Computer Application And Management Information System
MB 402

UNIT V – **M**anagement **I**nformation **S**ystem (**MIS**)

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System Concepts

Period : 06 (1hr.)

Introduction

- The term System has its origin in the Greek word "*Systema*", which means *an organized relationship among functioning units or components*.

- Some of these are the Solar System, the Telephone System, the Transportation System, the Production System, the Computer System, Business Systems, Biological Systems and many more.

- Ludwig von Bertalanfly, a biologist, proposed a general system theory that applies to organisation of elements such as cells, people, societies, or even planets.

Introduction

- Norbert Wiener, a mathematician, noticed that Information and communication provided connecting links for consolidating fragments or elements.
- The most popular concept of system was proposed by Herbert A. Simon, a political scientist. He associated the system concepts with the study of organisations by considering a system as a processor of information for making decisions.
- Considering the above 3 different approaches to system, it can be concluded that the word "System" is closely associated with the word "Organization.

System and Organization

- An organisation is divided into several departments, each with a specific set of functions.
- Each department focuses on a limited area of responsibility.
- For example, the purpose of information system is to
  - process input,
  - maintain files carrying information about the organization,
  - generate information, reports and
  - other outputs.
- These in turn, support the activities of other business systems.

System and Organization

- The business system and the organisation comprises interrelated departments such as production, sales, accounts, finance. etc.
- These departments are interdependent and are not of much use without their interrelationships.
- For example, production department can only produce goods, but without sales department it would not be able to sell the goods.
- The firm functions effectively and profitably only when these various departments function in proper coordination.

System :Definition

- The term 'System' is used extensively and sometimes loosely, in relation to various aspects of life and universe. It 'System' has been defined in many ways.

- **"A system is an orderly grouping or interdependent components, linked together according to a plan, to achieve a specific objective."**

- From the above definition following three key points emerge:

  1. System is an Assembly of Components— Proper arrangement of components helps to accomplish objectives. For example, the arrangement and coordination of an input device, a central processing unit, output device and one or more storage units in a computer system, produce an output.

System :Definition

2. The Components are Interdependent—No subsystem can work in isolation because. to perform its tasks, it depends on inputs received from other subsystems.

3. The components are linked together in order to achieve a specific objective.

- The components that make up systems, may actually be other smaller systems.

- So, each system may be nested in a larger system.

- Smaller systems within the larger system are known as subsystems.

- For example, the inventory control system may consist of an issuing subsystem and a receiving subsystem.
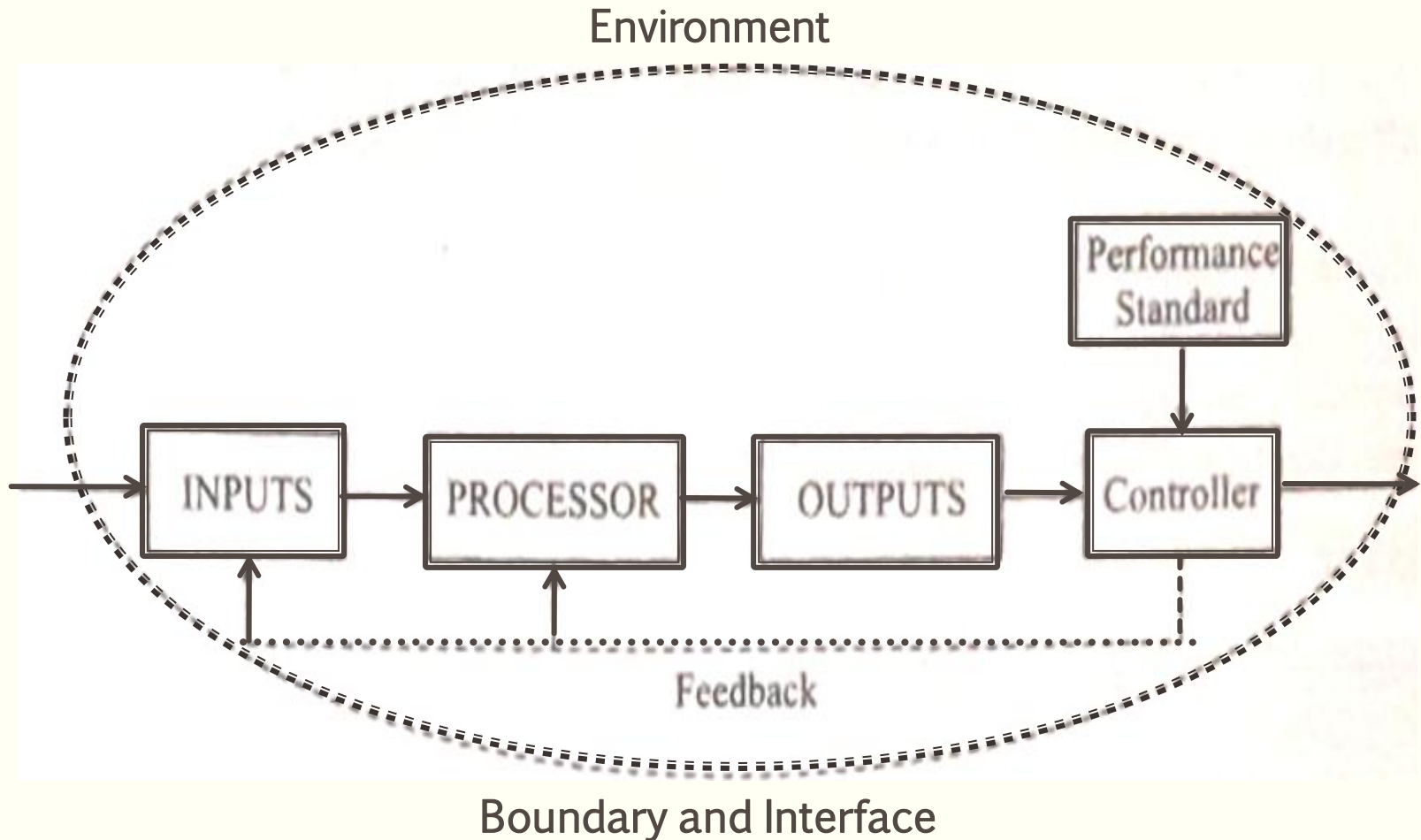
System : Definition

- Components constituting a system must be interdependent. Independent components do not make a system. For example, the components - a pet, a chair, a pen drive and a bell do not make up a system, because, they are neither interdependent, nor do they work together to achieve a specific objective.
- While the whole system has a specific objective, its subsystems (components) may also have their individual objectives.
- But the objectives of the system as a whole have a higher priority than the objectives of individual subsystems.

System : Elements

Environment

Performance Standard

INPUTS → PROCESSOR → OUTPUTS → Controller

Feedback

Boundary and Interface

System : Elements

- **Outputs and Inputs :** The main objective of any system is to generate an output that is of value to its user.

- Output is the result that is produced after processing. The output can be in the form of goods. services, or information. Whatever the nature of the output, it must be in line with the expectations of the intended user.

- Inputs are the elements (materials, human resources, information) that are fed to the system for processing. A system accepts input to generate output just as a business brings in various resources—human, material. financial—to produce commodities and services.

System : Elements

- **Processor(s)** : The processor is the operational component of a system.

- It is the element of a system that involves the actual conversion of inputs into the outputs.

- Based on the specifications of the output, the processors may modify the inputs totally or partially.

- This implies that the processing changes depending upon the change in the output specifications.

- In some cases, input is also modified to enable the processor to manage the transformation.

System : Elements

- **Control :** The control element regulates the system operation. It is the decision-making subsystem that controls the activities related to input, processing and output. In a computer system, the operating system and the associated software affect the working of the system. Output specifications decide what and how much input IS required to keep the system balance.
- In systems analysis, it is necessary to know attitudes of the personnel who'll be responsible for controlling the area for which a computer is being considered. Success and failure of the installation will depend on their mindsets. Backing of the management is required for securing control and supporting the objective of the proposed change.

System :Elements

- **Feedback :** It is through feedback that control in a dynamic system is ensured. Feedback measures output against a standard in form of *cybernetic procedure* that includes communication and control.
- Output information is fed back to the input or processor, for deliberation. After the output has been compared against performance standards, changes can occur in the input or processing and consequently, the output.
- Feedback may be positive or negative, routine or informational.
- Positive feedback strengthens performance of the system. Negative feedback generally provides the controller with information for action.
- In systems analysis, feedback plays a vital role. After the new system installation is done, feedback provided by the users often results in enhancements in the system to meet their requirements.

System : Elements

- **Environment :** The environment forms the **supra system** within which an organisation functions. It is the source of external elements that make an impact on the system. In fact, it often determines how a system must operate. It is everything that interacts with the system elements but **is not a part of the system**. For example, if we look at a factory as a system, then vendors, competitors etc., which provide constraints and may influence the actual performance of the business, are categorized as part of the environment.

System : Elements

- **Boundaries :** Boundaries are the limits that identify the system's components, processes and interrelationship when it interacts with other systems. For example, a teller system in a bank is confined to the withdrawals and related activities of customers, checking and savings accounts. It may exclude mortgage foreclosures, trust activities etc.
- The boundaries of each system determine its range of influence and control. For example, in an integrated bank-wide computer system design, a customer who has a mortgage and a checking account with the same bank, may write a cheque through the teller systems to pay premium that is later processed by "mortgage loan system".

System : Elements

- **Interface :** Entities in the environment lie outside the boundary of the system. So, to interact with external entities, the boundary needs to have certain points.
- These points are called interfaces, through which the interactions takes place.
- Therefore, the interfaces are points of interaction between the system and the environment.
- In systems analysis, it is important to know the boundaries of a system for determining the nature of its interface with other systems, as well as outside world.