CHAPTER 4 System Planning

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

Organisations can benefit from a formal process in System Development Life Cycle (SDLC). SDLC adheres to important phases that are essential for developers, such as planning, analysis, design, and implementation. The first phase of SDLC which is System Planning deals with two primary activities as shown in Figure 4.1:

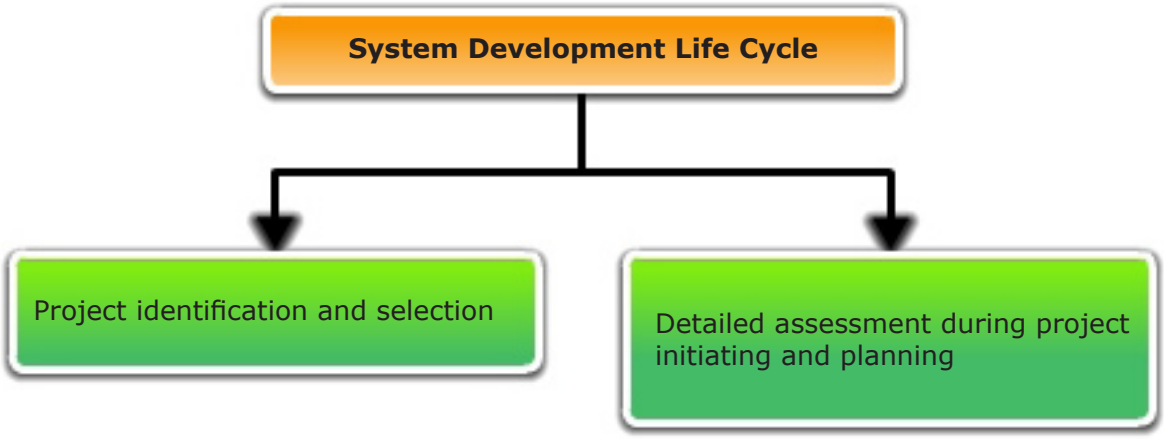

Figure 4.1: Two primary activities in the first phase of SDLC.

The first activity is project identification and selection focuses on activities during which the need for a new or enhanced system is recognised. Regardless of how a project is identified and selected, the second activity is to conduct a more detailed assessment during project initiating and planning, where projects are accepted for development, rejected or redirected.

Besides these two primary activities, a system request must pass several tests, called feasibility study, to see whether it is worthwhile to proceed further. A feasibility study uses four main yardsticks to measure a project planning. A project must be feasible in all four ways to merit further development. This is where you as system analyst who holds the role of project manager or consultant; begins to play a major role in the systems development process.

4.1 PROJECT IDENTIFICATION AND SELECTION

The first activity of system planning is project identification and selection. During this activity senior managers, business group or steering committee identifies and assesses all possible systems development projects that an organisation unit could undertake. Project identification and selection consists of three primary activities which are shown in Figure 4.2:

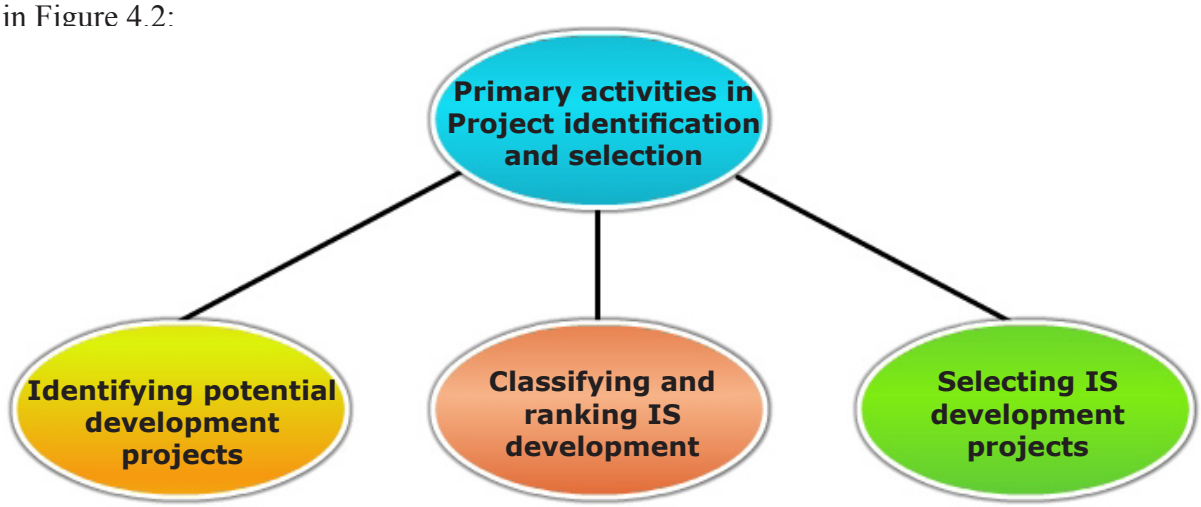

Figure 4.2: Three primary activities in project identification and selection phase.

4.1.1 Identifying potential development projects.

Organisation varies as to how it identifies projects. This process can be performed by:

- **Top-down source**
  Projects that are identified by top management or by a diverse steering committee.
- **Bottom-up source**
  Projects initiatives that are stemmed from managers, business units, user department or development group.

The process varies substantially across organisations. All methods of identification have been found to have strengths and weaknesses. Characteristics of each selection method are briefly summarised in Table 4.1:

Table 4.1: Characteristics of Alternative Methods for Making Information Systems Identification and Selection Decisions

Selection Method	Characteristics
Top Management	Greater strategic focus Largest project size Longest project duration
Steering Committee	Cross-functional focus Greater organisational change Formal cost-benefit analysis Larger and riskier projects
User Department	Narrow, nonstrategics focus Faster development Fewer users, management layers and business functions
Development Group	Integrasion with existing systems focus Faster development delays Less concern with cost-benefit analysis

Of all possible project sources, those identified by top management and steering committees most often reflect the broader needs of the organisation. This occurs because they are likely to have a broader understanding of the overall business objectives and constraints.

4.1.2 Classifying and ranking IS development projects

Classifying and ranking projects can be performed by top-down and bottom-up source. Criteria used when assigning the relative merit of a given project can vary. Commonly used criteria for assessing projects are summarised in Table 4.2. In any given organisation, one or several criteria might be used during the classifying and ranking process.

Table 4.2: Possible Evaluation Criteria when Classifying and Ranking Projects

Evaluation Criteria	Description
Value chain analysis	Extents to which activities add value and costs when developing products and/or services.
Strategic alignment	Extents to which the project is viewed as helping the organisation achieve its strategic objectives and long long-term goals.
Potential benefits	Extent to which the project is viewed as improving profits, customer service, etc and the duration of these benefits.
Resource availability	Amount and type of resources the project requires and their availability.
Project size/duration	Number of individuals and the length of time needed to complete the project.
Technical difficulty/ risks	Level of technical difficulty to complete the project successfully within given time and resource constraints.

4.1.3 Selecting IS development projects

Numerous factors must be considered in project selection decisions and numerous outcomes can occur from this decision process. Figure 4.3 shows that many factor influence project selection decisions.

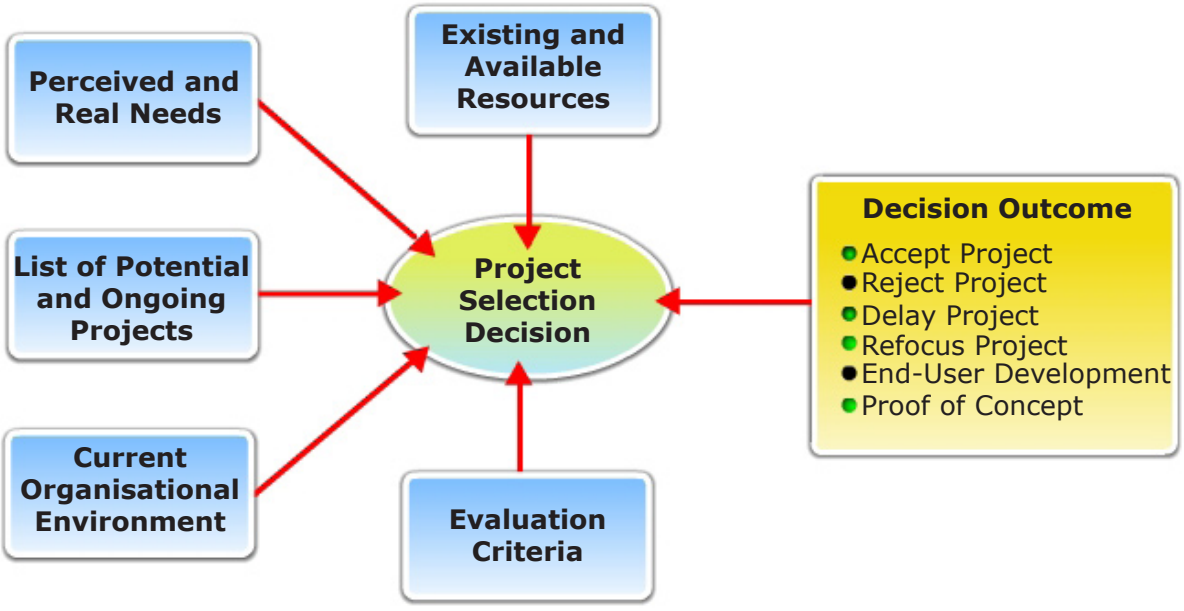

Table 4.1: Characteristics of Alternative Methods for Making Information Systems Identification and Selection Decisions

Primary deliverable from the first part of the planning phase is a schedule of specific IS development projects. These projects come from both top-down and bottom-up sources and once selected they move into the second activity that is project initiation and planning. This sequence of events is illustrated in Figure 4.4. Outcome of the next activity is the assurance that careful consideration was given to project selection and each project can help the organisation reach its goals.

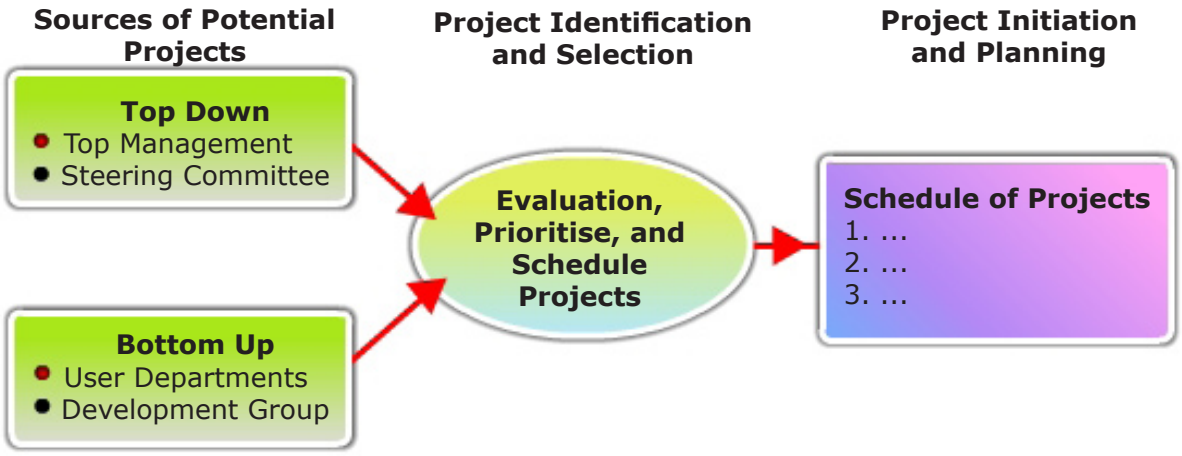

Figure 4.4: Deliverable and outcome of project identification and selection.
Source: Adapted from Hoffer et al (2008)

Many organisations have found that in order to make good project selection decisions, a clear understanding of overall organisational business strategy and objectives is required. In the next section, we discuss several techniques for gaining a thorough understanding of your development project.

4.2 PROJECT INITIATION AND PLANNING

Between ten to twenty percent of the entire development effort should be expanded in this project initiation and planning (PIP). Thus considerable time should be spent in PIP in order to fully understand the motivation for the requested system. The objective of PIP is to transform a vague system request document into tangible project description as illustrated in Figure 4.5. Effective communication among system analyst, users and management is crucial to the creation of a meaningful project plan.

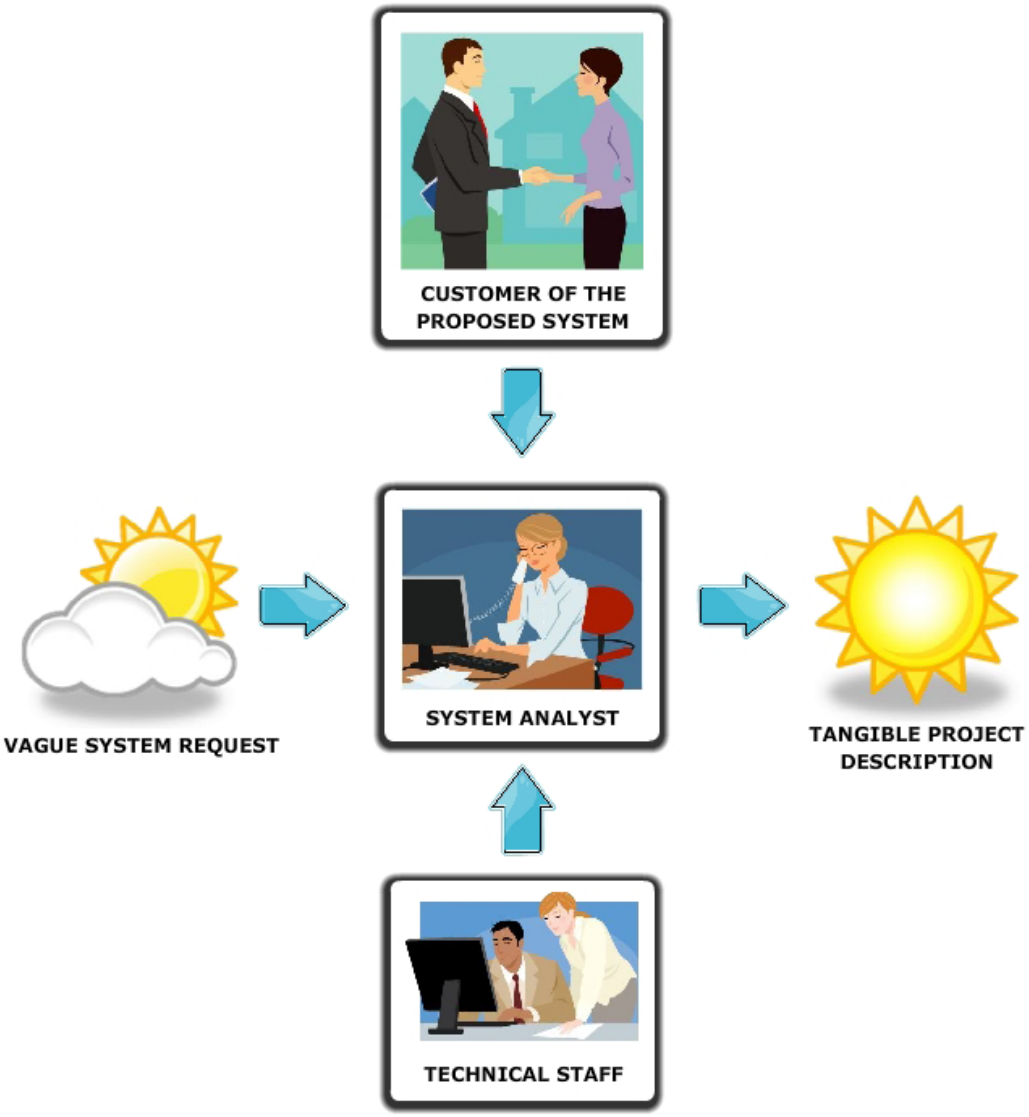

Figure 4.5: System analyst transforms a vague system request into tangible project description.

Source: Adapted from Valacich et al (2009)

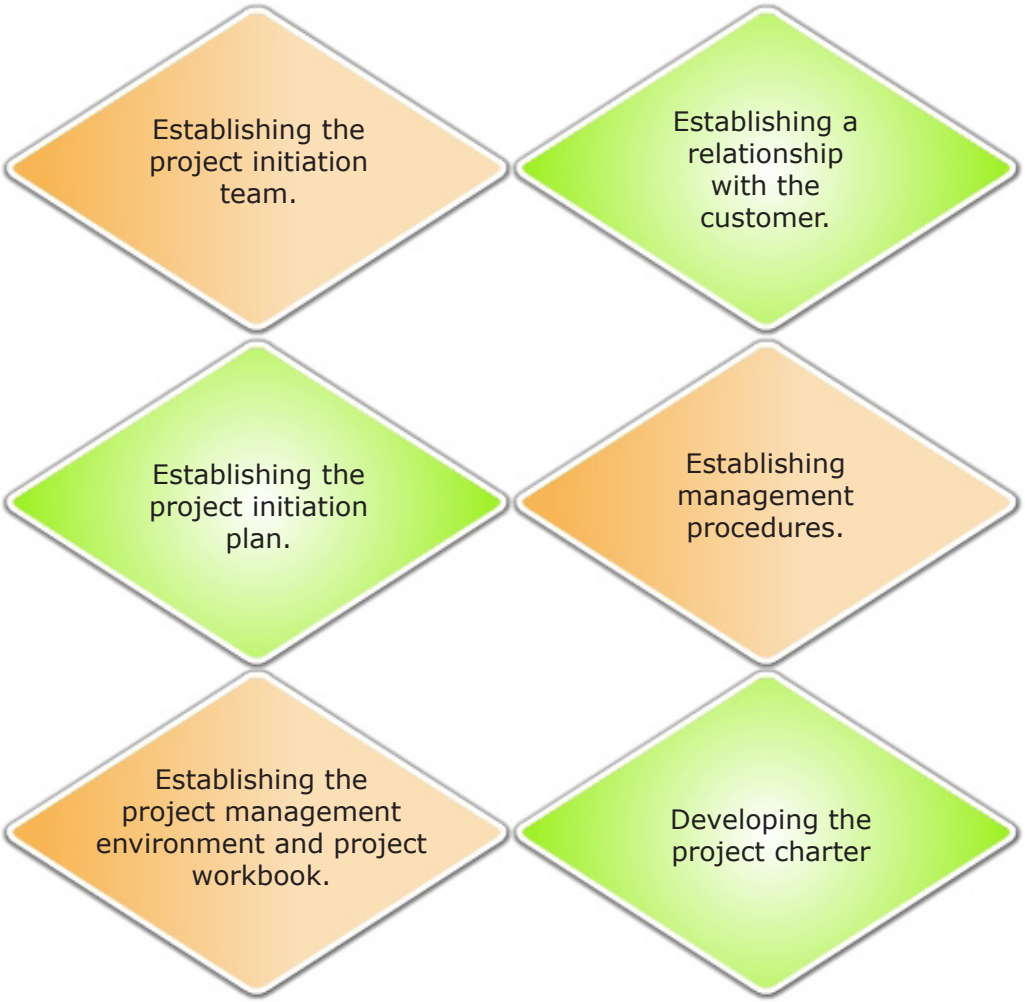

Figure 4.6: Elements of Project Initiation.

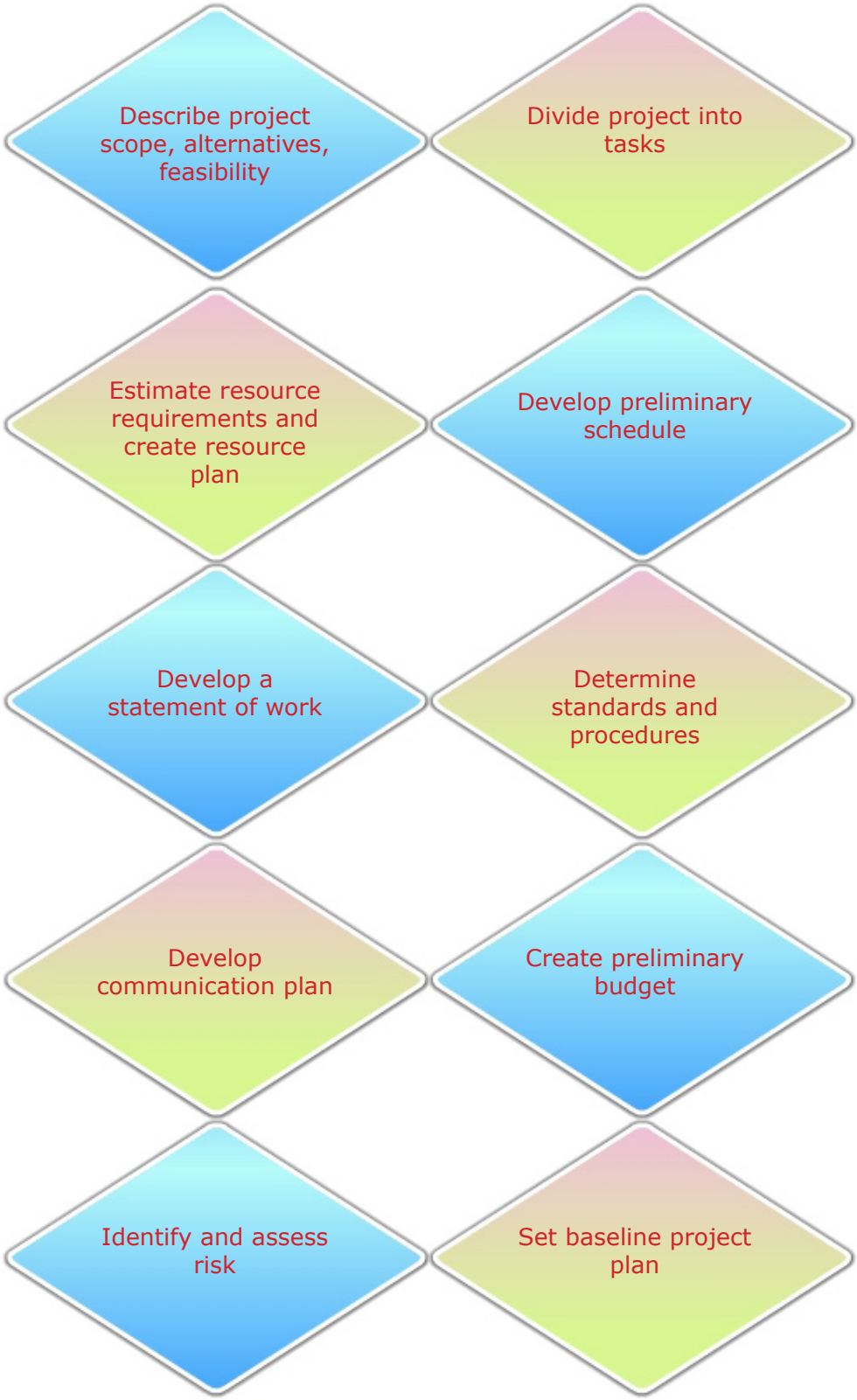

Figure 4.7: Elements of Project Planning.

Baseline Project Plan (BPP) contains all information collected and analysed during project initiation and planning. BPP is used by project committee to help decide whether the project should be accepted or cancelled. If selected, the BPP becomes the foundation document for all subsequent SDLC activities; however it is also expected to evolve as the project evolves. Project Scope Statement (PSS) is a short document prepared for the customer to describe what the project will deliver and outlines all work required in completing the project. The PSS ensures that both parties gain a common understanding of the project.

4.3 PROJECT FEASIBILITY

All projects are feasible given unlimited resources and infinite time (Pressman, 2005). Unfortunately most projects must be developed within tight budgetary and time constraints. Feasibility study is used to see whether it is worthwhile to proceed further. It requires a system analyst to evaluate a wide range of factors. Most feasibility factors are represented by the following categories as shown in Figure 4.8:

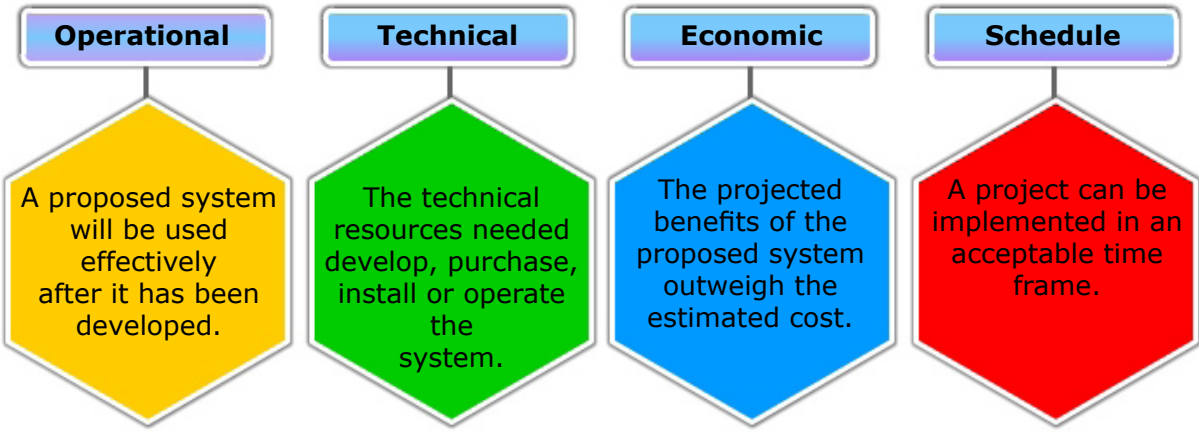

Figure 4.8: Categories of feasibility factors.

4.3.1 Operational Feasibility

Its purpose is to gain an understanding of the degree to which the proposed system will likely solve the business problems or take advantage of the opportunities outlined in the system service request or project identification study. If users have difficulty with a new system, it will not produce the expected benefits. Operational feasibility depends on several issues. For example, consider the following questions:

- Does management support the project? Do users support the project? Is the current system well-liked and effectively used? Do users see the need for change?
- Will the new system result in a workforce reduction? If so, what will happen to affected employees?
- Will the new system require training for users? If so, is the company prepared to provide the necessary resources for training current employees?
- Will users be involved in planning the new system right from the start?
- Will the new system place any new demands on users or require any operating changes? For example, will any information be less accessible or produced less frequently? Will performance decline in any way? If so, will an overall gain to the organisation outweigh individual losses?
- Will customers experience adverse effects in any way, either temporarily or permanently?
- Is there any risk to the company's image or goodwill?
- Does the development schedule conflict with other company priorities?
- Do legal or ethical issues need to be considered?

Operational feasibility is a measure of how well the solution will work in an organisation. It also measure of how user feel about the system or project. Determining operational feasibility requires creative imagination on the part of the system analyst, as well as the powers of persuasion to let users know which interfaces are possible and which will satisfy their needs. The systems analyst must also listen carefully to what users really want and what it seems they will use. Thus it is important for the systems analyst to have a clear understanding of how an information system will fit into the current day-to-day operations of the organisation.

4.3.2 Technical Feasibility

Its purpose is to gain an understanding of the organisation's ability to construct the proposed system. When assessing technical feasibility an analyst must consider the following points:

- Does the company have the necessary hardware, software, and network resources? If not, can those resources be acquired without difficulty?
- Does the company have the needed technical expertise? If not, can it be acquired?
- Does the proposed platform have sufficient capacity for future needs? If not, can it be expanded?
- Will a prototype be required?
- Will the hardware and software environment be reliable? Will it integrate it be with other company information systems, both now and in the future? Will it interface properly with external systems operated by customers and suppliers?
- Will the combination of hardware and software supply adequate performance? Do clear expectations and performance specifications exist?
- Will the system be able to handle future transaction volume and company growth?

Technical feasibility is a measure of the practicality of a specific technical solution and the availability of technical resources and expertise. A large part of determining resources has to do with assessing technical feasibility. The analyst must find out whether current technical resources can be upgraded or added to in a manner that fulfils the request under consideration.

At this point the expertise of system analysts is beneficial, because by using their own experience and their contacts with vendors, system analysts will be able to answer the question of technical feasibility. Usually the response to whether a particular technology is available and capable of meeting the users' requests is "yes" and then the question becomes an economic one.

4.3.3 Economic Feasibility

Its purpose is to identify the financial benefits and costs associated with the development project (Laplante, 2006). Economic feasibility is often referred as cost-benefit analysis. To determine economic feasibility, the analyst must estimate costs in each of the following areas as shown in Figure 4.9:

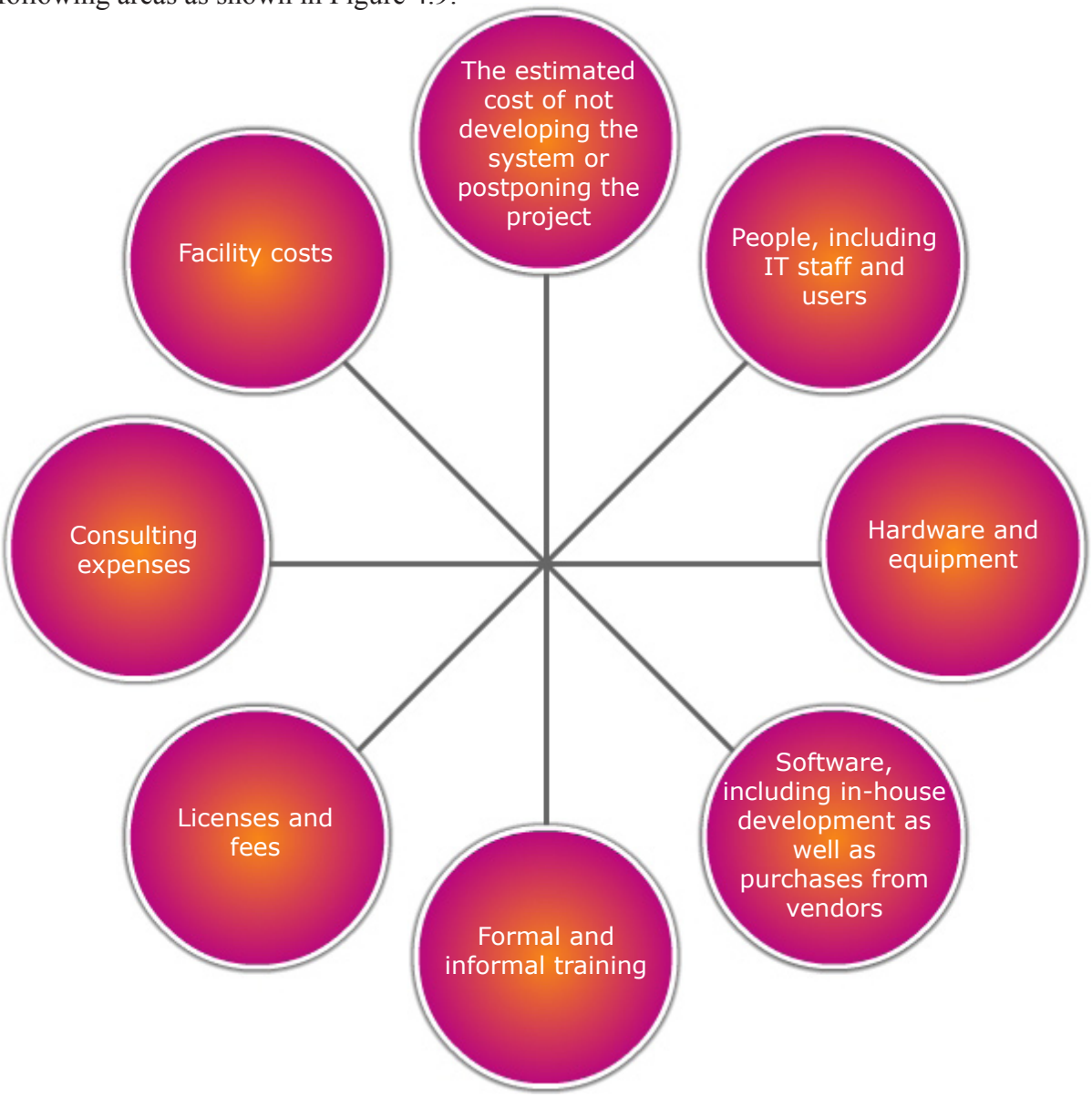

Figure 4.9: Costs that are estimated in determining economic feasibility

In addition to costs, assessment of tangible and intangible benefits to the company needs to be made. The review committee will use those figures, along with the cost estimates, to decide whether to pursue the project beyond the system planning phase. Table 4.3 describes Tangible and intangible benefits:

Table 4.3: Tangible and intangible benefits.

Facility costs	Intangible benefits
• Benifits that can be measured in dollars • Result from a decrease in expanses, an increase, in revenues, or both	• Advantage that are difficult to measured in dollars but are important to the company
• Examples >> A new scheduling system that reduces overtime, >> An online pakage tracking system that improves service and decreases the need for clerical staff, >> A sophisticated inventory control system that cuts excess inventory and eliminates production delays.	• Examples >> A user friendly system that improves employee job satisfaction. >> A sales tracking system that supplies better information for marketing decision. >> A new web-site that enhances the company images.

The development timetable must also be considered, because some benefits might occur as soon as the system is operational, but others might not take place until later.

Economic feasibility is a measure of the cost-effectiveness of a project or solution. The concerned business must be able to see the value of the investment it is pondering before committing to an entire systems study. If short-term costs are not overshadowed by long-term gains or produce no immediate reduction in operating costs, the system is not economically feasible and the project should not proceed further.

4.3.4 Schedule Feasibility

Its purpose is to gain understanding of the likelihood that all potential time frames and completion date schedules can be met. When assessing schedule feasibility, a systems analyst must consider the interaction between time and costs. For example, speeding up a project schedule might make a project feasible, but much more expensive. Other issues that relate to schedule feasibility include the following:

- Can the company or the IT team control the factors that affect schedule feasibility?
- Has management established a firm timetable for the project?
- What conditions must be satisfied during the development of the system?
- Will an accelerated schedule pose any risks? If so, are the risks acceptable?
- Will project management techniques be available to coordinate and control the project?

Schedule feasibility is a measure of how reasonable the project timetable is. It is preferable (unless the deadline is absolutely mandatory) to deliver a properly functioning information system two months late than to deliver an error-prone or useless system on time. While missing deadlines can be problematic, developing inadequate systems can be disastrous.

4.3.5 Judgement of Feasibility

From the foregoing discussion, it is evident that judging the feasibility of systems projects is never a clear-cut or easy task. Furthermore, project feasibility is a decision to be made not by the systems analyst but instead by management.

The system analyst needs to be sure that all these area of feasibility are addressed in the system planning phase. The study must be accomplished quickly so that the resources devoted to it are minimal, the information output from the study is solid and any existing interest in the project remains high.

Projects that meet the criteria discussed in the project identification and selection, project initiation and planning as well as feasibility study should be chosen for a detailed system analysis study. Generally, the process of feasibility assessment is effective in screening out projects that are inconsistent with the business's objective. Although it is painstaking, studying feasibility is worthwhile and saves businesses and systems analysts a good deal of time and money in the end.

SUMMARY

- A clearer understanding of how organisations identify, select project, initiate and plan project was discussed.
- Improved project identification and selection is needed as the cost of information system is rising rapidly, data redundancy is often out of control and systems often not address critical organisational objectives.
- Project initiation and planning is a challenging and time-consuming activity that requires active involvement from many organisational participants.
- Numerous feasibility studies must be considered when planning a project which include operational, technical, economical and schedule feasibility.
- The role of a system analyst is to provide a thorough examination of the items that can be assessed so that a project review committee can make informe decisions.

KEY TERMS

Baseline Project Plan

Bottom-up source

Economic Feasibility

Feasibility study

Intangible benefits

Operational Feasibility

Project Identification and Selection

Project Initiation and Planning

Project Scope Statement (PSS)

Schedule Feasibility

Tangible benefits

Technical Feasibility

Top-down source

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