CHAPTER 1

Introduction to Information Systems

1. Why Should I Study Information Systems?
2. Overview of Computer-Based Information Systems
3. How Does IT Impact Organizations?
4. Importance of Information Systems to Society

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1. Identify the reasons why being an informed user of information systems is important in today's world.
2. Describe the various types of computer-based information systems in an organization.
3. Discuss ways in which information technology can affect managers and non-managerial workers.

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4. Identify positive and negative societal effects of the increased use of information technology.

1.1 Why Should I Study Information Systems

- The Informed User – You!
- IT Offers Career Opportunities
- Managing Information Resources

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Reasons Why You Should Be An Informed User…

1. You will benefit more from your organization's IT applications because you will understand what is "behind" those applications.
2. Your input can enhance your organization's IT applications.
3. As you enter the workforce you can assist in selecting the IT applications your organization will use.

Reasons Why You Should Be An Informed User (con't)…

4. You will aware of both new information technologies and rapid developments in existing technologies.
5. You will understand how using IT can improve your organization's performance.
6. If you are entrepreneurial minded, you can use IT to start your own business.

IT Offers Career Opportunities


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- Chief Information Officer (CIO)
- Substantial Demand for IT Staff
  - Programmers
  - Business Analysts
  - System Analysts
  - Designers

Managing Information Resources

- Managing information systems (IS) is difficult and complex
- Contributing Factors:
  - Strategic value of IS's
  - Acquiring, operating, and maintaining IS's is very expensive
  - Evolution of the IS Function

1.2 Overview of Computer-Based IS's

- Data – Information – Knowledge
- Computer-Based Information System (CBIS)
- Types of Computer-Based Information Systems (CBIS)

Data – Information – Knowledge

- **Data items** refer to an elementary description of things, events, activities, and transactions that are recorded, classified, and stored but are not organized to convey any specific meaning.
- Data items can be numbers, letters, figures, sounds, and images.
- Examples of data items are collections of numbers (e.g., 3.11, 2.96, 3.95, 1.99, 2.08) and characters (e.g., B, A, C, A, B, D, F, C)

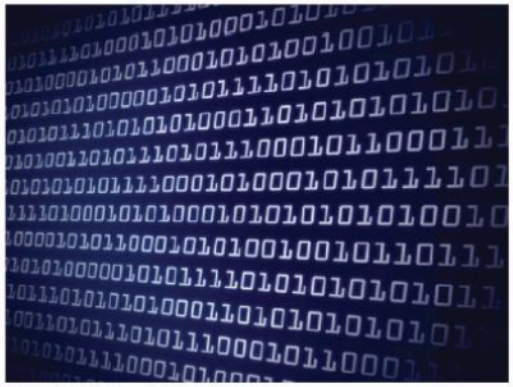
Information

- **Information** refers to data that have been organized so that they have meaning and value to the recipient.
- For example, a grade point average (GPA) by itself is data, but a student's name coupled with his or her GPA is information. The recipient interprets the meaning and draws conclusions and implications from the information

Knowledge

- **Knowledge** consists of data and/or information that have been organized and processed to convey understanding, experience, accumulated learning, and expertise as they apply to a current business problem.
- For example, suppose that a company recruiting at your college has found over time that students with grade point averages over 6.0 have experienced the greatest success in its management program.
- Based on this accumulated knowledge, that company may decide to interview only those students with GPAs over 6.0.

Data – Information – Knowledge



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Data

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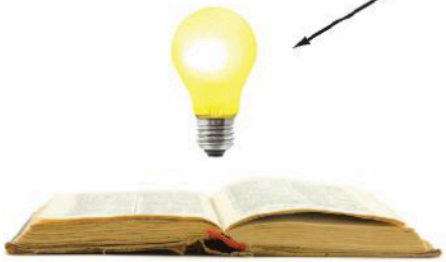
Information



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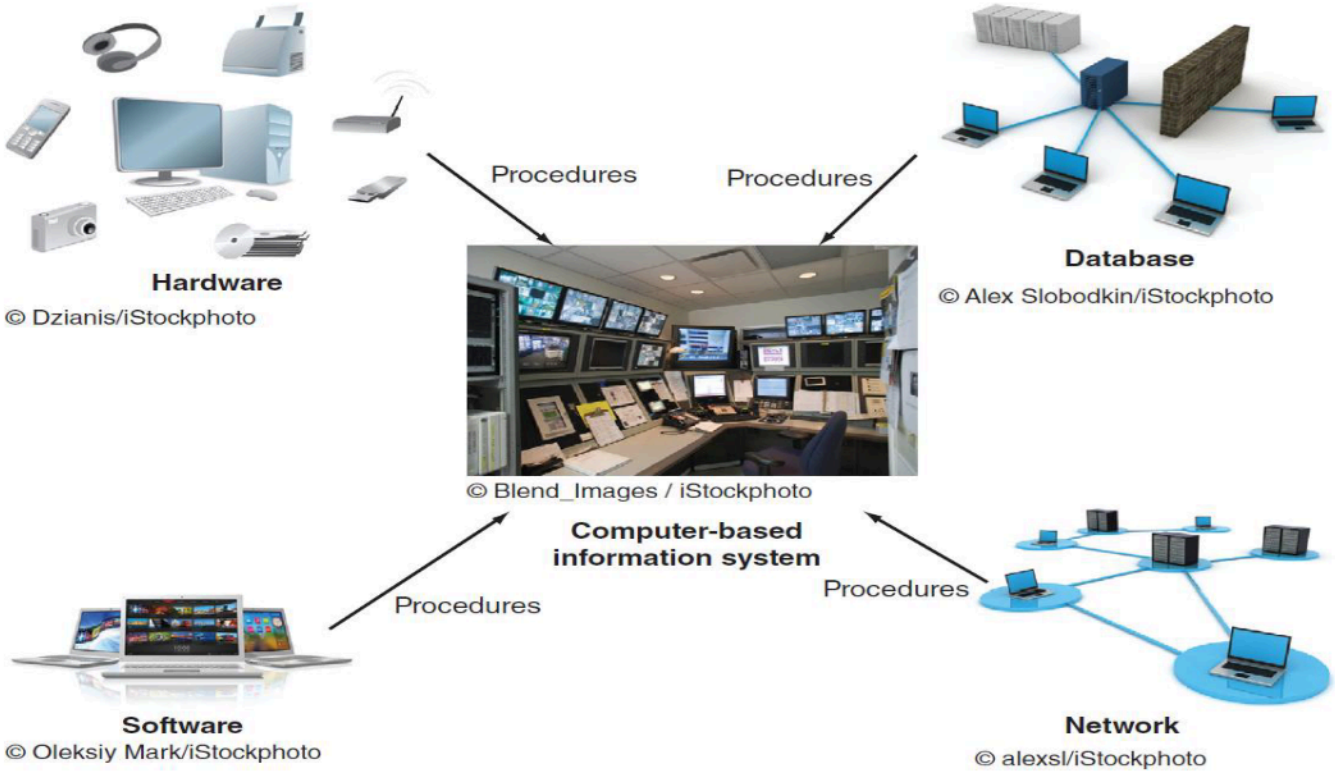
Knowledge

Computer-Based Information Systems (CBIS)

A **computer-based information system (CBIS)** is an information system that uses computer technology to perform some or all of its intended tasks. For this reason the term “information system” is typically use synonymously with “computer-based information system”



Components of a CBIS

- Hardware
- Software
- Database
- Network
- Procedures
- People

Components interact to form a CBIS.

Hardware consists of devices such as the processor, monitor, keyboard, and printer. Together, these devices accept, process, and display data and information.

Software is a program or collection of programs that enable the hardware to process data.

A **database** is a collection of related files or tables containing data.

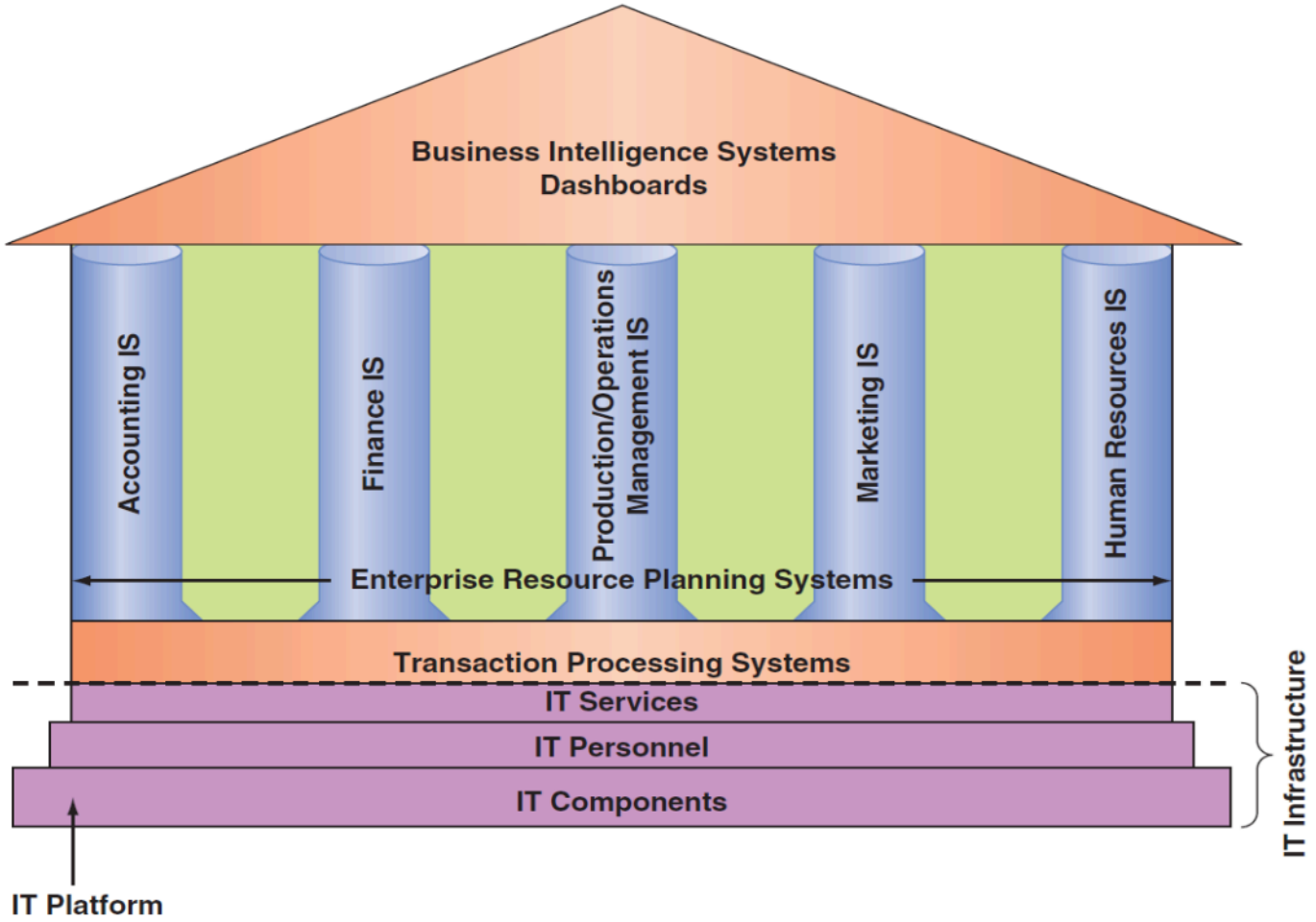
A **network** is a connecting system (wireline or wireless) that permits different computers to share resources.

Procedures are the instructions for combining the above components to process information and generate the desired output.

People are those individuals who use the hardware and software, interface with it, or utilize its output.

Computer-Based Information Systems (CBIS)

Figure illustrates how these components are integrated to form the wide variety of information systems found within an organization.



IT Components: Hardware, Software, a database, a network, procedures, and people.

IT Services: IT Personnel use IT Components to develop IS's, oversee security & risk, and manage data.

IT Infrastructure: The IT components and IT services.

Application: A program designed to support a specific task or business process.

Functional Area Information Systems (FAIS) : a collection of application programs in a single department or functional area.

Types of Computer Based Information Systems (CBIS)

- Breadth of Support for Information Systems (IS),
- Support for Organizational Employees

Organizational Level	Type of Support System	Purpose
Top Management	Executive Information Systems (EIS)	Strategic decision-making
Middle Management	Management Information Systems (MIS), Decision Support Systems (DSS)	Tactical planning & performance monitoring
Knowledge Workers	Knowledge Management Systems (KMS), Office Automation Systems (OAS)	Create/manage info and processes
Operational Managers	Transaction Processing Systems (TPS), MIS	Monitor/control operational activities
Operational Employees	TPS, Office Tools	Day-to-day transactions, record-keeping

🏢 Support for Organizational Employees (by Level):

Breadth of Support for Information Systems (IS)

- Functional Area Information Systems (FAIS)
- Enterprise Resource Planning Systems (ERP)
- Transaction Processing Systems (TPS)
- Interorganizational Information Systems (IOS)
- E-Commerce Systems

Breadth of Support for Information Systems (IS)

Functional Area Information Systems (FAIS) : a collection of application programs in a single department or functional area.
Enterprise Resource Planning (ERP): systems are designed to correct a lack of communication among the functional area IS.
Transaction Processing System (TPS): systems that support the monitoring, collection, storage, and processing of data from the organization's basic business transactions, each of which generates data.
Interorganizational Information systems (IOSs): Information systems that connect two or more organizations.
Electronic Commerce (e-commerce) Systems: an interorganizational information system that enable organizations to conduct transactions, called business-to-business (B2B) electronic commerce, and customers to conduct transactions with businesses, called business-to-consumer (B2C) electronic commerce.

Figure 1.5: IS that function among multiple organizations

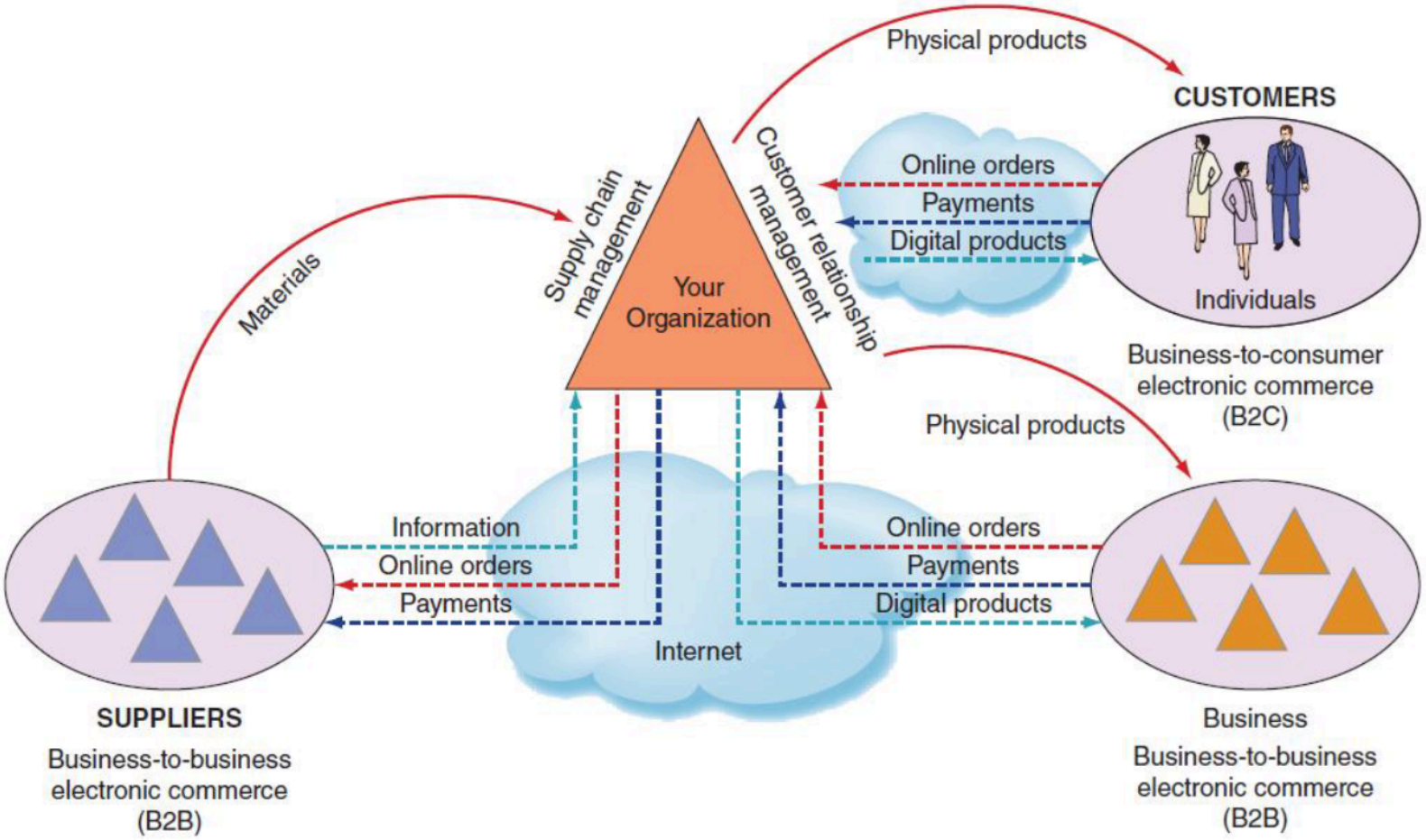


Figure 1.5 Information systems that function among multiple organizations.

Support for Organizational Employees

- Knowledge Workers
- Office Automation Systems (OASs)
- Business Intelligence (BI) Systems
- Expert Systems (ES)
- Dashboards

Support for Organizational Employees

Knowledge Workers: professional employees that are experts in a particular subject area (e.g., financial and marketing analysts, engineers, lawyers, and accountants.).

Office Automation Systems (OASs): typically support the clerical staff, lower and middle managers, and knowledge workers (e.g., word processing and desktop publishing software).

Business Intelligence (BI) Systems: systems that provide computer-based support for complex, nonroutine decisions, primarily for middle managers and knowledge workers.

Expert Systems (ES): systems that attempt to duplicate the work of human experts by applying reasoning capabilities, knowledge, and expertise within a specific domain.

Dashboards: a special form of IS that support all managers of the organization by providing rapid access to timely information and direct access to structured information in the form of reports.

1.3 How Does IT Impact Organizations?

- IT Reduces the Number of Middle Managers
- IT Change's the Manager's Job
- Will IT Eliminate Jobs?
- IT Impacts Employees at Work

IT Reduces the Number of Middle Managers

- IT makes managers more productive, and it increases the number of employees who can report to a single manager. Thus, IT ultimately decreases the number of managers and experts.

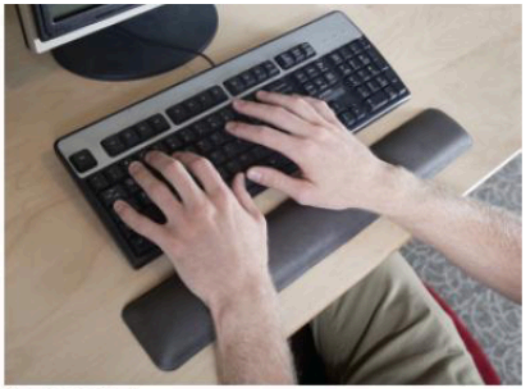
IT Changes the Manager's Job

- One of the most important tasks of managers is making decisions. A major consequence of IT has been to change the manner in which managers make their decisions. In this way, IT ultimately has changed managers' jobs.

IT Impacts Employees at Work

- IT Impacts Employees' Health and Safety
- IT Provides Opportunities for People with Disabilities

Figure 1.6: Ergonomic products protect computer users.



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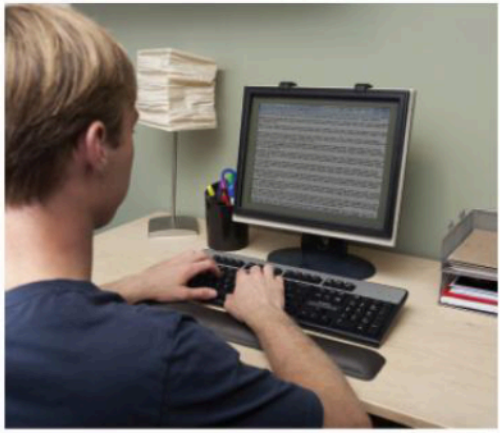

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1.4 Importance of IS to Society

- IT Affects Our Quality of Life
- The Robot Revolution is Here Now
- Improvements in Healthcare

IT Affects Our Quality of Life

- IT has significant implications for our quality of life. The workplace can be expanded from the traditional 9-to-5 job at a central location to 24 hours a day at any location. IT can provide employees with flexibility that can significantly improve the quality of leisure time, even if it doesn't increase the total amount of leisure time.

Organizational Responses

- Strategic Systems
- Customer Focus
- Make-to-Order and Mass Customization
- E-Business and E-Commerce

Competitive Advantage and Strategic IS's

Definition: An edge a company has over its rivals that allows it to generate greater sales, margins, or retain more customers.

Sources of Competitive Advantage:

- **Cost Leadership:** Offering the lowest cost.
- **Differentiation:** Offering unique value.
- **Focus/Niche:** Targeting a specific market segment.

Porter's Five Forces & IS

How IS impacts competition using Michael Porter's model:

- **Threat of new entrants:** High tech infrastructure creates barriers.
- **Bargaining power of buyers:** IS gives better customer understanding.
- **Bargaining power of suppliers:** Supply chain automation improves control.
- **Threat of substitutes:** IS fosters innovation & new service models.
- **Rivalry among competitors:** Real-time analytics offers a performance edge.