SOS POLITICAL SCIENCE AND PUBLIC ADMINISTRATION
MBA HRD 205
SUBJECT NAME: MANAGEMENT INFORMATION SYSTEM

UNIT-V

TOPIC NAME: KINDS OF SYSTEM

A system is a group of interacting or interrelated entities that form a unified whole. A system is delineated by its spatial and temporal boundaries, surrounded and influenced by its environment, described by its structure and purpose and expressed in its functioning.

CHARACTERISTICS OF A SYSTEM:

1. Systems have a specific structure which is defined by its components (entities/subsystems) and processes (interrelationships between its components). A system is a collection of interrelated entities and/or subsystems which can be analyzed. It is possible to understand the specific structure of a system. However, in some systems complete knowledge may not be available but in most cases the fundamental entities and their interrelations are known.
2. Systems are a model of reality-a system is an abstraction of reality. It is created to comprehend the nuances of a real-world condition and understand the interrelationships of subsystems in such real-world conditions in greater clarity.
3. A system has a purpose-a system performs a function. It has a reason for its existence. The purpose in most cases is the output of the system and in a way the output defines the purpose of the system.
4. Systems have inputs and outputs. Outputs are produced by processing the inputs-a system (unless of theoretical interest and fully closed), interacts with the environment by taking in input and then after processing the input produces the output.
5. Systems have performance that can be measured in terms of its output-a system will have measures of performance. In most cases, the performance of the system is a function of its input and output.
6. A system serves a client-the system will have a utility and hence, a client for it. The client can also be another system.
7. The components that make up a system have functional as well as structural interrelationships with each other.
8. A system has an environment-a system cannot exist in isolation. It exists in an environment. The environment reacts with it.

KINDS OF SYSTEM:

1. Abstract and physical system
2. Deterministic and probabilistic system
3. Open and closed system
4. User- machine system

1. ABSTRACT AND PHYSICAL SYSTEM:

• ABSTRACT SYSTEM:

An abstract system is a system which exists in a conceptual, abstract world. Abstract systems are composed from abstract components.

These are conceptual or non physical entities. For example: the abstract conceptualization of physical situations. A model is a representation of a real or planned system. A model is used to visualize relationships.

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• PHYSICAL SYSTEM:

Physical System may be static or dynamic in nature. For example, desks and chairs are the physical parts of computer center which are static

In physics, a physical system is a portion of the physical universe chosen for analysis. Everything outside the system is known as the environment. The environment is ignored except for its effects on the system. The split between system and environment is the analyst's choice, generally made to simplify the analysis. For example, the water in a lake, the water in half of a lake, or an individual molecule of water in the lake can each be considered a physical system. An isolated system is one that has negligible interaction with its environment.

Physical systems are tangible entities. A programmed computer is a dynamic system in which programs, data, and applications can change according to the user's needs.

2. DETERMINISTIC AND PROBABILISTIC SYSTEM:

DETERMINISTIC SYSTEM:

It operates in a predictable manner and the interaction between parts is known with certainty. For example: Two molecules of hydrogen and one molecule of oxygen make water.

A deterministic system also called mechanistic system is one whose behavioral patterns can be predicted if its present state and operation characteristics are known. Such a system operates according to a predetermined set of rules. A good example of a deterministic system is a computer program.

In simple linear regression, if the response and explanatory variables have an exact relationship, then that relationship is deterministic. In other words, if you can predict with 100% certainty where a y-value is going to be based only on your x-value, then that's a deterministic relationship.

A deterministic system is one in which the occurrence of all events is known with certainty. If the description of the system state at a particular point of time of its operation is given, the next state can be perfectly predicted.

PROBABILISTIC SYSTEM:

It shows probable behavior. The exact output is not known. For example: weather forecasting, mail delivery. A probabilistic model is, instead, meant to give a distribution of possible outcomes (i.e. it describes all outcomes and gives some measure of how likely each is to occur).

A probabilistic system is one in which the occurrence of events cannot be perfectly predicted. Though the behavior of such a system can be described in terms of probability, a certain degree of error is always attached to the prediction of the behavior of the system.

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3. OPEN AND CLOSED SYSTEM:

OPEN SYSTEM:

Open environment in Management Information Systems (M.I.S), is a system that allows for free exchange and flow of information and data between departments and the external environment. An open system on the other hand openly communicates with its surrounding environment and exchanges data and information.

A perfect example of an open system is a living organism such as a human being. We actively interact with our environment, which results in changes to both the environment and us. For example, we eat to acquire energy. Of course, interaction is a two-way street.

An open system includes the transfer and exchange of both matter and energy with the system's surroundings. All of the systems on Earth are classified as open systems. Our Earth system has four spheres: the atmosphere, the biosphere, the hydrosphere, and the exosphere.

CLOSED SYSTEM:

A closed system is self-contained and does not exchange data with any outside system, in MIS an example of a closed system would be the research and development department.

Any management system within an organization can be said to be "open" or "closed." An open system interacts with other systems through the free passing of information, Earth can be considered as a closed system, since it only receives sunlight (energy), while the overall mass stays constant, without (almost) any exchange from space.

Another example of a closed system is a saucepan or frying pan, on a stove, when its lid is closed.

Here as closed systems operate on their own with little or no influence from the outside world.

In a closed system, matter cannot be exchanged with the surrounding.

OPEN SYSTEM VS CLOSED SYSTEM:

OPEN SYSTEMS
VERSUS
CLOSED SYSTEMS

OPEN SYSTEMS	CLOSED SYSTEMS
Open system is a thermodynamic system where energy and matter can be exchanged with its surrounding	Closed system is a thermodynamic system where energy can be exchanged with its surrounding but not matter
Can exchange matter with the surrounding	Cannot exchange matter with the surrounding
Mass of the system will vary with time	Mass of the system is constant
Have boundaries which are not closed	Boundaries are completely closed

4. USER- MACHINE SYSTEM:

In user-machine systems, both, i.e. human as well as machine perform some activities in the accomplishment of a goal (e.g. decision-making). The machine elements (may be computer hardware and software) are relatively closed and deterministic, whereas the human elements of the system are open and probabilistic.

MIS is "an integrated, user-machine system for providing information to support operations, management and decision-making functions in an organization. The system utilizes computer hardware and software, manual procedures, models for analysis, planning, control and decision-making, and a database. Management Information System can also be called as 'Information Processing system' or 'Information and Decision System' or 'Organizational Information System' or simply 'Information System'.

Management Information Systems (MIS) is the study of people, technology, and organizations. Everyone who works in business, from someone who pays the bills to the person who hires and fires, uses information systems. For example, a supermarket could use a computer database to keep track of which products sell best.