**MANAGEMENT INFORMATION SYSTEM**

**UNIT -I**

**Introduction to MIS :**

Management Information Systems (MIS), referred to as Information Management and Systems, is the discipline covering the application of people, technologies, and procedures collectively called information systems, to solving business problems.

***“'MIS' is a planned system of collecting, storing and disseminating data in the form of information needed to carry out the functions of management.”***

Academically, the term is commonly used to refer to the group of information management methods tied to the automation or support of human decision making, e.g. Decision Support Systems, Expert Systems, and Executive Information Systems.

**Management** : Management is art of getting things done through and with the people in formally organized groups. The basic functions performed by a manager in an organization are: Planning, controlling, staffing, organizing, and directing.

**Information** : Information is considered as valuable component of an organization. Information is data that is processed and is presented in a form which assists decision maker.

**System :** A system is defined as a set of elements which are joined together to achieve a common objective. The elements are interrelated and interdependent. Thus every system is said to be composed of subsystems. A system has one or multiple inputs, these inputs are processed through a transformation process to convert these input to output.

**MIS DEFINITION:**

The Management Information System (MIS) is a concept of the last decade or two. It has been understood and described in a number ways. It is also known as the Information System, the Information and Decision System, the Computer- based information System.

The MIS has more than one definition, some of which are given below.

1. The MIS is defined as a system which provides information support for decision making in the organization.

2. The MIS is defined as an integrated system of man and machine for providing the information to support the operations, the management and the decision making function in the organization.

3. The MIS is defined as a system based on the database of the organization evolved for the purpose of providing information to the people in the organization.

4. The MIS is defined as a Computer based Information System.

Thought there are a number of definitions, all of them converge on one single point, i.e., the MIS is a system to support the decision making function in the organization. The difference lies in defining the elements of the MIS. However, in today’s world MIS a computerized .business processing system generating information for the people in the organization to meet the information needs decision making to achieve the corporate objective of the organization. In any organization, small or big, a major portion of the time goes in data collection, processing, documenting it to the people.

Hence, a major portion of the overheads goes into this kind of unproductive work in the organization. Every individual in an organization is continuously looking for some information which is needed to perform his/her task. Hence, the information is people-oriented and it varies with the nature of the people in the organization.

The difficulty in handling this multiple requirement of the people is due to a couple of reasons. The information is a processed product to fulfill an imprecise need of the people. It takes time to search the data and may require a difficult processing path. It has a time value and unless processed on time and communicated, it has no value. The scope and the quantum of information is individual dependent and it is difficult to conceive the information as a well-defined product for the entire organization. Since the people are instrumental in any business transaction, a human error is possible in conducting the same. Since a human error is difficult to control, the difficulty arises in ensuring a hundred per cent quality assurance of information in terms of completeness, accuracy, validity, timeliness and meeting the decision making needs.

In order to get a better grip on the activity of information processing, it is necessary to have a formal system which should take care of the following points:

* Handling of a voluminous data.
* Confirmation of the validity of data and transaction.
* Complex processing of data and multidimensional analysis.
* Quick search and retrieval.
* Mass storage.
* Communication of the information system to the user on time.
* Fulfilling the changing needs of the information.
* The management information system uses computers and communication technology to deal with these points of supreme importance.

**Objectives of MIS :**

**1. Data Capturing :** MIS capture data from various internal and external sources of organization. Data capturing may be manual or through computer terminals.

**2. Processing of Data :** The captured data is processed to convert into required information. Processing of data is done by such activities as calculating, sorting, classifying, and summarizing.

**3. Storage of Information:** MIS stores the processed or unprocessed data for future use. If any information is not immediately required, it is saved as an organization record, for later use.

**4. Retrieval of Information:** MIS retrieves information from its stores as and when required by various users.

**5. Dissemination of Information:** Information, which is a finished product of MIS, is disseminated to the users in the organization. It is periodic or online through computer terminal.

**Characteristics of MIS:**

**1. Systems Approach:** The information system follows a systems approach. Systems approach means taking a comprehensive view or a complete look at the interlocking sub-systems that operate within an organization.

**2. Management Oriented:** Management oriented characteristic of MIS implies that the management actively directs the system development efforts. For planning of MIS, top-down approach should be followed. Top down approach suggests that the system development starts from the determination of management’s needs and overall business objective. To ensure that the implementation of systems polices meet the specification of the system, continued review and participation of the manager is necessary.

**3. Need Based:** MIS design should be as per the information needs of managers at different levels.

**4. Exception Based:** MIS should be developed on the exception based also, which means that in an abnormal situation, there should be immediate reporting about the exceptional situation to the decision –makers at the required level.

**5. Future Oriented:** MIS should not merely provide past of historical information; rather it should provide information, on the basis of future projections on the actions to be initiated.

**6. Integrated:** Integration is significant because of its ability to produce more meaningful information. Integration means taking a comprehensive view or looking at the complete picture of the interlocking subsystems that operate within the company.

**7. Common Data Flow:** Common data flow includes avoiding duplication, combining similar functions and simplifying operations wherever possible. The development of common data flow is an economically sound and logical concept, but it must be viewed from a practical angle.

**8. Long Term Planning:** MIS is developed over relatively long periods. A heavy element of planning should be involved.

**9. Sub System Concept:** The MIS should be viewed as a single entity, but it must be broken down into digestible sub-systems which are more meaningful.

10. **Central database:** In the MIS there should be common data base for whole system

**ROLE OF THE MANAGEMENT INFORMATION SYSTEM:**

The role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart works faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processes it and sends it to the destination in the quantity needed. It fulfills the needs of blood supply to human body in normal course and also in crisis. The MIS plays exactly the same role in the organization.

(1) The system ensures that an appropriate data is collected from the various sources, processed, and sent further to all the needy destinations. The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries: the managers and the top management.

(2) The MIS satisfies the diverse needs through a variety of systems such as Query Systems, Analysis Systems, Modeling Systems and Decision Support Systems the MIS helps in Strategic Planning, Management Control, Operational Control and Transaction Processing.

(3) The MIS helps the clerical personnel in the transaction processing and answers their queries on the data pertaining to the transaction, the status of a particular record and references on a variety of documents. The MIS helps the junior management personnel by providing the operational data for planning, scheduling and control, and helps them further in decision making at the operations level to correct an out of control situation.

(4) The MIS helps the middle management in short them planning, target setting and controlling the business functions. It is supported by the use of the management tools of planning and control. The MIS helps the top management in goal setting, strategic planning and evolving the business plans and their implementation.

(5) The MIS plays the role of information generation, communication, problem identification and helps in the process of decision making. The MIS, therefore, plays a vita role in the management, administration and operations of an organization.

**Discuss an Organizational Need for MIS in a Company?**

To facilitate the management decision making at all levels of company, the MIS must be integrated. MIS units are companywide. MIS is available for the Top management. The top management of company should play an active role in designing, modifying and maintenance of the total organization wide management information system. Information system and Information technology have become a vital component of any successful business and are regarded as major functional areas just like any other functional area of a business organization like marketing, finance, production and HR. Thus it is important to understand the area of information system just like any other functional area in the business. MIS is important because all businesses have a need for information about the tasks which are to be performed. Information and technology is used as a tool for solving problems and providing opportunities for increasing productivity and quality. Information has always been important but it has never been so available, so current and so overwhelming. Efforts have been made for collection and retrieval of information, however, challenges still remain in the selection analysis and interpretation of the information that will further improve decision making and productivity.

**MIS for a Business Organization:**

1. **Support the Business Process:** Treats inputs as a request from the customer and outputs as services to customer. Supports current operations and use the system to influence further way of working.

2. **Support Operation of a Business Organization:** MIS supports operations of a business organization by giving timely information, maintenance and enhancement which provides flexibility in the operation of an organizations.

3. **To Support Decision Making:** MIS supports the decision making by employee in their daily operations. MIS also supports managers in decision making to meet the goals and objectives of the organization. Different mathematical models and IT tools are used for the purpose evolving strategies to meet competitive needs.

4. **Strategies for an Organization:** Today each business is running in a competitive market. MIS supports the organization to evolve appropriate strategies for the business to assent in a competitive environment.

**Discuss the Prerequisites of an Effective MIS?**

**(i) Qualified System and Management Staff:** The prerequisite of an effective MIS is that it should be managed by qualified officers. These officers should have a mutual understanding about the roles and responsibilities of each other. Be understand clearly the view of their fellow officers. For this, each organization should have two categories of officers:

**(a) System and Computer Experts** who in addition to their expertise in their subject area, they should also be capable of understanding management concepts to facilitate the understanding of problems asked by concern. They should also be clear about the process of decision making and information requirements for planning.

(**b) Management experts** who should also understand quite-clearly the concepts and operations of a computer. This basic knowledge of computer will be useful will place them in a comfortable position, while working with systems, technicians in designing or otherwise, of the information system.

**(ii) Futuristic Perspective:** An effective MIS should be capable of meeting the future requirements of its executives as well. This capability can be achieved by regular monitoring and updating the MIS.

**(iii) Support of Top Management:** For a management information system to be effective, it must receive the full support of top management. The Reasons for this are:

**(a)** Subordinate managers are usually lethargic about activities which do not receive the support of their superiors.

**(b)** The resources involved in computer based information system are larger and are growing larger and larger in view of importance gained by management information system.

**(iv) Common Database:** It is an integrated collection of data and information which is utilized by several information subsystems of an organization. A common database may be defined as a super file which consolidates and integrates data records formerly stored in a separate data file. Such a database can be organized as an integrated collection of data records into a single super file or it can be organized as an integrated collection of several data file.

**(v) Control and maintenance of MIS:** Control of the MIS means the operation of the system as it was designed to operate. Sometimes, users develop their own procedures or short cut methods to use the system which reduces its effectiveness.

**What do you understand by Information System? Discuss various type of Information**.

A business has several information systems:

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

**(a) Formal Information System:** It is based on organizational chart represented by the organization.

**(b) 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.

**(c) 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:

1. Transaction Processing System (TPS)
2. Management Information System (MIS)
3. Decision Support System (DSS)
4. Executive Support System (ESS)
5. Office Automation Systems (OASs), and
6. Business Expert Systems (BESs)

Shows the specific types of information systems that correspond to each organizational level. 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; and 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 uses data and produces data as shown in the following diagram.

Previously, 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

1. Activities performed by clerical personnel (clerks, secretaries, typist, etc.,) and
2. 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.

1. Typing
2. Mailing
3. Scheduling of meetings and conferences,
4. Calendar keeping, and
5. Retrieving documents

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

1. Conferencing.
2. 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:

1. Knowledge Base
2. Interface Engine
3. User Interface