

CONCEPT OF ICT - 1



Information &
Communication
Technology

BASIC BUILDING BLOCKS OF INFORMATION AND THEIR CHARACTERISTICS

Life cycle of data

Data

Raw facts of a person, thing, place or an event which does not have complete meaning. It is made up of text, numbers, date, etc..

It needs to be processed before it can be turned into something useful.

Features of data

- Not meaningful
- Cannot use for decision making
- Unorganized
- Incomplete
- Can be stored
- Can be communicate



Figure 1 - Data

Various forms of data and their characteristics

Data can be identified with different forms according to the nature of it. Some of them classifications are

- Quantitative data and Qualitative data
- Continuous data and Discrete Data
- Primary and Secondary Data

Quantitative data and Qualitative data

Qualitative data	Quantitative data
<p>-<i>Qualitative data</i> can be identified with their attributes or properties and it is not countable/ measurable as it is not numerical.</p> <p>-<i>Qualitative data</i> are not ordered or grouped logically. Therefore, it is usually unstructured.</p> <p><i>Qualitative data</i> are captured or identified with senses (Sight, smell, touch, taste and hear) of the recipient to observe the results.</p>	<p>-<i>Quantitative data</i> are captured or identified with instruments such as rulers, balances and thermometers. It is countable/ measurable as it is numerical.</p> <p>-<i>Quantitative data</i> are ordered or grouped logically. Therefore, it is usually structured.</p>
Example – Favorite colour, type of car, Place of birth	Example – Number of cars, Price of an item, Height

Life cycle of data

Lifecycle of data describes sequence of stages that a particular data goes through from its initial generation/capture to its deletion at the end of its useful life. Basically, this process consists of data creation, management of data and removal of obsolete data.

Number of versions of a data life cycles can be identified with different attributes in different domains or communities.

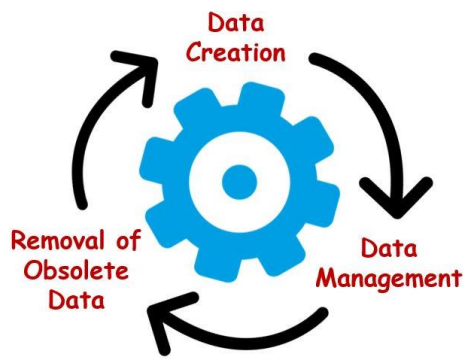


Figure 2 - Life cycle of data

To create meaningful information, data are captured or introduced into the system or create within the system. Created/collected data are kept and used for different purposes of the organization. Data will be removed/ deleted/ archived when they become useless. This process is called the life cycle of data.

Data Creation

Data needs to be initiated or created within/with the organization. It is created by one or more individuals or there can be some other ways to originate data such as through emails, faxes, letters, phone calls, etc.

In this stage, data are transmitted into an organization through several ways. Some of these are as follows.

Data entry

Acquisition from an external source party (Sensors' data)

With the stage of data creation, It is very important that the available data sources are trustworthy and well-established. Then only we can see the highest quality of data and information as well.

Management

Under data management stage, handling the flow of data throughout its life cycle can be seen. In this stage, it starts from the data which are from creation and initial storage to the time when it is deleted.

Under the management of data, it is very important to store data with security mechanisms and stored data must be accessible for relevant parties when they are required.

Removal of obsolete data

In this stage of the life cycle, data is retained or destroyed. Data is removed from all active environments which are decided to be destroyed. If a data is no longer used or processed to produce information, those data may be removed.

Though data is no longer used, that particular data can be needed again in the future. Those data will not be removed and they are archived.

Need of a processing data into information

Data needs to be converted into usable and desired form. This conversion /processing is carried out using a predefined sequence of instructions. This can be done either manually or automatically.

Organizations have no usage or access to massive amounts of data to get the help them to gain a competitive edge, to give them insight into sales, to have marketing strategies and to consider consumer needs. It is very important for any organization/ an individual to process data into meaningful form to make use of them. After converting them into usable format, the organization can continue their work and they can make decision based on given results.

Data vs. Information

Data, process and information



Figure 3 - Data, Process and Information

Data is the raw material that is to be collected to process into information.

Once data are collected and created, those data are processed with several processing activities and they are converted into information. Then it becomes human readable and organized form which is meaningful. After becoming into meaningful information, they are useful for business, managers to make decisions by managers of the organization.

According to the above explanation, we can see a strong inter relationship between data, process and information. Based on the quality of data, quality of the final results can be seen.

Difference between data and information

Data	Information
<p><i>Data</i> is raw facts of something. It needs to be processed before it can be turned into something useful.</p> <p><i>Data</i> can be something simple and it can be useless until it is organized</p> <p><i>Data</i> doesn't depend on Information</p> <p><i>Data</i> is a single unit.</p>	<p><i>Information</i> is processed data into meaningful form. So that can be used to make decisions.</p> <p>When data is processed, organized or presented, it can be useful. It is called <i>information</i>.</p> <p><i>Information</i> depends on data</p> <p>Collection of data which provides a meaning is called <i>Information</i>.</p>
<ul style="list-style-type: none"> • Not meaningful • Cannot use for decision making • Unorganized • Incomplete • Can be stored • Can be communicate 	<ul style="list-style-type: none"> • Meaningful • Can use for decision making • Organized • Complete • Can be stored • Can be communicate

Information:

Information

Information is an organized or processed data, which is meaningful for the user and it provides a value for decision making process.

Information cannot be generated without getting the help of data.

Some features of information

- Meaningful
- Can use for decision making
- Organized
- Complete

Based on the level of above features the value of information can be changed.

Value of information

Decision makers of an organization will make their decisions based on the given information. Value of information describes that how information helps a decision-maker to improve its decision. Value of Information will differ from person to person or a situation to situation.

The value of the information directly affects the overall outcome of a business/ an organization. Perfect information removes all doubtful things about the outcome of the decision alternatives.

Characteristics of valuable information

- **Timeliness**
A particular information must be provided when it is needed. When an information is outdated, it becomes useless for decision making process. As decision making process is always time-strapped it is very important to have the information to the right end-user at the right time.
- **Completeness**
Complete information contains all the important facts. For example, an investment report that does not include all important costs is not complete. Information is complete when there are no missing parts of the data. Facts and figures should be available in their entirety. The government's communique in the first example would be incomplete if the information about the exemption of non-nationals who have a 'right to abode' status is omitted.
- **Accuracy**
Inaccurate information will be generated due to inaccurate data. When we have an accurate data, they will be transformed into accurate information. We need correct instructions to process data into accurate information. is fed into the transformation process. Accurate information provides an error free environment for decision making process.
- **Relevant**
Relevant information is important to the decision maker. Information showing that lumber prices might not be relevant to a computer chip manufacturer. Does the end-user need the information? In other words, the information provided should be pertinent or suitable to the person's tasks. Technical data on production specifications would be relevant to the line supervisor but may not be relevant to upper management.

- Accessible
Information should be easily accessible by authorized users so they can obtain it in the right format and at the right time to meet their needs.
- Economical (Cost effectiveness)
Information should also be relatively economical to produce. Decision makers must always balance the value of information with the cost of producing it

The success of a business is marked by outputs exceeding inputs. The benefits obtained through securing information should out way the costs of obtaining it. An example of this is a small business obtaining data related to the efficacy of its advertising strategy by hiring a company to survey customers. The benefits of collecting this information would need to outweigh the costs involved in order for the process to be cost-beneficial.
- Simplicity
Information should be simple, not overly complex. Sophisticated and detailed information might not be needed. In fact, too much information can cause information overload, whereby a decision maker has too much information and is unable to determine what is really important