كلية المنصور الجامعة

Al – Mansour University College

Computer Science and Information System Department

4th Stage / Information System

Course 1

Management Information System

Lecture_06

Information and System Concepts(Count.)

By

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3.4 Fundamental Information System Concepts

- That Computer networks are systems of information processingcomponents.
- That Business uses of Computer networks are reallyinterconnectedbusiness information systems.
- That developing ways to use computer networks in business includesdesigning the basic components of information systems.
- That managing information technologyemphasizes the quality, businessvalue, and security of an organization's information systems.

Definition of system : System is a group of interrelated components working together toward a commongoal by accepting input and producing outputs in an organized transformationprocess.System has three basic interacting components or Functions:

1- **Input:** InputInvolvescapturing and assembling elements that enter the system to beprocessed.For ex. Raw materials, energy, data, and human effort must besecured and organized for processing.

2- **Processing :** Processinginvolves transformation processes that convert into output. Ex:manufacturing process, the human breathing process or mathematicalcalculations.

3- **Output :** Outputinvolves transferring elementsthat have beenproduced by atransformation process to their ultimate destination. E.g. finished products,human services, and management information must be transmitted to their human users.

3.5 Systems Approach

- a. Identify & establish the objective of the system
- b. Consider the totality of its relationships with its environment
- c. Can not ignore the importance of the environment internal or external
- d. Identify its components and their interactions.
- examples:

  1. Human Resources
     - skills inventory system
     - managerial promotion system
     - should they be separate or linked?

  2. brokerage house
     - central client or
     - individual broker system

  3. A TPS that has a very long response time

3.6 Classifications of Systems

a. Natural and Artificial

- Natural
  - Occur in nature without human intervention
  - Biological systems- immune systems, digestive
- Artificial
  - Human made or modified
  - Information systems, stereo
  - What about the immune system?
  - Artificial systems are measured

- Effectiveness: the extend to which a systems achieves its objectives
- Efficiency: consumption of inputs relative to outputs
- Usability: the ability of the uses to use the system
- Satisfaction: A subjective measure of "like" or usability or effectiveness.

b. Deterministic versus probabilistic

- deterministic: The interaction between the parts or subsystems is known for certain;
  - example: a computer program which performs exactly to a set of instructions.
- probabilistic: A system that can be described in terms of probable behavior (a certain degree of error).

c. Closed and open systems:

- Closed system: self contained, one that does not exchange material, information, or energy with its environment.
- Examples:
  - A freshman in an 8:00 AM class;
  - A chemical reaction in a sealed, insulated container.

- Relatively closed systems: in organizations and in information processing, there are systems that are relatively isolated from the environment, but are not completely closed, these will be considered closed systems.
- Examples:
  - a pre 1990 manufacturing system
  - a computer program with well defined inputs, a process and an output (No agents)
- Open Systems: exchange information, material, or energy with the environment, including random and undefined inputs.
- Examples:
  - Biological Systems, and Organizational Systems
- Open systems tend to have form and structure
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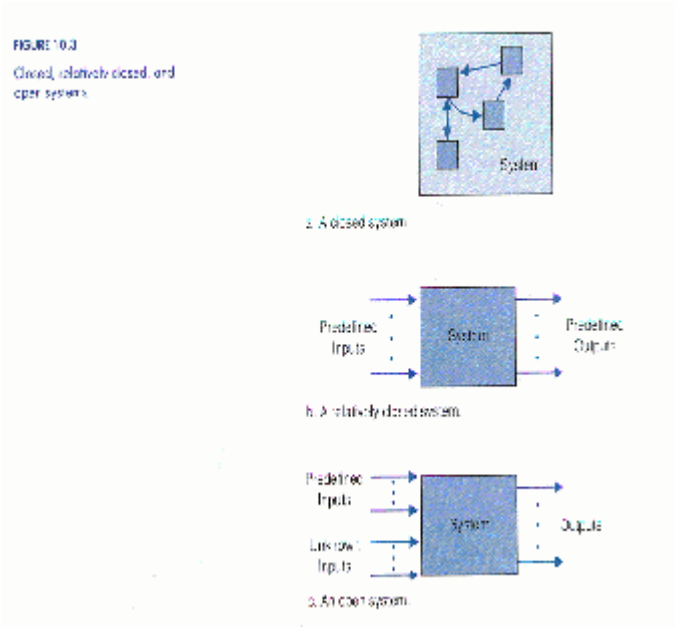

d. Human-Machine Systems: They both perform some of the activities in the accomplishment of a goal (making a decision).

- the Machine elements are - hardware and software are relatively closed and deterministic.
- the human element are open and probabilistic
  - Examples: The computer doing the computations, the human having a cup of coffee and thinking about the answers.