Lect.1:
Introduction to Information Systems.

Overview

- ♣ Basic Information Concepts.
- ♣ Classification of Information.
- ♣ Quality of Information.
- ♣ Information Need & Objective.

1.1 Basic Information Concepts.

- Information can be defined as meaningfully interpreted data. If we give you a number 1-212-290-4700, it does not make any sense on its own. It is just a raw data. However if we say Tel: +1-212-290-4700, it starts making sense. It becomes a telephone number. If I gather some more data and record it meaningfully like −

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Address: 350 Fifth Avenue, 34th floor
New York, NY 10118-3299 USA
Tel: +1-212-290-4700
Fax: +1-212-736-1300
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- It becomes a very useful information - the address of New York office of Human Rights Watch, a non-profit, non-governmental human rights organization.
- So, from a system analyst's point of view, information is a sequence of symbols that can be construed to a useful message.
- An **Information System** is a system that gathers data and provides information with the sole purpose of providing information to its users.
- The main object of an information system is to provide information to its users. Information systems vary according to the type of users who use the system.
- A **Management Information System (MIS)** is an information system that *evaluates*, *analyzes*, and *processes* an organization's data to produce meaningful and useful information

based on which the management can take right decisions to ensure future growth of the organization.

1.1.1. Information Vs Data.

- Data can be described as unprocessed facts and figures. Plain collected data as raw facts cannot help in decision-making. However, data is the raw material that is organized, structured, and interpreted to create useful information systems.
- Data is defined as 'groups of non-random symbols in the form of text, images, voice representing quantities, action and objects'.
- Information is interpreted data; created from organized, structured, and processed data in a particular context.

In other words, *"Information is a data that has been processed into a form that is meaningful to recipient and is of real or perceived value in the current or the prospective action or decision of recipient".*

1.1.2. Information, Knowledge and Business Intelligence.

- Data − A Fact or a piece of information, or a series thereof.
- Information − Knowledge discerned from data.
- Business Intelligence − Information Management pertaining to an organization's policy or decision-making, particularly when tied to strategic or operational objectives.

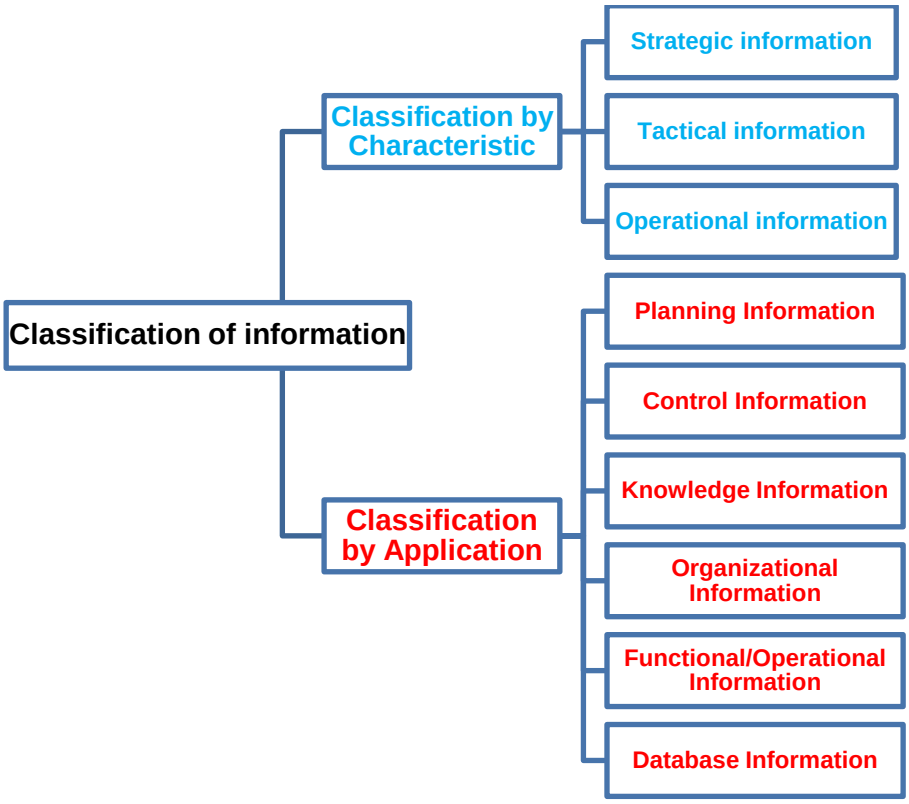
Other definition

- Data − The raw material of information.
- Information − Data organized and presented by someone.
- Knowledge − Information read, heard, or seen, and understood.
- Business Intelligence − integrated knowledge and understanding.

1.2

1.3 Classification of Information.

Two of the most important ways to classify information which are *classification by characteristic* and *classification by application* will be introduced.



❖ Classification by Characteristic

Information used in business for decision-making is generally categorized into three types −

- **Strategic Information** − Strategic information is concerned with long term policy decisions that defines the objectives of a business and checks how well these objectives are met. For example, acquiring a new plant, a new product, diversification of business etc, comes under strategic information.
- **Tactical Information** − Tactical information is concerned with the information needed for exercising control over business resources, like budgeting, quality control, service level, inventory level, productivity level etc.
- **Operational Information** − Operational information is concerned with plant/business level information and is used to ensure proper conduction of specific operational tasks as planned/intended. Various operator specific, machine specific and shift specific jobs for quality control checks comes under this category.

❖ Classification by Application

In terms of applications, information can be categorized as −

- **Planning Information** − These are the information needed for establishing standard norms and specifications in an organization. This information is used in *strategic, tactical, and*

operation planning of any activity. Examples of such information are time standards, design standards.

- **Control Information** − This information is needed for establishing control over all business activities through feedback mechanism.
- **Knowledge Information** − Knowledge is defined as "information about information". Knowledge information is acquired through experience and learning, and collected from *archival data and research studies*.
- **Organizational Information** − Organizational information deals with an organization's environment, culture in the light of its objectives. This information is used by everybody in the organization; examples of such information are employee and payroll information.
- **Functional/Operational Information** − This is operation specific information. For example, daily schedules in a manufacturing plant that refers to the detailed assignment of jobs to machines or machines to operators. This information is mostly internal to the organization.
- **Database Information** − Database information construes large quantities of information that has multiple usage and application. Such information is stored, retrieved and managed to create databases. For example, material specification or supplier information is stored for multiple users.

1.4 Quality of Information.

✓ Information is a vital resource for the success of any organization. Future of an organization lies in using and disseminating information wisely. Good quality information placed in right context in right time tells us about opportunities and problems well in advance.

✓ Good quality information − Quality is a value that would vary according to the users and uses of the information.

✓ Various authors propose various lists of metrics for assessing the quality of information. Let us generate a list of the most essential characteristic features for information quality −

- **Reliability** − It should be verifiable and dependable. (قابله للتحقيق ويمكن الاعتماد عليها)
- **Timely** − It must be current and it must reach the users well in time, so that important decisions can be made in time.
- **Relevant** − It should be current and valid information and it should reduce uncertainties.(يجب أن تكون معلومات حديثة وصحيحة ويجب أن تقلل من عدم اليقين.)
- **Accurate** − It should be free of errors and mistakes, true, and not deceptive.
- **Sufficient (كافيه)**− It should be adequate in quantity, so that decisions can be made on its basis.
- **Unambiguous (خاليه من الغموض)** − It should be expressed in clear terms. In other words, in should be comprehensive.
- **Complete** − It should meet all the needs in the current context.

- **Unbiased(عدم التحيز)** − It should be impartial, free from any bias. In other words, it should have integrity. بعبارة أخرى ، يجب أن تتمتع بالنزاهة) (يجب أن يكون غير متحيز وخالي من أي تحيز.
    - **Explicit** − It should not need any further explanation.
    - **Comparable** − It should be of uniform collection, analysis, content, and format.
    - **Reproducible(قابله للتكرار)** − It could be used by documented methods on the same data set to achieve a consistent result.

      (يمكن استخدامه بواسطة طرق موثقة على نفس مجموعة البيانات لتحقيق نتيجة متناسقه).

1.5 Information Need & Objective.

Information processing beyond doubt is the dominant industry of the present century. Following factors states few common factors that reflect on the needs and objectives of the information processing −

- Increasing impact of information processing for organizational decision making.
- Dependency of services sector including banking, financial organization, health care, entertainment, tourism and travel, education and numerous others on information.
- Changing employment scene world over, shifting base from manual agricultural to machine-based manufacturing and other industry related jobs.
- Information revolution and the overall development scenario.
- Growth of IT industry and its strategic importance.
- Strong growth of information services fueled by increasing competition and reduced product life cycle.
- Improvement in communication and transportation brought in by use of information processing.
- Use of information processing in reduction of energy consumption, reduction in pollution and a better ecological balance in future.

Briefly−

- Information is needed to survive in the modern competitive world.
- Information is needed to create strong information systems and keep these systems up to date.

❖ Management Information Systems (MIS) Need for Information Systems

Managers make decisions. Decision-making generally takes a four-fold path −

- Understanding the need for decision or the opportunity,
- Preparing alternative course of actions,
- Evaluating all alternative course of actions,
- Deciding the right path for implementation.

MIS is an information system that provides information in the form of standardized reports and displays for the managers. MIS is a broad class of information systems designed to provide information needed for effective decision making.

Data and information created from an accounting information system and the reports generated thereon are used to provide accurate, timely and relevant information needed for effective decision making by managers.

Management information systems provide information to support management decision making, with the following goals −

- Pre-specified and preplanned reporting to managers.
- Interactive and ad-hoc support for decision making.
- Critical information for top management.

MIS is of vital importance to any organization, because −

- It emphasizes on the management decision making, not only processing of data generated by business operations.
- It emphasizes on the systems framework that should be used for organizing information systems applications.