Management Information System

Basic concepts

- CONCEPTS: The word 'MIS' comprises of three basic elements such as:
- Management: Management covers the planning, control, and administration of the operations of a concern. The top management handles planning; the middle management concentrates on controlling; and the lower management is concerned with actual administration.
- Information: Information, in MIS, means the processed data that helps the management in planning, controlling and operations. Data means all the facts arising out of the operations of the concern. Data is processed i.e. recorded, summarized, compared and finally presented to the management in the form of MIS report.
- System: Data is processed into information with the help of a system. A system is made up of inputs, processing, output and feedback or control. A group of interrelated or interacting elements forming a unified whole e.g., business organization as systems.
 - A group of interrelated components working together towards a common goal by accepting input and producing output in an organized transformation process.

Meaning of MIS:

- MIS is the use of information technology, people, and business processes to record, store and process data to produce information that decision makers can use to make day to day decisions.
- MIS is the acronym for Management Information Systems. In a nutshell, MIS is a collection of systems, hardware, procedures and people that all work together to process, store, and produce information that is useful to the organization.

MIS

- Management Information System (MIS) is a study of people, technology, organizations, and the relationships among them in a broader sense.
- However in precise terms MIS is a software system that focuses on the management of information technology to provide efficiency and effectiveness or strategy decision making.
- The term is often used in the academic study of businesses and has connections with other areas, such as information systems, information technology, informatics, e-commerce and computer science.

MIS

- MIS can be defined in a number of ways:
 - 1. The MIS is defined as a system which provides information support for decision making in the organisation.
 - 2. MIS is an integrated system of men and machines for providing the information to support the operations, the management and decision making functions in the organisation.
 - 3. MIS is defined as a system based on the database to the Organisation evolved for the purpose of providing information to the people in the Organisation

Objectives of MIS

The goals of an MIS are to implement the organizational structure and dynamics of the enterprise for the purpose of managing the organization in a better way and capturing the potential of the information system for competitive advantage.

Following are the basic objectives of an MIS -

- Capturing Data Capturing contextual data, or operational information that will contribute in decision making from various internal and external sources of organization.
- Processing Data The captured data is processed into information needed for planning, organizing, coordinating, directing and controlling functionalities at strategic, tactical and operational level. Processing data means: making calculations with the data, sorting data, classifying data and summarizing data

Objectives of MIS

- Information Storage Information or processed data need to be stored for future use.
- Information Retrieval The system should be able to retrieve this information from the storage as and when required by various users.
- Information Propagation Information or the finished product of the MIS should be circulated to its users periodically using the organizational network.

Characteristics of MIS

- Following are the characteristics of an MIS:
 - It should be based on a long-term planning.
 - It should provide a holistic view of the dynamics and the structure of the organization.
 - It should work as a complete and comprehensive system covering all interconnecting sub-systems within the organization.
 - It should be planned in a top-down way, as the decision makers or the management should actively take part and provide clear direction at the development stage of the MIS.
 - It should be based on need of strategic, operational and tactical information of managers of an organization.
 - It should also take care of exceptional situations by reporting such situations.
 - It should be able to make forecasts and estimates, and generate advanced information, thus providing a competitive advantage. Decision makers can take actions on the basis of such predictions.

Characteristics of MIS

- Following are the characteristics of an MIS:
 - It should create linkage between all sub-systems within the organization, so that the decision makers can take the right decision based on an integrated view.
 - It should allow easy flow of information through various sub-systems, thus avoiding redundancy and duplicity of data. It should simplify the operations with as much practicability as possible.
 - Although the MIS is an integrated, complete system, it should be made in such a flexible way that it could be easily split into smaller sub-systems as and when required.
 - A central database is the backbone of a well-built MIS.

Characteristics of Computerized MIS

- Following are the characteristics of a well-designed computerized MIS:
 - It should be able to process data accurately and with high speed, using various techniques like operations research, simulation, heuristics, etc.
 - It should be able to collect, organize, manipulate, and update large amount of raw data of both related and unrelated nature, coming from various internal and external sources at different periods of time.
 - It should provide real time information on ongoing events without any delay.
 - It should support various output formats and follow latest rules and regulations in practice.
 - It should provide organized and relevant information for all levels of management: strategic, operational, and tactical.
 - It should aim at extreme flexibility in data storage and retrieval.

Functions of Management

- Management has been defined as a process of getting things done through others. This process is identified in a set of functions performed by managers to accomplish the goals. A manager is thus someone who defines, plans, guides, helps out, and assesses the work of others, frequently people for whom the manager is accountable in an organization. The following mentioned management functions will involve creative problem solving.
 - Planning: "planning is selecting information and making assumptions concerning the future to put together the activities necessary to achieve organizational objectives." Planning includes both the broadest view of the organization, e.g., its mission, and the narrowest, e.g., a tactic for accomplishing a specific goal
 - Organizing: Organizing is the classification and categorization of requisite objectives, the grouping of activities needed to accomplish objectives, the assignment of each grouping to a manager with the authority necessary to supervise it, and the provisions for coordination horizontally and vertically in the organization structure.

Functions of Management

- Directing: Direction is telling people what to accomplish and seeing that they do it to the finest of their capability. It includes making assignments, corresponding procedures, seeing that mistakes are corrected, providing on the job instruction and, of course, issuing orders.
- Staffing: Staffing function requires recognition of human resource needs, filling the organizational structure and keeping it filled with competent people. This function includes recruiting, training; evaluating and compensating are the specific activities.
- Controlling: "Control is the course of action that measures present performance and guides it towards some predetermined goal. The quintessence of control lies in checking existing actions against some desired results determined in the planning process."

- According to the expert there are three types of level of management:
 - Top Level Management
 - Middle Level Management
 - Low Level or Operative Management

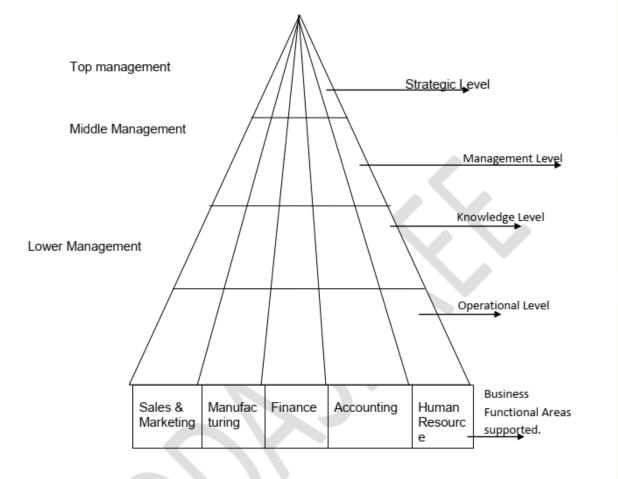
- Top Level Management: Top level management consists of board of directors, managing directors or executive committee members. Objectives of Top Level Management include the following.
 - Setting key objectives, policies and identifying factors essential for the development of the organization.
 - Making appointments to the top position of the organization such as managers department heads etc.
 - Reviewing the work of different personnel in various levels.

Middle Level Management: Middle level management consists of managers of various departments such as productions, sales, marketing, resource, finance etc.

Objectives of Middle Level Management include the following.

- Follow the rules and policies formulated by the top level management.
- Motivating personnel for higher productivity
- Collecting detail analysis reports from the various departments.
- Mutual understanding with other departments in the organization.
- Recommendations to the top level management.

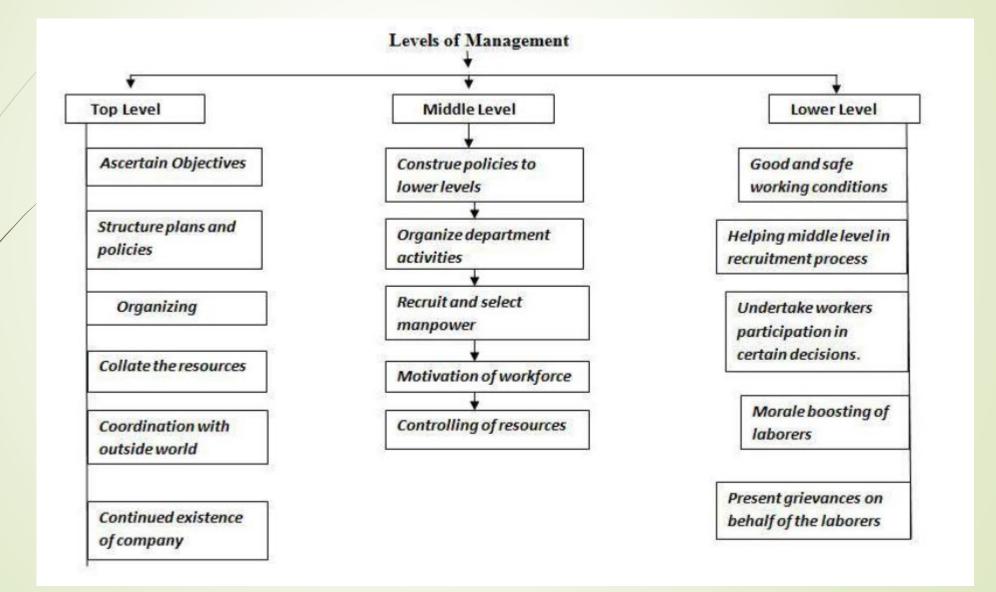
- Low Level Management: Low level management consist of supervisors, daily workers etc. Follow the rules and guidelines made out by the top level authentic of the organization. Some of the functions of Lower Level Management include the following.
- To issue orders and instructions to the workers and to supervise and control their work
- To classify and assign jobs to the workers
- To direct and guide the workers about work procedure
- To arrange for the necessary tools, equipment, materials etc., for the worker
- To solve the problems of workers
- To inform the management about the problems of workers which are not solved at this level?
- To maintain discipline among the workers and to develop in them the right approach to work.
- To maintain good human relations
- To build a high group morale among the workers.



Top Management: Strategic Planning

Middle Management: Tactical Planning or Management Control

Lower Management & Operational Management: Operational Control



Concept of a System

A System is a group of interrelated components working together toward a common goal by accepting inputs and producing outputs in an organized transformation process.

System Concepts

The concepts of a system are Technology, Application, Development and Management.

a. Technology.

Computer networks are systems of information processing components that are a variety of hardware, software and telecommunication technology.

b. Application.

That electronic business and commerce application involves interconnected business information system

c. Development.

That developing way to use IT in business includes designing the basic component of information system.

d. Management.

Managing IT emphasize the quality, strategic business value and security of an organization in information system.

Components of a System

- There are three basic components of a system, they are a) Input: Input involves capturing and assembling elements that enter to the system to be processed. Some of the inputs are raw materials, energy, data etc.
 - b) Processing: It involves transformation process that converts input to output.
 - c) Output: It involves transforming element that has been produced by a transformation process to their ultimate destination.

Types of System

a. Dynamic System:

When the interrelated component of the system interacts with each other and this controlled by management then it is known as Dynamic System.

b. Cybernative System

Dynamic System implementing the concept of feedback and control is known as Cyber native System.

c. Open System

A system got interacts with other system in its environment by exchanging input and output with its environment

d. Adoptive System

A System having the ability to change itself and its environment in order to survive is called an Adoptive System.

Data and information

By data we mean the facts or figures representing an object, place or the events occurring in the organization. It is not enough to have data (such as statistics on the economy). Data themselves are fairly useless, but when these data are interpreted and processed to determine its true meaning, they become useful.

Characteristics of Data

- They are facts obtained by reading, observation, counting, measuring and weighing etc. which are then recorded
- Data are derived from external and internal sources (activities with firm).
- Data may be produced as an automatic by-product of some routine but essential operation such as the production of an invoice or alternative a special counting or measuring procedure must be introduced and the result recorded.
- The source of data need be given considerable attention because if the sources of the data flawed, any resulting information will be worthless.

Data Processing

- Data or processing systems perform the essential role of collecting and processing the daily transactions of the organizations. Data processing is necessary to ensure that the day-to-day activities of the organization are processed, recorded and acted upon. Files are maintained which provide both the current data for transaction, for example the amount invoiced and cash received during the month for statement preparation, and which also serve as a basis for operational and tactical control and for answering enquiries.
- By information, we mean that the data have been shaped into a meaningful form, which may be useful for human beings.
- So, when data are processed, interpreted, organized, structured or presented so as to make them meaningful or useful, they are called information. Information provides context for data.

Characteristics of Good Information

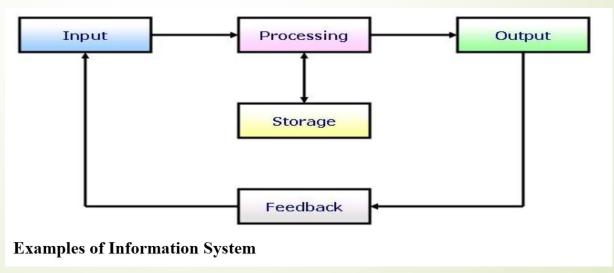
- Relevance: Information must be relevant to the problem being considered. Too often reports, messages, tabulations etc. contain irrelevant parts which most prevent the user of the information to get the actual meaning of what the sender wants
- Accuracy: Information should be sufficiently accurate for it to be relied upon by the manager and for the purpose for which it is intended.
- Completeness: Ideally, all the information required for a decision should be available. However, in practice, this is not often obtainable. What is required is that the information is complete in respect of the key elements of the problem.
- Confidence in the source: For information to have value it must be used. For it to be used managers must have confidence in the source.
- Communication to the right person: All persons have a defined sphere of activity and responsibility and should receive information to help them carry out their designated tasks. In practice this is not always as easy as it sounds. It is quite common for information to be supplied to the wrong level in the organization.

Functions of Information

- Reduction of Uncertainty: Uncertainty exist where there is less than perfect knowledge. Rarely, if ever is there perfect knowledge but relevant information help to reduce the unknown.
- An aid to monitoring and control: By providing information about performance and the extent of deviations from planned level of performance, management are better able to control operation.
- As a means of communication: Managers need to know about developments, plans, forecasts, impending changes and so on.
- As a memory supplement: By having historical information about performance, transactions, results of past actions and decisions available for reference, personal memories are supplemented.
- As aid to simplification: By reducing uncertainty and enhancing understanding, problems and situations are simplified and become more manageable.

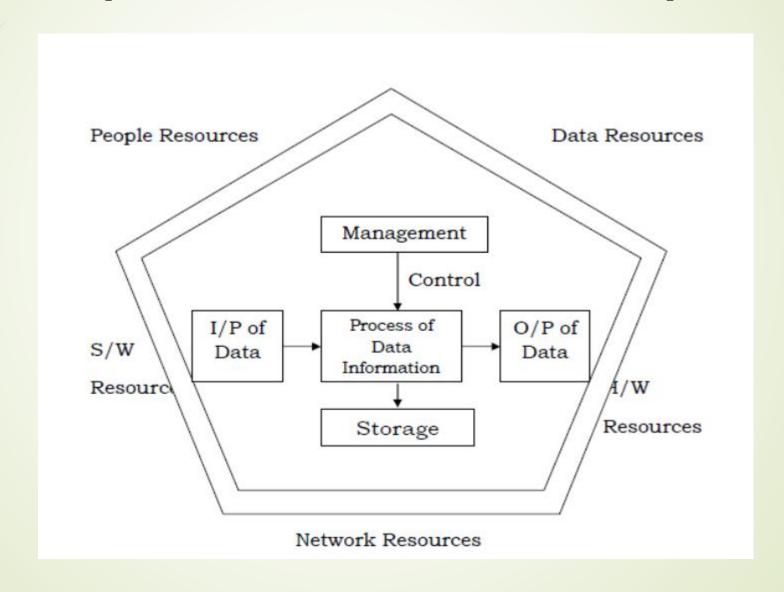
Information System

Meaning: An information system can be any organized combination of people, hardware, software, communication software and data resource that collects transformation or screening the information in an organization. Definition: An information system can be defined as a set of interrelated components that collect (or retrieve), process, store and distribute information to support decision making, coordination and control in an organization



Information system

- Information system provides information on the operation of the system to management for the direction and maintenance of the system as it exchanges inputs and output with its environment.
- Some examples of information systems include the following
 - Airline reservations (seat, booking, payment, schedules, boarding list, special needs, etc.)
 - Bank operations (deposit, transfer, withdrawal) electronically with a distinguish payment gateways.
 - Integration of department with the help of contemporary software's like ERP.
 - Logistics management application to streamline the transportation system.



People Resources

- ☐ People are required for the operation of all information system.
- People Resources divided into two types

i) End-Users

These are the people who use an information system or the information it produce.

Ex: Accounts, Sales Persons, Customers and Managers.

ii) Information system specialist

These are the people who develop and also operate Information system. Ex: System Managers, Programmers, Computer Operation.

Data Resources

Data resources of an Information system are typically organized in two parts:

i) Database

Database holds processed and organized data.

ii) Knowledge Base

It holds knowledge in a variety of forms such as facts, rules, and case examples.

Software Resources

It includes all sets of information processing instruction. It is also two types:

i) Program:

Set of operating instructions the direct and computer hardware.

ii) Procedure

Set of Information processing instructions needed by people.

Ex: Operating System, Spreadsheet Programs, and Word processor Programs.

Hardware Resources

Include all physical devices and materials used in information processing. It has also two types

i) Machines

Ex: Computer, Video Monitor, Scanner.

ii) Media

Hardware in computer based Information system.

Ex: Floppy Disk, Magnetic Tape and Optical Disk.

Computer System

Ex: Microcomputers, Midrange Computers System, Large Mainframe

Computer Peripheral: Ex: Mouse, Key Board.

Network Resources:

These are the fundamental resource components of all information Systems. It

has also two types:

i) Communication Media:

Ex: Co-axial Cable, Twisted Paired Wire, Fibre Optics Cable, Microwave System and Communication Satellite System.

ii) Network Support:

Generally used for the operation and use of a communication network. Ex: Modems, Internet Browser and Communication Control Software.