



Chapter 1

Business Information Systems in Your Career

Video Cases:

Case 1 [UPS Global Operations with the DIAD IV](#)

Case 2 [IBM, Cisco, Google: Global Warming by Computer](#)

Instructional Videos:

Instructional Video 1 [Green Energy Efficiency in a Data Center Using Tivoli Architecture \(IBM\)](#)

Instructional Video 2 [Tour IBM's Raleigh Data Center](#)



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STUDENT LEARNING OBJECTIVES

- **How are information systems transforming business and what is their relationship to globalization?**
- **Why are information systems so essential for running and managing a business today?**
- **What exactly is an information system? How does it work? What are its people, organization, and technology components?**



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STUDENT LEARNING OBJECTIVES

- **How will a four-step method for business problem solving help you solve information system-related problems?**
- **How will information systems affect business careers and what information systems skills and knowledge are essential?**



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Shortening the Lines at Disney World: Technology to the Rescue

- **Problem:** Long lines limit how many rides, shops, and restaurants a customer can visit during a stay.
- **Solution:** Enhance customer satisfaction and per-capita spending by using information systems to spot gridlock and improve crowd flow.





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Shortening the Lines at Disney World: Technology to the Rescue

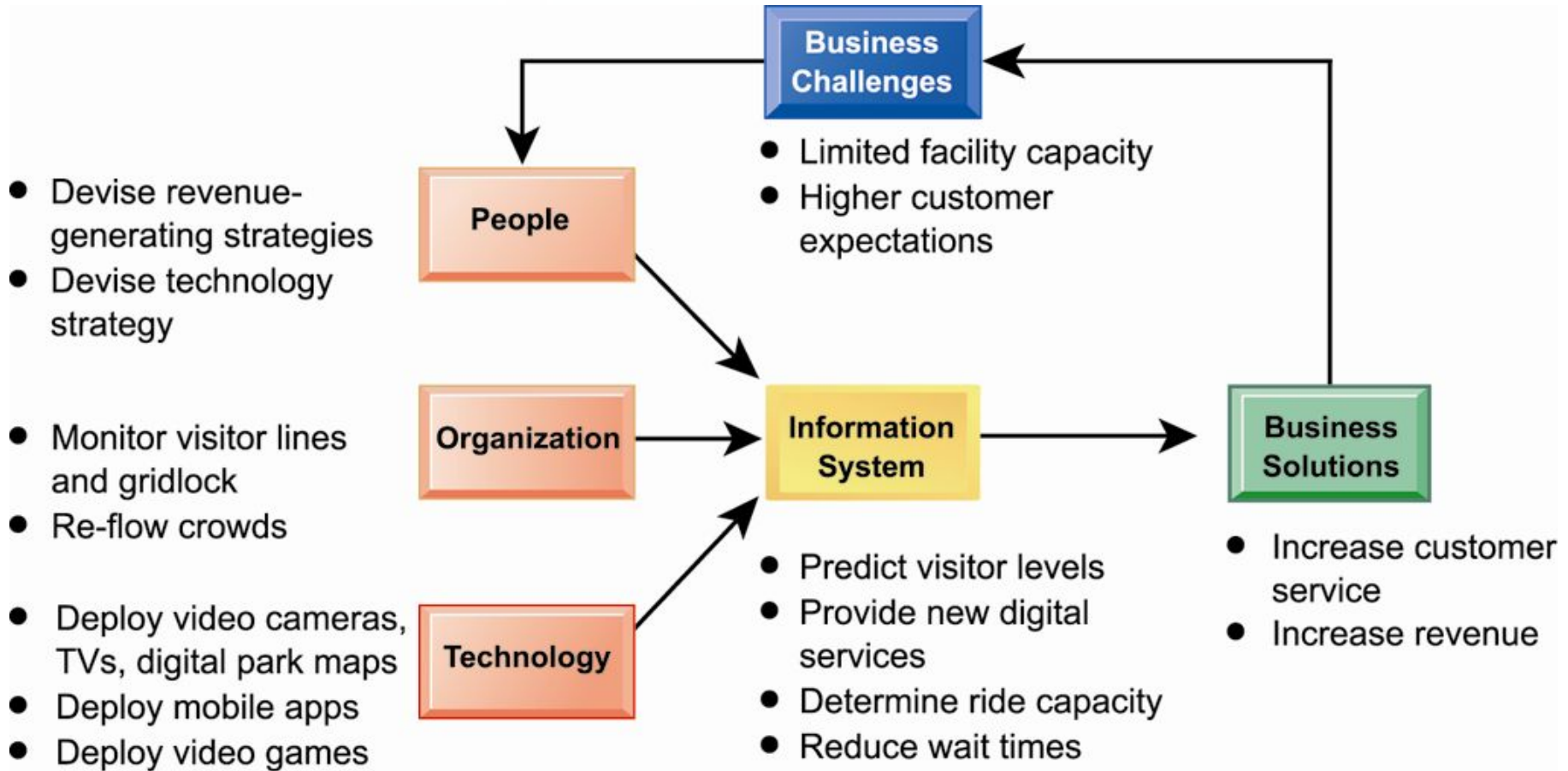
- **Disney Operational Command Center** uses video cameras, digital park maps, computer programs, and mobile apps to monitor attendance, registers, and spot and prevent gridlock.
- Demonstrates IT's role in increasing value and revenue in any business.
- Illustrates the potential for technology to improve customer experience.



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Shortening Lines at Disney World: Technology to the Rescue





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The Role of Information Systems in Business Today

How Information Systems Are Transforming Business

- In 2011, more than 131 million businesses had dot-com addresses registered.
- More than 106 million people receive their news online; 74 million Americans read blogs.
- Internet advertising continues to grow at around 14 percent per year.
- New laws require businesses to store more data for longer periods.
- Changes in business result in changes in jobs and careers.



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The Role of Information Systems in Business Today

What's New in MIS?

New technologies

Cloud computing

Software as a service (SaaS)

Mobile digital platform

People and behavior changes

Managers use social networks, collaboration

Business intelligence applications accelerate

Virtual meetings are accepted and used

Organizations

Web 2.0 applications widely adopted

Telework gains momentum

Co-creation of value, collaboration across firms



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The Role of Information Systems in Business Today

Interactive Session: Organizations

Running a Business from the Palm of Your Hand

- **Read the Interactive Session and then discuss the following questions:**
 - **What kinds of applications are described in the case? What business functions do they support? How do they improve operational efficiency and decision making?**
 - **Identify the problems that businesses in this case study solved by using mobile digital devices.**
 - **What kinds of businesses are most likely to benefit from equipping their employees with mobile digital devices such as iPhones, iPads, and BlackBerrys?**
 - **Discuss the implications of this statement: “The iPhone is not a game changer, it’s an industry changer.”**



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Globalization Challenges and Opportunities: A Flattened World

- **Internet and global communications have greatly reduced economic and cultural advantages of developed countries.**
 - Drastic reduction of costs of operating and transacting on global scale
 - Competition for jobs, markets, resources, ideas
 - Dependence on imports and exports
 - Requires new understandings of skills, markets, opportunities



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The Role of Information Systems in Business Today

Business Drivers of Information Systems

- **Businesses invest in IT to achieve six important business objectives.**
 1. **Operational excellence**
 2. **New products, services, and business models**
 3. **Customer and supplier intimacy**
 4. **Improved decision making**
 5. **Competitive advantage**
 6. **Survival**



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Operational Excellence:

- **Improved efficiency results in higher profits.**
- **Information systems and technologies help improve efficiency and productivity.**
 - E.g., Walmart
 - Power of combining information systems and best business practices to achieve operational efficiency—over \$405 billion in sales in 2010
 - Most efficient store in world as result of digital links between suppliers and stores



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The Role of Information Systems in Business Today

New Products, Services, and Business Models:

- **Information systems and technologies enable firms to create new products, services, and business models.**
 - **Business model:** how a company produces, delivers, and sells its products and services
- **E.g., Apple**
 - Transformed old model of music distribution with iTunes
 - Constant innovations—iPod, iPhone, iPad, etc.



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New Products, Services, and Business Models:

With multitouch displays, Internet browsing, document management, cameras, and messaging capabilities, Apple's iPhone and iPad have created new platforms for mobile business computing





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Customer and Supplier Intimacy:

- **Customers who are served well become repeat customers who purchase more.**
 - **Mandarin Oriental hotel**
 - Uses IT to foster an intimate relationship with its customers, keeping track of preferences, and so on
- **Close relationships with suppliers result in lower costs.**
 - **JCPenney**
 - IT to enhance relationship with supplier in Hong Kong



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Improved Decision Making:

- If managers rely on forecasts, best guesses, and luck, they will misallocate employees, services, and inventory.
- Real-time data improves ability of managers to make decisions.
 - **Verizon:** Web-based digital dashboard to update managers with real-time data on customer complaints, network performance, and line outages



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Transpara's Mobile Dashboard delivers comprehensive and accurate information for decision making. The graphical overview of key performance indicators helps managers quickly spot areas that need attention.



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Competitive Advantage:

- **Often results from achieving previous business objectives**
- **Advantages over competitors:**
 - Charging less for superior products, better performance, and better response to suppliers and customers
 - E.g., Apple, Walmart, UPS are industry leaders because they know how to use information systems for this purpose



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The Role of Information Systems in Business Today

Survival:

- **Businesses may need to invest in information systems out of necessity; simply the cost of doing business.**
 - **Keeping up with competitors**
 - Citibank's introduction of ATMs
 - **Federal and state regulations and reporting requirements**
 - Toxic Substances Control Act and the Sarbanes–Oxley Act



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Perspectives on Information Systems and Information Technology

What Is an Information System?

- **Information technology:** the hardware and software a business uses to achieve objectives.
- **Information system:** interrelated components that manage information to:
 - Support decision making and control
 - Help with analysis, visualization, and product creation
- **Data:** streams of raw facts.
- **Information:** data shaped into meaningful, useful form.

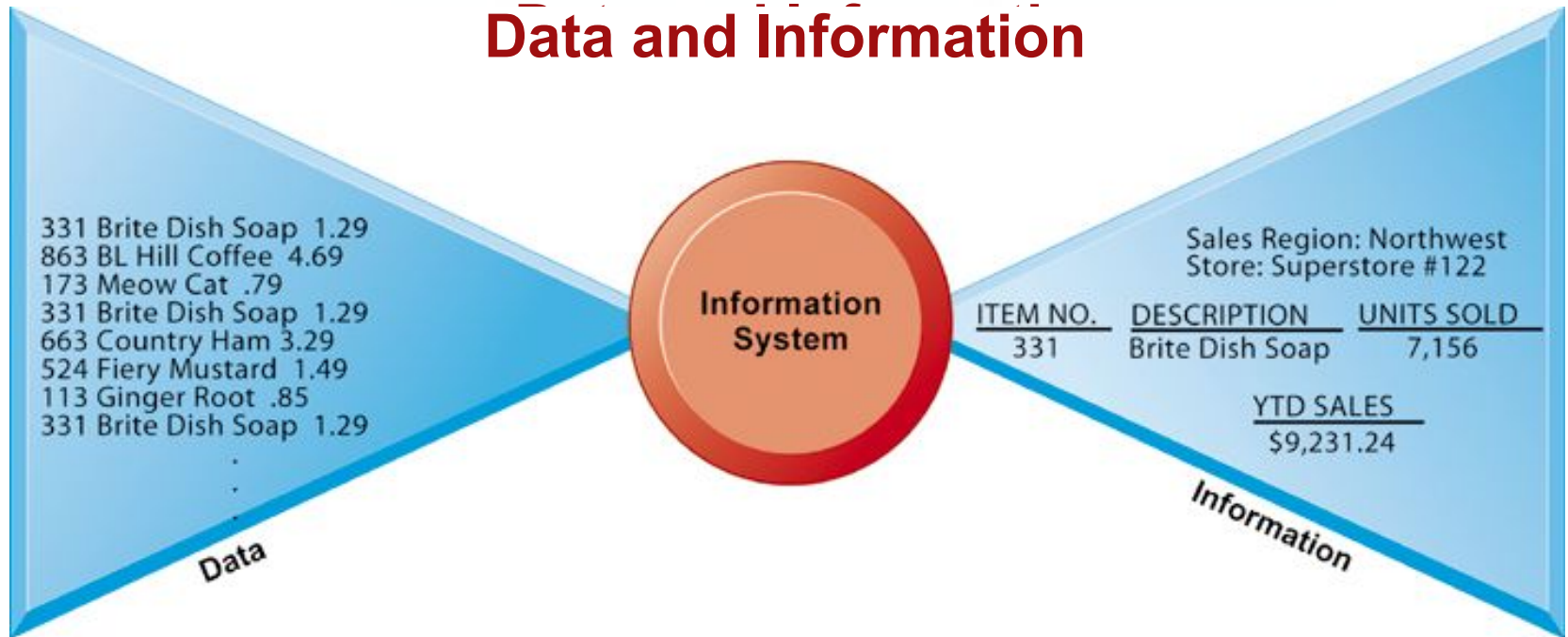


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Perspectives on Information Systems and Information Technology

Data and Information



Raw data from a supermarket checkout counter can be processed and organized to produce meaningful information, such as the total unit sales of dish detergent or the total sales revenue from dish detergent for a specific store or sales territory.

Figure 1-1



What Is an Information System?

- **Activities in an information system that produce information:**
 - **Input**
 - **Processing**
 - **Output**
 - **Feedback**
- **Sharp distinction between *computer* or *computer program* versus *information system***



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It Isn't Simply Technology: The Role of People and Organizations

Functions of an Information System

An information system contains information about an organization and its surrounding environment. Three basic activities—input, processing, and output—produce the information organizations need. Feedback is output returned to appropriate people or activities in the organization to evaluate and refine the input. Environmental actors, such as customers, suppliers, competitors, stockholders, and regulatory agencies, interact with the organization and its information systems.

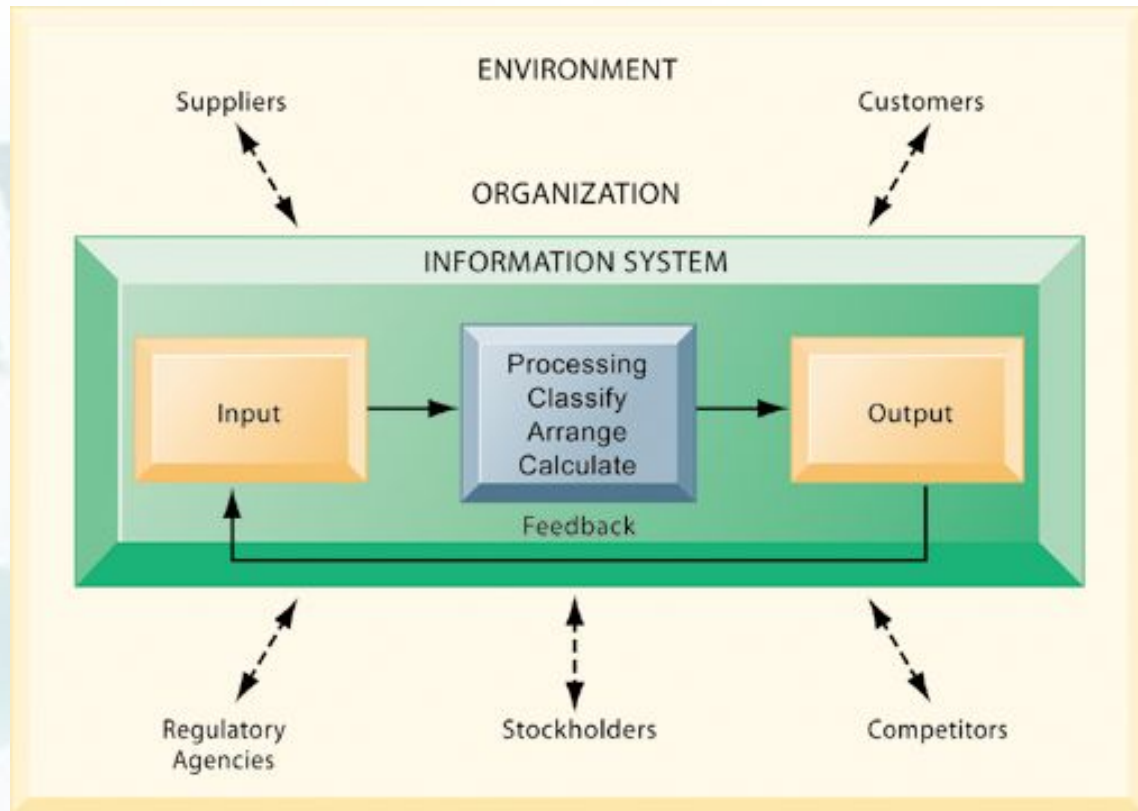


Figure 1-2



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It Isn't Simply Technology: The Role of People and Organizations

The Role of People and Organizations

- **Information systems literacy**
 - Includes behavioral and technical approach
- **Computer literacy**
 - Focuses mostly on knowledge of IT
- **Management information systems (MIS)**
 - Focuses on broader information systems literacy
 - Issues surrounding development, use, impact of information systems used by managers and employees



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It Isn't Simply Technology: The Role of People and Organizations

Information Systems Are More than Computers

Using information systems effectively requires an understanding of the organization, people, and information technology shaping the systems. An information system provides a solution to important business problems or challenges facing the firm.



Figure 1-3



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It Isn't Simply Technology: The Role of People and Organizations

Dimensions of Information Systems

- **Organizations**
 - **Coordinate work through structured hierarchy and business processes**
 - **Business processes:** related tasks and behaviors for accomplishing work
 - E.g., fulfilling an order, hiring an employee
 - May be informal or include formal rules
 - **Culture embedded in information systems**
 - E.g., UPS's concern with placing service to customer first



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It Isn't Simply Technology: The Role of People and Organizations

Dimensions of Information Systems

- **People**

- Information systems require skilled people to build, maintain, and use them.
- Employee attitudes affect ability to use systems productively.
- **Role of managers**
 - Perceive business challenges
 - Set organizational strategy
 - Allocate human and financial resources
 - Creative work: new products, services



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It Isn't Simply Technology: The Role of People and Organizations

Dimensions of Information Systems

- **Technology**

- **IT Infrastructure: foundation or platform that information systems built on**

- Computer hardware
 - Computer software
 - Data management technology
 - Networking and telecommunications technology
 - Internet and Web, extranets, intranets
 - Voice, video communications



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It Isn't Simply Technology: The Role of People and Organizations

Interactive Session: Technology

UPS Competes Globally with Information Technology

Using a handheld computer called a Delivery Information Acquisition Device (DIAD), UPS drivers automatically capture customers' signatures along with pickup, delivery, and time card information. UPS information systems use these data to track packages while they are being transported.





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It Isn't Simply Technology: The Role of People and Organizations

Interactive Session: Technology

UPS Competes Globally with Information Technology

- **Read the Interactive Session and then discuss the following questions:**
 - **What are the inputs, processing, and outputs of UPS's package tracking system?**
 - **What technologies are used?**
 - **How are these technologies related to UPS's business strategy?**
 - **What business objectives do these systems address?**
 - **What would happen if these technologies were not available?**



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Understanding Information Systems: A Business Problem-Solving Approach

The Problem-Solving Approach

- **Few business problems are simple or straightforward.**
- **Most business problems involve a number of major factors that can fall into three main categories:**
 - **Organization**
 - **Technology**
 - **People**



A Model of the Problem-Solving Process

- **Problem solving: four-step process**
 1. **Problem identification**
 2. **Solution design**
 3. **Choice**
 4. **Implementation**



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Understanding Information Systems: A Business Problem-Solving Approach

A Model of the Problem-Solving Process

1. Problem identification includes:

- Agreement that problem exists
- Definition of problem
- Causes of problem
- What can be done given resources of firm



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Understanding Information Systems: A Business Problem-Solving Approach

A Model of the Problem-Solving Process

- **Typical organizational problems**
 - Outdated business processes
 - Unsupportive culture and attitudes
 - Political in-fighting
 - Turbulent business environment, change
 - Complexity of task
 - Inadequate resources



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Understanding Information Systems: A Business Problem-Solving Approach

A Model of the Problem-Solving Process

- **Typical technology problems**
 - Insufficient or aging hardware
 - Outdated software
 - Inadequate database capacity
 - Insufficient telecommunications capacity
 - Incompatibility of old systems with new technology
 - Rapid technological change



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Understanding Information Systems: A Business Problem-Solving Approach

A Model of the Problem-Solving Process

- **Typical people problems**
 - Lack of employee training
 - Difficulties of evaluating performance
 - Legal and regulatory compliance
 - Work environment, ergonomics
 - Poor or indecisive management
 - Lack of employee support and participation



A Model of the Problem-Solving Process

2. Solution design

- Often many possible solutions
- Consider as many as possible to understand range of solutions

3. Choice: Factors include

- Cost
- Feasibility given resources and skills
- Length of time needed to implement solution



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Understanding Information Systems: A Business Problem-Solving Approach

A Model of the Problem-Solving Process

4. Implementation

- Building or purchasing solution
 - Testing solution, employee training
 - Change management
 - Measurement of outcomes
 - Feedback, evaluation of solution
- **Problem solving is a continuous process, not a single event**
 - Sometimes chosen solution doesn't work or needs adjustment



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Understanding Information Systems: A Business Problem-Solving Approach

Problem Solving Is a Continuous Four-Step Process

During implementation and thereafter, the outcome must be continually measured and the information about how well the solution is working is fed back to the problem solvers. In this way, the identification of the problem can change over time, solutions can be changed, and new choices made, all based on experience.

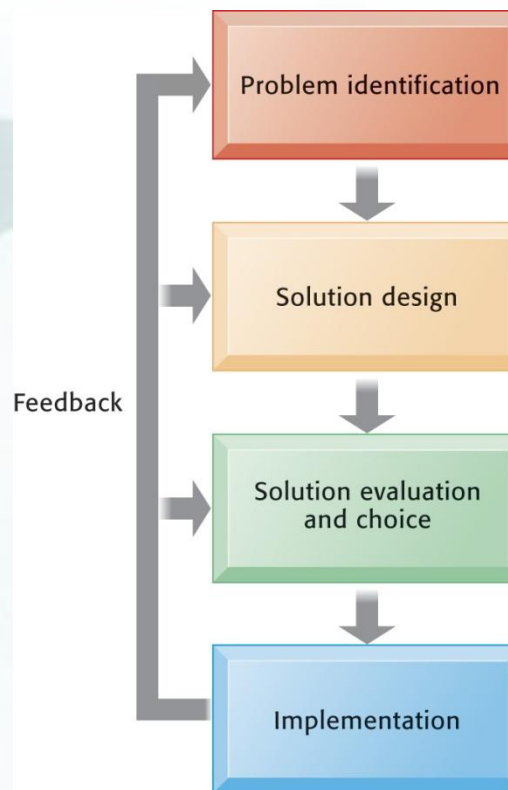


Figure 1-4



The Role of Critical Thinking in Problem Solving

- **Without critical thinking, easy to jump to conclusions, misjudge a problem, and waste resources**
- **Critical thinking:**
 - Sustained suspension of judgment with an awareness of multiple perspectives and alternatives



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Understanding Information Systems: A Business Problem-Solving Approach

The Role of Critical Thinking in Problem Solving

- **Four elements of critical thinking:**
 1. **Maintaining doubt and suspending judgment**
 2. **Being aware of different perspectives**
 - Including technology, organization, and people perspectives
 3. **Testing alternatives and letting experience guide**
 4. **Being aware of organizational and personal limitations**



The Connection Between Business Objectives, Problems, and Solutions

- **When firms cannot achieve business objectives these objectives become challenges.**
- **Information systems often present solutions, partially or fully, to these challenges.**



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Information Systems and Your Career

- **Success in today's job market requires a broad set of skills.**
- **Job candidates must have problem-solving skills as well as technical skills so that they can complete specific tasks.**
- **The service sector will account for 95 percent of the new jobs that are created or open up by 2012**



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Information Systems and Your Career

How Information Systems Will Affect Business Careers

- **Accounting:**

- Accountants increasingly rely on information systems to summarize transactions, create financial records, organize data, and perform financial analysis.

- **Skills:**

- Knowledge of databases and networks
- Online financial transactions and reporting systems
- How systems are used to achieve accounting functions



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Information Systems and Your Career

How Information Systems Will Affect Business Careers

- **Finance:**

- Relationship between information systems and financial management and services is so strong that many advise finance majors to co-major in information systems.

- **Skills:**

- Use systems for financial reporting, direct investment activities, implement cash management strategies
- Plan, organize, implement information systems strategies for the firm



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Information Systems and Your Career

How Information Systems Will Affect Business Careers

- **Marketing:**

- No field has undergone more technology-driven change in the past five years than marketing and advertising.

- **Skills:**

- Work with databases for tracking and reporting on customer behavior, product performance, customer feedback, product development
- Enterprise systems for product management, sales force management, customer relationship management



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Information Systems and Your Career

How Information Systems Will Affect Business Careers

- **Operations management in services and manufacturing:**
 - Production managers, administrative service managers, and operations analysts
 - **Skills:**
 - Hardware and software platforms for operations management
 - Use database and analytical software for coordinating and optimizing resources required for producing goods and services



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Information Systems and Your Career

How Information Systems Will Affect Business Careers

- **Management:**

- The job of management has been transformed by information systems.
- Impossible to manage business today without information systems.

- **Skills:**

- Use of information systems for each function of job, from desktop productivity tools to applications coordinating the entire enterprise



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Information Systems and Your Career



The job of management requires extensive use of information systems to support decision making and to monitor the performance of the firm.



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Information Systems and Your Career

How Information Systems Will Affect Business Careers

- **Information systems:**

- Fast changing and dynamic profession because information technologies are among most important tools for achieving business firms' key objectives

- Domestic and offshore outsourcing

- **Skills:**

- Uses of new and emerging hardware and software to achieve six business objectives
- An ability to take a leadership role in the design and implementation of new information systems



How Information Systems Will Affect Business Careers

- **Common requirements**
 - **How IT helps achieve six business objectives**
 - **Central role of databases**
 - **Business analytics and intelligence systems**
 - **Working with specialists and systems designers**
 - **Ethical, social, legal environment and issues**
 - **Use of IT to meet legal requirements**



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