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

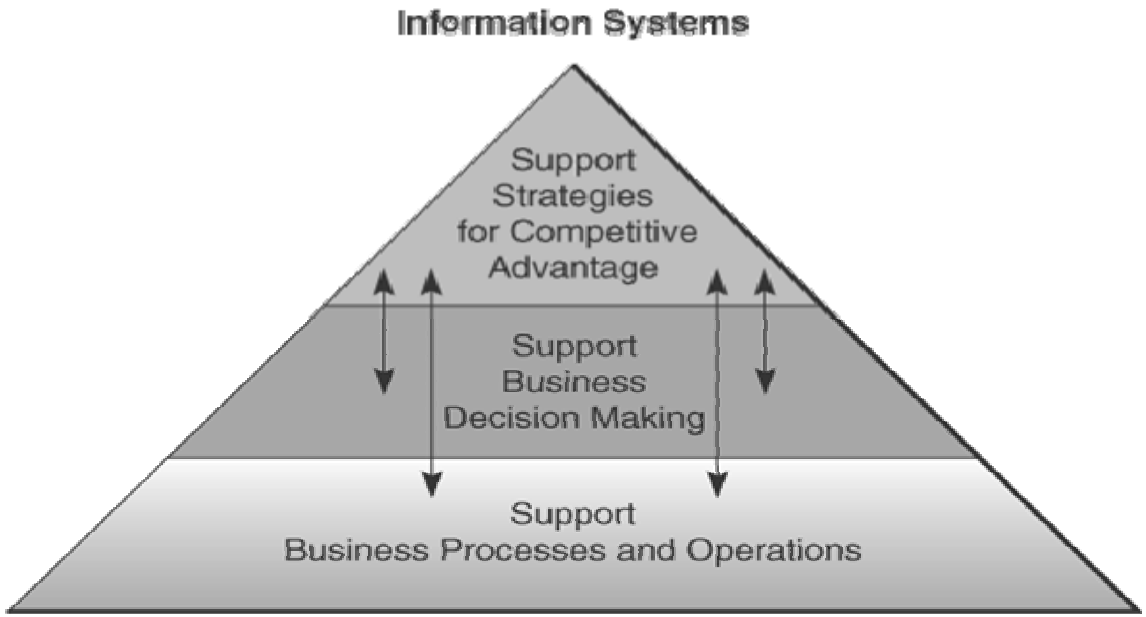
IT budget in Indonesian Business

- Bank Mandiri (2001-2003): US$200 juta, <1% dari total aset.
- >US$1 juta: Freeport Indonesia, Tiga Raksa Satria, Antam, Excelcomindo, Parit Padang, APL Indonesia.
- 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

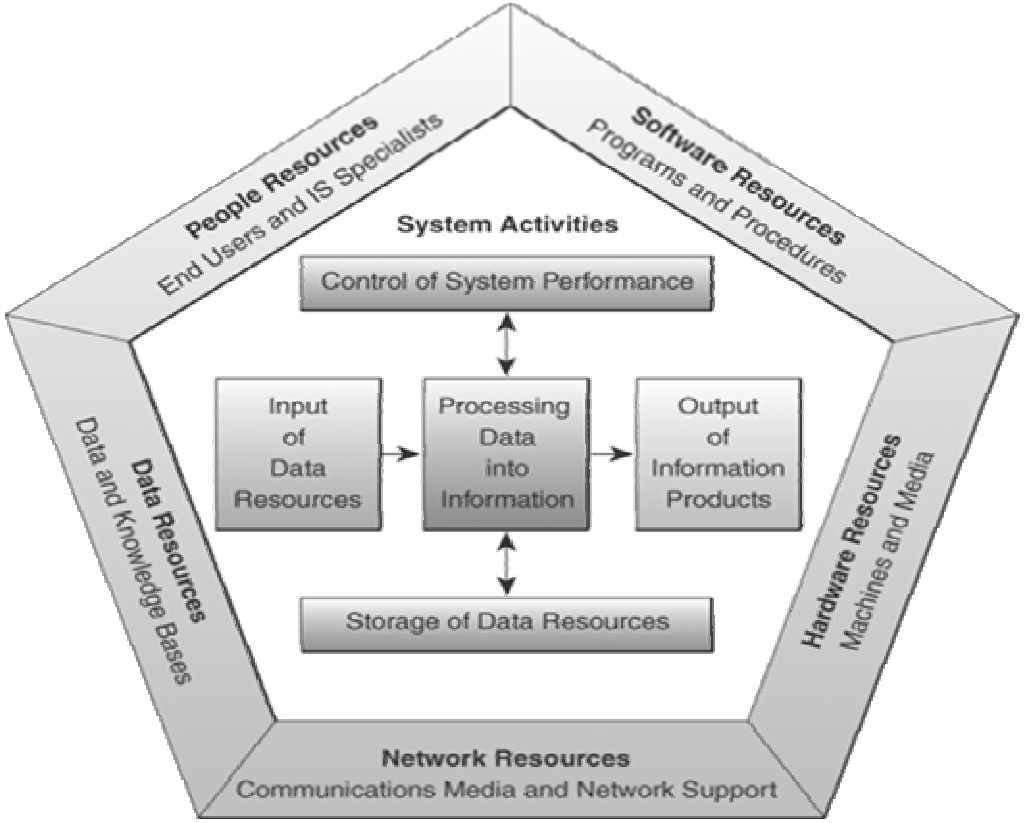
Information Systems: Concepts and Definitions

- **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



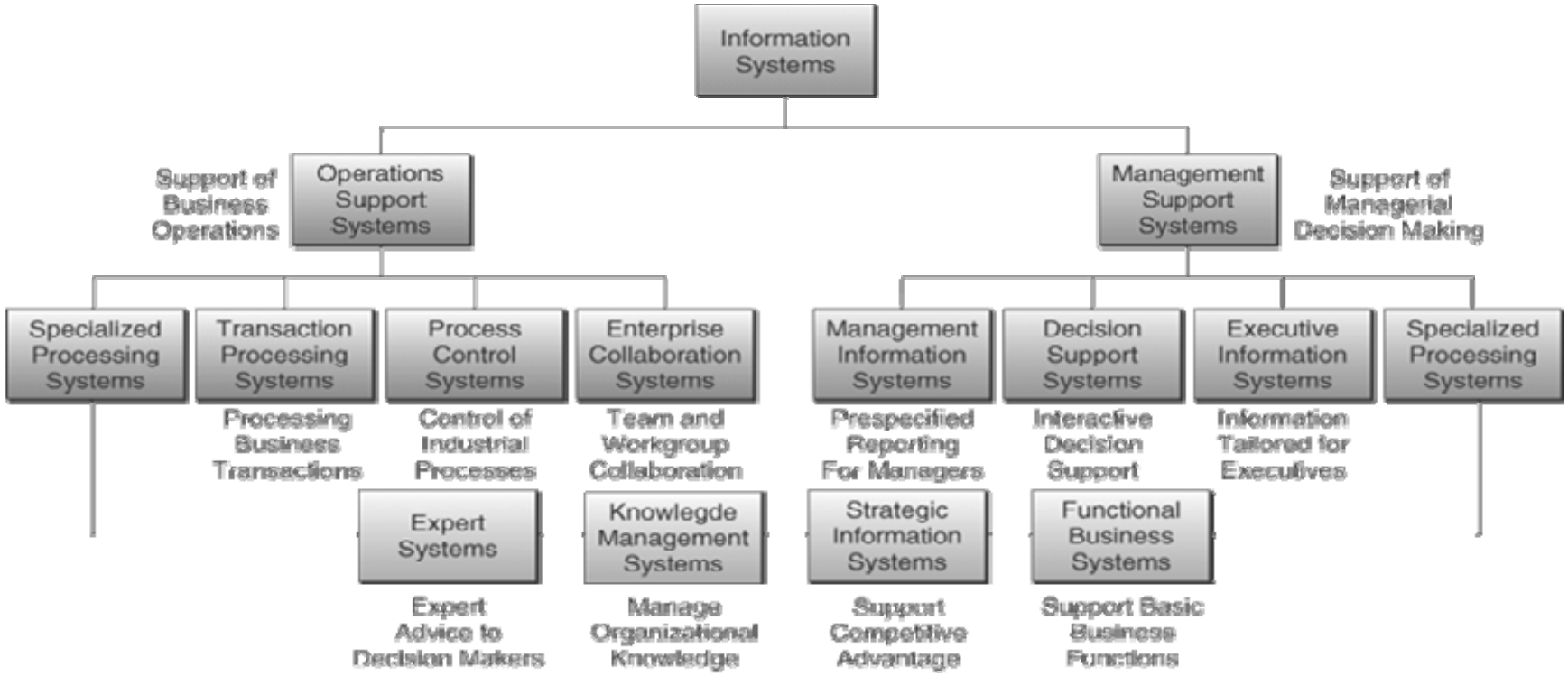
Basic Components of Information Systems

- **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.