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Fundamentals of Management Information Systems

Contents

- Concepts of MIS
- Elements of MIS
- Types of Information Systems
- Components of Information Systems
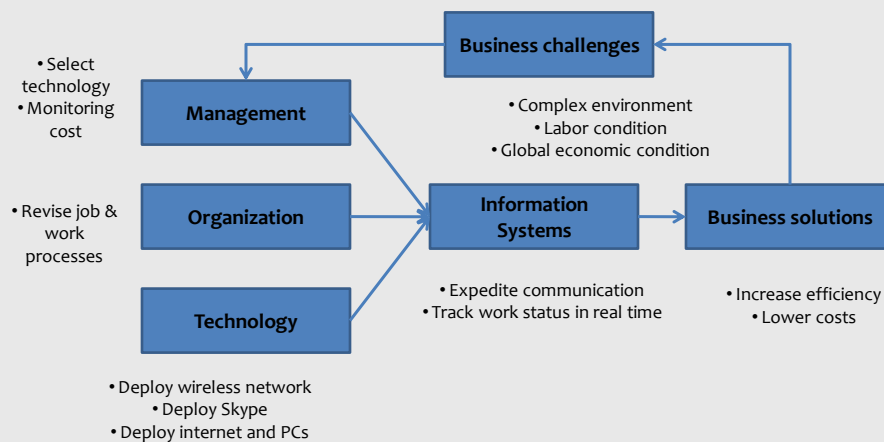
Intended Learning Outcome (ILO)

- To understand the concept of management information systems
- To define elements in MIS: the management, information, and system
- To differentiate between various types of information systems
- To know various components of information systems

Concept of MIS

- <u>A set of interrelated components</u> that <u>collect or retrieve, process, store & distribute information</u> to support decision making & control in an organization (Laudon & Laudon, 2013).

- **Why we use it?**
  - Efficient decision making
  - Coordinating & control information flow
  - Analyze & synthesis business problems
  - Visualize complex subject matter
  - Create new products
 - Achieve competitive advantages

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Concept of MIS (Cont'd)

- Select technology
- Monitoring cost

Business challenges

- Complex environment
- Labor condition
- Global economic condition

Management

- Revise job & work processes

Organization → **Information Systems** → **Business solutions**

- Expedite communication
- Track work status in real time

- Increase efficiency
- Lower costs

Technology

- Deploy wireless network
- Deploy Skype
- Deploy internet and PCs

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Elements of MIS (1)

- Three elements

1. **Management**
- ***Organizing & coordinating the activities*** of a business in order to achieve defined objectives.

- **Three levels**
  - Top management
  - Middle management
  - Operational management

Top Management

Middle Management

Operational Management
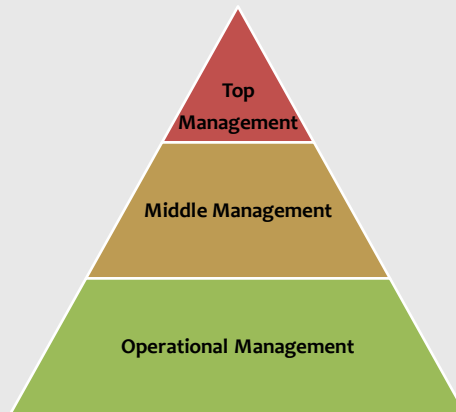
Elements of MIS (2)

2. **Information**
   - is ***a processed data*** that are represented facts, and thereby ***assist decision-making*** process.
   - ***meaningful facts***
   - e.g., purchase history

- **Data**
  - ***raw fact*** that represents events occurring in an organization
  - e.g., customer record

Elements of MIS (3)

3. **System**
- A system is *a set of elements* which are joined together to achieve a common objective.
- Elements are *interdependent and interrelated*.
- Three elements
    i. **Input:** *captures or collects data* from within the organization or from its external environment.
    ii. **Process:** *converts raw input* into a meaningful form.
    iii. **Output:** *transfers the processed information* to the users.
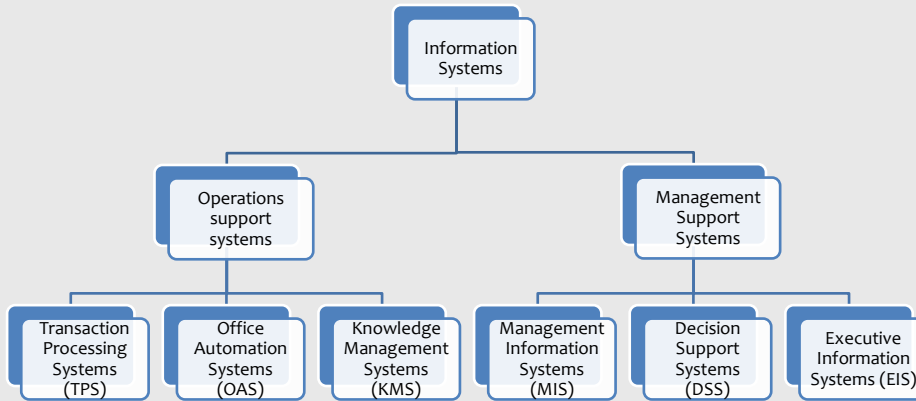
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Information Systems: Types (1)

- Can you tell me the type of information systems used in your department, organization, across organization?

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Information Systems: Types (2)

```
                        ┌──────────────┐
                        │ Information  │
                        │   Systems    │
                        └──────┬───────┘
              ┌────────────────┴────────────────┐
      ┌───────┴───────┐                  ┌───────┴───────┐
      │  Operations   │                  │  Management   │
      │    support    │                  │    Support    │
      │    systems    │                  │    Systems    │
      └───────┬───────┘                  └───────┬───────┘
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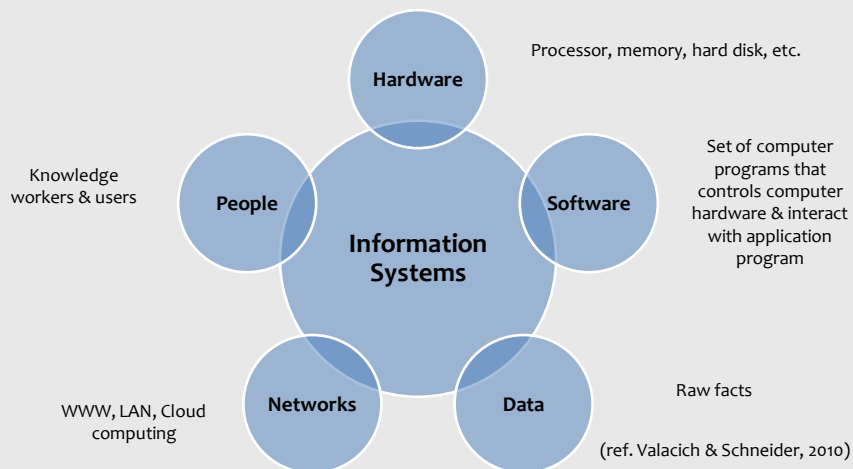| Transaction Processing Systems (TPS) | Office Automation Systems (OAS) | Knowledge Management Systems (KMS) | Management Information Systems (MIS) | Decision Support Systems (DSS) | Executive Information Systems (EIS) |

(ref. Joshi, 2013)

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Operations Support Systems

1. **Transactions Processing Systems (TPS)**
   – *basic business systems* that work at the *operational level* of the organization.

2. **Office Automation Systems (OAS)**
   – applications for workgroup communications and productivity.
   – *Office automation tools*
   – e.g., world processors, spreadsheets, emailing, storage, and retrieval of electronic files

3. **Knowledge Management Systems (KMS)**
   – a collaborative system that *promotes, preserves, distributes, and manages the knowledge works.*

Management Support Systems

1. **Management Information Systems (MIS)**
   - provide reports and *on-line access to the organizations' current performance and historical records*, such as, routine, periodical, and exception reports .

2. **Decision Support Systems (DSS)**
   - help managers in decision making by providing *analytical reports*.

3. **Executive Information Systems (EIS)**
   - *provide critical information* from a variety of internal and external sources *to the top management for strategic decisions.*

Information Systems: Components

Hardware — Processor, memory, hard disk, etc.

Software — Set of computer programs that controls computer hardware & interact with application program

Data — Raw facts

(ref. Valacich & Schneider, 2010)

Networks — WWW, LAN, Cloud computing

People — Knowledge workers & users

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References

- Laudon, K.C. & Laudon, J.P., Management Information Systems: Managing The Digital Firm, 12th Edition, 2013.
- Joshi, G., Management Information Systems, 1st Edition, 2013, Oxford Publishing Ltd.
- Valacich and Schneider, Information Systems Today: Managing the Digital World,4th Edition 2010.

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Introduction to
Knowledge Management (KM)

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What is Knowledge Management?

- Knowledge management (KM) may simply be defined as *doing what is needed to get the most out of knowledge resources*.
- In general, KM focuses on organizing and making available important knowledge, wherever and whenever it is needed.
- KM is also related to the concept of intellectual capital.

Forces Driving Knowledge Management

1. **Increasing Domain Complexity:** Intricacy of internal and external processes, increased competition, and the rapid advancement of technology all contribute to increasing domain complexity.
2. **Accelerating Market Volatility:** The pace of change, or volatility, within each market domain has increased rapidly in the past decade.
3. **Intensified Speed of Responsiveness:** The time required to take action based upon subtle changes within and across domains is decreasing.
4. **Diminishing Individual Experience:** High employee turnover rates have resulted in individuals with decision-making authority having less tenure within their organizations than ever before.

So, what does this mean?

- Faced with increased complexity, market volatility and accelerated responsiveness, today's younger manager feels less adequate to make the difficult decisions faced each day.

- KM is important for organizations that continually face downsizing or a high turnover percentage due to the nature of the industry.

Knowledge Management Systems

•Knowledge management mechanisms are <u>organizational or structural means used to promote knowledge management</u>.

•The use of leading-edge information technologies (e.g., Web-based conferencing) to support KM mechanisms enables dramatic improvement in KM.

•*knowledge management systems* (KMS): the <u>synergy between latest technologies and social/structural mechanisms</u>

Latest Technology + **Social/Structural Mechanisms** = **Knowledge Management Systems**

Knowledge Management Systems

- **KM systems classification** based on observations on the KM systems implementations:
  - *Knowledge Discovery Systems*
  - *Knowledge Capture Systems*
  - *Knowledge Sharing Systems*
  - *Knowledge Application Systems*

Issues in Knowledge Management

- *"Effective KM is not about making a choice between "software vs. wetware, classroom vs. hands-on, formal vs. informal, technical vs. social…uses all the options available to motivated employees to put knowledge to work …[and] depends on recognizing that all of these options basically need each other"* [Stewart, 2002].

- One of the <u>primary differences between traditional information systems and KM systems</u> is the active role that users of <u>KM systems play on building the content</u> of such systems.

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Effective Knowledge Management

- 80% - Organizational culture and human factors

- 20% - Technology

Essence of KM

1. Knowledge is first <u>created in the people's minds</u>. KM practices must first identify ways to <u>encourage and stimulate the ability of employees to develop new knowledge.</u>
2. KM methodologies and technologies must enable effective ways to elicit, represent, organize, re-use, and renew this knowledge.
3. <u>KM should not distance itself from the knowledge owners,</u> but instead celebrate and recognize their position as experts in the organization.