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

UNIT-V

TOPIC NAME: SYSTEM CONCEPT

SYSTEM:

System is an interrelated set of business procedures (or components) used within one business unit, working together for some purpose. For example, a system in the payroll department keeps track of checks, whereas an inventory system keeps track of supplies. The two systems are separate. A system has nine characteristics. A detailed explanation of each characteristic follows; system exists within a larger world, an environment. A boundary separates the system from its environment. The system takes input from outside, processes it, and sends the resulting output back to its environment.

ELEMENTS OF A SYSTEM:

1. **Components:** An irreducible part or aggregation of parts that makes up a system; also called a subsystem.
2. **Interrelated components:** Dependence of one part of the system on one or more other system parts.
3. **Boundary:** The line that marks the inside and outside of a system and that sets off the system from its environment.
4. **Purpose:** The overall goal or function of a system.
5. **Environment:** Everything external to a system that interacts with the system.
6. **Interfaces:** Point of contact where a system meets its environment or where subsystems meet each other.
7. **Constraints:** A limit to what a system can accomplish.
8. **Input:** Inputs are the information that enters into the system for processing.
9. **Output:** The main objective of a system is to get an output which is helpful for its user. Output is the final outcome of processing.

CHARACTERISTICS:

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.
9. Each subsystem also has a purpose and a measure of purpose.

INFORMATION SYSTEMS (IS):

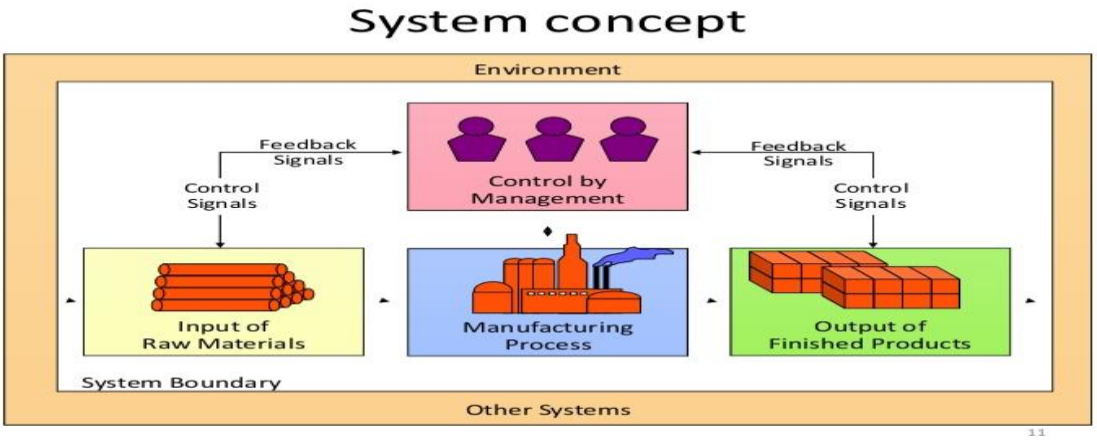
In organizations capture and manage data to produce useful information that supports an organization and its employees, customers, suppliers, and partners. Many organizations consider Information systems to be essential to their ability to compete or gain competitive damage. Most organizations have come to realize that ail workers need or participate in the development of information systems.

1. Transaction processing systems (TPSs)
2. Management Information systems (MISs)
3. Decision support systems (DSSs)

4. Executive information system (EIS)
5. Expert systems
6. Communications and collaboration system
7. Automation systems

- **Transaction processing systems (TPSs)** process business transactions such as orders, then cards, payments.
- **Management Information systems (MISs)** use the transaction data to produce information needed by managers to run the business.
- **Decision support systems (DSSs)** help various decision makers Identify and choose between options or decisions.
- **Executive information systems (EIS) are** tailored to the unique information needs of executives who plan for the business and assess performance against those plans.
- **Expert systems** capture and reproduce the knowledge of an expert problem solver or decision maker and then simulate the "thinking" of that expert.
- **Communications and collaboration system** enhance communication and collaboration between people, both Internal and external to the organization.
- Finally, office **automation systems** help employees create and share documents that support day-to-day office activities.

SYSTEMS CONCEPT



A mode of description, which explains an aspect of an object in terms of a set of interacting elements. The object can, in principle, be anything: a physical object, a body of work, an idea, or an enterprise.

A system is an arrangement of components designed to achieve a particular objective (or objectives) according to plan. The components may be either physical or conceptual or both, but they all share a unique relationship with each other and with the overall objective of the system. A health care delivery system, for example, has doctors and physical facilities plus conceptual operating policies which combine to ultimately provide patients with a specified level of medical care.

Our cultural environment includes a multitude of economic and social systems, many of which are interrelated and function simultaneously for the benefit of society as a whole. For example, we have a national monetary system which facilitates the exchange of goods and a transportation network which can move these goods quickly and efficiently to any part of the country.

The individual business and government organizations are essentially subsystems of larger social systems. They, in turn, are typically composed of their own subsystems, which theoretically function for the good of their individual organizations. The production, marketing, and finance functions are traditional subsystems of the formal organization of a firm. However, many firms are now reorganizing their formal structure to better account for the interdependency of such subsystems. As a result, businesses systems are emerging which are based more upon information flows and decision responsibilities than upon strict functional lines.

A systems approach to operations management problems places strong emphasis upon the integrative nature of management responsibilities, recognizing both the interdependence and the hierarchical nature of subsystems. In essence, systems theory stresses the understanding and relationships of the whole system, recognizing that a combined effect of components can be greater than the sum total of individual effects, that is, can be synergistic. Problems must first be abstracted from the overall (macro) environment, then they can be broken down into parts (micro), analyzed, and solutions proposed. But ultimately the components must again be restructured or synthesized (macro) to discover and evaluate the impact of new interrelationships that arise from proposed changes in the system.

The ability of any system to achieve its objectives depends upon:

(l) The design of the system.

(2) The control exercised by the system.

TYPES OF SYSTEMS:

System is classified in various ways.

1. According to the Creation:

- Natural system: Existing naturally- solar system, river system etc.
- Man-made system: Transportation system, lighting system. Man-made system is designed and operated by man. The man utilizes the inputs taken from the natural systems.

2. According to the Flexibility:

- Flexible system: The system which is adjusting to maintain the balance or equilibrium between the systems and is changing environment. Example: most of the life forms, economic, political and social systems.
- Rigid system: This cannot be modified or will not adjust for modification. Example: highway. Even the man tries to build some flexibility into every system designed or constructed. Example: Building.

3. Based on Human Involvement:

- Manual system: A production system completely man operated one. Example: Coir thread making.
- Automatic machine system: completely automated.
- To have equilibrium, man-machine relationships exist for production.

4. Based on System Output:

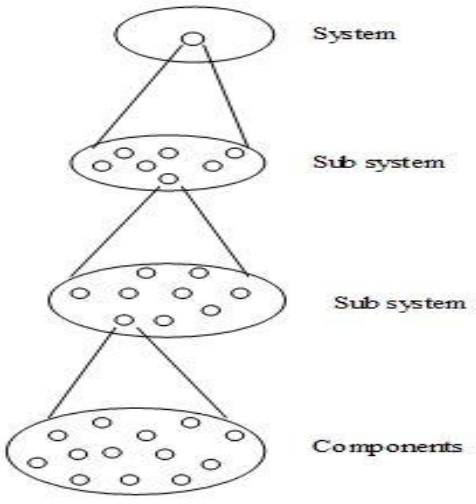
- System that produces: a production system
- System that serves clients/ customers: hospital, restaurant, etc.

COMPONENTS OF SYSTEM:

If units are designed and operated as a system, each segment or subsystem can be viewed as a self contained unit & its relationships or contribution to the next level can be performed and measured. Inputs, transformation process and output are the components of any system. Input and output are mere significant than the actual transformation process. 'Black box' approach is used to demonstrate the relationship let computes and systems. A component is a basic unit or black box which performs or provides the facility for performing some part of the transformation process. A teacher component in education or university system, may be taken for medical illustration as a system with several sub systems. The definition of what is a system, subsystem, components occurs when the objectives of those systems are determined.

SYSTEM DESIGN:

Most managers realize that the independent optimization of individual subsystems, such as marketing or production functions, does not necessarily result in optimization of the objectives of the total system. Production may favor a steady manufacturing rate and low inventories while marketing is anxious to meet highly seasonal demands. If any form of total system optimization is to be achieved, the subsystem objectives must be integrated and coordinated in light of overall system goals. It makes sense to start with a clearly delineated set of overall system objectives and to develop a hierarchy of subsystem goals which, when consistently pursued, will most effectively facilitate the overall objectives.



A design is simply a predetermined arrangement of components or operating parameters, such as the set of drawings for a plant expansion or the plans and pro-

cedures for enforcing statewide air pollution controls. The systems design process thus involves identifying and bounding the relevant parameters so as to isolate them from numerous irrelevant variables. Following this, many considerations enter into the analysis and design (or redesign) stage of a systems design, such as the economics of use of available resources, level of technology to be used, safety and reliability of the system itself, and impact of the system upon the environment outside the organization. One of the most vital inputs to systems design comes from the consumers or users. They embody the service objectives of the organization and are also the ultimate source of funds for the operations. Since the system functions to serve the consumers, their quantity and cost requirements, as well as quality and other technological desires, should be incorporated into the production systems design. Business history has vividly proved that orientation to the consumers is a key element in an organization's success. This holds true for public and nonprofit organizations as well as profit-making firms.

The more structured the design is, the less planning and decision making will be involved in the operation of the system. Similarly, a highly structured design, although suitable for high-volume production of standardized products, is inherently less adaptable to meeting competitive pressures of broader product lines in smaller volumes upon shorter notice from the customer. An increasingly important consideration in modern systems design arises from the need for flexibility and adaptability, of the system to meet new and unexpected demands. Fortunately, both physical equipment and human components can be geared to accept change, especially if the system has been designed with this inevitability in mind.

Production systems are often categorized as continuous or intermittent, although many systems are a combination of the two. In continuous designs, the physical flow of products is continuous and production is usually in high volumes accomplished through line-type operations. Plant layout is arranged to accommodate the product, such as paper, and specialized equipment is used. In intermittent designs, the physical flow of products is intermittent and production is on a batch or job-order basis. Layout is arranged according to process, and general-purpose equipment is used.