Information Systems and Management Information System (MIS)

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INF 411/CMM 213: MANAGEMENT OF ICT

Introduction:

- There is a real need for managers and end users to understand and know how to plan and manage information systems and technology in an organization.

- Many business executives now see information technology as an enabling technology for managing the functional and organizational processes.

- Information is data that has been processed and is presented in a form which assists in decision-making.
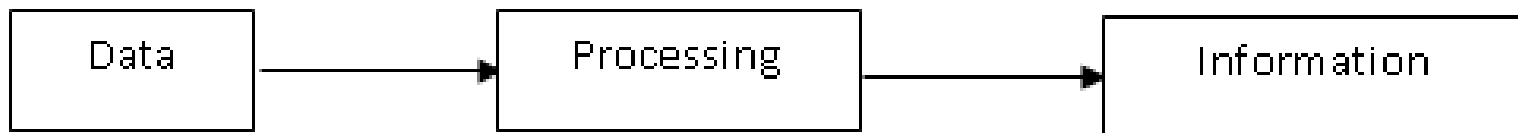
Information Systems

What is an information system?

▪ No universal definition of an information system.

▪ An **Information System (IS)** is an arrangement of people, data, processes, and information technology that interact to collect data (input), process (manipulate), store, and provide as output the information needed to support an organization.

  ✓ *Input - activity of gathering and capturing raw data.*

  ✓ *Processing - converting data into useful outputs.*

  ✓ *Output - production of useful information, usually in the form of documents and reports.*

  ✓ *Feedback - information from the system that is used to make changes to input or processing activities.*

Information System

- **Information System (IS)** is a set of interrelated components that collect, manipulate, store, and disseminate data and information and provide feedback to meet an objective.

- An *Information System* is a combination of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organisational setting.

- The elements are interrelated and interdependent.

- The components function together to achieve a desired result.

Information Systems

- Information system can either be manual (paper and ink) or computer-based (computerised).

- A ***computer based information system*** is an information system that uses computer technology to perform input, processing and output activities.

- Technology can make an organisation flexible and more efficient.

- Some authorities simply define an information system as "*a system that accepts data resources as input and processes them into information products as output*".
  - ✓ We can pictorially depict this as:

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┌─────────┐       ┌──────────────┐       ┌──────────────┐
│  Data   │ ────▶ │  Processing  │ ────▶ │ Information   │
└─────────┘       └──────────────┘       └──────────────┘
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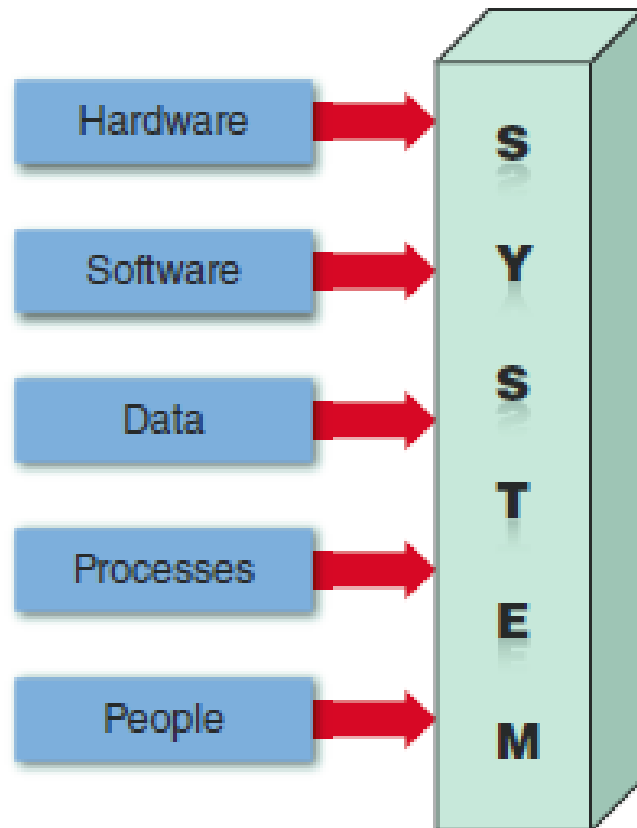
Information Systems

- Business organisations are increasingly embracing and adopting ICT and specifically computerised information systems.

- Computers are becoming a basic tool in almost all spheres of human endeavour – mainly for 'managing' information.

- Information and communication technologies (ICTs) today are the means for efficient and effective management of information i.e. for capture, transmission, manipulation, storage, report preparation, retrieval, and dissemination of information for decision making.

- Computerisation of information management is not only complex but also costly to undertake.

- To ensure success, computerised systems are developed and implemented following well-tried frameworks.

Information System Components

- Information systems have five key components: *hardware*, *software*, *data*, *processes*, and *people*.

- These components work together to input, process, output, store, and control activities that convert data resources to information products.

An information system needs these components.

Information System Components

- *Hardware* - A variety of physical devices including computer equipment used to perform input, processing, and output activities.
  - ✓ They also include servers, terminals, printers, computer-based storage media etc.

- *Software* - Information processing instructions and programs which direct and control computer hardware.
  - ✓ Computer programs that govern the operation of the computer.
  - ✓ Software consists of both system software and application software.

- *Data* - all data utilized by application software.
  - ✓ They are stored in files or databases on computer secondary storage.
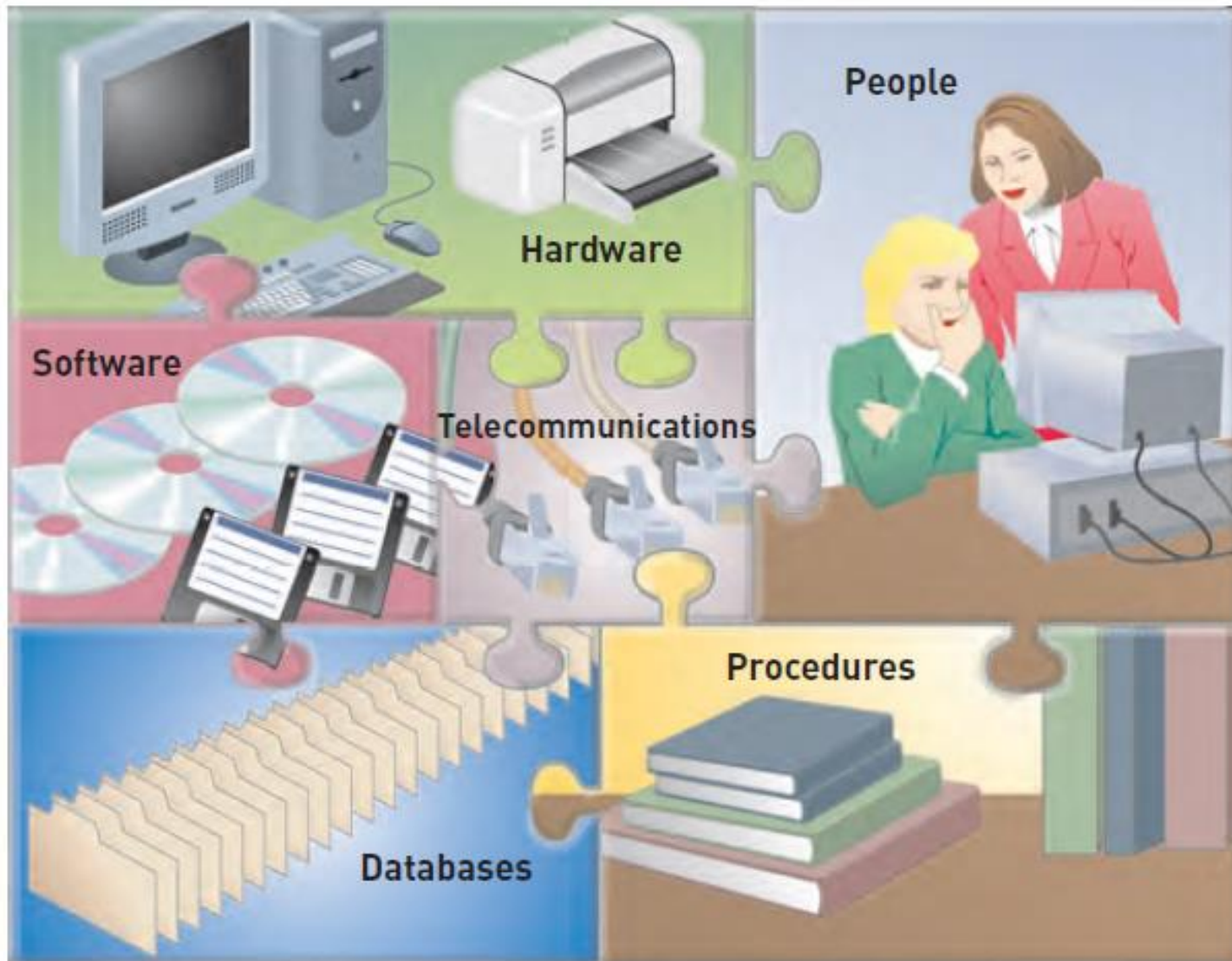
Information System Components

- **_Processes/procedures_** - Include policies, procedures, and operations that convert inputs into outputs.

- ✓ A procedure is defined as a series of steps followed in a regular, specified order to accomplish one end result e.g. data entry procedures, error correction procedures, student admission procedures etc.

- ✓ Set of operating instructions or rules that people need to perform in information processing e.g. instructions followed when registering as a student for courses / examinations etc.

- ✓ Procedures are typically in written form and also include manuals and other documentation describing the tasks performed by all the people (both end-users and IS personnel) involved with the system.

Information System Components

- ■ **_People_** - These are stakeholders and users - include end users and operations personnel such as computer operators, systems analysts, programmers, information systems managers, data administrators etc.

- ✓ Information systems exist to provide information to people in an organisation i.e. to management, ICT specialists, and end users.

- ✓ People are required for the operation of all information systems.

- ✓ The success or failure of an information system depends almost entirely on how satisfied the end users and management are with their interaction with the IS.

- ■ **_Communication networks_** - most authors consider this component under hardware.

- ✓ This component consists of telecommunications technologies and computer networks like the Internet, intranets, and extranets.

Components of Information System:

Information System Components

- Information Systems components are interrelated and interdependent.

- The components function together to achieve a desired result.

- To develop a successful information system requires meticulous examination and a good understanding of all the components of an information system.

- Systems Analysts require a good understanding of the IS requirements, the organisation's goals, methods, and corporate culture.
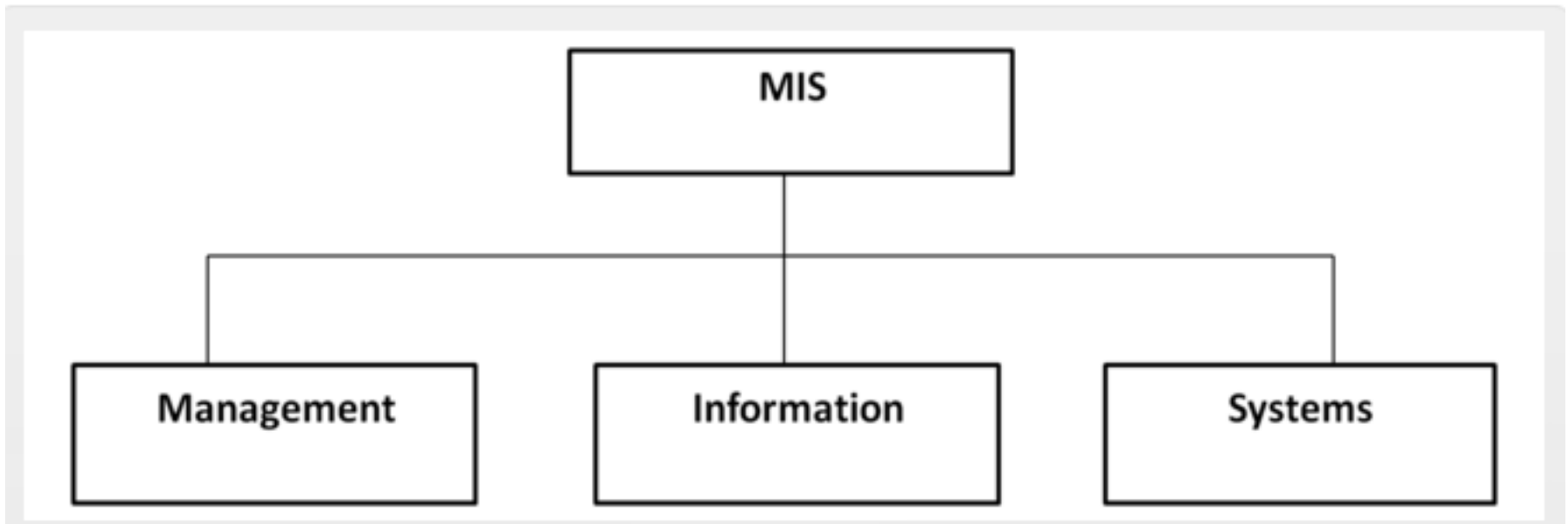
Information System

- A computer based information system is an information system that uses computer technology to perform input, processing and output activities.

- Due to the massive computerization of manual information systems, computer based information systems are simply referred to as information systems.

- Using an Information System effectively requires an understanding of the organization, management and Information Technology shaping the systems.

- The information system makes possible the conversion of data into management information for use by decision makers within the organization.

- Examples of information systems include: student management information systems used by universities and colleges, hospital management systems used in hospitals, airline reservation systems used by airlines, Automated Teller Machines (ATMs) in banks, Point of Sale (POS) terminals used by supermarket checkout clerks etc.

Management information system (MIS):

- **Management information systems (MIS)** is an acronym of three words, i.e. Management, Information, System.

- **Management information systems (MIS)** is an organized collection of people, procedures, hardware, software and databases used to provide routine information to managers and decision makers.

- It is a system which provides information support for decision making in the organization.

- MIS provides managers with information and support for effective decision making, and provides feedback on daily operations.

- It refers to a computer-based system that provides managers with the tools to organize, evaluate and efficiently manage an organization.

Management information system (MIS):

- MIS is a necessity in all the organizations.

- Information generated from MIS must be useful in managing the business and organization.

- The concept of MIS is therefore a blend of principle, theories and practices of the Management, Information and System.

Management information system (MIS):

- MIS is an integrated collection of subsystems or functional information systems, each supporting particular functional areas.

- It continuously interacts with the internal and the external environment of the business.

- There is no standard classification of such sub-systems in an organization, but a typical set on the basis of specific functional areas in a manufacturing organization includes:
  - ✓ *Production Management Information System*
  - ✓ *Marketing Management Information System*
  - ✓ *Finance and Accounting Management Information System*
  - ✓ *Materials Management Information System*
  - ✓ *Human Resource Information System*

- An institution of higher learning e.g a University will have an Academic Management Information system with functional information systems such as Admissions, Student Finance, Course Management, Examination, Graduation Management etc.

Functional information systems of MIS

- Production Management Information System: Production planning and control, Quality control, Research & Development etc.

- Marketing Management Information System: Sales order, Forecasting, Sales analysis, Billing, Distribution, Stock availability, Sales quota control, Pricing, Product promotion etc.

- Finance and Accounting Management Information System: Financial planning, Budgeting, Cost accounting, Asset accounting, Accounts receivable, Accounts payable, Payroll, etc.

- Human Resource Information System: Employee recruitment, Employee training, Employee transfers, Employee retirements etc.

- Academic Management Information System: Admissions, Examination, Timetabling, Course Registration, Class management etc.

Management information system (MIS):

- MIS is a broad class of information systems designed to provide information needed for effective decision making in the organization.

- It supports the planning, control and operational functions of an organization by furnishing uniform information in proper time frame to help the process of decision-making.

- A MIS therefore, produces information that the organizations require for efficient and effective management.

- MIS produce data-driven reports that help businesses and managers make the right decisions at the right time.

- Management information systems are typically computer-based information systems used for managing the organizations.

Why MIS?

- Managers makes decisions all the time, hence need information from MIS.

- To address information overload; hence MIS is required to filter out relevant information from irrelevant. Not all information is useful.

Benefits/Advantages of MIS to an Organization:

1) ***MIS Minimizes Information Overload***: MIS change the larger amount of data into summarized form and therefore, avoids the confusion which may arise when managers are flooded with detailed facts.

2) ***Planning and Control***: MIS improves the quality of plans by providing relevant information for planning and it increases organizational control.

3) ***Costs***: MIS results in cost savings in the long run.

4) ***Quick Decisions***: Decisions can be made more quickly and with confidence that the data are both timely, relevant and accurate. MIS generates new evidence in support of a decision.

5) Significant benefits in terms of ***time savings***, ***productivity gains*** and ***process re-engineering opportunities*** are associated with the use of data warehouse for information processing.

6) Management can get an overview of their entire operations and organization. MIS provides support to managers as they work to achieve corporate goals.

Benefits/Advantages of MIS to an Organization:

7) Managers have the ability to get *feedback* about their performance.

8) Organizations can maximize benefits from their investments by seeing what is working and what isn't.

9) Managers can compare results to planned performance by identifying strengths and weaknesses in both the plan and the performance and identify problem areas and opportunities for improvement.

10) Organizations are able to highlight their strengths and weaknesses due to the presence of revenue reports, employees' performance records etc. MIS gives an overall picture of the company and acts as a communication and planning tool.

11) The availability of customer data and feedback in the MIS can help the company to align their business processes according to the needs of the customers.

12) MIS can help an organization to gain a *competitive advantage*. Competitive advantage is a firm's ability to do something better, faster, cheaper, or uniquely, when compared with rival firms in the market.

Types of MIS Reports:

- MIS reports are usually generated through accumulation of transaction processing data.

- Scheduled reports - Produced periodically on a regular interval or on a schedule (daily, weekly, monthly).
  - ✓ Scheduled reports allow businesses to analyze data over time (e.g. A Manager may want to see weekly payroll reports to keep track of labor costs.

- On-demand report - Gives certain information at a manager's request.

- Exception report - Automatically produced when a situation is unusual or requires management action. Exception reports rely on trigger points e.g in the case of the production lines, the trigger point could be something like 10% below expected production.

- Real - time report - This type of MIS report allows someone to monitor changes as they occur.

Functions of MIS:

- MIS must perform the following functions in order to meet its objectives:

- Data Capturing: MIS captures data from various internal and external sources of an organization.
  - ✓ Data capturing is through computer terminals.

- Processing of Data: The captured data is processed to convert it into the required management information.
  - ✓ Processing of data is done by such activities as calculating, comparing, sorting, classifying and summarizing.
  - ✓ These activities organize, analyze, and manipulate data using various statistical, mathematical, operations research and other business models.

Functions of MIS:

- Storage of Information: MIS stores processed or unprocessed data for future use.
  - ✓ If any information is not immediately required, it is saved as an organizational record.
  - ✓ Stored data is commonly organized into fields, records, files and databases.

- Retrieval of Information: MIS retrieves information from its stores as and when required by various users.

- Dissemination of Information: Management Information, which is a finished product of MIS, is disseminated to the users in the organization.

Impact of MIS on an organization:

- MIS plays a very important role in the organization.

- It creates an impact on the organization's functions, performance and productivity.

- It helps organizations in forecasting and long term planning.

- MIS creates a structured data and knowledge base for all the people in the organization.

- MIS helps the user in understanding of the business itself.

- A well designed MIS makes an impact on the managerial efficiency.

- MIS saves time for managers in an organization as information for decision making can be accessed faster.

- MIS helps organizations have a competitive advantage.
  - ✓ Competitive advantage is a significant and long-term benefit to a company over its competitors e.g it can result from higher-quality products, better customer service, and lower costs.

MIS Support to Management:

- The objective of the MIS is to provide information for decision support in the process of management.

- It helps in such a way that the business goals are achieved in the most efficient manner.

- Since decision making is not restricted to a particular level, MIS supports all the levels of the management in conducting the business operations.

END

Thank You

Q & A ?