DCA 202 – Information Technology

LESSON : 1

WEEK : 1

TOPIC 1 : Introduction to Information Technology

OBJECTIVE : To give the student an overview of IT

LEARNING OUTCOMES:

After completing this chapter you should be able to:

1. Differentiate among data, information and knowledge.
2. Differentiate between information technology infrastructure and information technology architecture.
3. Describe the components of computer-based information systems.
4. Describe the various types of information systems by breadth of support.
5. Identify the major information systems that support each organizational level.
6. Describe how information resources are managed and identify the roles of the information systems department and the end users.

TOPIC OUTLINE:

1.1 Information Systems: Concepts and Definitions
1.2 Types of Information Systems
1.3 Examples of Information Systems

Chapter 1
Introduction To
Information Technology

1.1 Information Systems: Concepts and Definitions

- **Data Item.** Elementary description of things, events, activities and transactions that are recorded, classified and stored but are not organized to convey any specific meaning.
- **Information.** Data organized so that they have meaning and value to the recipient.
- **Knowledge.** Data and/or information organized and processed to convey understanding, experience, accumulated learning and expertise as they apply to a current problem or activity.

Information Technology Architecture. A high-level map or plan of the information assets in an organization, which guides current operations and is a blueprint for future directions.

Information Technology Infrastructure. The physical facilities, IT components, IT services and IT management that support an entire organization.

Information System (IS). Collects, processes, stores, analyzes and disseminates information for a specific purpose.

Computer-based Information System (CBIS). An information system that uses computer technology to perform some or all of its intended tasks.

Basic Components of Information Systems

1. **Hardware** is a device such as a processor, monitor, keyboard or printer
2. **Software** is a program or collection of programs that enable hardware to process data.
3. **Database** is a collection of related files or tables containing data.

- **Network** is a connecting system (wire line or wireless) that permits different computers to share resources.
- **Procedures** are the set of instructions about how to combine the above components in order to process information and generate the desired output.
- **People** are those individuals who use the hardware and software, interface with it, or use its output.

Application Programs

4. **Application program** is a computer program designed to support a specific task, a business process or another application program.

1.2 Types of Information Systems

5. Information Systems that support specific functional areas and operations include:

- Functional Area Information System
- Transaction Processing System (TPS)
- Enterprise Resource Planning (ERP) System
- Inter-organizational Information System
- Electronic Commerce Systems

6. **Functional area information systems** or **departmental information systems**

- Function: Support the activities within specific functional areas.
- Example: System for processing payroll.

- **Transaction processing system (TPS)**
  - Function: Process transaction data from business events.
  - Example: Wal-Mart checkout point-of-sale terminal.

- **Enterprise Resource Planning System (ERP)**
  - Function: Integrate all functional areas of the organization.
  - Example: Oracle, SAP

- **Inter-organizational information systems (IOS)** are information systems that connect two or more organizations and support inter-organizational operations such as supply chain management.
  - Function: Manage flows of products, services and information among organizations.
  - Example: Wal-Mart Retail Link System connecting suppliers to Wal-Mart.
  - Supply chain describes the flow of materials, information, money and services from raw material suppliers through factories and warehouses to the end customers.

7. **Electronic Commerce Systems**

- Function: Enable transactions among organizations and between organizations and customers.
- Business-to-Business (B2B)
- Business-to-Consumer (B2C)
- Example: www.dell.com

Support for Organizational Employees

8. **Knowledge workers** are professional employees such as financial and marketing analysts, engineers, lawyers and accountants.

- They create information and knowledge about a specific subject area and integrate it into an organization.
- Act as advisors to middle managers and executives.

9. **Office Automation System (OAS)**

- Function: Support daily work activities of individuals and groups.
- Example: Microsoft Office
- Support: Clerical staff, lower and middle managers and knowledge workers.

10. **Management Information System (MIS)**
- Function: Produce reports summarized from transaction data, usually in one functional area.
- Example: Report on total sales of each customer.
- Supports: Primarily for middle managers, sometimes for lower level managers as well.

11. **Decision Support System (DSS)**
- Function: Provide access to data and analysis tools.
- Example: "What if" analysis of changes in a budget.
- Supports: Primarily for middle managers and knowledge workers

12. **Expert System (ES)**
- Function: Mimic human expert in a particular area and make a decision.
- Example: Credit card approval analysis.
- Supports: Knowledge workers

13. **Executive Information System (EIS)**
- Function: Present structured, summarized information about aspects of business important to executives.
- Example: Status of production by product.
- Supports: Top managers of the organization.

1.3 The Internet

⇒ The Internet, sometimes called "the Net" is the largest and most far-flung network system for connecting users worldwide.

⇒ The Internet is not really a network at all but a loosely organised collection of about 25,000 networks.

⇒ Many people are astonished to discover that no one owns the Internet; it is run by volunteers. It has no central headquarters, no centrally offered services and no comprehensive index to tell you what information is available.

⇒ Originally developed and still subsidised by the United States government, the Internet connects libraries, college campuses, research labs, businesses, and any other organisation or individual who has the capacity to hook up.

Getting Connected

⇒ How are the computers able to communicate with one another? To access the Internet, a user's computer must be connected to a computer called a server. Each server uses the same special software called TCP/IP (Transmission Control Protocol / Internet Protocol). The supplier of the server computers, often called an Internet service provider (ISP), charges a fee, usually monthly, based on the amount of service provided.

Getting Around

⇒ The most attractive method used to move around the Internet is called browsing. Using a program called a browser, you can use a mouse to point and click on screen icons to explore the Internet, particularly the World Wide Web (www).

⇒ An Internet subset of texts, images and sounds linked together to allow users to peruse related topics. Each different location on the Web is called a Web site or just a site. You may have heard of the term home page; this is just the first page of a web site.

1.4 Managing Information Resources

- Which IT Resources are Managed and By Whom?
  - During the early 1950s, Information Systems Department (ISD) managed ALL of the only computing resource, the mainframe.
  - Today, computing resources are located throughout the organization and almost all employees use computers in their work.
  - This system is known as *end user computing*.

14. The major categories of information resources are hardware, software, databases, networks, procedures, security facilities and physical buildings.

15. **The Role of the IS Department**
  - The ISD is responsible for corporate-level and shared resources and for using IT to solve end users' business problems.
  - End users are responsible for their own computing resources and departmental resources.
  - ISD and end users work together as partners to manage the IT resources.

New (Consultative) IS Functions

16. Initiating and designing specific strategic IS.
17. Incorporating the Internet and e-commerce into the business.
18. Managing system integration including the Internet, intranets and extranets.
19. Educating the non-IS managers about IT.
20. Educating the IS staff about the business.

- Supporting end user computing.
- Partnering with the executives.
- Managing outsourcing.
- Proactively using business and technical knowledge to "seed" innovative ideas about IT.
- Creating business alliances with vendors and IS departments in other organizations.

IT Offers Career Opportunities

21. The demand for traditional IT staff – such as programmers, business analysts, systems analysts and designers – is substantial.

In addition, well-paid jobs in Internet and e-commerce, mobile commerce, network, security, object-oriented programming, telecommunications and multimedia design are available too.