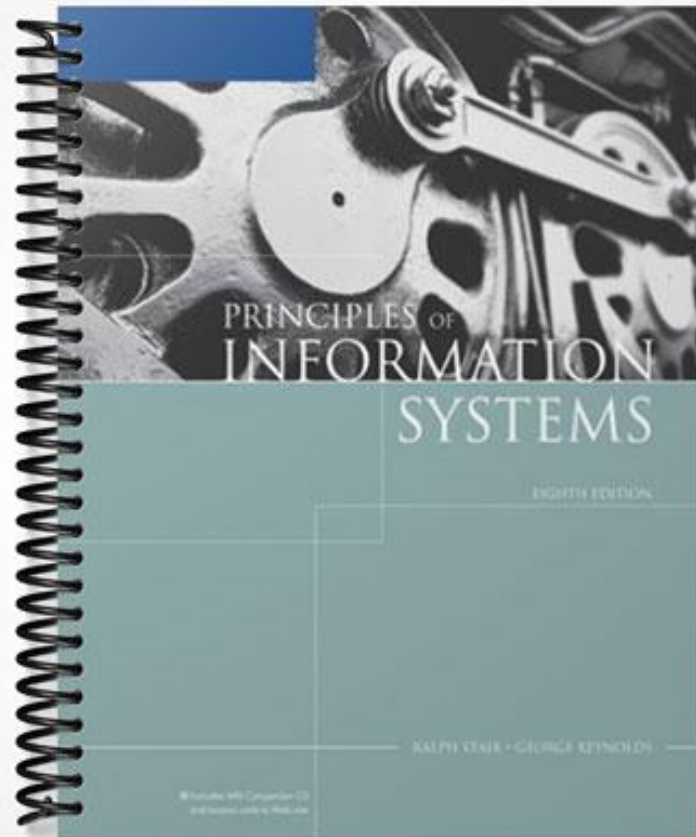


# SOLUTIONS MANUAL



## **Chapter 2**

# **Information Systems in Organizations**

### **At a Glance**

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## Overview

Chapter 2 presents a discussion of information systems within the context of modern business organizations. Businesses use information systems for a variety of purposes and when wisely implemented, these systems can add value to an organization within the constraints of its structure and culture. Information systems can help a corporation achieve competitive advantage over its competition. The factors that lead corporations to try to achieve competitive advantage, as well as the strategies for achieving competitive advantage are discussed in this chapter. This chapter also describes the careers available in information systems.

## Principles and Objectives

Principles	Learning Objectives
<p>The use of information systems to add value to the organization is strongly influenced by organizational structure, culture, and change.</p>	<ul style="list-style-type: none"> <li>• Identify the value-added processes in the supply chain and describe the role of information systems within them.</li> <li>• Provide a clear definition of the terms <i>organizational structure</i>, <i>culture</i>, and <i>change</i> and discuss how they affect the implementation of information systems.</li> </ul>
<p>Because information systems are so important, businesses need to be sure that improvements or completely new systems help lower costs, increase profits, improve service, or achieve a competitive advantage.</p>	<ul style="list-style-type: none"> <li>• Identify some of the strategies employed to lower costs or improve service.</li> <li>• Define the term <i>competitive advantage</i> and discuss how organizations are using information systems to gain such an advantage.</li> <li>• Discuss how organizations justify the need for information systems.</li> </ul>
<p>Cooperation between business managers and IS personnel is the key to unlocking the potential of any new or modified system.</p>	<ul style="list-style-type: none"> <li>• Define the types of roles, functions, and careers available in information systems.</li> </ul>

## Teaching Tips

### Why Learn About Information Systems in Organizations?

Organizations of all types use information systems to cut costs and increase profits. Students in every major or career path are likely to work with computers and information systems to help their company or organization become more efficient, effective, productive, and competitive. For example, a management major might be hired by a shipping company to help design a computerized system to improve employee productivity, while a biochemist might conduct research for a drug company and use a computer to evaluate the potential of a new cancer treatment. In this chapter, students will see how information systems can help organizations produce higher-quality products and increase their return on investment.

### Organizations and Information Systems

An organization is a formal collection of people and other resources established to accomplish a set of goals. The primary goal of a for-profit organization is to maximize shareholder value, often measured by the price of the company stock. Nonprofit organizations include social groups, religious groups, universities, and other organizations that do not have profit as the primary goal.

All business organizations contain a number of value-added processes. The value chain, first described by Michael Porter in a 1985 Harvard Business Review article, is a concept that reveals how organizations can add value to their products and services. The value chain is a series (chain) of activities, as shown below and in Figure 2.2 on page 44.

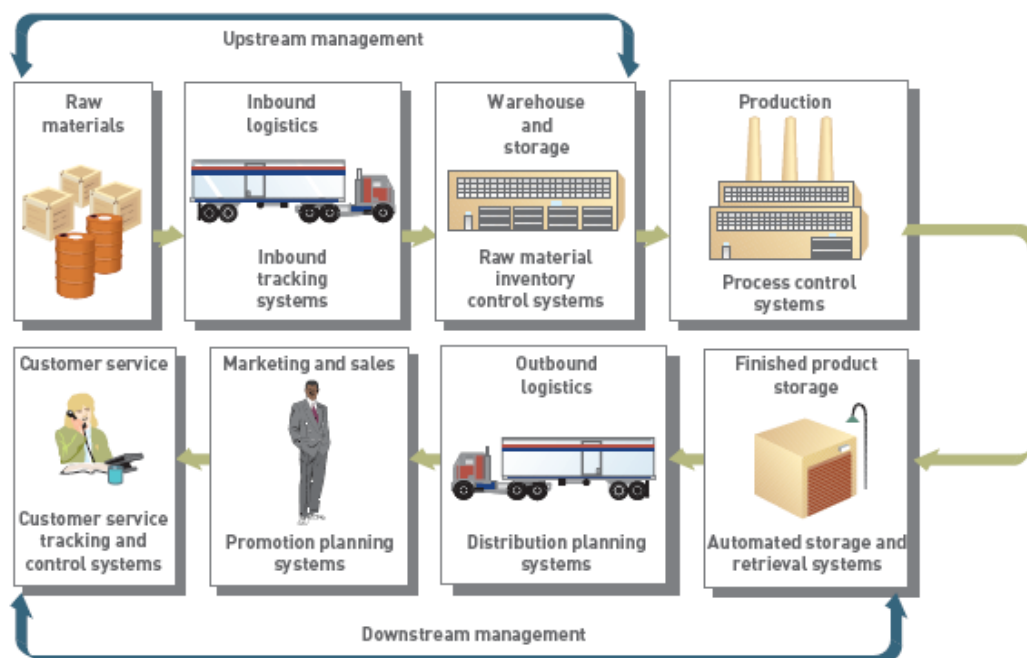


Figure 2.2: The Value Chain of a Manufacturing Company

Managing these activities is often called supply chain management. Depending on the customer, value may mean lower price, better service, higher quality, or uniqueness of product. Value is derived from the skill, knowledge, time, and energy invested by the company. By adding a significant amount of value to their products and services, companies will ensure further organizational success.

<b>Teaching Tip</b>	When introducing the material in this section, be sure to use a number of case studies and examples to show how different companies are using various types of information systems to achieve their goals.
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### Organizational Structures

Organizational structure refers to organizational subunits and the way they relate to the overall organization. Depending on the goals of the organization and its approach to management, the following structures can be used:

- Traditional – hierarchical structure
- Project – centered on major products or services
- Team – centered on work teams or groups
- Virtual – employs individuals or groups in geographically dispersed areas

### Organizational Culture and Change

The *culture* of an organization is a set of major understandings and assumptions that its employees share. The understandings, which can include common beliefs, values, and approaches to decision making, are generally not stated or documented as goals or formal policies.

Organizational change deals with how nonprofit and for-profit organizations plan for, implement, and handle change, the dynamics of which can be viewed in terms of a change model. This is a representation of change theories that identifies the phases of change and the best way to implement them. Kurt Lewin and Edgar Schein proposed the following three-stage approach for change: unfreezing, moving, and refreezing.

Organizational learning is closely related to organizational change, and according to its theory, organizations adapt to new conditions or alter their practices over time. In some cases, the adjustments can be a radical redesign of business processes, often called reengineering, while in others, the adjustments can be more incremental, a concept known as continuous improvement.

<b>Teaching Tip</b>	Ask a local businessperson involved with strategic planning and information technology to come and speak with the class.
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## Reengineering and Continuous Improvement

Reengineering, also called process redesign, involves the radical redesign of business processes, organizational structures, information systems, and values of the organization to achieve a breakthrough in business results. It can reduce delivery time, increase product and service quality, enhance customer satisfaction, and increase revenues and profitability.

The idea of continuous improvement is to constantly seek ways to improve the business processes in order to add value to products and services. This continual change will, in turn, increase customer satisfaction and loyalty, and ensure long-term profitability.

## User Satisfaction and Technology Acceptance

The extent to which an organization uses technology can be a function of technology diffusion, infusion, and acceptance. Technology diffusion is a measure of how widely technology is spread throughout an organization, while technology infusion is the extent to which it permeates an area or department.

## Quality

Quality means the ability of a product (including services) to meet or exceed customer expectations.

A product is considered to be high-quality if it satisfies customers by functioning correctly and reliably, meeting needs and expectations, and being delivered on time with courtesy and respect. To ensure quality, organizations use a number of techniques, including total quality management and six sigma.

## Outsourcing, On-Demand Computing, and Downsizing

Three strategies that organizations often use to contain costs are outsourcing, on-demand computing, and downsizing. Outsourcing involves contracting with outside professional services to meet specific business needs. On-demand computing refers to rapidly responding to the organization's flow of work as the need for computer resources varies. When there is a need for computer resources, the organization pays for the resources from a computer or consulting company just as it pays for electricity from a utility company. Downsizing involves reducing the number of employees to cut costs.

<b>Teaching Tip</b>	Outsourcing is a controversial issue because many companies outsource existing jobs to other countries where labor costs are much lower. Ask students to discuss whether outsourcing is beneficial or harmful to a country as a whole. What are the benefits of outsourcing? Who gets to enjoy these benefits – the company, the workers, and/or the consumers? What are the disadvantages of outsourcing?
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## **Quick Quiz 1**

1. What type of organizational change is characterized by a radical change?  
ANSWER: Reengineering
2. What term is used to describe the major understandings and assumptions of a group?  
ANSWER: Culture
3. What is an example of a value chain activity?  
ANSWER: Inbound logistics, warehousing and storage, production, product storage, outbound logistics, marketing and sales, and customer service
4. True or False: Organizations often outsource a process to focus more closely on their core business.  
ANSWER: True

## **Competitive Advantage**

A competitive advantage is a significant and long-term benefit that an organization enjoys over its competition. Establishing and maintaining this advantage is complex, but a company's survival and prosperity depends on its success in doing so.

### **Factors That Lead Firms to Seek Competitive Advantage**

A number of factors can lead to the attainment of competitive advantage, and Michael Porter, a prominent management theorist, suggested the following widely accepted five-forces model:

- Rivalry among existing competitors
- Threat of new market entrants
- Threat of substitute products and services
- Bargaining power of buyers
- Bargaining power of suppliers

## Strategic Planning for Competitive Advantage

To be competitive, a company must be fast, nimble, flexible, innovative, productive, economical, and customer oriented. It must also align the information system strategy with general business strategies and objectives. Given the five market forces just mentioned, companies can use the following general strategies for the attainment of competitive advantage:

- Cost leadership
- Differentiation
- Niche strategy
- Altering the industry structure
- Creating new products and services
- Improving existing product lines and service
- Other strategies

## Quick Quiz 2

1. True or False: One of the ways of attaining competitive advantage is to deliver to only a small, niche market.  
ANSWER: True
2. \_\_\_\_\_ is a significant and (ideally) long-term benefit to a company over its competition.  
ANSWER: Competitive advantage
3. An agreement between two or more companies that involves the joint production and distribution of good and services is referred to as a(n) \_\_\_\_\_.  
ANSWER: strategic alliance

## Performance-Based Information Systems

There have been at least three major stages in the business use of IS, as summarized below:

- Cost reduction and productivity (1960's)
- Competitive advantage orientation (1980's)
- Performance-based (Current)

The third stage (performance-based), carefully considers both strategic advantage and costs and uses productivity, return on investment (ROI), net present value, and other measures of performance to evaluate the contributions their information systems make to their businesses.



## Productivity

Productivity is a measure of the output achieved divided by the input required. Productivity can be based on a number of factors, such as labor hours, the amount of raw materials used, resulting quality, and time to produce the goods or service.

## Return on Investment and the Value of Information Systems

Return on investment (ROI) tells us about the additional profits or benefits that are generated as a percentage of the investment in IS technology.

Other means to measure the value of information systems include earnings growth, increase in market share, increase in customer awareness and satisfaction, and the total cost of ownership (TCO).

## Risk

When making the decision to invest in information systems, managers must consider the risks of designing, developing, and implementing these systems. Information systems can sometimes be costly failures.

## Quick Quiz 3

1. One measure of IS value is \_\_\_\_\_, which investigates the additional profits or benefits that are generated as a percentage of the investment in IS technology.  
ANSWER: return on investment or ROI
2. How is productivity defined?  
ANSWER: Productivity is a measure of the output achieved divided by the input required.
3. A measure that attempts to quantify the total cost of owning computer equipment is referred to as \_\_\_\_\_.  
ANSWER: total cost of ownership or TCO

## Careers in Information Systems

The field of information systems is broad and contains many potential paths.

## Roles, Functions, and Careers in the IS Department

In general, the three primary responsibilities of an IS department are operations (efficiency of IS systems), systems development (development, maintenance, review), and support (help desk, user assistance). Within each of these areas, a variety of tasks and opportunities exist.

## Typical IS Titles and Functions

In most organizations, information systems personnel work in an information systems department that employs a chief information officer (CIO). The main responsibility of the CIO is to manage an IS department's equipment and personnel in a way that will help meet organizational goals. The CIO, who is normally part of upper management, may also participate in the organization's overall strategic planning effort.

Local area network (LAN) administrators set up and manage the network hardware, software, and security processes. They manage the addition of new users, software, and devices to the network. They also isolate and fix operations problems.

Many occupations are related to the Internet. Some of these include Internet strategists and administrators, Internet systems developers, Internet programmers, and Internet or Web site operators.

Often, people working in IS roles have completed some form of certification. Certification is a process for testing skills and knowledge resulting in an endorsement by the certifying authority that an individual is capable of performing a particular job.

## Other IS Careers

There are many other possible careers besides those already mentioned. These include careers in the field of security and fraud detection and prevention, and video-game development. The IS field also offers many careers in which it is possible to work from your own home.

IS personnel can also work for consulting firms such as Accenture, IBM, and EDS. Alternatively, they can also be employed by a hardware or software vendor developing or selling products.

## Quick Quiz 4

1. Which member of the IS staff works as a liaison between users and technical developers?  
ANSWER: Systems analyst
2. Which upper-level manager has responsibility for the IS department?  
ANSWER: Chief information officer (CIO)
3. A(n) \_\_\_\_\_ is basically a miniature IS department attached and directly reporting to a functional area in a large organization.  
ANSWER: information service unit

## Class Discussion Topics

1. What are the implications of using reengineering versus continuous improvement in a systems development effort?
2. What steps would you take to align the IS functions of an organization with its organizational mission?
3. Should technology drive an organization's strategic planning or should strategic planning drive an organization's technology adoption plans?

## Additional Projects

1. After choosing a well-known company, use the Internet to research the strategies the company is using to achieve competitive advantage. Summarize your findings in 2-3 paragraphs.
2. Choose a position in the IS department to research. Find out what qualifications are required to work in this position. Is certification required or helpful? What are the responsibilities of someone working in this position? Write a 2-3 paragraph report summarizing your findings.

## Additional Resources

1. TechWeb: The Business Technology Network:  
[www.techweb.com/](http://www.techweb.com/)
2. E-Commerce Times:  
[www.ecommercetimes.com/](http://www.ecommercetimes.com/)
3. Computer Certification:  
<http://certification.about.com/index.htm>

## Key Terms

- **Certification** - a process for testing skills and knowledge, which results in a statement by the certifying authority that states an individual is capable of performing a particular kind of job.
- **Change model** - a representation of change theories that identifies the phases of change and the best way to implement them.
- **Competitive advantage** - a significant and (ideally) long-term benefit to a company over its competition.
- **Continuous improvement** - constantly seeking ways to improve the business processes to add value to products and services.

- **Culture** - a set of major understandings and assumptions shared by a group.
- **Downsizing** - reducing the number of employees to cut costs.
- **Empowerment** - giving employees and their managers more responsibility and authority to make decisions, take certain actions, and have more control over their jobs.
- **Five-forces model** - a widely accepted model that identifies five key factors that can lead to attainment of competitive advantage, including (1) the rivalry among existing competitors, (2) the threat of new entrants, (3) the threat of substitute products and services, (4) the bargaining power of buyers, and (5) the bargaining power of suppliers.
- **Flat organizational structure** - an organizational structure with a reduced number of management layers.
- **Information center** - a support function that provides users with assistance, training, application development, documentation, equipment selection and setup, standards, technical assistance, and troubleshooting.
- **Information service unit** - a miniature IS department.
- **On-demand computing** - contracting for computer resources to rapidly respond to an organization's varying workflow. Also called on-demand business and utility computing.
- **Organization** - a formal collection of people and other resources established to accomplish a set of goals.
- **Organizational change** - the responses that are necessary for profit and nonprofit organizations to plan for, implement, and handle change.
- **Organizational culture** - the major understandings and assumptions for a business, a corporation, or an organization.
- **Organizational learning** - adaptations to new conditions or alterations of organizational practices over time.
- **Organizational structure** - organizational subunits and the way they relate to the overall organization.
- **Outsourcing** - contracting with outside professional services to meet specific business needs.
- **Productivity** - a measure of the output achieved divided by the input required.
- **Project organizational structure** - a structure centered on major products or services.
- **Quality** - the ability of a product (including services) to meet or exceed customer expectations.
- **Reengineering (process redesign)** - the radical redesign of business processes, organizational structures, information systems, and values of the organization to achieve a breakthrough in business results.
- **Return on investment (ROI)** - one measure of IS value that investigates the additional profits or benefits that are generated as a percentage of the investment in IS technology.
- **Strategic alliance (strategic partnership)** - an agreement between two or more companies that involves the joint production and distribution of goods and services.
- **Team organizational structure** - a structure centered on work teams or groups.
- **Technology acceptance model (TAM)** - a model that describes the factors that lead to higher levels of acceptance and usage of technology.
- **Technology diffusion** - a measure of how widely technology is spread throughout the organization.
- **Technology infusion** - the extent to which technology is deeply integrated into an area or department.

- **Total cost of ownership (TCO)** - the measurement of the total cost of owning computer equipment, including desktop computers, networks, and large computers.
- **Traditional organizational structure** - an organizational structure similar to a managerial pyramid, where the hierarchy of decision making and authority flows from strategic management at the top down to operational management and nonmanagement employees. Also called a hierarchical structure.
- **Value chain** - a series (chain) of activities that includes inbound logistics, warehouse and storage, production, finished product storage, outbound logistics, marketing and sales, and customer service.
- **Virtual organizational structure** - a structure that employs individuals, groups, or complete business units in geographically dispersed areas that can last for a few weeks or years, often requiring telecommunications or the Internet.