

Lesson one: Introduction

Information Concepts

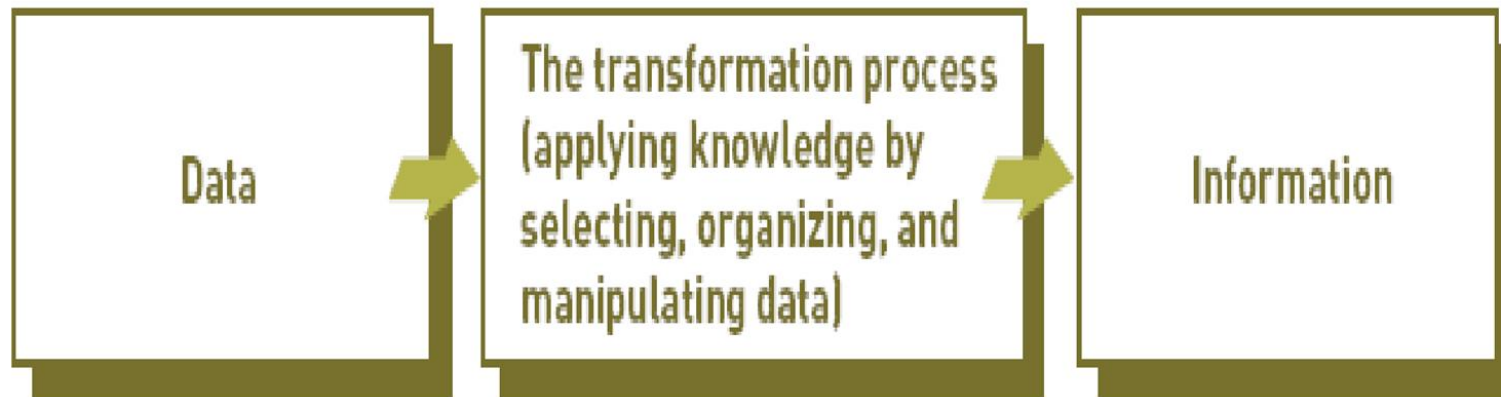
- ▶ • Data, information, and knowledge
- ▶ - **Data:** Raw facts
- ▶ - **Information:** Collection of facts organized in such a way that they have additional value beyond the value of the facts themselves
- ▶ - **Process:** Set of logically related tasks performed to achieve a defined outcome
- ▶ - **Knowledge:** Awareness and understanding of a set of information

Data, information, knowledge

Types of data

Data	Represented by
Alphanumeric data	Numbers, letters, and other characters
Image data	Graphic images and pictures
Audio data	Sound, noise, or tones
Video data	Moving images or pictures

Process of transforming data into information



Characteristics of information

- ▶ • If information is not accurate or complete
- ▶ - People can make poor decisions, costing thousands, or even millions, of dollars
- ▶ • Information can be of little value to the organization
- ▶ - If information is not relevant, not delivered to decision makers in a timely fashion, or too complex to understand

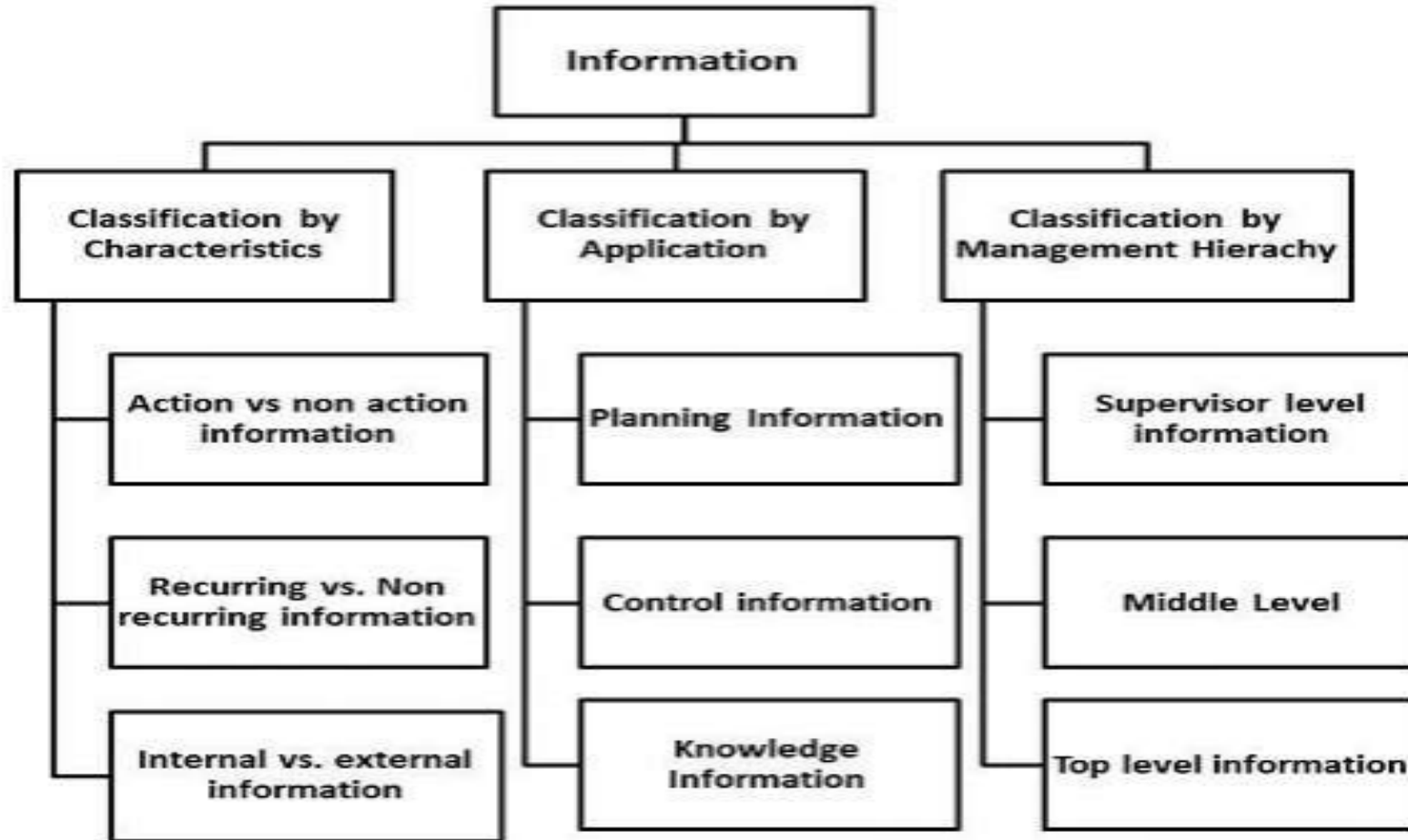
Characteristics	Definitions
Accessible	Information should be easily accessible by authorized users so they can obtain it in the right format and at the right time to meet their needs.
Accurate	Accurate information is error free. In some cases, inaccurate information is generated because inaccurate data is fed into the transformation process. (This is commonly called garbage in, garbage out [GIGO].)
Complete	Complete information contains all the important facts. For example, an investment report that does not include all important costs is not complete.
Economical	Information should also be relatively economical to produce. Decision makers must always balance the value of information with the cost of producing it.
Flexible	Flexible information can be used for a variety of purposes. For example, information on how much inventory is on hand for a particular part can be used by a sales representative in closing a sale, by a production manager to determine whether more inventory is needed, and by a financial executive to determine the total value the company has invested in inventory.
Relevant	Relevant information is important to the decision maker. Information showing that lumber prices might drop might not be relevant to a computer chip manufacturer.
Reliable	Reliable information can be trusted by users. In many cases, the reliability of the information depends on the reliability of the data-collection method. In other instances, reliability depends on the source of the information. A rumor from an unknown source that oil prices might go up might not be reliable.
Secure	Information should be secure from access by unauthorized users.
Simple	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.
Timely	Timely information is delivered when it is needed. Knowing last week's weather conditions will not help when trying to decide what coat to wear today.
Verifiable	Information should be verifiable. This means that you can check it to make sure it is correct, perhaps by checking many sources for the same information.

The Value of Information

The value of information is directly linked to how it helps decision makers achieve their organization's goals

- ▶ Can help people and their organizations perform tasks more efficiently and effectively
- ▶ Can help managers decide whether to invest in additional information systems and technology

Classification of information



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- ▶ Information is an asset. • Information has value that needs protection. • Some information has legal protection requirements. • Loss or inappropriate disclosure has consequences.

- ▶ Classification by management
- ▶ Based on Anthony's classification of Management, 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. This information is used for controlling attainment, nature and utilization of important processes in a system. When such information reflects a deviation from the established standards, the system should induce a decision or an action leading to control.
- □ 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. Karl Weick's Organizational Information Theory emphasizes that an organization reduces its equivocality or uncertainty by collecting, managing and using these information prudently. 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. In a service oriented business, it would be the duty roster of various personnel. 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.

► *Describe classification by characteristics?*

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.
- ▶ following are the dimensions or elements of Information Quality:
 - ▶ □ Intrinsic: Accuracy, Objectivity, Believability, Reputation
 - ▶ □ Contextual: Relevancy, Value-Added, Timeliness, Completeness, Amount of information
 - ▶ □ Representational: Interpretability, Format, Coherence, Compatibility
 - ▶ □ Accessibility: Accessibility, Access security

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- ▶ 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.
 - ▶ □ 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.
 - ▶ □ Accurate - It should be free of errors and mistakes, true, and not deceptive.
 - ▶ □ Sufficient - It should be adequate in quantity, so that decisions can be made on its basis.
 - ▶ □ Unambiguous - It should be expressed in clear terms. In other words, it should be comprehensive.
 - ▶ □ Complete - It should meet all the needs in the current context.
 - ▶ □ Unbiased - It should be impartial, free from any bias. In other words, it should have integrity.
 - ▶ □ Explicit - It should not need any further explanation.
 - ▶ □ Comparable - It should be of uniform collection, analysis, content, and format.
 - ▶ □ Reproducible - It could be used by documented methods on the same data set to achieve a consistent result.