Unit 3: Planning 4 LHs

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BIM(5TH Semester)

Planning

- The demand for new or replacement systems exceeds the ability and resources of most organizations to conduct systems development projects either by themselves or with consultants.

- This means that organizations must set priorities and a direction for systems development that will yield development projects with the greatest net benefits.

- As a systems analyst, you must analyze user information requirements, and you must also help make the business case—or justify why the system should be built and the development project conducted.

- The reason for any new or improved information system (IS) is to add value to the organization.

- As systems analysts, we must choose to use systems development resources to build the mix of systems that add the greatest value to the organization.

- The source of systems projects is either initiatives from IS planning (proactive identification of systems) or requests from users or IS professionals (reactions to problems or opportunities) for new or enhanced systems.

## 2.1 System development projects: Identification and Selection

2.1.1 Introduction

2.1.2 Identifying and Selecting System Development Projects

2.1.3 Corporate and information systems planning

Identifying and Selecting Systems Development Projects

Systems development life cycle with project identification and selection highlighted

✓ Project Identification and Selection
Project Initiation and Planning

Planning

Analysis

Design

Implementation

Maintenance
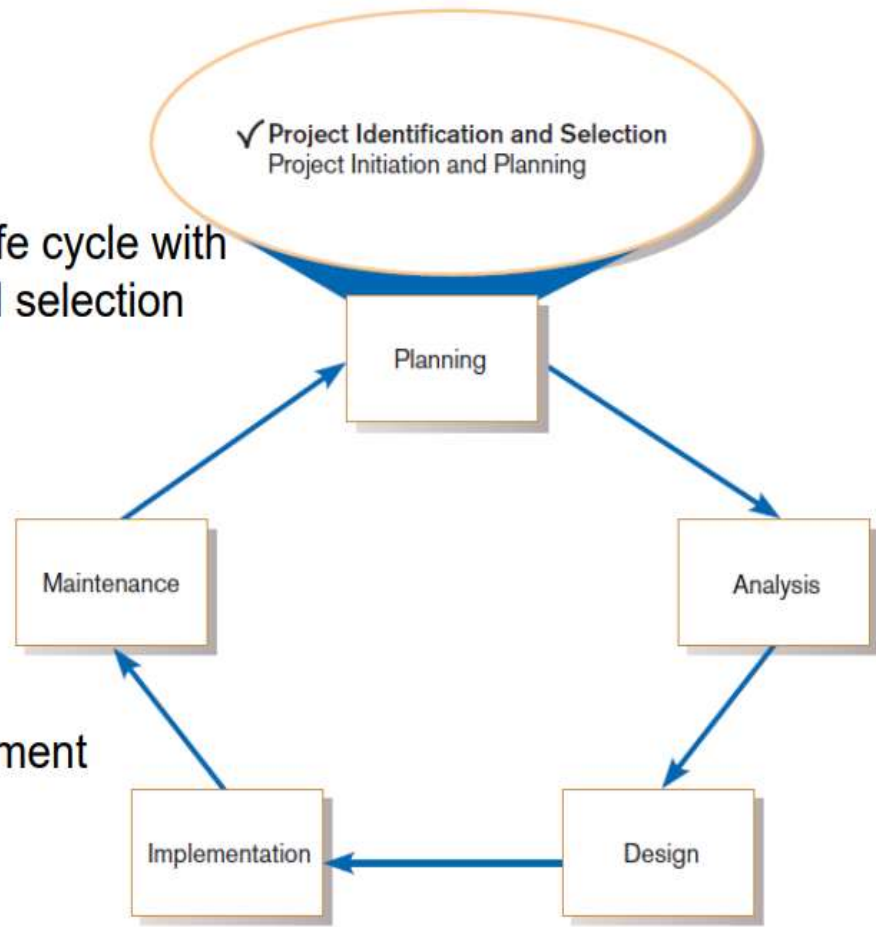
Three main steps:
1. Identifying potential development projects
2. Classifying and ranking IS development projects
3. Selecting IS development projects

1. Identifying potential development projects

- Organizations vary as to how they identify projects. This process can be performed by

- Identification from a stakeholder group

- A stakeholder is any individual, group, or organization that has an interest in, can affect, or is affected by a project, business, or its outcomes, including customers, employees, investors, suppliers, communities, and governments, acting as primary (direct impact) or secondary (indirect impact) parties.

- Understanding stakeholders is crucial for success, as they influence decisions and can impact an organization's operations and performance, whether internal or external.

- Each stakeholder group brings their own perspective and motivation to the IS decision.

- **Top-Down:** Senior management, steering committees focus on global needs.

- **Bottom-Up:** Business units, users, or IS groups identify operational problems/opportunities (e.g., slow processes).

- **Sources:** Strategic planning, customer feedback, competitive pressure, audits, new technologies.

- A steering committee, composed of a cross section of managers with an interest in systems;

- User departments, in which either the head of the requesting unit or a committee from the requesting department decides which projects to submit (often you, as a systems analyst, will help users prepare such requests); or The development group or a senior IS manager.

- All methods of identification have been found to have strengths and weaknesses. Research has found, for example, that projects identified by top management more often have a strategic organizational focus.

- Alternatively, projects identified by steering committees more often reflect the diversity of the committee and therefore have a cross functional focus. Projects identified by individual departments or business units most often have a narrow, tactical focus.

- Finally, a dominant characteristic of projects identified by the development group is the ease with which existing hardware and systems will integrate with the proposed project.

- Other factors, such as project cost, duration, complexity, and risk, are also influenced by the source of a given project.

- You will help user managers provide the description of information needs and the reasons for doing the project that will be evaluated in selecting, among all submitted projects, which ones will be approved to move into the project initiation and planning phase of the SDLC.

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
	Enterprise-wide consideration
Steering Committee	Cross-functional focus
	Greater organizational change
	Formal cost–benefit analysis
	Larger and riskier projects
Functional Area	Narrow, nonstrategic focus
	Faster development
	Fewer users, management layers, and business functions involved
Development Group	Integration with existing systems focus
	Fewer development delays
	Less concern with cost–benefit analysis

Classifying and ranking IS development projects

- Using value chain analysis or other evaluation criteria

  Value chain analysis: Analyzing an organization's activities to determine where value is added to products and/or services and the costs incurred for doing so; usually also includes a comparison with the activities, added value, and costs of other organizations for the purpose of making improvements in the organization's operations and performance

- Value Chain Analysis (VCA) is a strategic business method, developed by Michael Porter, that breaks down a company's activities (primary like operations/logistics & support like HR/tech) to find where value is added or costs are incurred, aiming to achieve competitive advantage through cost reduction By analyzing each step from raw materials to customer service, businesses identify inefficiencies, boost profits, and strengthen market position.

Transform Raw
Materials into
Products

Storage and
Distribution
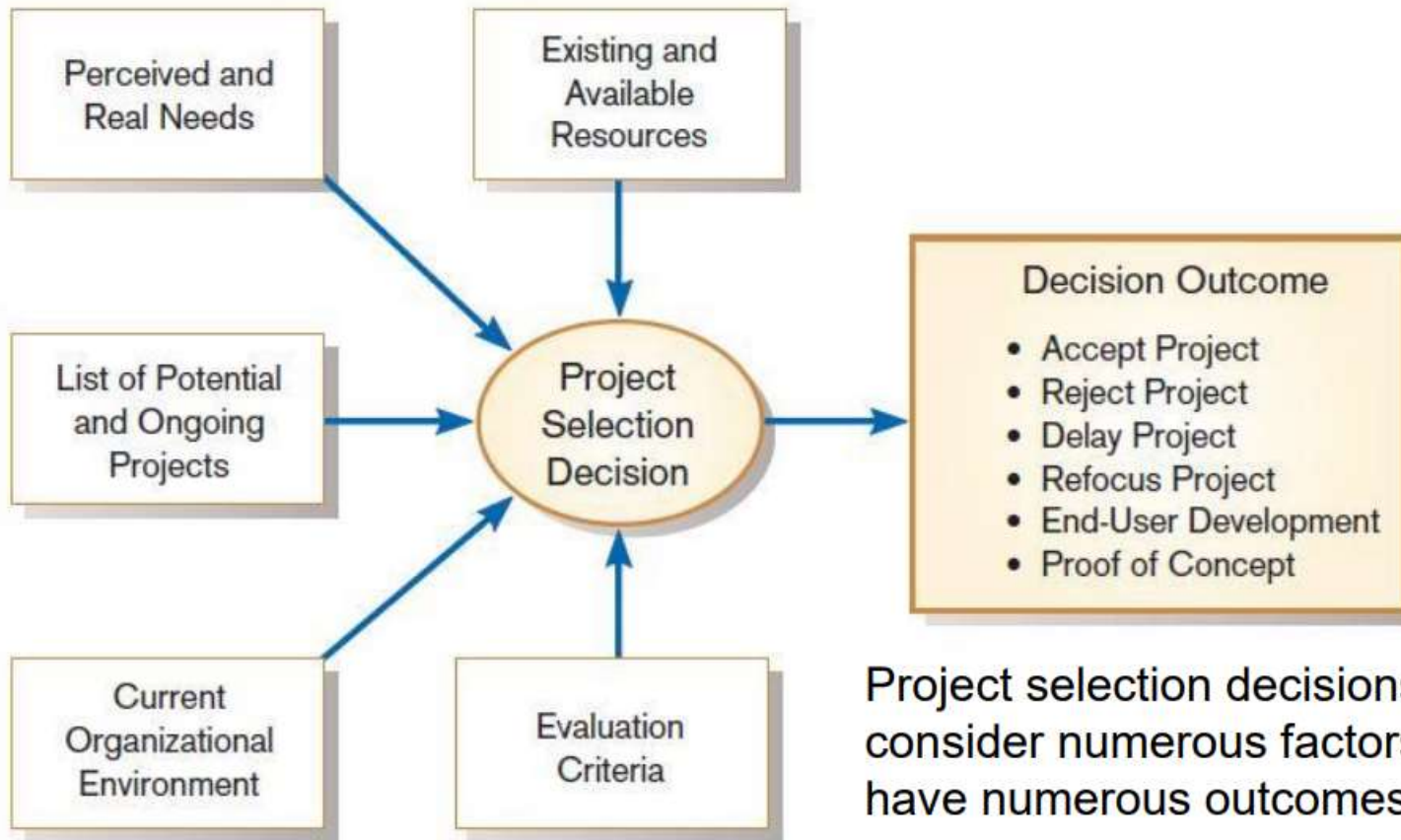of Products

Marketing,
Sales, and
Customer Support

Organizations can be thought of as a
value chain, transforming raw materials
into products for customers

TABLE 4-2   Possible Evaluation Criteria When Classifying and Ranking Projects

Evaluation Criteria	Description
Value Chain Analysis	Extent to which activities add value and costs when developing products and/or services
Strategic Alignment	Extent to which the project is viewed as helping the organization achieve its strategic objectives and long-term goals
Potential Benefits	Extent to which the project is viewed as improving profits, customer service, and so forth, 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 successfully complete the project within given time and resource constraints

Selecting IS development projects

- Based on various factors
- Both short- and long-term projects considered
- Most likely to achieve business objectives selected
- A very important and ongoing activity

Perceived and Real Needs	Existing and Available Resources	

Decision Outcome

- Accept Project
- Reject Project
- Delay Project
- Refocus Project
- End-User Development
- Proof of Concept

List of Potential and Ongoing Projects

Project Selection Decision

Current Organizational Environment

Evaluation Criteria

Project selection decisions must consider numerous factors and can have numerous outcomes

One method for deciding among different projects or alternative designs:

- For each requirement or constraint:
  Score = weight X rating
- Each alternative: sum scores across requirements/constraints
- Alternative with highest score wins

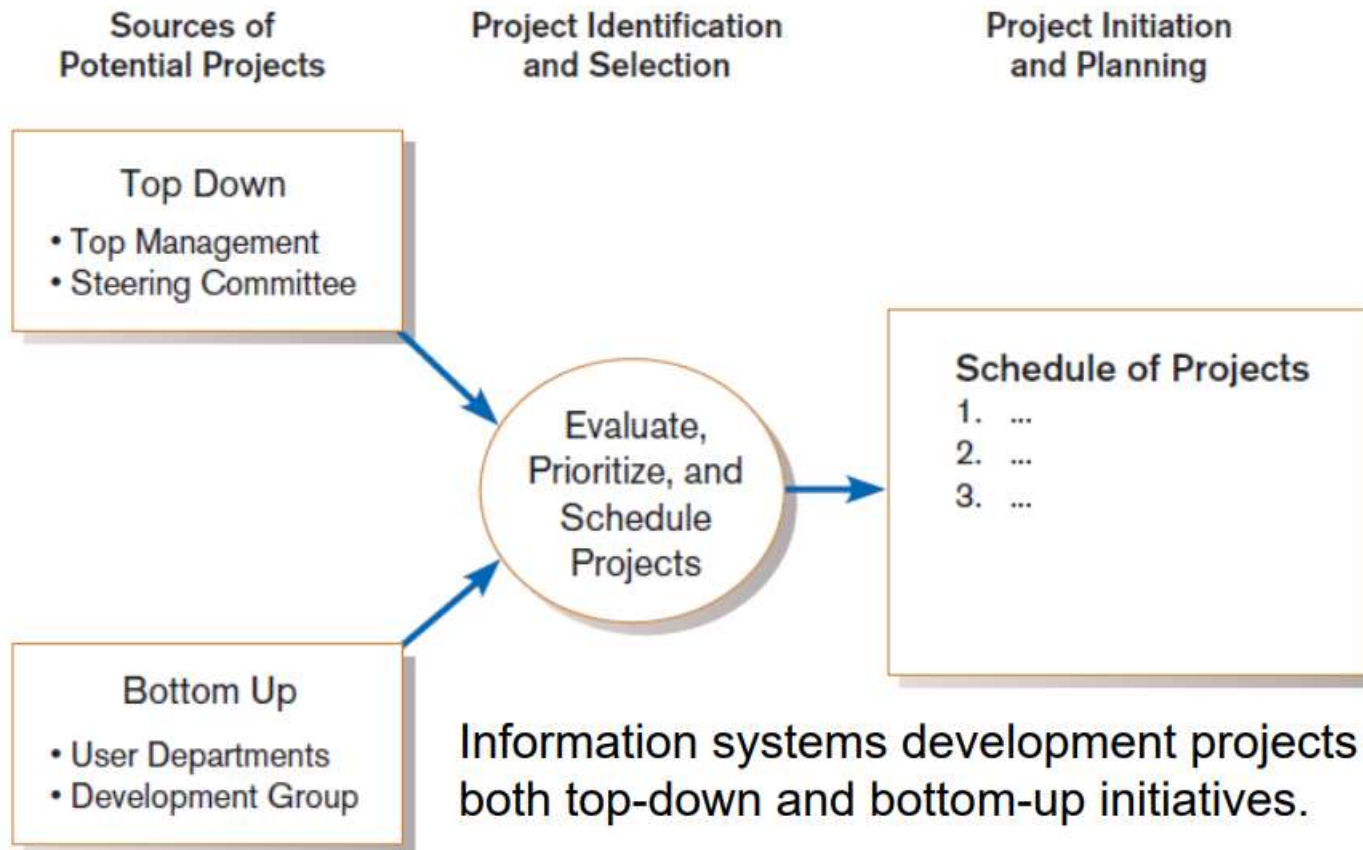| Criteria	Weight	Alternative A		Alternative B		Alternative C	
		Rating	Score	Rating	Score	Rating	Score
Requirements							
Real-time data entry	18	5	90	5	90	5	90
Automatic reorder	18	1	18	5	90	5	90
Real-time data query	14	1	14	5	70	5	70
	50		122		250		250
Constraints							
Developer costs	15	4	60	5	75	3	45
Hardware costs	15	4	60	4	60	3	45
Operating costs	15	5	75	1	15	5	75
Ease of training	5	5	25	3	15	3	15
	50		220		165		180
Total	100		342		415		430

Alternative projects and system design decisions can be assisted using weighted multicriteria analysis

DELIVERABLES AND OUTCOMES

Primary deliverable from the first part of the planning phase is a schedule of specific IS development projects.

Outcome of the next part of the planning phase—project initiation and planning—is the assurance that careful consideration was given to project selection and each project can help the organization reach its goals.

Incremental commitment: a strategy in systems analysis and design in which the project is reviewed after each phase and continuation of the project is rejustified

Sources of Potential Projects	Project Identification and Selection	Project Initiation and Planning

Top Down
- Top Management
- Steering Committee

Evaluate, Prioritize, and Schedule Projects

Schedule of Projects
1. ...
2. ...
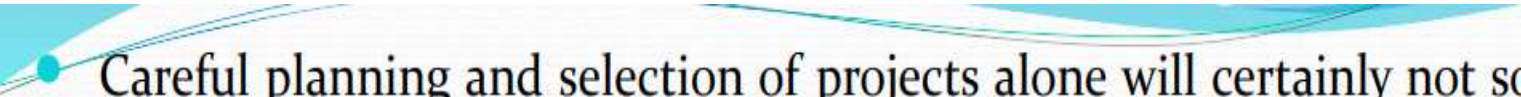3. ...

Bottom Up
- User Departments
- Development Group

Information systems development projects come from both top-down and bottom-up initiatives.

To benefit from a planning-based approach for identifying and selecting projects, an organization must:

- Analyze its information needs thoroughly.
- Plan its projects carefully.

2.1.3 CORPORATE AND INFORMATION SYSTEMS PLANNING

- The need for improved information systems project identification and selection is readily apparent when we consider factors such as the following:

1. The cost of information systems has risen steadily and approaches 40 percent of total expenses in some organizations.

2. Many systems cannot handle applications that cross organizational boundaries.

3. Many systems often do not address the critical problems of the business as a whole or support strategic applications.

4. Data redundancy is often out of control, and users may have little confidence in the quality of data.

5. Systems maintenance costs are out of control as old, poorly planned systems must constantly be revised.

6. Application backlogs often extend three years or more, and frustrated end users are forced to create (or purchase) their own systems, often

- Careful planning and selection of projects alone will certainly not solve all of these problems.

- We believe, however, that a disciplined approach, driven by top management commitment, is a prerequisite for most effectively applying information systems in order to reach organizational objectives.

- The focus of this section is to provide you with a clear understanding of how specific development projects with a broader organizational focus can be identified and selected.

- Specifically, we describe corporate strategic planning and information systems planning, two processes that can significantly improve the quality of project identification and selection decisions.

CORPORATE STRATEGIC PLANNING

- A prerequisite for making effective project selection decisions is to gain a clear idea of where an organization is, its vision of where it wants to be in the future, and how to make the transition to its desired future state.

- Figure represents this as a three-step process.

1. The first step focuses on gaining an understanding of the current enterprise. In other words, if you don't know where you are, it is impossible to tell where you are going.

2. Next, top management must determine where it wants the enterprise to be in the future.

3. Finally, after gaining an understanding of the current and future enterprise, a strategic plan can be developed to guide this transition.
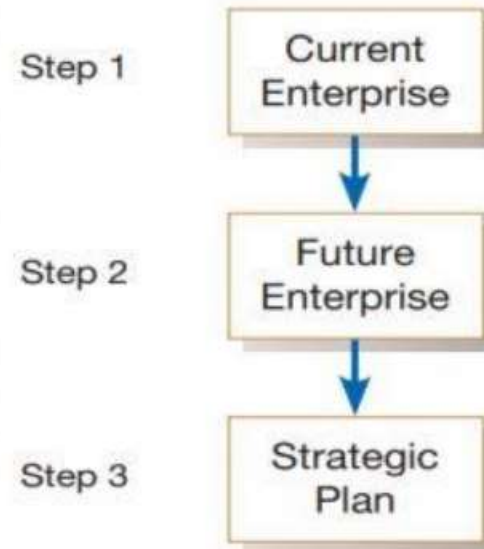

FIGURE 4-6
Corporate strategic planning is a three-step process

- The process of developing and refining models of the current and future enterprise as well as a transition strategy is often referred to as corporate strategic planning.

- **Corporate strategic planning is an ongoing process that defines the mission, objectives, and strategies of an organization**.

- During corporate strategic planning, executives typically develop a mission statement, statements of future corporate objectives, and strategies designed to help the organization reach its objectives.

- All successful organizations have a mission.

- The mission statement of a company typically states in very simple terms what business the company is in.

- Mission statement is a statement that makes it clear what business a company is in.

Mission statement

Objectives

Pine Valley Furniture
Corporate Mission Statement

We are in the business of designing, fabricating, and selling to retail stores high-quality wood furniture for household, office, and institutional use. We value quality in our products and in our relationships with customers and suppliers. We consider our employees our most critical resource.

Pine Valley Furniture
Statement of Objectives

1. PVF will strive to increase market share and profitability (prime objective).

2. PVF will be considered a market leader in customer service.

3. PVF will be innovative in the use of technology to help bring new products to market faster than our competition.

4. PVF will employ the fewest number of the highest-quality people necessary to accomplish our prime objective.

5. PVF will create an environment that values diversity in gender, race, values, and culture among employees, suppliers, and customers.
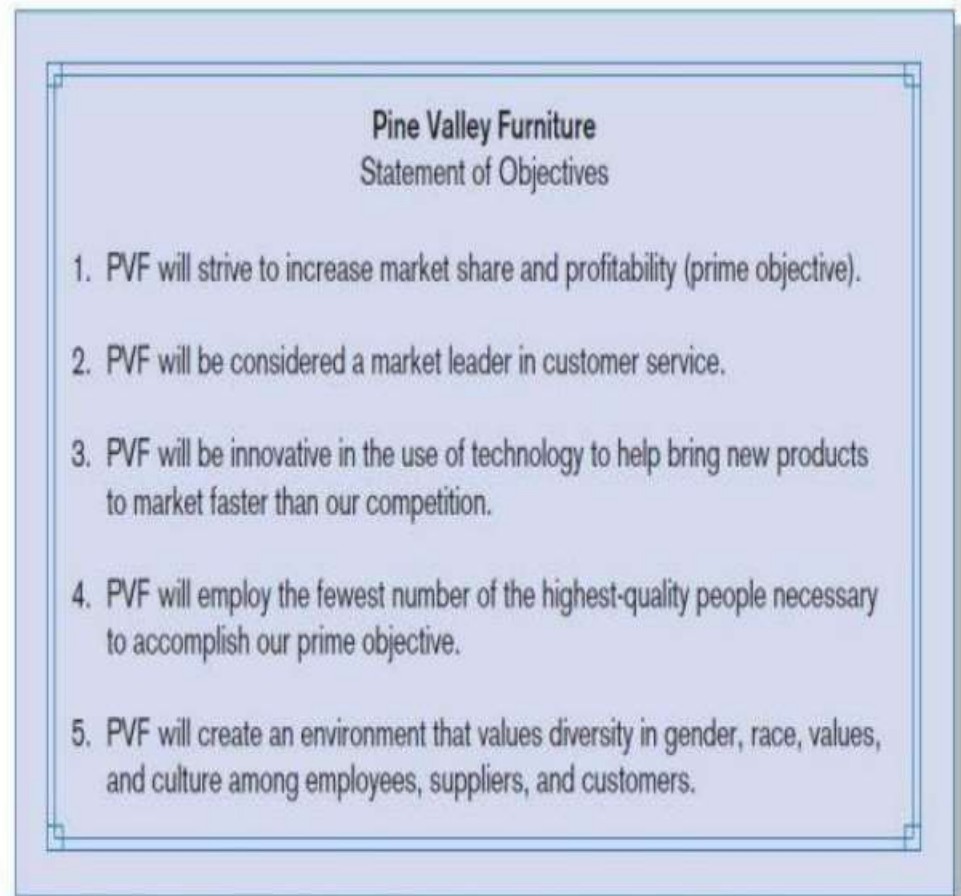
FIGURE
Mission statement (Pine Valley Furniture)

FIGURE
Statement of Corporate Objectives (Pine Valley Furniture)

- After defining its mission, an organization can then define its objectives.
- Objective statements refer to "broad and timeless" goals for the organization.
- These goals can be expressed as a series of statements that are either qualitative or quantitative but that typically do not contain details likely to change substantially over time.
- Objectives are often referred to as critical success factors.
- Once a company has defined its mission and objectives, a competitive strategy can be formulated.
- Objective statements A series of statements that express an organization's qualitative and quantitative goals for reaching a desired future position.
- A competitive strategy is the method by which an organization attempts to achieve its mission and objectives.
- • In essence, the strategy is an organization's game plan for playing in the competitive business world.

Competitive Strategy

TABLE 4-3 Generic Competitive Strategies

Strategy	Description
Low-Cost Producer	This strategy reflects competing in an industry on the basis of product or service cost to the consumer. For example, in the automobile industry, the South Korean–produced Hyundai is a product line that competes on the basis of low cost.
Product Differentiation	This competitive strategy reflects capitalizing on a key product criterion requested by the market (for example, high quality, style, performance, roominess). In the automobile industry, many manufacturers are trying to differentiate their products on the basis of quality (for example, "At Ford, quality is job one.").
Product Focus or Niche	This strategy is similar to both the low-cost and differentiation strategies but with a much narrower market focus. For example, a niche market in the automobile industry is the convertible sports car market. Within this market, some manufacturers may employ a low-cost strategy while others may employ a differentiation strategy based on performance or style.

niche: a job or position which is very suitable for someone, especially one that they like or an area or position which is exactly suitable for a small group of the same type

INFORMATION SYSTEMS PLANNING (ISP)

- The second planning process that can play a significant role in the quality of project identification and selection decisions is called information systems planning (ISP).

- ISP is an orderly means of assessing the information needs of an organization and defining the information systems, databases, and technologies that will best satisfy those needs.

- This means that during ISP you (or, more likely, senior IS managers responsible for the IS plan) must model current and future organization informational needs and develop strategies and project plans to migrate the current information systems and technologies to their desired future state.

- • ISP is a top-down process that takes into account the outside forces— industry, economic, relative size, geographic region, and so on—that are critical to the success of the firm.

- This means that ISP must look at information systems and technologies in terms of how they help the business achieve its objectives as defined during corporate strategic planning.

Like corporate strategic planning, ISP is a three-step process in which the first step is to assess current IS-related assets— human resources, data, processes, and technologies.

Next, target blueprints of these resources are developed. These blueprints reflect the desired future state of resources needed by the organization to reach its objectives as defined during strategic planning.

Finally, a series of scheduled projects is defined to help move the organization from its current to its future desired state.

Step 1

Current Situation:
- listing of manual and automated processes
- listing of manual and automated data
- technology inventory
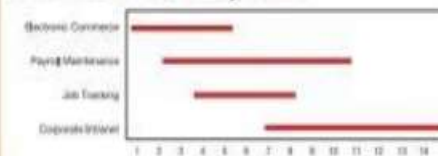- human resources inventory

Step 2

Future Situation:
- blueprints of manual and automated processes
- blueprints of manual and automated data
- technology blueprints
- human resources blueprints

Step 3

Schedule of Projects:

For example, a project may focus on reconfiguration of a telecommunications network to speed data communications or it may restructure work and data flows between business areas. Projects can include not only the development of new information systems or the modification of existing ones, but also the acquisition and management of new systems, technologies, and platforms. These three activities parallel those of corporate strategic planning, and this relationship is shown in Figure.
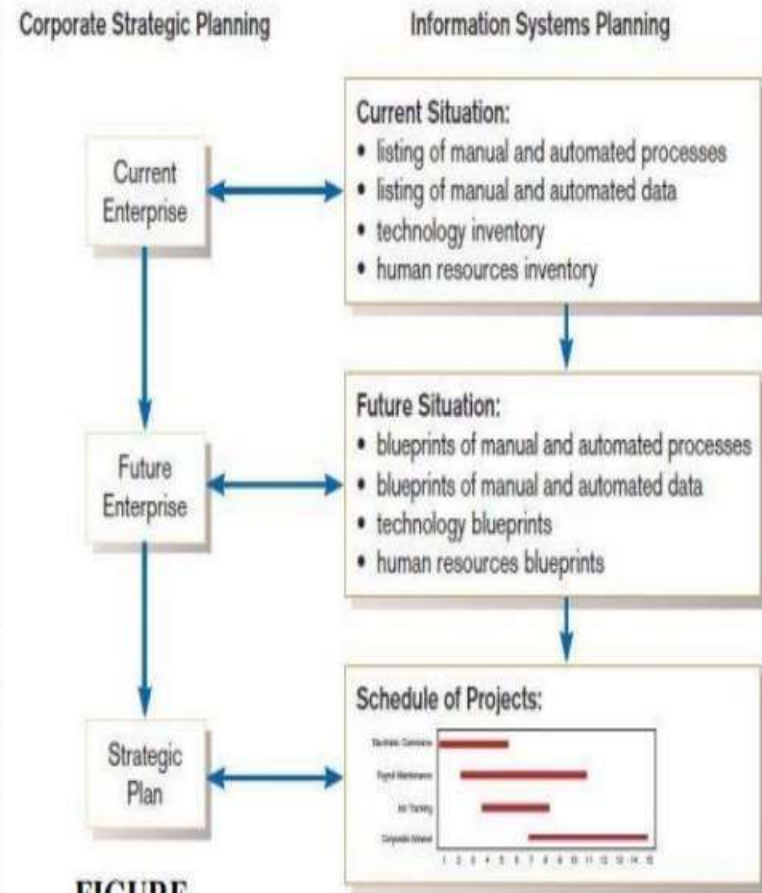

FIGURE

Parallel activities of corporate strategic planning and

Initiating and planning systems development projects

Project initiation and planning (PIP) is decides when PIP ends and when the next phase of the SDLC, begins.

Many activities performed during PIP could also be completed during analysis.

Pressman (2014) speaks of three important questions that must be considered when making this decision on the division between PIP and analysis.

1. How much effort should be expended on the project initiation and planning process?

2. Who is responsible for performing the project initiation and planning process?

3. Why is project initiation and planning such a challenging activity?

How much effort should be expended on the project initiation and planning process?

- Often difficult to find the answer.

- Practical experience has found, however, that the time and effort spent on initiation and planning activities easily pay for themselves later in the project.

- Proper and insightful project planning, including determining project scope as well as identifying project activities, can easily reduce time in later project phases.

- A rule of thumb is that between 10 and 20 percent of the entire development effort should be expended on the PIP study.

- Thus, you should not be reluctant to spend considerable time in PIP in order to fully understand the motivation for the requested system.

Who is responsible for performing the project initiation and planning process?

Systems analyst, or a team of analysts for large projects

The analyst will work with the proposed customers (managers and users) of the system

Other technical development staff prepare the final plan.

Experienced analysts working with customers fully understand information services needs

 Able to perform PIP without the detailed analysis typical of the analysis phase of the life cycle.

Less-experienced analysts with customers who only understand their needs will likely expend more effort

Why is project initiation and planning such a challenging activity?

PIP is viewed as a challenging activity because the objective of the PIP study is to transform a vague system request document into a tangible project description.

Getting all parties to agree on the direction of a project may be difficult for cross-department projects where different parties have different business objectives.

Thus, more complex organizational settings for projects will result in more time required for the analysis of the current and proposed systems during PIP.

Elements of Project Initiation

TABLE 5-1   Elements of Project Initiation

- Establishing the Project Initiation Team
- Establishing a Relationship with the Customer
- Establishing the Project Initiation Plan
- Establishing Management Procedures
- Establishing the Project Management Environment and Project Workbook
- Developing the Project Charter

Assessing Project Feasibility

- Most projects must be developed within tight budgetary and time constraints.
- Assessing project feasibility is a required activity for all information systems projects
- As a systems analyst, evaluate a wide range of factors.

Most feasibility factors are represented by the following categories:

a. Economic
b. Technical
c. Operational
d. Scheduling
e. Legal and contractual
f. Political

- A feasibility study is simply an assessment of the practicality of a proposed project plan or method. This is done by analyzing technical, economic, legal, operational and time feasibility factors. A project feasibility study should be done during the project management life cycle after the business case has been completed.

- Why is it important to conduct a feasibility study?

- An effective feasibility study points a project in the right direction by helping decision-makers have a holistic view of the potential benefits, disadvantages, barriers and constraints that could affect its outcome. The main purpose of a feasibility study is to determine whether the project can be not only viable but also beneficial from a technical, financial, legal and market standpoint.

Types of Feasibility Study

- There are many things to consider when determining project feasibility, and there are different types of feasibility studies you might conduct to assess your project from different perspectives.

1) Technical Feasibility Study

- A technical feasibility study consists in determining if your organization has the technical resources and expertise to meet the project requirements. Technological requirements refer to the technology needed to execute the project. This could include specific software, hardware, or other technological tools. Hardware and software requirements refer to the specific equipment and programs needed to execute the project. Technical skills refer to the abilities and expertise of the team members who will be executing the project.

Components of Technical Feasibility

Component	Description	Example	Role
Technological Requirements	Technology needed to execute the project	Cloud platform for a SaaS app	Ensures project technological viability
Hardware and Software Requirements	Specific equipment and programs needed	Servers and development tools for software	Defines resource needs
Technical Skills	Expertise of the project team	Programmers skilled in Python for AI project	Ensures team capability

2) Economic Feasibility Study

- Also called financial feasibility study, this type of study allows you to determine whether a project is financially feasible. In Economic Feasibility study cost and benefit of the project is analyzed.

- Economic feasibility studies require the following steps:

i. Before you can start your project, you'll need to determine the seed capital, working capital and any other capital requirements, such as contingency capital. To do this, you'll need to estimate what types of resources will be needed for the execution of your project, such as raw materials, equipment and labor.

ii. Once you've determined what project resources are needed, you should use a cost breakdown structure to identify all your project costs.

iii. Identify potential sources of funding such as loans or investments from angel investors or venture capitalists.

iv. Estimate the expected revenue, profit margin and return on investment of your project by conducting a cost-benefit analysis, or by using business forecasting techniques such as linear programming to estimate different future outcomes under different levels of production, demand and sales.

v. Estimate your project's break-even point.

vi. Conduct a financial benchmark analysis with industrial averages and specific competitors in your industry.

vii. Use pro forma cash flow statements, financial statements, balance sheets and other financial projection documents.

3) Legal Feasibility

In Legal Feasibility study project is analyzed in legality point of view. This includes analyzing barriers of legal implementation of project, data protection acts or social media laws, project certificate, license, copyright etc. Overall it can be said that Legal Feasibility Study is study to know if proposed project conform legal and ethical requirements.

4) Cultural and Political Feasibility

This section assesses how the software project will affect the political environment and organizational culture. This analysis takes into account the organization's culture and how the suggested changes could be received there, as well as any potential political obstacles or internal opposition to the project. It is essential that cultural and political factors be taken into account in order to execute projects successfully.

5) Resource Feasibility

This method evaluates if the resources needed to complete the software project successfully are adequate and readily available. Financial, technological and human resources are all taken into account in this study. It guarantees that sufficient hardware, software, trained labor and funding are available to complete the project successfully.

6) Operational Feasibility

In Operational Feasibility degree of providing service to requirements is analyzed along with how much easy product will be to operate and maintenance after deployment. Along with this other operational scopes are determining usability of product, Determining suggested solution by software development team is acceptable or not etc.

7) Schedule Feasibility

In Schedule Feasibility Study mainly timelines/deadlines is analyzed for proposed project which includes how much time teams will take to complete final project which has a great impact on the organization as purpose of project may fail if it can't be completed on time.

Building and Receiving the Baseline Project Plan

- All the information collected during project initiation and planning is collected and organized into a document called the Baseline Project Plan.

- Once the BPP is completed, a formal review of the project can be conducted with project clients and other interested parties.

- The focus of this review is to verify all information and assumptions in the baseline plan before moving ahead with the project.

Determining Project Benefits

- An information system can provide many benefits to an organization.
- A new or renovated information system can automate monotonous jobs and reduce errors
- Provide innovative services to customers and suppliers
- Improve organizational efficiency, speed, flexibility, and morale.
- In general, the benefits can be viewed as being both tangible and intangible

Tangible benefits

Tangible benefits refer to items that can be measured in dollars and with certainty.

Examples of tangible benefits might include reduced personnel expenses, lower transaction costs, or higher profit margins.

It is important to note that not all tangible benefits can be easily quantified (to measure something in amount).

For example, a tangible benefit that allows a company to perform a task in 50 percent of the time may be difficult to quantify in terms of hard dollar savings.

Most tangible benefits will fit within the following categories

- Cost reduction and avoidance
- Error reduction
- Increased flexibility
- Increased speed of activity
- Improvement of management planning and control
- Opening new markets and increasing sales opportunities

The intangible benefits of the system could not be quantified

Intangible benefits refer to items that cannot be easily measured in dollars or with certainty

such as the improvement of employee morale, or they may have broader societal implications, such as the reduction of waste creation or resource consumption.

Table 5-3 lists numerous intangible benefits often associated with the development of an information system.

Actual benefits will vary from system to system.

After determining project benefits, project costs must be identified.

Determining Project Costs

Similar to benefits, an information system can have both **tangible and intangible costs.**

Tangible costs refer to items that you can easily measure in dollars and with certainty.

From an IS development perspective, tangible costs include items such as hardware costs, labor costs, and operational costs including employee training and building renovations.

Alternatively, intangible costs are items that you cannot easily measure in terms of dollars or with certainty.

Intangible costs can include loss of customer goodwill, employee morale, or operational inefficiency.

Determining Project Costs

ONE-TIME COSTS WORKSHEET Customer Tracking System Project	Year 0
A. Development costs	$20,000
B. New hardware	15,000
C. New (purchased) software, if any	
1. Packaged applications software	5,000
2. Other _____	0
D. User training	2,500
E. Site preparation	0
F. Other _____	0
TOTAL one-time costs	$42,500

Figure 5-4

One-time costs for Customer Tracking System (Pine Valley Furniture

Determining Project Costs

RECURRING COSTS WORKSHEET
Customer Tracking System Project

	Year 1 through 5
A. Application software maintenance	$25,000
B. Incremental data storage required: 20 GB $50 (estimated cost/GB = $50)	1000
C. Incremental communications (lines, messages, . . .)	2000
D. New software or hardware leases	0
E. Supplies	500
F. Other_____	0
TOTAL recurring costs	$28,500

Figure 5-5

Recurring costs for Customer Tracking System (Pine Valley Furniture)

Time Value of Money

Suppose you want to buy a used car from an acquaintance (a person that you have met but do not know well) and she asks that you make three payments of $1500 for three years, beginning next year, for a total of $4500.

If she would agree to a single lump-sum payment at the time of sale (and if you had the money!), what amount do you think she would agree to? Should the single payment be $4500? Should it be more or less? To answer this question, we must consider the time value of money.

Most of us would gladly accept $4500 today rather than three payments of $1500, because a dollar today (or $4500 for that matter) is worth more than a dollar tomorrow or next year, given that money can be invested.

The rate at which money can be borrowed or invested is referred to as the cost of capital, and is called the discount rate for TVM calculations.

Let's suppose that the seller could put the money received for the sale of the car in the bank and receive a 10 percent return on her investment.

A simple formula can be used when figuring out the present value of the three $1500 payments:

Time Value of Money

$$PV_n = Y \times \frac{1}{(1 + i)^n}$$

Assessing Technical Feasibility

The purpose of assessing technical feasibility is to gain an understanding of the organization's ability to construct the proposed system.

Possible target hardware, software, and operating environments to be used, as well as system size, complexity, and the group's experience with similar systems.

It is important to note that all projects have risk and that risk is not necessarily something to avoid.

Yet it is also true that, because organizations typically expect a greater return on their investment for riskier projects, understanding the sources and types of technical risks proves to be a valuable tool when you assess a project.

Also, risks need to be managed in order to be minimized; you should, therefore, identify potential risks as early as possible in a project.

The potential consequences of not assessing and managing risks can include the following:

• Failure to attain expected benefits from the project

• Inaccurate project cost estimates

• Inaccurate project duration estimates

• Failure to achieve adequate system performance levels

• Failure to adequately integrate the new system with existing hardware, software, or organizational procedures.

Thank You