UNIT-1 MANAGEMENT INFORMATION SYSTEM: BASIC CONCEPTS

UNIT STRUCTURE

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1.0 Introduction

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.

In this unit, we will discuss the basic concepts in Management Information System.

1.1 Learning Objectives

After going through this unit you should be able to:

- Know the fundamental management concepts
- Understand the basic concepts of Information Systems
- Understand and apply core knowledge in Information Systems
- Identify and analyze requirements for information systems
- Understand and apply design principles in Information Systems.
- Identify the basic components of Management Information Systems.
- Conceptualize information systems as combinations of hardware and software technologies.
- Know the applications of information systems in various levels of Management.

1.2 Basic Concepts

Management Information System is an accumulation of 3 different terms as explained below.

Management: We can define management in many ways like, "Manage Man Tactfully" or Management is an art of getting things done by others. However, for the purpose of Management Information System, management comprises the process and activity that a manager does in the operation of their organization, i.e., to plan, organize, direct and control operations.

Information: Information simply means processed data or in the layman language, data which can be converted into meaningful and useful form for a specific user.

System: The system can be explained in a following ways:

- System can be defined as a set of elements joined together for a common objective.
- 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.

1.3 Overview of Management Concepts

Every business unit has some objectives of its own. These objectives can be achieved with the coordinated efforts of several personnel. The works of a number of persons are properly co-ordinated to achieve the objectives through the process of management.

Management is a vital aspect of the economic life of man, which is an organised group activity. It is considered as the indispensable institution in the modern social organization marked by scientific thought and technological innovations. One or the other form of management is essential wherever human efforts are to be undertaken collectively to satisfy wants through some productive activity, occupation or profession.

It is management that regulates man's productive activities through coordinated use of material resources. Without the leadership provided by management, the resources of production remain resources and never become production.

Management is the integrating force in all organized activity. Whenever two or more people work together, to attain a common objective, they have to coordinate their activities. They also have to organize and utilize their resources in such a way as to optimize the results.

Management is usually defined as planning, directing and controlling the business operations. Management is the process of allocating and organizations input including human and economic resources by planning, organizing, directing and controlling for the purpose of producing goods or services desired by customers so that organizational objectives are accomplished.

1.4 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: According to Terry and Franklin, "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. The focus is on separation, coordination, and control of tasks and the flow of information inside the organization. It is in this function that managers allocate authority to job holders.

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." The purpose of directing is to control the behaviour of all personnel to accomplish the organization's mission and objectives while simultaneously helping them accomplish their own career objectives.

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."

1.5 Levels of Management

According to the expert there are three types of level of management:

i) Top Level Management

ii) Middle Level Management

iii) Low Level or Operative Management

1.5.1 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.

1.5.2 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.

1.5.3 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.

1.6 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.

1.6.1 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.

1.6.3 Components of a System

There are three basic components of a system, they are

a) Input,

b) Processing and

c) Output.

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.

1.6.4 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.

1.7 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.

Information is created from organized structured and processed data in a particular context, "information can be recorded as signs, or transmitted as signals. Information is any kind of event that affects the state of a dynamic system that can interpret the information. Conceptually, information is the message (utterance or expression) being conveyed. Therefore, in a general sense, information is 'knowledge communicated or received concerning a particular fact or circumstance".

Characteristics of Good Information

Good information is that which is used and which create value. Experience and research shows that good information has numerous qualities which are:

1. **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.

2. **Accuracy**: Information should be sufficiently accurate for it to be relied upon by the manager and for the purpose for which it is intended.

3. **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. This suggests that there should be interaction between information provides and users to ensure that the key factors are identified.

4. 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. Confidence is enhanced: Data Processes Output

a. The source has been reliable in the past

b. There is good communication between the information producer and the manager.

5. **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. a superior may not pass it on the person who needs it whilst subordinates may hold onto information in an attempt to make themselves seem indispensable.

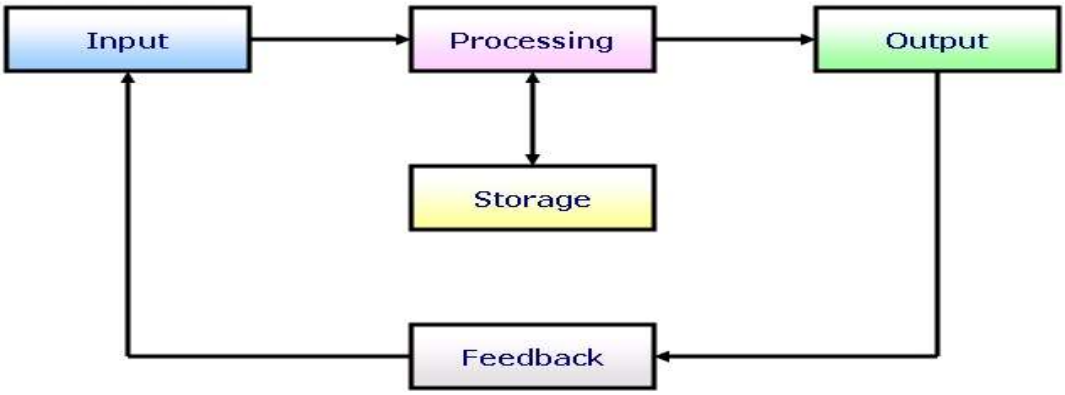
Functions of Information

a) **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.
b) **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.
c) **As a means of communication**: Managers need to know about developments, plans, forecasts, impending changes and so on.
d) **As a memory supplement**: By having historical information about performance, transactions, results of past actions and decisions available for reference, personal memories are supplemented.
e) **As aid to simplification**: By reducing uncertainty and enhancing understanding, problems and situations are simplified and become more manageable.

1.8 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.*



Examples of Information System

A business is an example of an organizational system to an economic resource (input) is transformed by various business processes into goods and services (output).

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.

a. Feedback and control

A system with feedback and control components is sometimes known as cybernetic system that is a self monitoring or self regulating system.

b. Feedback.

Feedback is a data about the performance of a system.

c. Control.

Control involves monitoring and evolving feedback determines whether a system is moving towards the achievement of its goals. The control function makes necessary adjustments to a system input and possessing components to ensure that to produce proper output.

1.8 Components of Information System

a. People Resources

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

i) End-Users

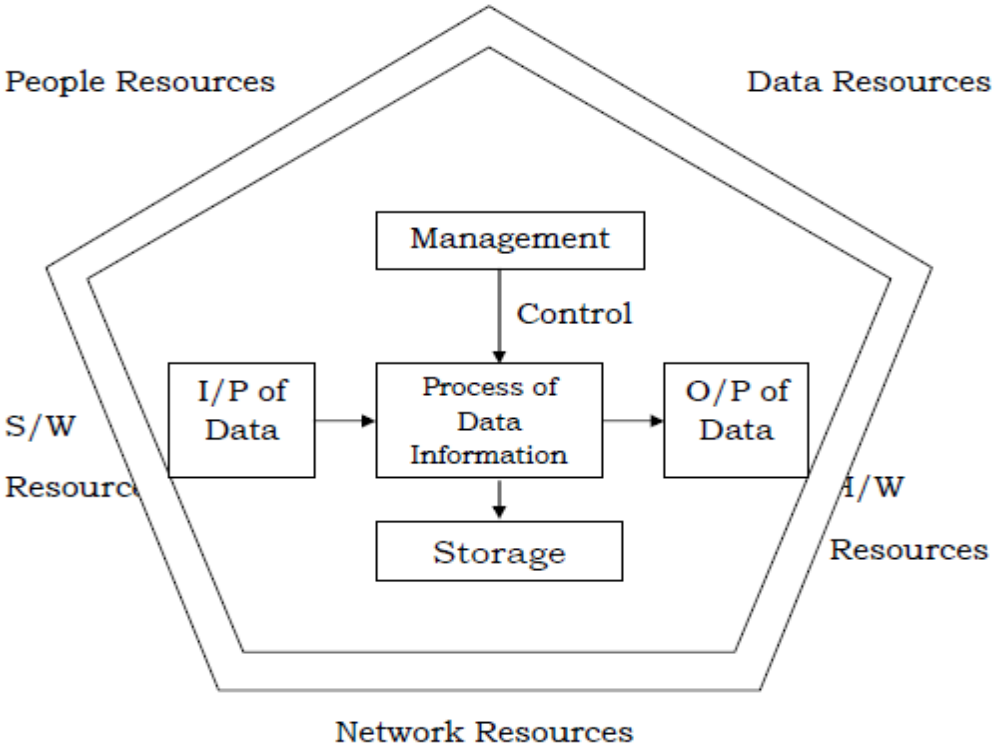
These are the people who use an information system or the information it produce.

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.



b. 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.

c. 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.

d. 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.

e. 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.

1.9 Need for Information Systems

The information system is very important for the internet technology and the traditional business concerns and is really the latest phase in the ongoing evolution of business. All the companies need to update their business, infrastructure and change way they work to respond more immediately to customer need.

A first step in designing and developing an MIS is to assess the information needs for decision making of management at different hierarchical levels, so that the requisite information can be made available in both timely and usable form to the people who need it. Such assessment of information needs is usually based on personality, positions, levels and functions of management.

1.10 Uses of Information System

Information system and technology including E-business and E-commerce technology and application has become vital component of successful business and organization.

It is a study of business administration and management. For a manager or a business professional it is just as important to have basic understanding of information system and any other functional area in business.

1.11 Roles of Information Systems in business

An Information system supports the business Organizations in the following ways.

a) **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.

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

c) **Support Decision Making:** An IS supports the decision making by employee in their daily operations. It 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.

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

1.12 Let us Sum Up

In this unit we have, have discussed some basic concepts relevant to management information system such as the fundamental concepts of management, levels of management, systems concepts, types of systems, components, information and types of information systems and examples of information systems. Management Information System is seen as a way of evaluating, analyzing and processing an organization data to produce meaningful and useful information from which the management can take decision to ensure future growth and development of the organization.

In the next unit we will discuss different types of Information systems and their support to different levels of management in an organization.

1.13 Self Assessment Questions

1. What are different management functions?

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2. Define a system? What do you mean by system concepts?

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3. What are various types of systems?

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4. What is an Information system? Why information systems are needed?

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5. Explain how an Information System supports business Organizations.

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1.14 Model Questions

1. What are three levels of management and outline the objectives each level of management.
2. Discuss the concepts and components of a system.
3. Differentiate between data and information. What are the characteristics of good information?
4. What is an Information system? Discuss about each component of an Information System.
5. Discuss the role of information systems in business.

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UNIT 2 MIS APPLICATIONS IN ORGANISATION

UNIT STRUCTURE

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2.0 Introduction

Large number of jobs today for computer professionals is in creating information systems for managing organizations. Students should know what information is and how it is different from data, should know nature of organizations and their structure to design appropriate information system, should know management structure and needs of each level of management and should know functional areas of management and information needs for each area.

The management professionals also should identify different type of information that is needed at various levels of management and how Information systems can provide the information each levels of management.

In this unit we will explain different types of information needed at various levels of management and the applications of management information systems in the organization.

2.1 Learning Objectives

After going through this unit you should be able to

- Define the term Information".
- Explain the concepts of Information and its types.
- Understand the need for information at various levels of management.
- Types of Information Systems
- Define MIS
- Identify the objectives of MIS
- Know the applications of MIS in an organization.

2.2 Information Concepts

Data is a raw material for information systems. Collecting data costs money and hence one must collect necessary and sufficient data. Data is generally input to the information systems for processing. Data size is also growing but is useless unless it is processed to create information.

Information is processed data, used by managers to initiate actions and to run the organization efficiently. The data processed by machines gives information

Types of Information

- ***Strategic:*** Needed for long range planning and directions. This is less structured.
- ***Tactical:*** Needed to take short range decisions to improve profitability and performance.
- ***Operational:*** Needed for day to day operations of the organization. Eg: Daily Sales, Billing.
- ***Statutory:*** Needed by law to send to government authorities. Eg: Sales tax return.

2.3 Need for Information Systems

Information systems are needed when timely processing for fast action is needed; same data has to be processed in different ways and when organizations require innovative processing.

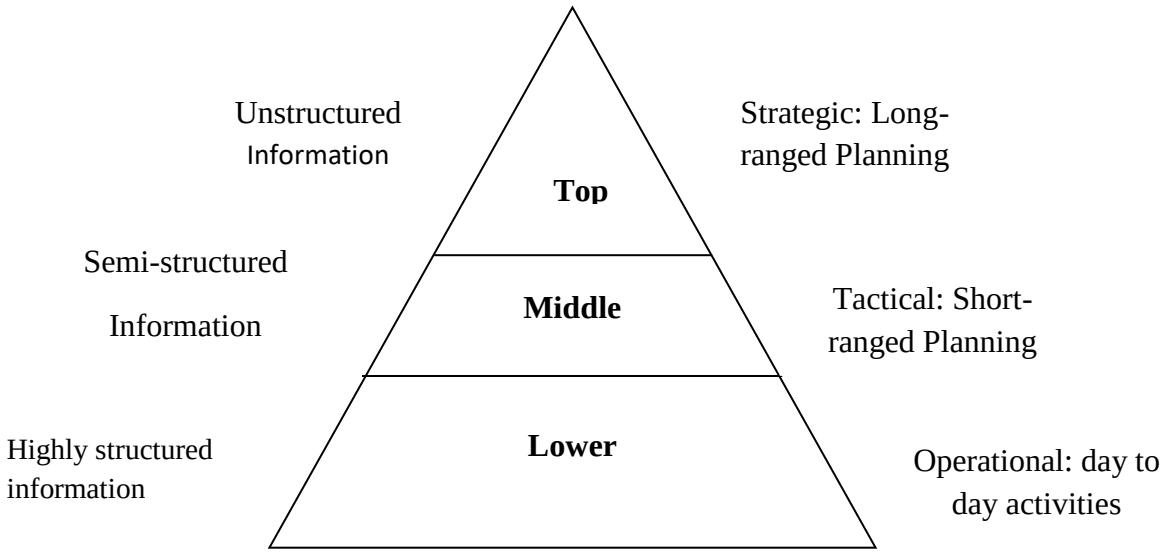

Fig: Management hierarchy and information needs

Functional areas of management are as follows

A. Production
B. Marketing
C. Materials – purchase, stores
D. Finance –accounts
E. Human Resource Development (HRD)
F. Research and Development (R&D)

2.4 Information for Management

Different types of information required for various departments of an enterprise can be categorized as follows.

2.4.1 Production Management

The following type of information is needed in production management:

Strategic Information:

1) Yearly and monthly production quotas and alternate schedules

2) Policies on machine replacement, augmentation and modernization.

3) Identifying best product mix.

Tactical Information

1) Identifying and controlling areas of high cost.

2) Identifying critical bottlenecks in production.

3) Identifying alternate production schedules based on tools, machines etc.

4) Performance measures of machines to decide replacement.

Operational Information

1) Monitoring up to date production information by examining assemblies, detecting likely shortages and giving early warning.

2) Scheduling better production dynamically.

3) Preventive maintenance schedules.

4) Monitoring tool, machine and personnel availability

2.4.2 Marketing Management

The following type of information is needed in Marketing Management:

Strategic Information:

1) Search for new markets and marketing strategies.

2) Analysis of competitor's strategy

3) Technology and demographic forecasts and product changes

Tactical Information:

1) Advertising techniques and analysis of their impact.

2) Customer preference surveys.

3) Correlation of prices and sales.

4) Sales force deployment and targets.

5) Exploring alternate marketing channels.

6) Timing of special sales campaigns.

Operational Information:

1) Sales analysis by regions, customer class, sales person.

2) Sales target versus achievement.

3) Market share and trends.

4) Seasonal variations.

5) Effect of model changes.

6) Performance of sales outlets

7) Costs of campaigns and benefit.

2.4.3 Material Management

The following type of information is needed in Materials Management:

Strategic Information:

1) Developing vendors for critical items
2) Determining optimal levels of inventory
3) Determining proportion of material needed
4) Reducing varieties of inventory

Tactical Information:

1) Developing vendor performance measures.
2) Determining optimal reorder levels.
3) Determining issues of items to shops versus
4) Standard needs.
5) Controlling high value of inventory.
6) Determining impact on material cost and
7) Procurement with design changes and new
8) Product introduction.

Operational Information:

1) List of excess & deficient items received.
2) List of items rejected.
3) Critical items received.
4) Stores in transit and in inspection.
5) Value of inventory in hand.
6) Goods received, rejected and issued.

2.4.4 Finance Management

The following type of information is needed in Finance Management:

Strategic Information:

1) Methods of financing.
2) Pricing policies
3) Tax planning.

Tactical Information:

1) Variations between budget and expenses.
2) Large outstanding payments/Receipts.

3) Credit and payment status.

4) Cost increases and pricing.

5) Impact of taxation on pricing

Operational Information:

1) Periodic financial report.

2) Budget status to all functional managers.

3) Tax returns.

4) Share transfers.

5) Profit and loss account.

6) Payments and receipts.

7) Payroll, provident fund accounts

2.4.5 Human Resource Management

The following type of information is needed in Human Resources Management:

Strategic Information:

1) Long range human resource requirements at different levels.

2) Policies on human resource development and training

3) Policies on personnel welfare and facilities

Tactical Information:

1) Performance appraisal.

2) Demographic make-up of personnel and its impact on retirement.

3) Production incentives.

4) Morale of personnel.

5) Absentee reduction.

6) Leave and overtime policies.

7) Personnel deployment policies.

Operational Information:

1) Routine assessment.

2) Skills inventory.

3) Loan/advances and recoveries.

4) Leave record.

2.5 Computer Based Information Systems

A computer-based information system, or CBIS, uses computers to collect, process, store, analyze and distribute information for a specific purpose, such as meeting a business objective. The main components of a CBIS include hardware, software, data, procedures and people.

Computer Based Information System (CBIS) 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 a class of systems known collectively as computer based information systems. A few of them are as follows:

i. Transaction Processing System (TPS)
ii. Management Information System (MIS)
iii. Decision Support System (DSS)
iv. Office Automation Systems (OASs)

Transaction Processing Systems: Transaction processing systems handle routine information items, more often than not manipulating data in some constructive way as it enters or leaves the firm's databases. An order entry program is an example of a TPS. Reasons for TP are recording, classification, sorting, calculation, summarization, storage and exhibit of results.

Management Information Systems: Management Information systems make available a focused vision of information flow as it develops during the course of business activities. This information is constructive in managing the business. We will discuss all the aspects of MIS in the coming heads in an elaborate manner.

Decision Support Systems: Decision Support systems are methodical models used to progress managerial or professional decision making by bringing significant data to a manager's notice. In many cases, these systems use the identical data as management information systems, but DSS purify the data to make it more functional to managers. It support with exceptional and nonrecurring decisions, which are moderately unstructured. Mainly what factors to reflect on and what information are needed.

Office Automation Systems: Office automation systems endow with electronic mail, word processing, electronic filing, scheduling, calendaring, and other kinds of support to office workers. First introduced with personal computers, these "groupware" applications became essential with the extensive use of personal digital assistants. It combines word processing, telecommunications and data processing to computerize office information, draws on stored data as a result of data processing and comprise handling of correspondence, reports and documents.

2.6 Management Information Systems (MIS)

2.6.1 Definition

G.B. Davis defined a Management Information System (MIS) is "an integrated man/machine system for providing information to hold up the operations, management and decision making functions in an organization." Here the system utilizes hardware and software, manual procedures, management decision model and data base.

An MIS need not be wholly computer based; it is however inevitable that the information deriving from the high volume of data in basic operational processes is computerized; what is still not so certain is whether the once off "high level" information also needed in an MIS, is best obtained using a computer.

Apart from this there are many other thoughts over and above to this definition are as follows:

- A management information system aims at meeting the information needs of managers, predominantly with regard to the current and past operations of the enterprise.
- Management information system is a system which provides precise, timely and meaningful data for management planning, analysis and control to optimize the growth of the organization.
- Thus from the above definition it had been extracted that "Management Information System" (M.I.S.) is vitally concerned with processing data into information. Which is then communicated to the different departments in an organization for appropriate decision making?
- The MIS is a system which provides information support for decision making in the organization.
- The MIS is 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.
- The MIS is a system based on the database of the organization evolved for the purpose of providing information to the people in the organization.
- The MIS is a Computer based Information System.

Though 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.

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.

2.6.2 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.

2.6.3 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

2.6.4 Role of MIS in an Organization:

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 fulfils 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 fulfil 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, Modelling 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 vital role in the management, administration and operations of an organization.

2.7 Let Us Sum Up

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.

2.8 Self Assessment Questions

1. Name the types of information generated by an information system.

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2. What are the types of information is needed in Human Resources Management department?

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3. What are different types of computer based information systems supporting to different levels of management?

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4. Define MIS. What is its nature?

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5. What are the main Objectives of MIS?

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6. What are the typical characteristics of an MIS?

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2.9 Model Questions

1. What are different types of Information needed by various levels of management? Discuss.
2. Outline the different types of information required for various departments of an enterprise.
3. What is a computer-based information system? Discuss different categories of computer-based information system?
4. Define MIS. Write its objectives and characteristics.
5. Discuss the role of MIS in a business organization.

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UNIT-3 MIS ISSUES AND CHALLENGES

UNIT STRUCTURE

3.0 Introduction

3.1 Learning Objectives

3.2 Functions of a Management Information System

3.3 Characteristics of a Computerized MIS

3.4 The Role of Management Information Systems

3.5 Role of MIS in improving decision making

3.6 The benefits of management information systems

3.7 Limitations of MIS

3.8 The challenges of management information systems

3.9 MIS Security & Ethical Issues

3.10 Information Systems and Ethics

3.11 The IEEE Code of Ethics and Professional Conduct

3.12 Uses of MIS

3.13 Let us Sum Up

3.14 Self Assessment Questions

3.15 Model Questions

3.16 References and Further Readings

3.0 Introduction

Management Information System (MIS) is all about collecting and processing of raw data into useful information and its dissemination to the users at various levels of management in the required format. It produces information, which impacts managements to understand the business situation of the organization and take decisions accordingly. In fact a full MIS consists of all the systems that the institution uses too generate the information that guide management's decisions and actions. However, it is tough identifying the needs of different types of strategic, tactical and operational information required at top level, middle level and low level management, collect data from the users, processing them to generate information and disseminate to all the levels of the management. In this unit we will discuss some issues in collecting, processing and creating information by a Management Information System.

3.1 Learning Objectives

At the end of this unit you should be able to

- Know the Functions of a Management Information System
- The Role of Management Information Systems
- Role of MIS in improving decision making
- The benefits of management information systems
- The challenges of management information systems

3.2 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

3.3 Functions of a Management Information System

The management information system is an integrated, computerized and machine user system providing the required information to support the operation and decision making. The main functions of a management system are the following.

1. **Data Capturing:**

   MIS captures data from various internal and external sources of an organization. Data capturing may be manual or through computer terminals. End users, typically record data about transactions on some physical medium such as paper form or enter it directly into a computer system.

2. **Processing of data:**

   The captured data is processed to convert it into the required management information. Processing of data is done by such activities as calculating, comparing, sorting, classifying and summarizing.

3. **Storage of information:**

   MIS stores processed or unprocessed data for future use. If any information is not immediately required, it is saved as an organizational record. In this activity, data and information are retained in an organized manner for later use. Stored data is commonly organized into fields, records, files and databases.

4. **Retrieval of information:**

   MIS retrieves information from its stores as and when required by various users. As per the requirements of the management users, the retrieved information is either disseminated as such or it is processed again to meet the exact demands.

5. **Dissemination of MI:**

   Management information, which is a finished product of MIS, is disseminated to the users in the organization. It could be periodic, through reports or on-line through computer terminals.

3.4 The Role of Management Information Systems

Management information system (MIS) has become very necessary due to emergence of high complexity in business organization. It is all to know that without information no Organization can take even one step properly regarding the decision making process. Because it is matter of fact that in an organization decision plays an essential role for the achievement of its objectives and we know that every decision is based upon information. If gathered information are irrelevant than decision will also incorrect and organization may face big loss & lots of difficulties in surviving as well.

Two main roles are played by the decision making of the managers. First it helps the managers to take decision based on the information being prepared. Second when the decision making and decisions are fixed and only the input data change, it is as a suitable repeating to support different types of manager's decisions.

- **Helps in Decision making: -** Management Information System (MIS) plays a significant Role in Decision making Process of any Organization. Because in Any organization decision is made on the basis of relevant Information and relevant information can only be Retrieving from the MIS.

- **Helps in Coordination among the Department: -** Management information System is also help in establishing a sound Relationship among the every persons of department to department through proper exchanging of Information's.

- **Helps in Finding out Problems: -** As we know that MIS provides relevant information about the every aspect of activities. Hence, if any mistake is made by the management then Management Information Systems (MIS) Information helps in Finding out the Solution of that Problem.

- **Helps in Comparison of Business Performance: -** MIS store all Past Data and information in its Database. That why management information system is very useful to compare Business organization Performance. With the help of Management information system (MIS) Organization can analyze his Performance means whatever they do last year or Previous Years and whatever business performance in this year and also measures organization Development and Growth.

3.5 Role of MIS in improving decision making

Preliminarily, it is inherent to state that decision making is an integral part of any business. This is because a majority of operations in an organization revolve around decisions made by the management and other key stakeholders in the organization. In order to take right decision, it is vital to have a good information system since decisions are based on the information available.

The quality of managerial decision-making depends directly on the quality of available information" and the managers should therefore cultivate an environment that encourages the growth and viable sprouting of quality information.

More importantly, the capacity to guide decision-making facilitates progress and improvement of the operations in a company.

Principally, the record keeping and data-basing tool of MIS definitely ensures that decisions are made viably while businesses run smoothly.

Over the recent years, there has also been an increased usage of automated Management Information Systems. To a large extent, these automated systems have hugely revolutionized the decision-making process in a positive way.

For instance, by using automated MIS, companies no longer have to rely on 24-hour services from workers. Instead, the machines are able to be programmed to do things on our behalf.

Crucially, this ensures that decisions made in a business are orderly and well-planned which, in effect, encourages objectivity during decision making. As a result, businesses and the decision making process are improved through its systematic and orderly formula of operating.

3.6 The benefits of management information systems

The management information system helps by two major ways in problem solving: An information source is provided in organization area and helps the identification of the problem. The benefit of management information system with this aim is to state the problem possibility for the managers.

Current business era is an era where information flow is very vital role than the flow of goods. As great as any of a businessman and monopolize the flow of goods, it does not mean anything if he does not have accurate, current, easily accessible and controllable in the mastering its distribution. Therefore it is one of the company assets of modern business is highly valuable information system that has a high response rate and focus on its users from all aspects.

Information systems are built well and correctly, among others, can increase productivity, reduce the stock of material production, eliminating activities that do not have the benefit (value added), improve service and customer satisfaction, coordinating every part in the enterprise and improve the quality of management policies.

While in general the benefits of management information systems can be categorized as tangible benefits and intangible benefits.

3.6.1 Tangible benefits

An information system is built and maintained properly will provide tangible benefits could be seen that in fact achieved its movement through the income and expenses incurred by the company.

Indicators of success / benefits that have an impact on revenue enhancement is the increased sales in existing markets and expansion into new markets.

A good information system can be used not only for the storage of electronic data alone but must be able to support the analysis required by management. So with the support of good information system can be obtained then the information is accurate, reliable, current and easily accessible on the condition of the company's sales.

With the report presented by the rapid and can be accessed at any time that the decisions taken can be faster and precise on the existing market dynamics. In terms of cost reduction can be done on reducing the amount of factual analysis of the human resources involved in the business, reducing operational costs such as supplies and overhead, the reduction of goods / material in warehouse stock, reduction of maintenance costs and providing equipment that is not too expensive.

Some examples of reduction of the number of human resources are in the process of recording financial transactions. If previously in the accounting process should be managed by five people with the implementation of the good accounting information system is done by one person enough. This is due to the Accounting Information System which is integrated so any bookkeeping process can be processed directly from each of the relevant sections without having to go through the process of refilling the data. Stacking material supply problems during the production is often burden of the company assets, with the implementation of supply chain management module in information systems developed greatly help solve the problem.

With the support of supply chain management then the stacking stocks of material production can be reduced to a minimum. Where, the company simply ordered to suppliers only when the inventory reaches the minimum limit.

3.6.2 Intangible Benefits

Often the intangible benefits of system information management are the critical point in the course of business of a company's wheel. Because it is intangible, the following aspects are often overlooked or not detected.

1. **Increased customer satisfaction:** Good management information system will speed up the process so that, the time required to serve a customer can be faster.

2. **Improved quantity and quality of information:** Information is an important component of business today. Who controls the information would act more responsive to changes and trends in the future. Application of good information system will certainly generate reports compilation of data that is managed by qualified and comprehensive database. This can be achieved for each of the reporting process is executed automatically by computer machines.
3. **Improved quality and quantity management decisions**: It is inevitable that any decision-making relies heavily on information that supports the policy to be taken. It can only be realized if information systems can provide information that is relevant, accurate, current and can be retrieved at any time.
4. **Improved quality and responsiveness number of the competitors' condition**

   Aspects of business intelligence is very important since a long time with a variety of formats and needs. To reach the point of rapid and appropriate response on the dynamics of the competition will require information systems that can collect, analyze and compile the information needed by decision makers in the company.
5. **Improved operational efficiency and flexibility**: All business owners would want these. The more efficient and flexibly an operational then this indicate the low cost to run it. This can be achieved due to cut the bureaucracy in the company after the implementation of good information systems.
6. **Improved quality of internal and external communications**: A good information system must be supported by electronic data communication network systems that are reliable as well. With the application of good information systems, each party both inside and outside the company can exchange information more effectively and efficiently.
7. **Improved quality of planning**: Planning is an essential process for businesses. However, any plan that will be made then of course needed the support of adequate information into practice. If not then the plan may be disoriented and did not reach its target because of mistake information into its base.
8. **Improved quality control and supervision**: With the information system is built and maintained properly then any activity within the business environment can be constantly monitored. Monitoring is certainly an impact on improving control over every procedure and activities occurring within the company.

3.7 Limitations of MIS

Even though MIS has many benefits it has its limitations. MIS is sometimes considered a solution for every bane within an organization. While MIS may

solve some critical problems but it is not a solution to all problems of an organization.

It cannot meet the special demands of each person. Mostly, the management information system doesn't provide exact information and the concept of decision support system was created in response to such need.

The limitations of MIS may be stated as, The MIS is as good as its design-MIS if designed in an improper manner does not serve the management and hence is of little relevance.

The MIS is as good as its users-if the users do not know how to leverage the information available from MIS then MIS is of little use.

The MIS is no good if the basic data is obsolete and outdated (for example, MIS will only facilitate garbage with information and in about garbage-out-process)

3.8 The challenges of management information systems

If all the existing barriers are divided into humanistic, organizational and environmental factors, the major drawbacks and the reasons of failure and using MIS in public organizations are as following:

Humanistic factors

- The lack of information of the managers and users as they don't know exactly what they want and what their information needs are.
- The lack of understanding of the needs of the users by designers (the lack of correct definition of the needs and their analysis)
- The lack of information of the managers and users about the collaboration method with the designer team.
- The lack of participation of the managers and users in system design.
- The lack of understanding of the managers of software and information systems.
- The lack of information of most of the analysts and programmers (designers) with new system work environment.
- The lack of acceptance of the system executers and resistance against the change.
- The lack of accuracy in the data collected

Organizational factors

- The lack of good conditions for participation and collaboration of the managers, users and system directors
- The lack of consistency and complexity of the existing manual systems.
- The lack of existing systems and methods analysis before the system design
- The lack of evaluation of the existing power

- Bad condition of educating the specialized forces
- The lack of human resources with management and computer fields and other required specializations (the problems of absorbing human resources)
- Inadequate education of the users
- Inadequate and incomplete documentation
- Unsuitable implementation of the system

Environmental factors

- The lack of suitable consultants for designing the system and software
- The lack of procedures and methodology and stages of creating the system
- The lack of evaluation of environmental aspects in management information systems
- The lack of suitable use of mass media to develop the culture of using computer and information systems.
- The lack of holding suitable MA training courses in the universities and the lack of suitable education of human resources in this regard.
- The lack of ratification of the suitable rules in Islamic council parliament and government board and the considerable problem in this regard.
- The lack of serious consideration and adequate investment in this regard.

3.9 MIS Security & Ethical Issues

Security of an Information System

Information system security refers to the way the system is defended against unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction.

There are two major aspects of information system security:

- Security of the information technology used - securing the system from malicious cyber-attacks that tend to break into the system and to access critical private information or gain control of the internal systems.
- Security of data - ensuring the integrity of data when critical issues, arise such as natural disasters, computer/server malfunction, physical theft etc. Generally an off-site backup of data is kept for such problems.

Guaranteeing effective information security has the following key aspects:

- Preventing the unauthorized individuals or systems from accessing the information.
- Maintaining and assuring the accuracy and consistency of data over its entire life-cycle.
- Ensuring that the computing systems, the security controls used to protect it and the communication channels used to access it, functioning correctly all the time, thus making information available in all situations.
- Ensuring that the data, transactions, communications or documents are genuine.
- Ensuring the integrity of a transaction by validating that both parties involved are genuine, by incorporating authentication features such as "digital signatures".
- Ensuring that once a transaction takes place, none of the parties can deny it, either having received a transaction, or having sent a transaction. This is called 'non-repudiation'.
- Safeguarding data and communications stored and shared in network systems.

3.10 Information Systems and Ethics

Information systems bring about immense social changes, threatening the existing distributions of power, money, rights, and obligations. It also raises new kinds of crimes, like cyber-crimes.

Following organizations promote ethical issues:

- The Association of Information Technology Professionals (AITP)
- The Association of Computing Machinery (ACM)
- The Institute of Electrical and Electronics Engineers (IEEE)

- Computer Professionals for Social Responsibility (CPSR)

The ACM Code of Ethics and Professional Conduct

- Strive to achieve the highest quality, effectiveness, and dignity in both the process and products of professional work.
- Acquire and maintain professional competence.
- Know and respect existing laws pertaining to professional work.
- Accept and provide appropriate professional review.
- Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis and possible risks.
- Honour contracts, agreements, and assigned responsibilities.
- Improve public understanding of computing and its consequences.
- Access computing and communication resources only when authorized to do so.

3.11 The IEEE Code of Ethics and Professional Conduct

IEEE code of ethics demands that every professional vouch to commit themselves to the highest ethical and professional conduct and agree:

- To accept responsibility in making decisions consistent with the safety, health and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;
- To avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
- To be honest and realistic in stating claims or estimates based on available data;
- To reject bribery in all its forms;
- To improve the understanding of technology, it's appropriate application, and potential consequences;
- To maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;
- To seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
- To treat fairly all persons regardless of such factors as race, religion, gender, disability, age, or national origin;
- To avoid injuring others, their property, reputation, or employment by false or malicious action;
- To assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

3.12 Uses of MIS

- Since it can be programmed to follow business rules uniformly, MIS reinforces discipline in accounting and portfolio tracking. ƒ
- Computers can link all data pertaining to a customer or customer group hence MIS can provide a consolidated view of each customer or group.
- MIS allow for single entry of data that can then be used by many people. Data once entered can be accessed, manipulated and used by all users.
- Thus MIS reduces duplication of effort and increases speed of work. ƒ
- MIS integrates information and process. MIS supports workflow and procedures for users. ƒ
- MIS can be ported to remote areas via laptop or palm technology. ƒ
- MIS application can be customized or enhanced to support new products and institutional growth.

3.13 Let us Sum Up

Management Information System is essential for business development. There are many benefits that can be obtained from the business owner application of information systems. To be able to keep compete with competitors will require a good and reliable management information systems.

In this unit we have discussed about the benefits of MIS, its Challenges and limitations. We have also discussed some of the issues including the security issues in MIS.

3.14 Self Assessment Questions

1. Outline the Characteristics of a Computerized MIS.
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2. Highlight the benefits of management information systems.
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3. Point out the limitations of MIS.
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4. How can you ensure security of an information system?

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3.15 Model Questions

1. Discuss the characteristics and functions of Computerized MIS.
2. The Role of Management Information Systems in decision making in organizations.
3. Discuss the benefits of implementing MIS in an organization.
4. Explain the challenges faced in deploying MIS in an organization.
5. Discuss the security and ethical issues of MIS.

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Answer to Self Assessment Questions(Unit-1)

1. What are different management functions?

The following mentioned management functions will involve creative problem solving.

a) Planning: selecting information and making assumptions concerning the future to put together the activities necessary to achieve organizational objectives.

b) Organizing: Organizing is the classification and categorization of requisite objectives, the grouping of activities needed to accomplish objectives.

c) Directing: Direction is telling people what to accomplish and seeing that they do it to the finest of their capability

d) Staffing: This function includes recruiting, training; evaluating and compensating are the specific activities.

e) Controlling: Control is the course of action that measures present performance and guides it towards some predetermined goal.

2. Define a system? What do you mean by system concepts?

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.

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

3. What are various types of systems?

Systems can be categorised in to the following types.

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. Cyber native 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.

4. What is an Information system? Why information systems are needed?

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

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.

The information system is very important for the internet technology and the traditional business concerns. All the companies need to update their business, infrastructure and change way they work to respond more immediately to customer need.

5. Explain how an Information System supports business Organizations.

The strategic role of an Information System involves using it to develop products, services, and capabilities that provide a company major advantages over competitive forces it faces in the global marketplace.

We need an Information System flexible enough to deal with changing information needs of the organization. The designing of such a system is a complex task. It can be achieved only if the information system is planned.

We understand this planning and implementation is a management development process.

Precisely, an Information System provides-

- Supports to business processes and operations.
- Supports decision making by its employees and managers.
- Support of its strategies for competitive advantage.

Answer to Self Assessment Questions (Unit-2)

1. Name the types of information generated by an information system.

Information is processed data, used by managers to initiate actions and to run the organization efficiently. The data processed by machines support to produce different types of information to take right decision at right times.

Types of Information generated by Information systems are as follows.

- ***Strategic:*** Needed for long range planning and directions. This is less structured.
- ***Tactical:*** Needed to take short range decisions to improve profitability and performance.
- ***Operational:*** Needed for day to day operations of the organization. Eg: Daily Sales, Billing.
- ***Statutory:*** Needed by law to send to government authorities. Eg: Sales tax return.

2. What are the types of information is needed in Human Resources Management department?

The following are three types of information is needed in Human Resources Management with examples.

Strategic Information:

- Long range human resource requirements at different levels.
- Policies on human resource development and training
- Policies on personnel welfare and facilities

Tactical Information:

- Performance appraisal.
- Demographic make-up of personnel and its impact on retirement.
- Production incentives.
- Morale of personnel
- Absentee reduction.
- Leave and overtime policies.

- HR deployment policies.

Operational Information:

- Routine assessment.
- Skills inventory.
- Loan/advances and recoveries.
- Leave record.

3. What are different types of computer based information systems supporting to different levels of management?

Computer Based Information System (CBIS) 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 a class of systems known collectively as computer based information systems. A few of them are as follows:

1. Transaction Processing System (TPS)
2. Management Information System (MIS)
3. Decision Support System (DSS)
4. Office Automation Systems (OASs)
5. Define MIS. What is its nature?

4. What is MIS? What is its nature?

Management Information System (MIS) is defined as "an integrated man/machine system for providing information to hold up the operations, management and decision making functions in an organization."

Nature of MIS:

- A management information system aims at meeting the information needs of managers,
- Management information system is a system which provides precise, timely and meaningful data for management planning, analysis and control to optimize the growth of the organization.
- M.I.S is vitally concerned with processing data into information.
- The MIS is a system which provides information support for decision making in the organization.
- The MIS is a system based on the database of the organization evolved for the purpose of providing information to the people in the organization.

5. What are the main Objectives of MIS?

The main objectives of MIS include the following.

- MIS captures data from various internal and external sources of organization.

- **P**rocesses the captured data to convert into required information. Processing of data is done by such activities as calculating, sorting, classifying, and summarizing etc.
- **S**tores 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.
- MIS retrieves information from its stores as and when required by various users.
- Information, which is a finished product of MIS, is disseminated to the users in the organization. It is periodic or online through computer terminal.

6. What are the typical characteristics of an MIS?

Some of the common characteristics of MIS are as follows.

- MIS follows a systems approach to problem solving.
- MIS is Management Oriented.
- MIS design should be as per the information needs of managers at different levels.
- MIS should provide information, on the basis of future projections on the actions to be initiated.
- It is an integrated man machine system which has ability to produce more meaningful information
- MIS is developed over relatively long periods. A heavy element of planning should be involved.
- The MIS should be viewed as a single entity, but it must be broken down into digestible sub-systems which are more meaningful.
- In the MIS there should be common data base for whole system

Answer to Self Assessment Questions (Unit-3)

1. Outline the Characteristics of a 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

2. Highlight the benefits of management information systems.

A good information system can be used not only for the storage of electronic data alone but must be able to support the analysis required by management. So with the support of good information system can be obtained then the information is accurate, reliable, current and easily accessible on the condition of the company's sales.

The following are some of the benefits of a good MIS.

- Increased customer satisfaction
- Improved quantity and quality of information:
- Improved quality and quantity management decisions:
- Improved quality and responsiveness number of the competitors' condition
  Improved operational efficiency and flexibility:
- Improved quality of internal and external communications:
- Improved quality of planning:
- Improved quality control and supervision

3. **Point out the limitations of MIS.**

Even though MIS has many benefits it has its limitations.

- While MIS may solve some critical problems but it is not a solution to all problems of an organization.
- It cannot meet the special demands of each person.
- MIS if designed in an improper manner does not serve the management and hence is of little relevance.
- The MIS is as good as its users-if the users do not know how to leverage the information available from MIS then MIS is of little use.
- The MIS is not good if the basic data is obsolete and outdated (for example, MIS will only facilitate garbage with information and in about garbage-out-process)

4. **How can you ensure security of an information system?**

Ensuring effective information security has the following key aspects:

- Preventing the unauthorized individuals or systems from accessing the information.
- Maintaining and assuring the accuracy and consistency of data over its entire life-cycle.
- Ensuring that the computing systems, the security controls used to protect it and the communication channels used to access it, functioning correctly all the time, thus making information available in all situations.
- Ensuring that the data, transactions, communications or documents are genuine.
- Ensuring the integrity of a transaction by validating that both parties involved are genuine, by incorporating authentication features such as "digital signatures".
- Ensuring that once a transaction takes place, none of the parties can deny it, either having received a transaction, or having sent a transaction. This is called 'non-repudiation'.
- Safeguarding data and communications stored and shared in network systems.