Chapter 1

Information Systems: Concepts and Management
Chapter Outline

- Information Systems: Concepts and Definitions
- Types of Information Systems
- Examples of Information Systems
- Managing Information Resources
Learning Objectives

- Differentiate among data, information and knowledge.
- Differentiate between information technology infrastructure and information technology architecture.
- Describe the components of computer-based information systems.
Learning Objectives (Continued)

- Describe the various types of information systems by breadth of support.
- Identify the major information systems that support each organizational level.
- Describe how information resources are managed and identify the roles of the information systems department and the end users.
Why study Information Systems and Information Technology?

- Vital component of successful businesses
- Helps businesses expand and compete

- Businesses use IS and IT
  - To improve efficiency and effectiveness of business processes
  - For managerial decision making
  - For workgroup collaboration
IT budget in Indonesian Business


- PT. AAM (distributor obat), mengeluarkan Rp1,08 miliar untuk mengembangkan InfoStep, software untuk memonitor operasional harian dan perencanaan strategis.
IT Budget Trend (Indonesia)

- 2006: US$2,731,30 juta
- 2007: US$2,996,62 juta
- 2008: US$3,368,25 juta
- 2009: US$3,756,86 juta
What does IS do for a business?
Business Applications expanding role over time

- **Electronic Business and Commerce: 1990s–2000s**
  - Internet-based e-business and e-commerce systems
  - Web-enabled enterprise and global e-business operations and electronic commerce on the Internet, intranets, extranets, and other networks

- **Strategic and End User Support: 1980s–1990s**
  - End user computing systems
    - Direct computing support for end user productivity and workgroup collaboration
  - Executive information systems
    - Critical information for top management
  - Expert systems
    - Knowledge-based expert advice for end users
  - Strategic information systems
    - Strategic products and services for competitive advantage

- **Decision Support: 1970s–1980s**
  - Decision support systems
    - Interactive ad hoc support of the managerial decision-making process

- **Management Reporting: 1960s–1970s**
  - Management information systems
    - Management reports of prespecified information to support decision making

- **Data Processing: 1950s–1960s**
  - Electronic data processing systems
    - Transaction processing, record-keeping, and traditional accounting applications
Information Systems: Concepts and Definitions

- **Data Item.** Elementary description of things, events, activities and transactions that are recorded, classified and stored but are not organized to convey any specific meaning.

- **Information.** Data organized so that they have meaning and value to the recipient.

- **Knowledge.** Data and/or information organized and processed to convey understanding, experience, accumulated learning and expertise as they apply to a current problem or activity.
Information Systems

- **Information System (IS).** Collects, processes, stores, analyzes and disseminates information for a specific purpose.

- **Computer-based Information System (CBIS).** An information system that uses computer technology to perform some or all of its intended tasks.
Information systems model
Basic Components of Information Systems

- **Hardware** is a device such as a processor, monitor, keyboard or printer.
- **Software** is a program or collection of programs that enable hardware to process data.
- **Database** is a collection of related files or tables containing data.
Basic Components of Information Systems (Continued)

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

- **Procedures** are the set of instructions about how to combine the above components in order to process information and generate the desired output.

- **People** are those individuals who use the hardware and software, interface with it, or uses its output.
Types of IS
Types of Information Systems

Information Systems that support specific functional areas and operations include:

- Functional Area Information System
- Transaction Processing System (TPS)
- Enterprise Resource Planning (ERP) System
- Interorganizational Information System
- Electronic Commerce Systems
Types of Information Systems (Continued)

- **Functional area information systems** or departmental information systems
  - Function: Support the activities within specific functional areas.
  - Example: System for processing payroll.
Types of Information Systems (Continued)

- **Transaction processing system (TPS)**
  
  - Function: Process transaction data from business events.
  
  - Example: Walmart checkout point-of-sale terminal.

- **Enterprise Resource Planning System (ERP)**
  
  - Function: Integrate all functional areas of the organization.
  
  - Example: Oracle, SAP
Types of Information Systems (Continued)

- **Interorganizational information systems (IOS)** are information systems that connect two or more organizations and support interorganizational operations such as supply chain management.
  
  - Function: Manage flows of products, services and information among organizations.
  
  - Example: Walmart Retail Link System connecting suppliers to Walmart.

- **Supply chain** describes the flow of materials, information, money and services from raw material suppliers through factories and warehouses to the end customers.
Types of Information Systems (Continued)

- **Electronic Commerce Systems**
  - Function: Enable transactions among organizations and between organizations and customers.
  - Business-to-Business (B2B)
  - Business-to-Consumer (B2C)
  - Example: www.dell.com
Support for Organizational Employees (Continued)

- **Office Automation System (OAS)**
  - **Function**: Support daily work activities of individuals and groups.
  - **Example**: Microsoft Office
  - **Support**: Clerical staff, lower and middle managers and knowledge workers.
Support for Organizational Employees (Continued)

■ Management Information System (MIS)

□ Function: Produce reports summarized from transaction data, usually in one functional area.

□ Example: Report on total sales of each customer.

□ Supports: Primarily for middle managers, sometimes for lower level managers as well.
Support for Organizational Employees (Continued)

*Decision Support System (DSS)*

- **Function**: Provide access to data and analysis tools.
- **Example**: “What if” analysis of changes in a budget.
- **Supports**: Primarily for Middle managers and knowledge workers
Support for Organizational Employees (Continued)

- **Expert System (ES)**
  - Function: Mimic human expert in a particular area and make a decision.
  - Example: Credit card approval analysis.
  - Supports: Knowledge workers
Support for Organizational Employees (Continued)

- **Executive Information System (EIS)**
  - **Function:** Present structured, summarized information about aspects of business important to executives.
  - **Example:** Status of production by product.
  - **Supports:** Top managers of the organization.
Managing Information Resources

- Which IT Resources are Managed and By Whom?
  - During the early 1950s, Information Systems Department (ISD) managed ALL of the only computing resource, the mainframe.
  - Today, computing resources are located through the organization and almost all employees use computers in their work.
  - This system is known as end user computing.
Managing Information Resources (Continued)

- The Role of the IS Department
  - The ISD is responsible for corporate-level and shared resources and for using IT to solve end users’ business problems.
  - End users are responsible for their own computing resources and departmental resources.
  - ISD and end users work together as partners to manage the IT resources.
Managing Information Resources (Continued)

- ISD has changed from a purely technical support role to a more managerial and strategic one.
- Director of ISD has changed from a technical manager to a senior executive called the chief information officer (CIO).
Traditional Major IS Functions

- Managing systems development and systems project management.
- Managing computer operations, including the computer center.
- Staffing, training and developing IS skills.
- Provide technical services.
- Infrastructure planning, development and control.
New (Consultative) IS Functions

- Initiating and designing specific strategic IS.
- Incorporating the Internet and e-commerce into the business.
- Managing system integration including the Internet, intranets and extranets.
- Educating the non-IS managers about IT
- Educating the IS staff about the business
New IS Functions (Continued)

- Supporting end user computing.
- Partnering with the executives.
- Managing outsourcing.
- Proactively using business and technical knowledge to “seed” innovative ideas about IT.
- Creating business alliances with vendors and IS departments in other organizations.
Thanks.