Chapter 1 Foundations of Information Systems in Business

Foundation Concepts

- Why study information systems and information technology?
  - ☐ Vital component of successful businesses
  - ☐ Helps businesses expand and compete
  - ☐ Improves efficiency and effectiveness of business processes
  - ☐ Facilitates managerial decision making and workgroup collaboration

What is a System?

- A set of interrelated components
- With a clearly defined boundary
- Working together
- To achieve a common set of objectives

What is a System?

- A system is…
  - ☐ A set of interrelated components
  - ☐ With a clearly defined boundary
  - ☐ Working together
  - ☐ To achieve a common set of objectives
  - ☐ By accepting inputs and producing outputs
 - ☐ In an organized transformation process

Basic Functions of a System

- Input
  - Capturing and assembling elements that enter the system to be processed
- Processing
  - Transformation process that converts input into output
- Output
  - Transferring transformed elements to their ultimate destination

Cybernetic System

- All systems have *input*, *processing*, and *output*
- A **cybernetic system**, a self-monitoring, self-regulating system, adds feedback and control:
  - **Feedback** is data about the performance of a system
  - **Control** involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal

A Business as a System

Stakeholders in the Business Environment
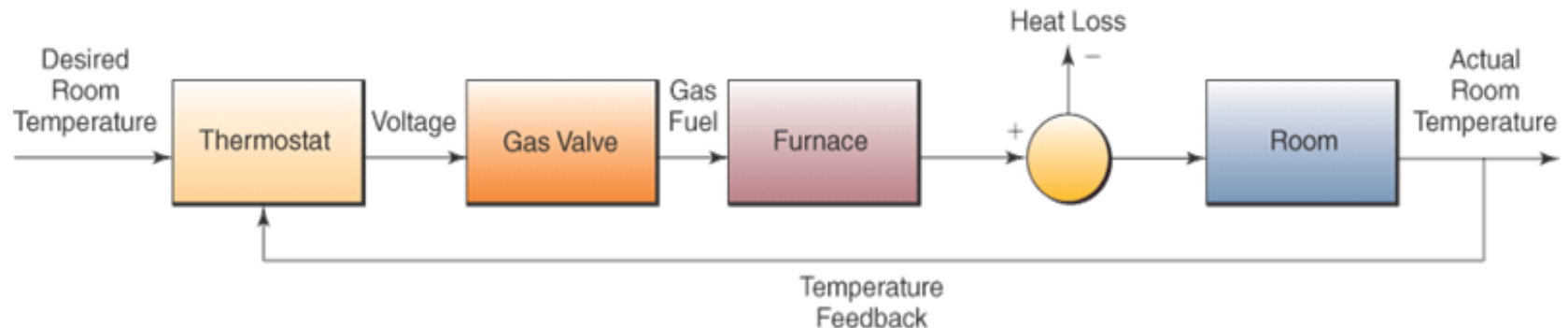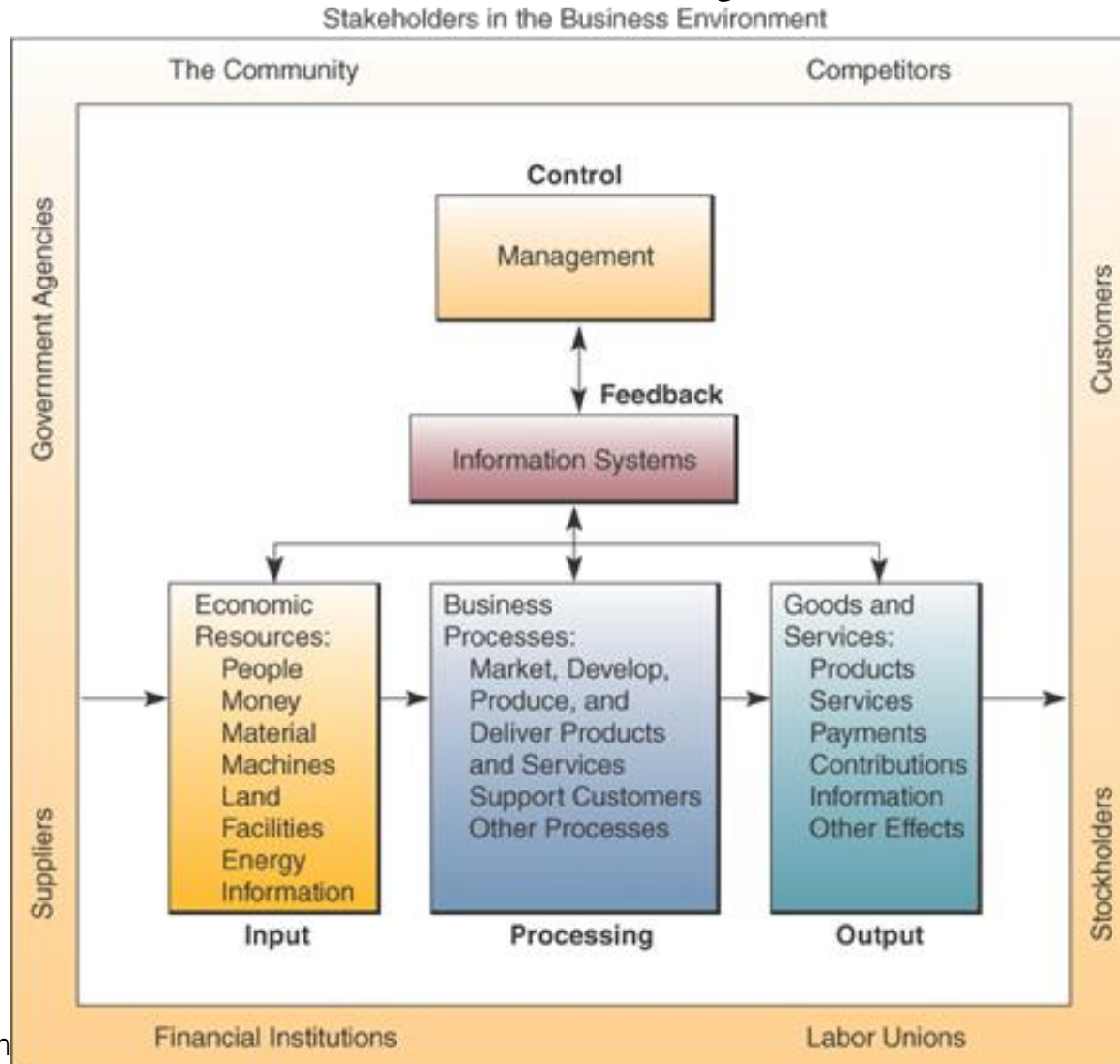
Other System Characteristics

- If a system is one of the components of a larger system, it is a **subsystem**
  - ☐ The larger system is an **environment**
- Several systems may share the same environment
  - ☐ Some may be connected via a shared boundary, or **interface**
- Types of systems…
  - ☐ Open
  - ☐ Adaptive

What is an Information System?

- An organized combination of…
  - ☐ People
  - ☐ Hardware and software
  - ☐ Communication networks
  - ☐ Data resources
  - ☐ Policies and procedures
- This system…
  - ☐ Stores, retrieves, transforms, and disseminates information in an organization

Information Technologies

- Information Systems
  - □ All the components and resources necessary to deliver information and functions to the organization
  - □ Could be paper based
- Information Technologies
  - □ Hardware, software, networking, data management
- Our focus will be on computer-based information systems (CBIS)

Components of an IS

System Activities

Control of System Performance

| Input of Data Resources | Processing Data into Information | Output of Information Products |

Storage of Data Resources

People Resources
End Users and IS Specialists

Software Resources
Programs and Procedures

Data Resources
Data and Knowledge Bases

Hardware Resources
Machines and Media

Network Resources
Communications Media and Network Support

Information System Resources

- People Resources
    - Specialists
    - End users
- Hardware Resources
    - Machines
    - Media
- Software Resources
    - Programs
    - Procedures
- Data Resources
    - Product descriptions, customer records, employee files, inventory databases
- Network Resources
    - Communications media, communications processors, network access and control software
- Information Resources
    - Management reports and business documents using text and graphics displays, audio responses, and paper forms

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Data Versus Information

- **Data** are raw facts about physical phenomena or business transactions
- **Information** is data that has been converted into meaningful and useful context for end users
- Example:
  - Sales data is names, quantities, and dollar amounts
  - Sales information is amount of sales by product type, sales territory, or salesperson

IS Activities

- **Input** of data resources
  - ☐ Data entry activities
- **Processing** of data into information
  - ☐ Calculations, comparisons, sorting, and so on
- **Output** of information products
  - ☐ Messages, reports, forms, graphic images
- **Storage** of data resources
  - ☐ Data elements and databases
- **Control** of system performance
  - ☐ Monitoring and evaluating feedback

Recognizing IS

- Business professionals should be able to look at an information system and identify…
    - ☐ The people, hardware, software, data, and network resources they use
    - ☐ The type of information products they produce
    - ☐ The way they perform input, processing, output, storage, and control activities

Information System Framework for Business Professionals
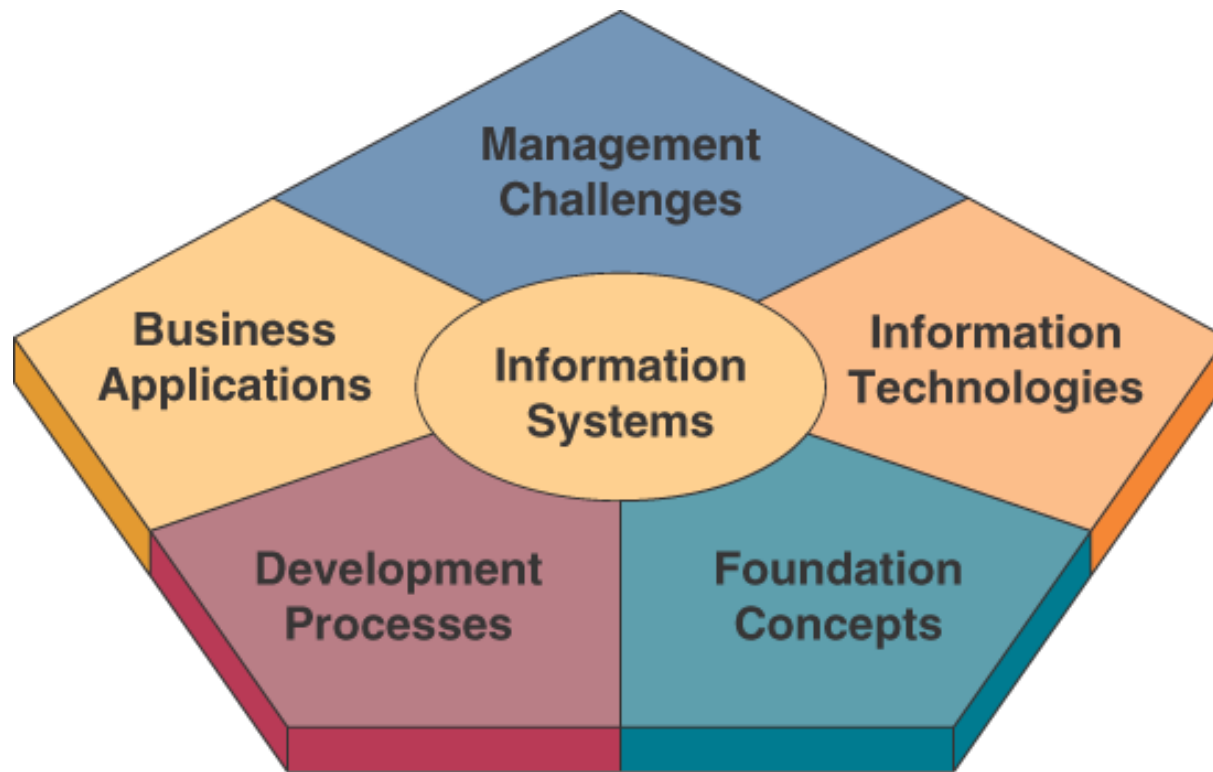
IS Framework

- **1.Foundation Concepts:-**

  Fundamental behavioral, technical, business and managerial concepts about the components and role of information system. That includes basic information systems concepts derived from general systems theory or competitive strategy concepts used to develop the business applications of information technology.

- **2.Information Technology:-**

  Major concepts, developments and Management issues in information technology that is hardware, software, network, data resource Management and many internet based complex technologies, coverage of data resource management and communications.

IS Framework

- **3.Business Applications:-**

    The major use of information system for the operations,   management ,and

    competitive advantages of a business includes electronic business commerce

    collaboration and decision making using the internet, intranet, and extranets

    used for the business process and applications.

- **4.Development Processes:-**

    How business professionals and information specialists plan develop, and

    implement information system to meet business opportunities using several

    applications development approaches.

IS Framework

- **5.Management Challenges:-**

    The challenges of effectively and ethically managing information

technologies, strategies, and security for users ,enterprise and global and the

managerial challenges of IT fields.

Fundamental Roles of IS in Business

Information Systems

- Support Strategies for Competitive Advantage
- Support Business Decision Making
- Support Business Processes and Operations

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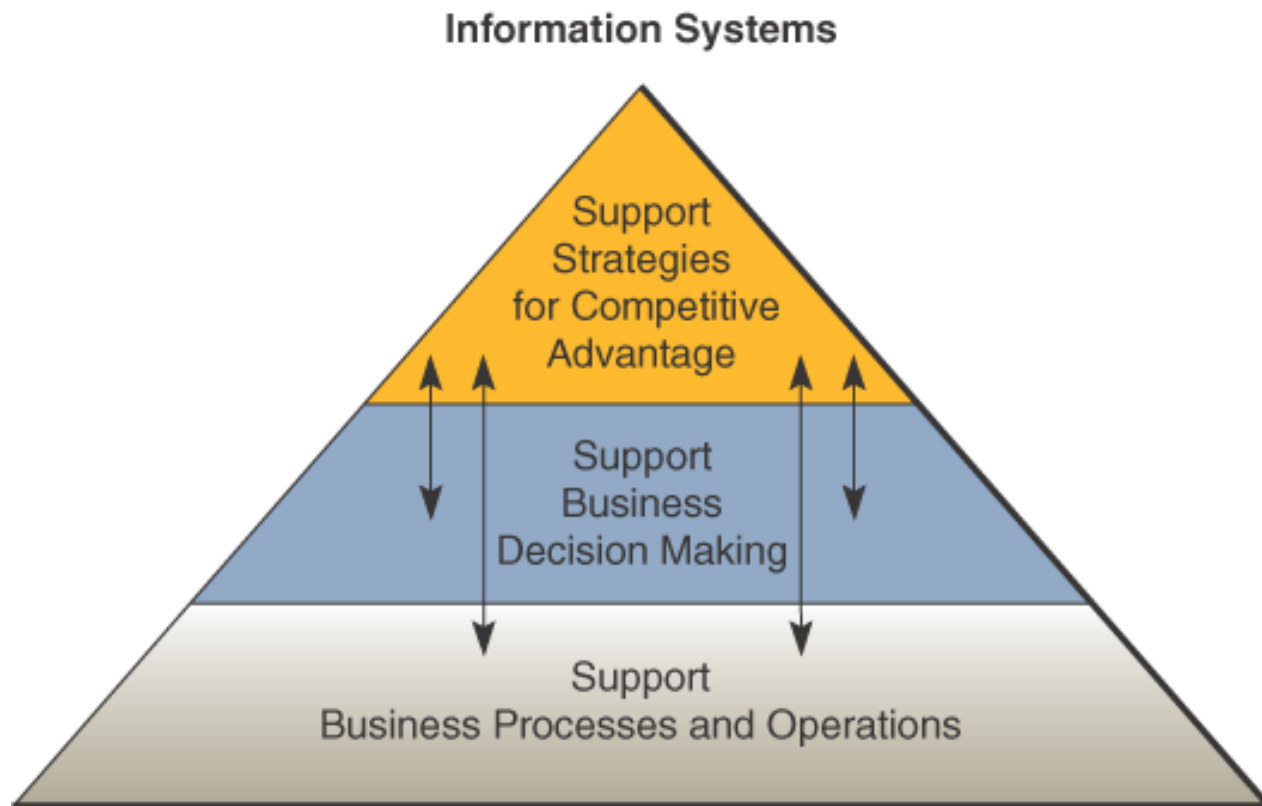
Trends in Information Systems

The Expanding Roles of IS in Business and Management

The Expanding Participation of End Users and Managers in IS

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

Decison 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

Types of IS – Operations Support

- **Trans action processing system**:-   An important operating support system that process data resulting from business transactions, update operational data base documentations for business, example-Sales record , Accounts and inventory processing etc.,

- **Process Control System**:- Monitor and control over all physical process for example petroleum refinery uses electronic sensors linked to computer to continuously monitor the chemical process and make instant real time adjustment that control refinery process.

- **Enterprise collaboration system**s:-   It means support team, work group, and enterprise communication and collaborations for example using of e-mail, chat, and video conferencing for the business purposes.
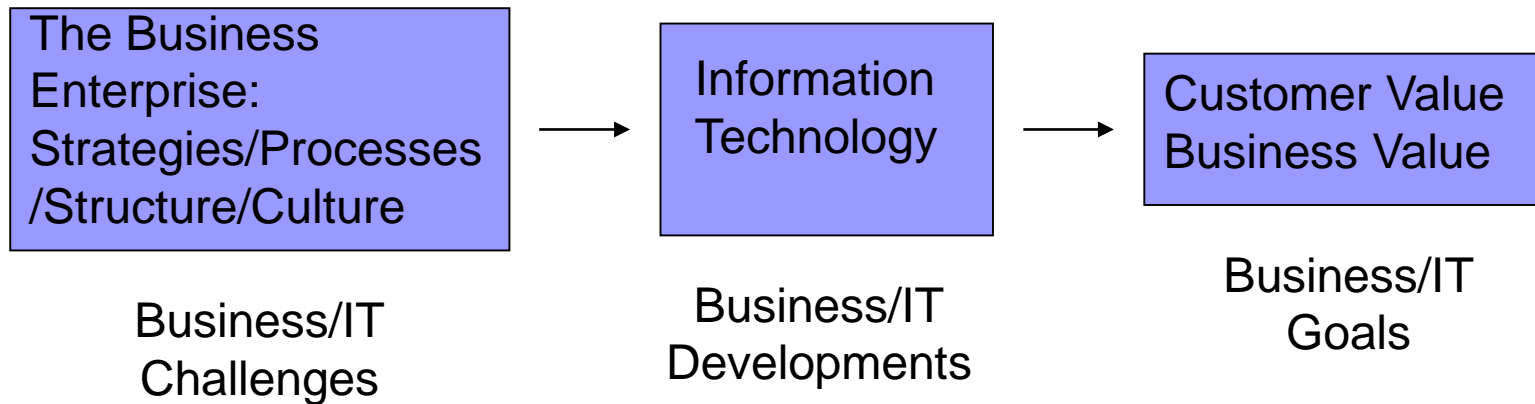
Types of IS – Management Support

- **Management support system:-**

- **Management Information system :-**   provides information in the form of reports , and displays to support business decision making Ex:- Sales analysis report, Production performance report like time sheet, work load scheduling etc.,

- **Decision Support system:-**   it provides inter active ad hoc support for the decision making process of managers and other business professionals.Example:- Product Pricing and profitability forecasting.

Types of IS – Management Support

- **Executive information system:-** It provides information for critical decisions from various sources tailored to the information needed for executives ex:- Easy analyze and access of business performances, actions of competitors, and economic support to strategic planning.

Managerial Challenges Of Information Technology

The Business Enterprise: Strategies/Processes /Structure/Culture	→	Information Technology	→	Customer Value Business Value
Business/IT Challenges		Business/IT Developments		Business/IT Goals

Managerial Challenges Of Information Technology (continued)

Business/IT Challenges	Business/IT Developments	Business/IT Goals
•Speed and flexibility requirements of product development, manufacturing, and delivery cycles,	* Use of the internet, intranets, extranets, and the WEB	•Give customers what they want, when and how they want it, at the lowest cost
•Integration of e business and e commerce into the organization's strategies, process, structure, and culture		• Coordination of manufacturing and business process with suppliers and customers

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Developing Information System (IS) Solutions