these six activities have been performed. Before moving on to the next phase of the project, the work performed during project initiation is reviewed at a meeting attended by management, customers, and project team members. An outcome of this meeting is a decision to continue, modify, or abandon the project.

In the case of Purchasing Fulfillment System at Valley Furniture, the board accepted the SSR and selected a project steering committee to monitor project progress and to provide guidance to the team members during subsequent activities. If the scope of the project is modified, it may be necessary to return to project initiation activities and collect additional information. Once a decision is made to continue the project, a much more detailed project plan is developed during the project planning phase.

3.3.2

Project Planning

Project planning is the second phase of the project management process that focuses on defining clear, discrete activities and the work needed to complete each activity within a single project. For example, during the Purchasing Fulfillment System project, project team can develop a 10 page plan. However, project plans for very large systems may be several hundred pages in length. The types of activities that you can perform during project planning are described in the following list:

- (a) Describe project scope, alternatives, and feasibility study. The purpose of this activity is to understand the content and complexity of the project. During this activity, you should reach agreement on the following questions:
- What problems or opportunities does the project address?
 - What are the quantifiable results to be achieved?
 - What needs to be done?
 - How will success be measured?
 - How will we know when we are finished?

A Feasibility Study which is conducted by the project manager involves determining if the information system makes sense for the organisation from an economic and operational standpoint. The study takes place before the system is constructed.

- (b) **Divide the project into manageable tasks.** This is a critical activity during the project planning process. Here, you must divide the entire project into manageable tasks and then logically order them to ensure a smooth evolution between tasks. One of the ways to do it is using **Work Breakdown Structure (WBS)**. In Figure 3.5, the process of dividing the project into manageable tasks and logically ordering them to ensure smooth evolution between tasks.



Figure 3.5: Work Breakdown Structure

Some tasks may be performed in parallel whereas others must follow one another sequentially. A WBS can be represented in a Gantt chart in Figure 3.6.

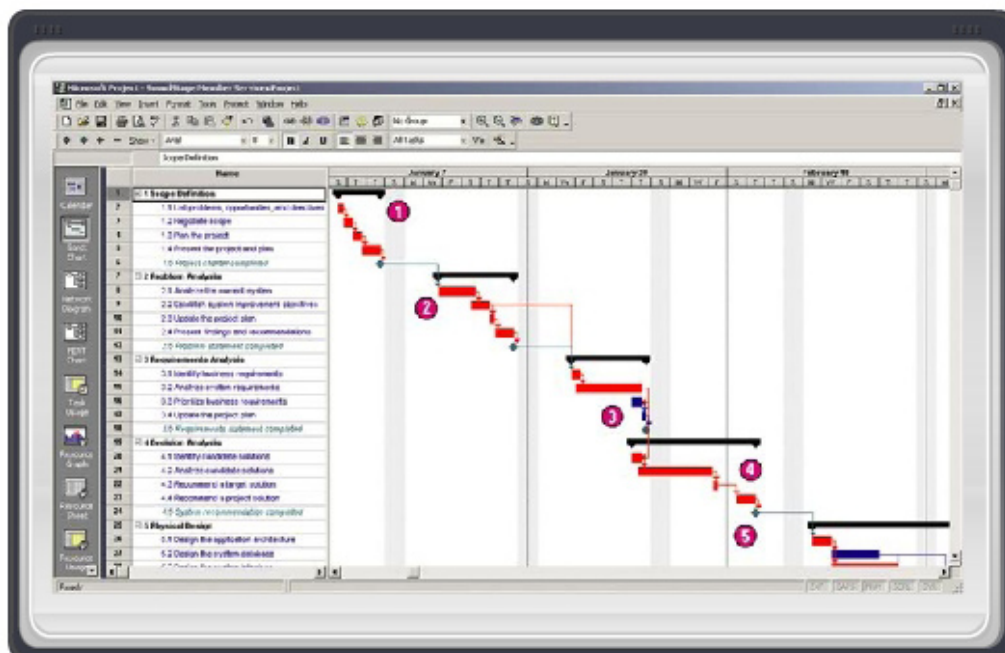


Figure 3.6: Gantt chart - A shot from Microsoft Project

Gantt chart is a graphical representation of a project that shows each task as a horizontal bar whose length is proportional to its time for completion. Different colors, shades, or shapes can be used to highlight each kind of task.

- (c) **Estimate resources and create a resource plan.** The goal of this activity is to estimate resource requirements for each project activity and to use this information to create a project resource plan. The resource plan helps assemble and deploy resources in the most effective manner. For example, you would not want to bring additional programmers onto the project at a rate faster than you could prepare work for them.

Project managers use a variety of tools to assist in making estimates of project size and costs. The most widely used is called **Constructive Cost Model (COCOMO)** as illustrated in Figure 3.7, which uses parameters that are derived from prior projects of differing complexity. COCOMO uses these different parameters to predict human resource requirements for basic, intermediate, and very complex systems.



Figure 3.7: COCOMO is used by many project managers to estimate project resources
Source: USC-COCOMO II, 2000.00 from software cost estimation with COCOMOII

- (d) **Develop a preliminary schedule.** During this activity, you use the information on tasks and resource availability to assign time estimates to each activity in the WBS. These time estimates will enable you to create target starting and ending dates for the project. The schedule may be represented as a Gantt chart (as shown in Figure 3.6) or as a network diagram.

A **Network Diagram** (as shown in Figure 3.8) is a graphical depiction of project tasks and their interrelationships. As with a Gantt chart, each type of task can be highlighted by different features on the network diagram.

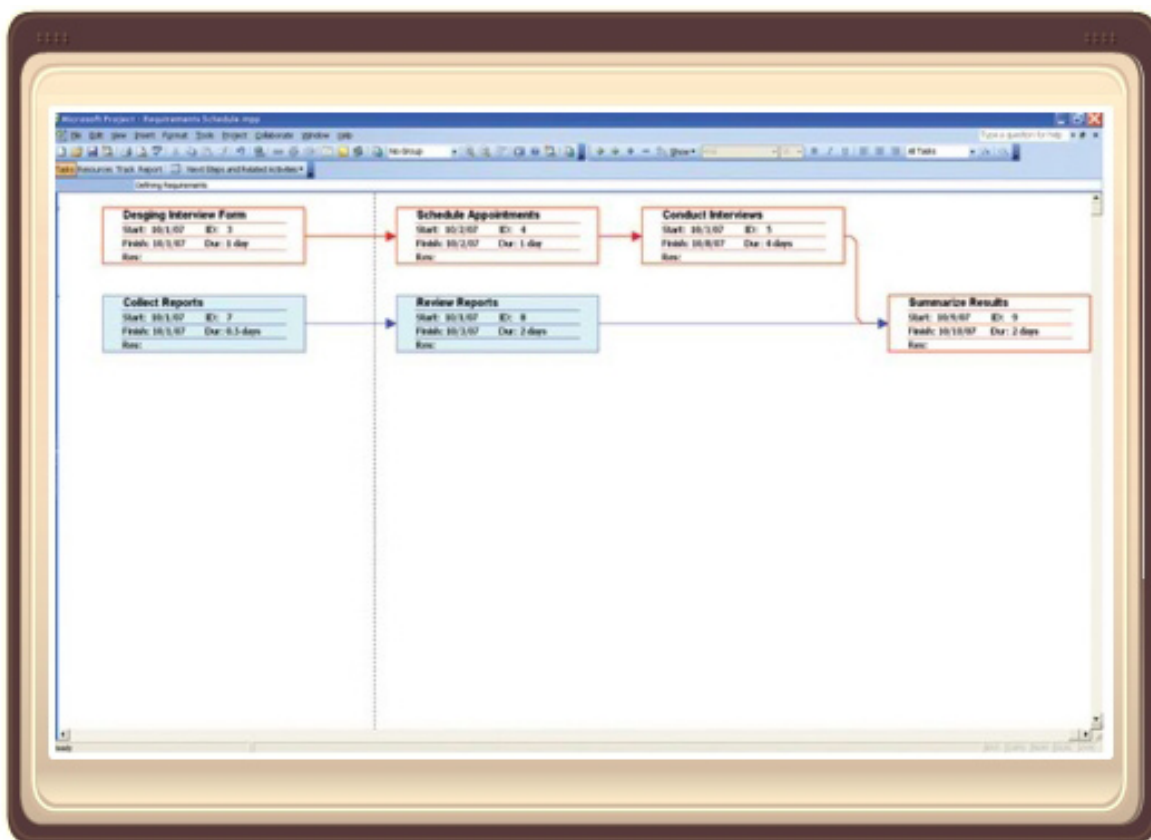


Figure 3.8: Network diagram illustrates relationship and sequence of those activities with arrows - A shot from Microsoft Project

- (e) **Develop a communication plan.** The goal of this activity is to outline the communication procedures among management, project team members and customer. The communication plan includes when and how written and oral reports will be provided by the team, how team members will coordinate work, what messages will be sent to announce the project to interested parties, and what kind of information will be shared with vendors and external contractors involved with the project.

- (f) **Determine project standards and procedures.** For example, the team must decide on which tools to use, how the standard SDLC might be modified, which SDLC methods will be used, documentation styles (e.g., type fonts and margins for user manuals), how team members will report the status of their assigned activities, and terminology. Setting project standards and procedures for work acceptance is a way to ensure the development of a high-quality system.
- (g) **Identify and assessing risk.** The goal of this activity is to identify sources of project risk and to estimate the consequences of those risks. Risks might arise from the use of new technology, prospective users' resistance to change, availability of critical resources, changes in regulatory actions due to the construction of a system, or team member inexperience with technology.
- (h) **Creating a preliminary budget.** During this phase, you need to create a preliminary budget that outlines the planned expenses and revenues associated with your project. The project justification will demonstrate that the benefits are worth these costs. Figure 3.9 shows a cost-benefit analysis for a new development project.

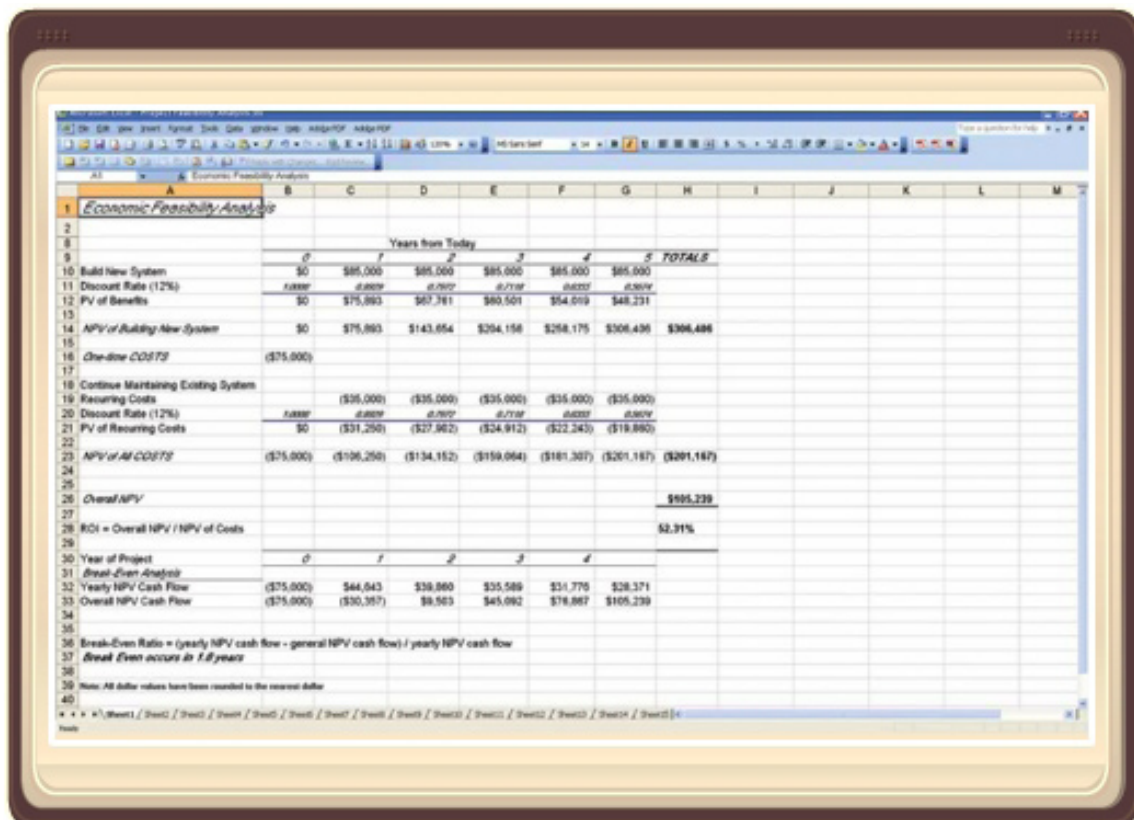


Figure 3.9: A financial cost and benefit analysis for system development project-A shot from Microsoft Excel

- (i) **Develop a Project Scope Statement.** The development primarily for the customer, this document outlines work that will be done and clearly describes what the project will deliver. It is to provides a clear understanding of project size, duration, and outcomes.
- (j) **Setting a Baseline Project Plan (BPP).** Once all of the prior projects planning activities have been completed, you will be able to develop a baseline project plan. This baseline provides an estimate of the project's tasks and resource requirements and is used to guide the next project phase which is project execution.



In which phase of the systems development life cycle does project planning typically occur? In which phase does project management occur?

3.3.3

Project Execution

Project execution is the third phase of the project management process in which the plans created in the prior phases (project initiation and planning) are put into action. Within the context of SDLC, project execution occurs primarily during the analysis, design and implementation phases. During the development of the Purchasing Fulfillment System, the project manager was responsible for five key activities during project execution. These activities are described in Table 3.1 below:

Table 3.1: The Five Key Activities during Project Execution

FIVE KEY ACTIVITIES DURING PROJECT EXECUTION		
No. of Activity	Key Activity	Description
Activity 1	Executing the BPP	The project manager initiate the execution of project activities, acquire and assign resources, orient and train new team members, keep the project on schedule, and ensure the quality of project deliverables.
Activity 2	Monitor project progress against the BPP	While you execute the BPP, you should monitor your progress. If the project gets ahead of (or behind) schedule, you may have to adjust resources, activities and budgets. Monitoring project activities can result in

Activity 3	Manage changes to the BPP	<p>modifications to the current plan.</p> <p>Numerous events may initiate a change to the BPP, including the following possibilities:</p> <ul style="list-style-type: none"> • A slipped completion date for an activity. • The identification of a new activity that becomes evident later in the project. • An unforeseen change in personnel due to sickness, resignation, or termination.
Activity 4	Maintain the Project Workbook	<p>As in all project phases, maintaining complete records of all project events is necessary. The workbook provides the documentation new team members require to assimilate project tasks quickly. It explains why design decisions were made and is a primary source of information for producing all project reports.</p>
Activity 5	Communicating the project status	<p>The project manager is responsible for keeping all stakeholders such as system developers, managers, and customers, abreast of the project status.</p> <p>There are ways that you can communicate such as by meetings, status reports, meeting minutes, seminars and workshops, bulletin boards, memos, specification documents, brown bag lunches, hallway discussions, newsletters, and project workbook.</p>

This section outlined your role as the project manager during the execution of the BPP. If you develop a high quality project plan, it is much more likely that the project will be successfully executed.

3.3.4 Project Closing

Project Closing is the final phase of the project management process that focuses on bringing a project to an end. The types of activities that you can perform during project closing are described in the following list:

Table 3.2: The Three Activities during Project Closing

THREE ACTIVITIES DURING PROJECT CLOSING		
No. of Activity	Key Activity	Description
Activity 1	Closing down the project	When closing down the project, it is also important to notify all interested parties that the project has been completed and to finalise all project documentation and financial records so that a final review of the project can be conducted.
Activity 2	Conducting post project reviews	The review should be conducted with management and customers. These reviews are to determine the strengths and weaknesses of project deliverables, the processes used to create them, and the project management process. It is important that everyone understands what went right and what went wrong in order to improve the process for the next project.
Activity 3	Closing the customer contract	The focus of this final activity is to ensure that all contractual terms of the project have been met. A project governed by a contractual agreement is typically not completed until agreed to by both parties, often in writing.

Project Closing is a very important activity. A project is not complete until it is closed, and it is at this stage that projects are deemed a success or failure. Completion also signifies the chance to begin a new project and to apply what you have learned.

As with the Purchasing Fulfillment System project, the project can be closed when it has been completed and success. Within the context of SDLC, project closedown occurs after the implementation phase. The system maintenance phase typically represents an ongoing series of projects, each of which must be individually managed.



Describe the activities performed by the project manager during project execution.

3.4

PROJECT MANAGEMENT RESOURCE

Here are some links and references to other material that bears on the subject area of Project Management:

(a) Project Management Institute (PMI)

The Project Management Institute (PMI), the leader in the USA in developing professional standards for Project Management, describes Project Management as follows:

“Project management is the application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of the particular project. Project management knowledge and practices are best described in terms of their component processes.”

The PMI approach defines 5 Process Groups:

Initiating, Planning, Executing, Controlling, Closing and 9 Knowledge Areas. PMI publishes the Project Management Body of Knowledge© (free to members), and provides many helpful resources and training for project managers.



Visit PMI's website below to get more information on the institution:

<http://www.pmi.org/Pages/default.aspx>

(b) The Rational Software Corporation

The Rational Software Corporation is a leading commercial supplier of software development project management tools and methodology. Their Rational Unified Process® (RUP®) is a licensed website that encompasses their entire approach to software development, and many of the documents, guidelines and checklists in this SDLC model were

taken from that source (only for licensees of Rational's RUP). The RUP defines only 4 development phases (Inception, Elaboration, Construction and Transition).



Visit the website below to get more information on the corporation:

<http://www-01.ibm.com/software/rational/>

(c) Gantthead

This is a website that provides free and premium (subscription) information on all aspects of project management for IT. Many of downloads require a subscription, but there are also many freebies, including whitepapers, templates, a long list of departments with featured articles, tool reviews, and discussion forums. For a fee, they will even review your project artifacts. Individual and corporate subscriptions are available.

Rational was founded by the inventors of the Unified Modeling Language (UML), so it is worth noting that the methods and techniques employed in the Rational Unified Process make extensive use of UML concepts and modeling practices as an adjunct to requirements gathering and design.



Visit the website below to get more information on the services provided:

<http://www.gantthead.com/>

SUMMARY

1. This topic focuses on managing information system projects and the role of project manager.
2. A project is a sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by specific time, within budget, and according to specification.
3. Project management is the process of initiating, planning, executing and closing the development of an acceptable system at a minimum cost within a specified time frame.
4. A Project manager is responsible for supervising a systems project from initiation to conclusion. A project manager also needs to have technical and managerial skills and is ultimately responsible for determining the size, scope and resource requirements for a project.
5. The causes of failed project includes:
 - (a) Failure to establish upper-management commitment to the project.
 - (b) Lack of organisation's commitment to the methodology.
 - (c) Taking shortcuts through or around the methodology.
 - (d) Poor estimating technique.
 - (e) Over optimism.
 - (f) Insufficient resources.
 - (g) Failure to manage the plan.
6. To manage the project, project manager must execute four project management processes which are Project Initiation, Project Planning Project Execution and Project Closing.
7. A wide variety of automated tools for assisting project manager are available. Most tools have a set of common features, including the ability to define and order tasks, assign resource to tasks and modify tasks and resources. Project manager can be guided in improving their managing skill by resources available in PMI, Rational or Ganttthead organisation.

KEY TERMS

Baseline Project Plan

Constructive Cost Model

Feasibility Study

Gantt chart

Network Diagram

Project

Project Charter

Project Closing

Project Execution

Project Initiation

Project management

Project manager

Project Planning

Project Workbook

System Service Request

Work Breakdown Structure

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