**UNIT – III**

**INFORMATION SYSTEM**

**Information System types:**

A business has several information systems

* Formal Information System
* Informal Information System
* Computer Based Information System

 **Formal Information System**

* It is based on organizational chart represented by the organization.

**Informal Information System**

It is an employee based system designed to meet personal and vocational needs and to help in the solution of work-related problems. It also funnels information upward through indirect channels. It works within the framework of the business and its stated policies.

**Computer Based Information System (CBIS)**

This category of information system depends mainly on the computer for handling business application. System analysis develops different types of information system to meet variety of business needs.

There is class of system known as collectively as computer based information system.

They are categorized in the following 6 classes:

* Transaction Processing System (TPS)
* Management Information System (MIS)
* Decision Support System (DSS)
* Executive Support System (ESS)
* Office Automation Systems (OASs)
* Business Expert Systems (BESs)
* The organization has executive support systems (ESS) at the strategic level;
* Management information systems (MIS) and decision-support systems (DSS) at the management level;
* Knowledge work systems (KWS) and office systems at the knowledge level;
* Transaction processing systems (TPS) at the operational level.
* Systems at each level in turn are specialized to serve each of the major functional areas. Thus, the typical systems found in organizations are designed to assist workers or managers at each level and in the functions of sales and marketing, manufacturing, finance, accounting, and human resources.

1.  **Transaction Processing System:**

TPS processes transaction and produces reports.

It represents the automation of the fundamental, routine processing used to support business operations. It does not provide any information to the user to his/her decision-making.

TPS was known as Management Information System. Prior to computers, data processing was performed manually or with simple machines. The domain of TPS is at the lowest level of the management hierarchy of an organization.

**2. Management Information System (MIS)**

MIS is an information system, which processes data and converts it into information. A management information system uses TPS for its data inputs. The information generated by the information system may be used for control of operations, strategic and long-range planning. Short-range planning, management control, and other managerial problem solving. It encompasses processing in support of a wide range of organizational functions & management processes. MIS is capable of providing analysis, planning & decision making support. The functional areas of a business may be marketing, production, human resource, finance and accounting.

**3. Decision Support System (DSS)**

A decision support system (DSS) is an information system application that assists decision-making. DSS tends to be used in planning, analyzing alternatives, and trial and error search for solution. The elements of the decision support system include a database, model base & software. The main application areas of DSS are Production, finance and marketing.

DSS can be differentiated from MIS on the basis of processing the information. MIS processes data to convert it into information. DSS processes information to support the decision making process of a manager.

**4. Executive Support System (ESS)**

Executive Support System (ESS) is an extension of the management information system, which is a special kind of DSS; An ESS is specially tailored for the use of chief executive of an organization to support his decision-making. It includes various types of decision-making but it is more specific and person oriented.

**5. Office Automation Systems (OAS)**

Office automation refers to the application of computes and communication technology to office functions. Office automation systems are meant to improve the productivity of managers at various levels of management of providing secretarial assistance and better communication facilities.

Office activities may be grouped under two classes, namely

* Activities performed by clerical personnel (clerks, secretaries, typist, etc.,)
* Activities performed by the executives (managers, engineers or other professionals like economist, researches etc.)

In the first category, the following is a list of activities.

* Typing
* Mailing
* Scheduling of meetings and conferences,
* Calendar keeping, and
* Retrieving documents

The following is a list of activities in the second category (managerial category)

* Conferencing.
* Production of information (messages, memos, reports, etc.) and controlling performance.

**6. Business Expert Systems:**

These systems are one of the main types of knowledge-based information systems. These systems are based on artificial intelligence, and are advanced information systems. A business expert system is a knowledge based information system that uses its knowledge about a specific, complex application area to act as an expert.

The main components of an expert system are:

* Knowledge Base
* Interface Engine
* User Interface

**Transaction Processing System:**

Transaction processing systems are information system that process data resulting from the occurrence of business transactions. Transactions are events that occur as part of doing business such as sales, purchase, deposits, withdrawals, refunds and payments.

**For Example:**

The data generated whenever the business sells something to a customer on credit.

Data about the customer, product, salesperson, and store and so on must be captured and processed. This in turn causes additional transactions such as credit checks, customer billing, inventory changes, and increases in accounts receivable balances, which generate even more data. Thus, transaction processing activities are needed to capture and process such data, or the operations of a business world grind to a halt. Therefore, transaction processing systems play a vital role in supporting the operations of an organization.

**The Transaction processing cycle:**

Transaction processing systems capture and process data describing business transactions. Transaction processing system has five stages of cycle. They are.

* Data entry activities
* Transaction processing activities
* File and database processing
* Document and report generation
* Inquiry processing activities

**The data entry process:**

The input activity in transaction processing systems involves a data process. In this process data is captured or collected by recording, coding and editing activities. Data may be converted to a form that can be entered into a computer system. It has always been a problem getting data into computers accurately and quickly enough to match their awesome processing speeds. These methods are more efficient and reliable and are known as source data automation.

**Traditional data entry:**

* Traditional methods of data entry typically rely on the end users of an information system to capture data on source document such as purchase order, payroll time sheets and sales order forms.
* The source documents are subjected to one of the following additional data entry activities.
* The data is converted into a machine – readable medium, such as magnetic tape or magnetic disks. Typically this means using such devices as key to tape machine and key to disk system.
* The data from source documents could alternatively be directly entered into a computer system using a direct input device without the use of machine readable media.

**Source of data automation:**

The use of automated methods of data entry is known as source data automation several methods have been developed to accomplish this automation though very few completely automate the data entry process.

They are all based on trying to reduce or eliminate many of the activities, people and data media required by traditional data entry methods.

**Batch processing:**

* Transaction processing system process data two basic ways:
* Batch processing where transaction data is accumulated over a period of time and processed periodically.
* Real time processing where data is processed immediately after a transaction occurs.
* Transactions processing systems still make heavy use to batch processing.

**Batch processing activities:**

In a batch processing system transaction data is accumulated over a period of time and processed periodically. Batch processing usually involves. Gathering source documents originated by business transactions such a sales orders and invoices into groups called batches. Recording transactions data on an input medium such as magnetic disk or magnetic tape. Sorting the transactions in a transaction file in the same sequence as the records in a sequential master file. Processing transaction data and creating an updated master file and a variety of documents and reports.

**Real time processing:**

It process transaction data immediately after they are generated and can provide immediate output to end users. Data is fed directly into the computer system from online terminals without being stores and it is always stored online in direct access files. Files and database are always up to date since they are updated whenever date is originated regardless of its frequency.

Real time processing depends as telecommunications networks of online terminals and computers.

**Executive Support System (ESS)**

**Meaning:**

* ESI are information systems that combine many of the features of MIS and DSS. When they were first developed their focus was on meeting the strategic information needs of top management.
* In some cases and EIS also called executive support system.

**Definition**:

According to Matthews and Shoe Bridge, “EIS is a computer based information delivery and communication system designed to support the needs of top executives”.

**Characteristics** **of** **EIS**:

The main characteristics of EIS are as follows:

**Drill down capabilities:**

This capacity of an EIS allows the executives look for details on any specific information. Each level of detail that is accessed by the user may involve submenus if the system is menu driven.

**Designed with management critical success factors in mind:**

Every organization has certain critical factors that are important for achieving the organizational goals. Status access, trend analysis, and exception reporting: this feature allows executives to access the current executives to examine. The timing and relevance of information is very important.

**Personalized** **analysis**:

This capability of an EIS allows executives to use built in functions to analyze problematic situations.

 **Navigation** **of** **information**:

This feature allows the executives to access large amounts of data in a quick and efficient manner.

**EIS critical success factors:**

**A committed and informed executive sponsor:**

A top level executive, preferable the CEO should serve as the executive sponsor of the EIS by encouraging its implementation.

**An operating sponsor:**

 The executive sponsor will most likely be too busy to devote much time to implementation.

 **An appropriate information services staff:**

Information specialist should be available who understand not only the information technology but also how the executive will use the system.

 **Appropriate information technology`:**

 EIS implements should not get carried away and incorporate unnecessary hardware and software.

 **Data management:**

 It is not sufficient to simply display the data or information. The executive should have some idea of how current the data is the analysis can be accomplished by drill down by following up with data managers or both.

**A clear link to business objectives:**

 Most successful EIS are designed to solve specific problems or meet needs that can be addressed with information technology.

**Management of organizational resistance:**

 When an executive resists the EIS efforts should be taken to gain support. A good strategy is to identify a single problem that the executive faces and then quickly implement an EIS using prototyping to address that problem.

**Management of the spread and evolution of the system:**

Experience has shown that when upper level management begins receiving information from the EIS lower level managers want to receive the same output.

**An effective ESS should have the following capabilities:**

**Support for defining an overall vision:**

 One of the key roles of senior executive is to provide a broad vision for the entire organization.

**Support for strategic planning:**

EIS also support strategic planning. It is also planning the acquisition of new equipment, analyzing merger possibilities and making difficult decisions concerning downsizing and the sale of assets if required by unfavorable economic conditions.

**Support for strategic organizing and staffing:**

Top level executive are concerned with organizational structure .overall direction for staffing decisions and effective communication with labour unions are also major decision areas for top level executives.

**Support for strategic control:**

 Another type of executive decision relates to strategic control, which involves monitoring and managing the overall operation of the organization.

**Support for crisis management:**

Even with careful strategic planning a crisis can occur. Major disasters, include hurricane, tornadoes, floods, earthquakes, fires and terrorist activities can totally shut down major parts of organization.

**Advantages and Disadvantages of EIS**

**Advantages:**

* Ability to analyze trends
* Augmentation of managers leadership capabilities
* Enhanced personal thinking and decision making
* Contribution to strategic control flexibility
* Ease access to existing information
* Instruments of change
* Better reporting system
* Better understanding of enterprise operations.

**Disadvantages:**

* Functions are limited cannot perform complex calculations.
* Hard to quantify benefits and to justify implementation of an EIS.
* Executives may encounter information overload.
* System may become slow, large, and hard to manage.
* Difficult to keep current data.
* May lead to less reliable and insecure data.
* Small companies may encounter excessive costs for implementation.