Overview of Data, Information and IS

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INF 411/CMM 213: MANAGEMENT OF ICT

Introduction to Information Technology Concepts

- ***Information Technology*** means the use of hardware, software, services, and supporting infrastructure to manage and deliver information.

- ***Information and Communication Technologies*** can be broadly defined as the means of creation, storage, management and dissemination of ***information*** by electronic means.
  - ✓ Information and Communication Technology (ICT) continues to play a central role in different spheres of lives.

- Modern business structure relies on instant information and technology acts as a means to deliver information at the right time to the right place.

Data and Information

- **Data** is a collection of un-organized facts, which can include words, numbers, images, and sounds.
- Data convey no particular meaning to a given activity within any given environment.
- ***Data*** is the raw material for information that becomes valuable through the use of analytics.
- ***Information*** is data that has been processed and analyzed into a form that is organized and meaningful to the recipient and is directly useful in decision making e.g. reports.
- Information is the outcome of processing and analyzing the data.
- ***N/B:*** *We can have data without information but we cannot have information without data*.

Importance Information

- **Information:** Information is an important **asset** and has value to an organization.
- It is one of the organization's most valuable resources.
- **Asset:** Anything that has value to an organization e.g land, building, vehicles, information etc.
- Information is recognized as an important and valuable asset to the organization, hence needs to be protected and secured from exposure.
- "*Data and Information is the new oil*" (Clive Humby, 2006).

Role of Information in an Organization

- The **decision-making process**: one important role of information is to support decision making by decision makers in an organization.

- **Planning and forecasting:** It is also important for planning in an organization.

- The other role of information is to **generate knowledge for organizations**.
  - ✓ Knowledge is derived from relevant information.

N/B: *If an organization's information is not accurate or complete, people can make poor decisions, costing thousands, or even millions of dollars.*

General Characteristics of Good Information

For information to be useful and valuable, it must possess several characteristics and attributes that add value to that piece of information.

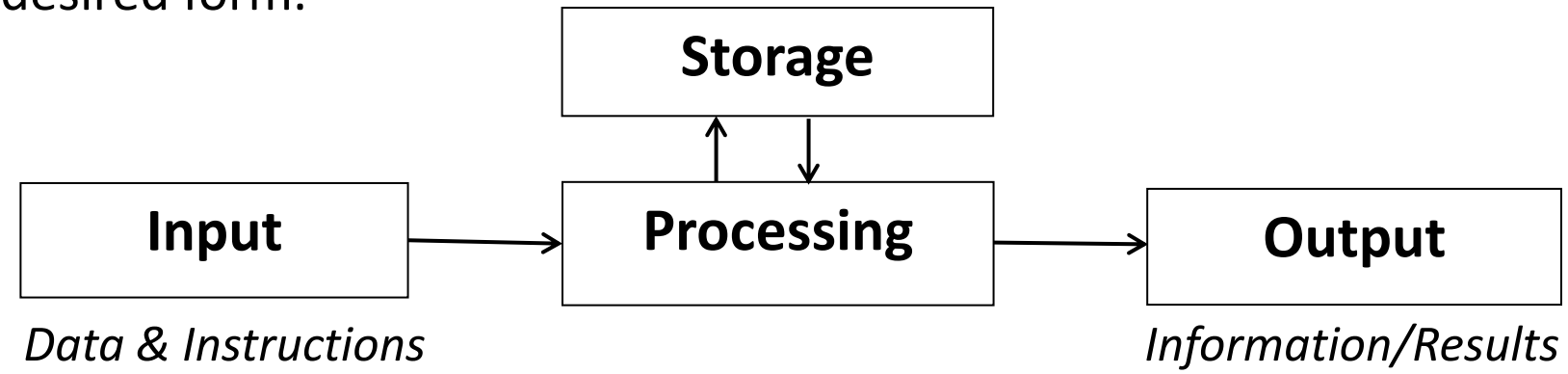
- **Accuracy:** Information should be free from errors.
- **Reliability:** Should come from authoritative sources.
  - ✓ Reliable information can be trusted by users.
  - ✓ Information must accurately represent the events or activities of an organization.
- **Relevant:** Information should be relevant to the purpose for which it is required.
- **Timely:** Timely information is delivered when it is needed.
  - ✓ Provided in good time to affect decision-making process.
  - ✓ Information received too late will be irrelevant.
- **Secure:** Information should be secure from access by unauthorized users.

General Characteristics of Information

- **Complete:**
  - ✓ Information should contain all the details required by the user.
  - ✓ Includes all relevant data or aspects of the data that are required.
- **Concise:**
  - ✓ Information should be in a form that is short enough to allow for its examination and use.
  - ✓ Must be able to depict the required scenario without presenting unnecessary information.
- **Presentable:** Information should be presented precisely, clearly and in an orderly fashion e.g. using summaries, graphs, charts etc.
- **Verifiable:** Independently generated information of the same process must be the same or within reasonable variance.
- **Availability/accessibility:** Information should be easy to obtain or access when required.

Data Processing

- **Data processing** is carrying out of operations and manipulation of data to produce meaningful information.
- Processing includes collection, manipulation, storing, analyzing, accessing and transmitting of data.
- Data processing is the conversion of data into meaningful, usable and desired form.



- It is a very important aspect in any organisation of any size or nature because it generates information for decision making.
- Data processing can be ***manual*** or ***electronic***.

Manual and Electronic Data Processing

Manual Data Processing:

- In **manual data processing**, all the operations and manipulation on the data are done manually with a pen and paper.
- There is no use of electronic device or machine.
- The process is slow, less reliable and prone to errors.

Electronic Data Processing:

- In **electronic data processing**, computers are used to process data.
- It is fast, reliable and there is high level of accuracy.
- It is computerized and designed to improve quality and maximize productivity.
- It is currently the best method of data processing due to its accuracy and efficiency.

Advantages of Electronic Data Processing Using Computers

- ***Speed (processing capability)*** – Computers have higher processing speeds than other means of processing and quickens the data processing operations.
- ***Accuracy*** – The degree of accuracy and preciseness of the information is increased by the use of electronic data processing.
- ***Consistency*** – Given the same data and the same instructions computers will produce exactly the same results.
- ***Convenience:*** Data processing that requires repeated operations may be boring and tedious practice when carried out manually hence the need for electronic data processing.
- ***Reliability*** – Computers can perform some work repeatedly without making errors which are quite common in manual processing.
- ***Memory capability and volume*** – A computer has the ability to store and process large volumes of data.

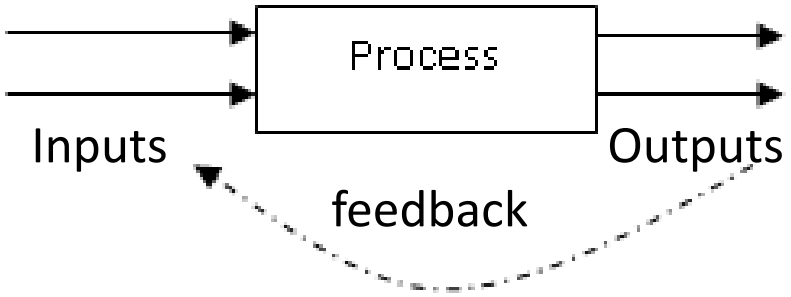
System

What is a System?

- A ***system*** is a collection of related components that work together to realise an objective and produce specific results.

- A ***system*** is a group of interrelated components working together toward a common goal by accepting inputs and producing outputs in an organised transformation process.

- Every system may, therefore, be considered a processor – that converts inputs to outputs.



System

- Systems exist in all fields of human endeavour – social, political, biological, electrical, economic, information, etc.
- Systems can be partitioned into smaller subsystems. A ***subsystem*** is a unit within a system that shares some or all of the characteristics of that system.
- All systems are composed of the same basic elements or components i.e. *inputs, processes* and *outputs*.

✓ ***Inputs*** – are elements that enter the system to be processed; involves capturing and assembling elements that enter the system to be transformed e.g. raw materials, data etc.

✓ ***Processing*** – involves transformation of input into outputs.

✓ ***Outputs*** – are results of the transformation process and their transfer to the ultimate destination.

END

Thank You

Q & A ?