

CHAPTER – 2 INFORMATION SYSTEM CONCEPTS

TOPICS TO BE DISCUSSED

A. AN OVERVIEW OF INFORMATION SYSTEM

B. TYPES OF INFORMATION SYSTEM

- OPERATIONAL SUPPORT SYSTEM
- MANAGEMENT SUPPORT SYSTEM
- OFFICE AUTOMATION SYSTEM

C. APPLICATION OF INFORMATION SYSTEM IN BUSINESS

D. INFORMATION TECHNOLOGY IN BUSINESS WORLD

E. CHARACTERISTICS OF INFORMATION

F. ROLE OF INFORMATION IN BUSINESS

G. VARIOUS TYPES OF BUSINESS APPLICATION

A. AN OVERVIEW OF INFORMATION SYSTEM

- WHAT IS SYSTEM
- CLASSIFICATION OF SYSTEM
- COMPONENTS OF INFORMATION SYSTEM
- STEPS OF INFORMATION SYTEM
- CHARACTERISTICS OF COMPUTER BASED INFORMATION SYSTEM
- MAJOR AREAS OF COMPUTER BASED APPLICATION

B. TYPES OF INFORMATION SYSTEM

OSS	MSS	OAS
Transaction Processing Systems (TPS)	Management Information System (MIS)	Test Processing Systems (TPS)
Process Control Systems (PCS)	Decision Support System (DSS)	Electronic Document Management System (EDMS)
Enterprise Collaboration System (ECS)	Executive Information System (EIS)	Electronic Message Communication System (EMCS)
		Teleconferencing and Video Conferencing Systems (TVCS)

OTHER INFORMATION SYSTEM

- Expert System
- Knowledge Management System
- Functional Business Information System
- Strategic Information System
- Cross Functional Information System

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C. APPLICATION OF INFORMATION SYSTEM IN BUSINESS

D. IT IN BUSINESS WORLD

E. CHARACTERISTICS OF INFORMATION

F. ROLE OF INFORMATION IN BUSINESS

G. VARIOUS TYPES OF BUSINESS APPLICATION

AN OVERVIEW OF INFORMATION SYSTEM

- **WHAT IS SYSTEM**

When a set of interconnected components are work together are work together to achieve some common goals or objectives.

- **CLASSIFICATION OF INFORMATION SYSTEM**

ABSTRACT – Does not contain any physical component.

It is an orderly arrangement of ideas.

Ex. Blue Prints, software etc.

PHYSICAL – It contains physical component like people, materials, machines etc.

Physical systems are more common than abstract system.

All working systems are physical system.

Ex. Transport System, Computer System.

OPEN SYSTEM – It interacts with its environment and changes itself as per the requirement of environment.

CLOSE SYSTEM – This type of system does not interact with its environment and cannot change itself as per the change in environment.

MANUAL – System where data collection, manipulation and final reporting are carried out exclusively by human efforts.

AUTOMATED – System where all the above activities are carried out by computers.

DETERMINISTIC - System where input, process and output is known with certainty is known as deterministic system.

PROBABILISTIC – System where output can only be predictable is known as probabilistic system.

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- **COMPONENTS OF INFORMATION SYSTEM**

- ✓ PEOPLE – Here people means IT professional, developers, system users etc. who can use the system for collecting information.
- ✓ HARDWARE – Hardware means the physical component of the system. Ex. Keyboard, Mouse etc.
- ✓ SOFTWARE – Software means the system software like UNIX, WINDOWS etc.
- ✓ DATA – The Data is raw fact, which may be in the form of database.
- ✓ NETWORK – Network means the communication media.

- **STEPS OF THE INFORMATION SYSTEM MODEL**

- ✓ Data is collected and converted into suitable format for input
- ✓ Data is processed and converted into information
- ✓ Information is stored for future use or communicated to user

- **CHARACTERISTICS OF COMPUTER BASED INFORMATION SYSTEM**

- ✓ All systems are work for pre-determined objectives,
- ✓ A system has a no. of interconnected and interdependent subsystem or components.
- ✓ If one sub-system or component fails – whole system does not work.
- ✓ The way in which one sub system interacts with another is called interaction.
- ✓ The goals and objectives of individual sub system have lower priority over the goals and objectives of entire system.

TYPES OF INFORMATION SYSTEM

- TRANSACTION PROCESSING SYSTEM
- DECISION SUPPORT SYSTEM
- EXECUTIVE INFORMATION SYSTEM
- MANAGEMENT SUPPORT SYSTEM
- EXPERT SYSTEM
- OFFICE AUTOMATION SYSTEM

TRANSACTION PROCESSING SYSTEM

- **WHAT IS TRANSACTION PROCESSING SYSTEM**

- ✓ This kind of systems is used to record routine business transactions like sales, purchase etc.
- ✓ This kind of system is used at operational level.
- ✓ Output of TPS is used as input for other systems.

- **ACTIVITIES OF TPS**

- ✓ Capturing the transaction
- ✓ Processing of transaction
- ✓ Generating reports
- ✓ Answering queries

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- **COMPONENTS OF TPS**

- ✓ INPUT
 - This component provides data to TPS for processing.
- ✓ PROCESSING
 - After giving the input, transaction get processed then only user give output.
- ✓ STORAGE
 - Processed data is stored for future use.
- ✓ OUTPUT
 - Any document generated is the system is output.
 - Financial reports summarize the result of transaction processed and express the result in accordance with the principle of financial reporting.

- **FEATURES OF TPS (LABS)**

- ✓ LARGE VOLUME OF DATA STORAGE –
 - TPS is transaction oriented system and it consist large volume of data thus it require storage capacity.
- ✓ AUTOMATIC BASIC OPERATION –
 - A TPS aims at automating operations of business enterprise and play a critical role in the day to day functioning of the enterprise.
 - Any failure in the TPS for a short period of time can play havoc with the functioning of enterprise.
- ✓ BENEFIT EASILY MEASUREABLE –
 - TPS reduces the workload of the people associated with it and increase their efficiency.
 - The benefits of TPS is tangible, user can easily accept the TPS.
- ✓ SOURCE OF INPUT FOR OTHER SYSTEM
 - TPS is the basic source of internal information for other IS.
 - Heavy reliance by other IS on TPS, this make TPS important for strategic level management and tactical level management.

DECISION SUPPORT SYSTEM

- **WHAT IS DECISION SUPPORT SYSTEM**

- ✓ DSS are mainly used to solve semi structured and unstructured problem by bringing together human efforts and computerized information.
- ✓ DSS are useful for TOP and MIDDLE level management.
- ✓ DSS supports human decision making process rather than replacing them.
- ✓ DSS uses internal as well as external information to solve unstructured problems.

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- **WHAT ARE CHARACTERISTICS OF DSS**

- ✓ Supports decision making at all levels of management
- ✓ It helps individual and also group decision making
- ✓ It should be flexible and adaptable to change according to the environment
- ✓ DSS focuses on decision rather than data and information
- ✓ It should be easy to use. A user should not need prior programming knowledge
- ✓ DSS can be used for structured problems also
- ✓ DSS should be user friendly
- ✓ DSS should be extensible and evolve over time
- ✓ DSS are used mainly for decision making purpose and not for training purpose
- ✓ In using DSS managers judgment is also essential

- **COMPONENTS OF DSS**

- ✓ USER
 - The user of DSS is generally a manager or analyst with unstructured or semi structured problems to solve.
- ✓ DATABASE
 - The DSS includes one or more database.
 - This database contains both internal as well as external information.
 - The database is implemented at three level as under –
 - Physical Level → Tracks / sectors in HDD
 - Logical Level → Tables in DBMS
 - External Level → User View
- ✓ Planning Language
 - The user communicates and commands the DSS through planning language.
 - User can use two types of planning language as under –
 - General Purpose Planning Language
 - Special Purpose Planning Language
- ✓ Model Base
 - Model base is known as brain of DSS.
 - DSS provide structure of problem to be solved.
 - It provides a framework of problems in the form of a model which analyze problem using manipulation and computations.

- **VARIOUS USE OF DSS IN ACCOUNTING**

- ✓ Cost accounting system
- ✓ Capital budgeting system
- ✓ Budget Variance analysis System
- ✓ General Decision Support System

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EXECUTIVE INFORMATION SYSTEM

- **WHAT IS EXECUTIVE INFORMATION SYSTEM**

- ✓ It is sometime also known as Executive Support System.
- ✓ It is useful for the top level management.
- ✓ It provides information to TLM in summarized form.
- ✓ EIS is highly user friendly system because it provides a graphical reporting system.

- **WHAT ARE CHARACTERISTICS OF EIS**

- ✓ EIS is a computer based information system that serves the information needs of TLM.
- ✓ EIS is very user friendly.
- ✓ EIS provide facility to generate exceptional reports.
- ✓ EIS provides summarized information with drill down facility for detailed information.
- ✓ EIS provide ONLINE ANALYSIS facility.
- ✓ EIS provide information in graphical form.
- ✓ EIS is capable to access both internal and external data.
- ✓ EIS provide timely information.

- **CONTENTS OF EIS**

- ✓ EIS should be updated and easy to understand.
- ✓ EIS should be user friendly.
- ✓ Performance indicators in an EIS must reflect everyone's contribution
- ✓ Information should be available to everyone.
- ✓ EIS should not increase the workload of the staff.
- ✓ Information should be confidential.

- **CHARACTERISTICS OF INFORMATION USED IN EIS (FILL HIGH)**

- ✓ Future Oriented
- ✓ Informal Source – Internal or External
- ✓ Lack of Structure – No fixed pattern of info.
- ✓ Low level of information – Broader info.
- ✓ High level of uncertainty – May or may not be correct.

MANAGEMENT INFORMATION SYSTEM

What is
MIS

Characteristics
of an effective
MIS

Misconceptions
about MIS

Pre-requisites
of an effective
MIS

Constraints
(Limitations) in
operating MIS

- **WHAT IS MIS**

- ✓ Many experts define MIS in different ways.
- ✓ According to David and Olson MIS means “An integrated user machine system designed for providing support to operational control, management control and decision making function in an organization.
- ✓ In other words MIS is a computer based information system that provides flexible and speedy access to accurate data.
- ✓ MIS supports the managers at different level to take strategic decision.
- ✓ Nature of MIS at different level has different flavor and they are available in the form of different types of reports.
- ✓ MIS is an extension of TPS.
- ✓ Output of TPS becomes Input of MIS.

- **CHARACTERISTICS OF MIS**

- ✓ MANAGEMENT DIRECTED
- ✓ MANAGEMENT ORIENTED
- ✓ COMMON DATABASE
- ✓ COMMON DATA FLOW
- ✓ INTEGRATED
- ✓ LONG TERM PLANNING
- ✓ NEED BASED
- ✓ EXCEPTION BASED
- ✓ COMPUTERISED

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- **MYTHOS OF MIS**

- ✓ More data more information
- ✓ Any computer based Information System is a MIS
- ✓ Repot should be highly accurate
- ✓ Any reporting system is MIS
- ✓ MIS is a bunch of technology
- ✓ The study of MIS is about use of computer
- ✓ MIS is a management technique

- **PRE-REQUISITIES OF MIS**

- ✓ Database
- ✓ Qualified staff
- ✓ Support of top management
- ✓ Control and maintenance
- ✓ Evaluation of MIS

- **CONSTRAINTS /LIMITATION OF MIS**

- ✓ Non-availability of experts
- ✓ Problem in selecting the sub-system
- ✓ Non-standardized approach
- ✓ Non-cooperation from staff
- ✓ High turnover of experts
- ✓ Difficulty in quantifying the benefits

EXPERT SYSTEM

- **WHAT IS EXPERT SYSTEM**

- ✓ Expert system is a computer based information system which provides advice or solution to a given problem.
- ✓ Expert system work on the principle of artificial intelligence to solve complex and unstructured problems.
- ✓ Expert system is also knowledge based system because this system contains knowledge of experts in an org. and structured manner to solve problems.

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- ***BUSINESS APPLICATION OF EXPERT SYSTEM***

- ✓ Accounting and finance
- ✓ Marketing
- ✓ Manufacturing
- ✓ Personnel
- ✓ General Business

- ***NEED OF EXPERT SYSTEM***

- ✓ Experts are expensive
- ✓ Experts are short in supply
- ✓ Human experts can handle only a few factors
- ✓ Experts are not available 24*7 hours.

- ***BENEFITS OF EXPERT SYSTEM***

- ✓ Real life expert
- ✓ Assist beginners
- ✓ ES never be biased
- ✓ Preserve knowledge
- ✓ It can be used as strategic tool
- ✓ It can be used any time

- ***QUALITIES / PROPERTIES OF ES***

- ✓ Availability: One or more experts are available to support the knowledge base
- ✓ Complexity: problems is complex
- ✓ Domain: problem is limited to a relatively well-defined problem area.
- ✓ Expertise: Solutions to the problem require the efforts of experts
- ✓ Structure: must be able to cope with ill-structured and uncertain situation

OFFICE AUTOMATION SYSTEM

- ***ACTIVITIES OF OAS***

- ✓ Document Capture
- ✓ Document Creation
- ✓ Receipts and Distribution
- ✓ Filling, Search, Retrieval and Follow up
- ✓ Calculations
- ✓ Recording Utilization of Resources

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- **BENEFITS OF OAS**

- ✓ Improve efficiency
- ✓ *Improves communication*
- ✓ *Reduces time*
- ✓ *Reduces cost*
- ✓ *Increases accuracy*

- **TYPES OF OAS**

- ✓ **TEXT PROCESSING SYSTEMS**

- Widely used office system
- Automate the process of development of documents
- Use of standard stored information to produce personalized documents.
- Support laser printers, inkjet printers, scanners
- Example - MS Word.

- ✓ **ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS**

- Used to store, retrieve and manage document files or scanned copy of documents.
- Linked to text processors, electronic message communication systems etc.
- Provide remote access of documents
- Helps in internal communication of document
- Helps traveling executives to share work space in the office.

- ✓ **ELECTRONIC MESSAGE COMMUNICATION SYSTEMS**

- **Electronic Mail**

- Electronic transmission
- Online development and editing
- Broadcasting and Rerouting
- Integration with other Information systems

- **Fax**

- Transmission of images of documents over telephone lines
- Computer system permits sharing of fax facilities
- uses special software and fax servers to send and receive fax messages using common communication resources

- **Voice Mail**

- Variation of the email
- Messages are transmitted as digitized voice

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✓ **TELECONFERENCING AND VIDEO-CONFERENCING SYSTEMS**

- Used for conducted meeting
- Persons located at two or more different places can participate
- Reduce the time and cost
- Teleconferencing has audio link
- Video conferencing has both audio and video link
- Can be used on PC with a camera
- Uses visual communication software

APPLICATION OF INFORMATION SYSTEMS IN ENTERPRISE PROCESSES

THREE IMP. ROLE OF SYSTEM IN BUSINESS

Support an org.
business
processes and
operation (Ex.
TPS)

Support
decision
making
(Ex. MIS, DSS,
EIS)

Support at
strategic level
(Ex. Expert
System)

IT IN BUSINESS WORLD

MARKETING

CUSTOMER
RELATIONSHIP
MANAGEMENT

SUPPLY CHAIN
MANAGEMENT

KNOWLEDGE
MANAGEMENT

RETAILING

DECISION
MAKING

SOME IMPORTANT IMPLICATIONS OF IS IN BUSINESS

- ✓ It help managers in **efficient decision making**
- ✓ It help an organization to **survive and grow** in highly competitive environment
- ✓ It helps in making **right decision at the right time**
- ✓ It helps in generating **innovative ideas** for solving critical problems
- ✓ **Knowledge gathered** through IT may be utilized in unusual situations
- ✓ IT can be integrated to **formulate strategy** of action or operation
- ✓ **Artificial intelligence** and **data mining** can be used to identify patterns from large dataset

CHARACTERISTICS OF INFORMATION

- ✓ Availability
- ✓ Purpose
- ✓ Mode and format
- ✓ Updated
- ✓ Rate
- ✓ Frequency
- ✓ Completeness
- ✓ Reliability
- ✓ Validity
- ✓ Quality
- ✓ Transparency
- ✓ Value of information

ROLE OF INFORMATION IN BUSINESS



STRATEGIC LEVEL INFORMATION - ESSENTIAL FOR LONG TERM PLANNING (DSS, EIS)

TACTICAL LEVEL INFORMATION – ESSENTIAL FOR SHORT TERM PLANNING (MIS)

OPERATIONAL LEVEL INFORMATION – ESSENTIAL TO CARRY OUT DAY TO DAY BUSINESS ACTIVITIES (TPS)

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IMPACT OF INFORMATION TECHNOLOGY ON DIFFERENT SECTORS IS EXPLAINED BELOW

- **E-business:**
 - ✓ It means use of internet in business
 - ✓ Primary components of e-business are computers, communication channels, software etc.
 - ✓ 24 hours sales, lower cost, efficient
 - ✓ Eliminate middlemen
 - ✓ Unlimited market place
 - ✓ Different types of business can be done, B2B, B2C, C2C
- **Financial Service Sector**
 - ✓ Financial institutions manage large volume of transactions every day
 - ✓ Because of IT applications, financial institutions operate nation wide
 - ✓ Most of the services are available to customers through internet
 - ✓ Reduced cost in terms of office staff and office building
 - ✓ Easier to manage customer relationship through the use of IT, e.g. e-mails and SMS can be used to communicate new products and services
 - ✓ Customers can do transactions using internet banking, phone banking and ATM
- **Wholesaling and Retailing:**
 - ✓ Retail business uses IT for billing, stock control, buying and generating reports
 - ✓ Bar code readers are used to read the bar tags for billing purpose
 - ✓ Supply chain logistics is managed using IT
 - ✓ Data mining techniques are used to analyze market trends and customer profile
- **Public Sectors:**
 - ✓ Public sector services include government hospitals, police stations, universities etc.
 - ✓ IT can be used here to keep records of cases and FIR's
 - ✓ ERP can be used in universities or hospitals to keep records of patients and employees
- **Others:**
 - ✓ IT is used in entertainment industry, agriculture industry, tour and hotel industry, airline reservation and consultancy etc.