CHAPTER 6

TYPES OF INFORMATION SYSTEM

Compiled by: Tsegaye Berhanu

MAJOR TYPES OF SYSTEMS IN ORGANIZATIONS

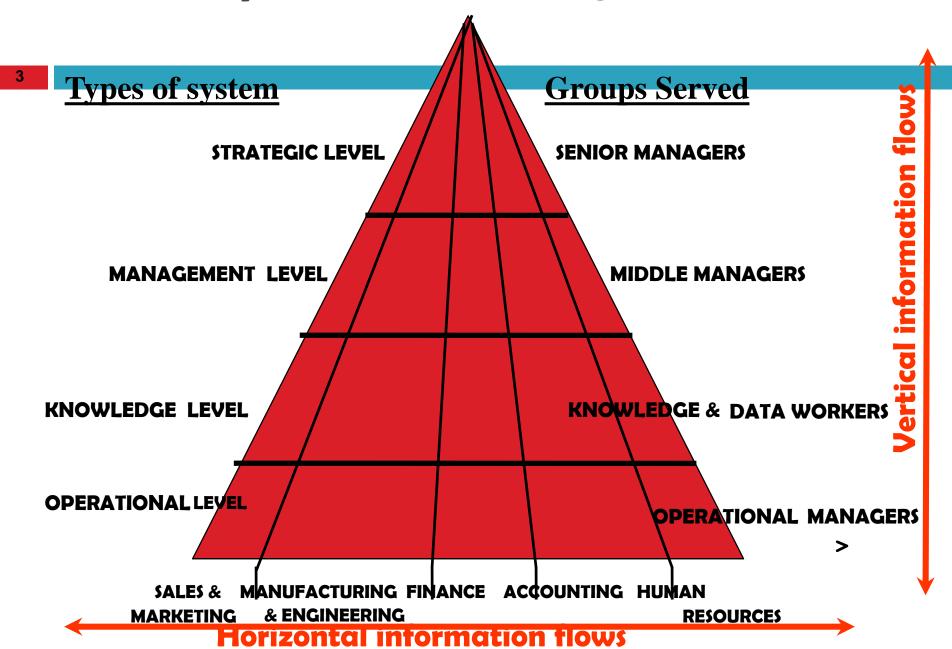➢ **Ways to Organize Information Systems**

By the groups they serve

- ❖ Strategic level
- ❖ Management level
- ❖ Operational level

➢ **By functional area**

- ❖ Sales and marketing
- ❖ Manufacturing and production
- ❖ Finance and accounting
- ❖ Human resources

Information System at different Organizational levels

Types of system   **Groups Served**

STRATEGIC LEVEL   **SENIOR MANAGERS**

MANAGEMENT LEVEL   **MIDDLE MANAGERS**

KNOWLEDGE LEVEL   **KNOWLEDGE & DATA WORKERS**

OPERATIONAL LEVEL   **OPERATIONAL MANAGERS**

>

SALES & MARKETING   **MANUFACTURING & ENGINEERING**   **FINANCE**   **ACCOUNTING**   **HUMAN RESOURCES**

Horizontal information flows

Vertical information flows

The Four Major Types of Information Systems

A typical organization has the following information systems with each supporting a specific organizational level. These systems include

- ❖ **Transaction Processing Systems (TPS)**

- ❖ **Management Information System (MIS)**

- ❖ **Office Automation Systems (OAS)**

- ❖ **Decision Support System (DSS)**

Transaction processing systems (TPS)

➢ **Transactions**

- ❖ A transaction refers to any event or activity that affects the organization.
- ❖ Basic business operations such as customer orders, billing customers, purchase orders, receipts, time cards, invoices, and payroll checks in an organization.
- ❖ To support the processing of business transactions, the transaction processing systems (TPS) are used in the organizations

➢ **Transaction processing systems (TPS)**

- ❖ Computer-based systems that perform routine operations and serve as a foundation for other systems
- ❖ Used to be called Electronic Data Processing Systems (EDPS)

Transaction Processing Systems (TPS)

➢ TPS is a basic business system that serve the operational level.

➢ A computerized system that facilitates daily routine transactions (such as sales orders from customers, or bank deposits and withdrawals) necessary to the conduct of the business and captures and stores data associated with the transaction.

Batch vs. On-Line Transaction Processing

➤ **TPS process transactions in two basic ways:**

  ❖ **Batch processing**

    ❖ A system whereby business transactions are accumulated over a period of time and prepared for processing as a single unit or batch

  ❖ **On-line transaction processing (OLTP)**

    ❖ A system whereby each transaction is processed immediately, without the delay of accumulating transactions into a batch

Transaction Processing Systems (TPS)

- ➢ Are vital for the organization, as they gather all the input necessary for other types of systems.

- ➢ Provide the basic input to the organization's database.

- ➢ A failure in the TPS often means disaster for the organization.

  ❖ Imagine what happens when an airline reservation system fails: all operations stop, no transactions can be carried out until the system is up again.

  ❖ Long queues form in front of ATMs and tellers when a bank's TPS crashes.

Objectives of TPS

- Process data generated by and about transactions
- Maintain a high degree of accuracy
- Ensure data and information integrity and accuracy
- Produce timely documents and reports
- Help provide increased and enhanced service
- Help build and maintain customer loyalty
- Achieve competitive advantage

Transaction Processing Systems – Summary

➢ Focus on processing and recording the data generated by business transactions and routine operations.

➢ Produce a variety of information products for internal or external use (customer statements, employee paychecks, sales receipts etc.).

➢ Records, classifies, sorts, calculates, summarizes stores and displays data.

➢ Supports the monitoring, collection, storage, processing, and dissemination of the organization's basic business transactions (sales, purchases, inventory changes).

❖ Example: Banking, Finance & Accounting systems

Office Automation System (OAS)

- **An office automation system (OAS) is a collection of communication technology, computers and persons to perform official tasks.**

- **Works at the knowledge level**

- **It executes office transactions and supports official activities at every organizational level.**

- **These activities can be divided into:**
  - **Clerical activities**
  - **Managerial activities.**

Office Automation System (OAS)

- **Clerical activities performed with the help of office automation system include preparing written communication, typesetting, printing, mailing, scheduling meetings, calendar keeping etc.**

- **Managerial activities office automation system helps in conferencing, creating reports and messages, and controlling performance of <u>organization</u>. Many applications like word processing, electronic filing and e-mail are integrated in office automation system**

Management Information Systems (MIS)

- MIS is especially developed to support planning, controlling, and decision-making functions of middle managers.

- MIS extracts transaction data from underlying TPSs, compiles them, and produces information products in the form of reports, displays or responses.

- These information products provide information that conforms to decision-making needs of managers and supervisors

Management Information Systems (MIS)

- **MISs use simple routines like summaries and comparisons which enable managers to take decisions for which the procedure of reaching at a solution has been specified in advance.**

- **A typical MIS report is a summary report, such as**
  - **a report on the quarterly sales made by each sales representative of the organization**
  - **exception report that specifies the exception conditions the sales made by some sales representative is far below than expected.**

Management Information Systems (MIS)

- MISs are used to produce reports on monthly, quarterly, or yearly basis. However, if managers want to view the daily or hourly data, MIS enables them to do so.

- MIS provide managers online access to the current performance as well as past records of the organization.

- Works at the management level

Management Information Systems- Summary

➢ Generates statistical summaries, exception reports, some analysis and projections, routing decisions, communication with others

➢ May be generated on a schedules basis

➢ Provides information for decision support where the information requirement can be identified in advance

❖ Examples sales and marketing summaries, personnel skills information systems

Decision Support Systems (DSS)

- A DSS is an interactive computer-based information system that, like MIS, also serves at the management level of an organization.

- However, in contrast to MIS, it processes information to support the decision making process of managers.

- It provides middle managers with the information that enables them to make intelligent decisions.

- A DSS in a bank, for example, enable a manager to analyze the changing trends in deposits and loans in order to ascertain the yearly targets.

Decision Support Systems (DSS)

- DSSs are designed for every manager to execute a specific managerial task or problem.
- DSSs help managers to make semi-structured decisions, the solution to which can be arrived at logically.
- DSS can also help in taking complex decisions. To support such decisions, they use information generated by OASs and TPSs.
- **Works at the management level**

Decision Support Systems (DSS)

- DSSs have more analytical power as compared to other information systems.

- DSS employ a wide variety of decision models to analyze data or summarize vast amount of data into a form (usually form of tables or charts) that make the comparison and analysis of data easier for managers.

- They provide interactive environment so that the users could work with them directly, add or change data as per their requirements, and ask new questions.

Other Information Systems

- **Knowledge Work Systems (KWS)**
- **Executive Information Systems (EIS)**
- **Inter-Organizational Systems (IOS)**
- **Specialized Systems (AI-based)**
  - **Expert Systems**
  - **Neural Systems**
  - **Learning Systems**
  - **Vision systems**
  - **Robotics**

Thank you for your attention!!