

Management Information Systems – An Overview

Lesson 13

KEY CONCEPTS

■ Management ■ Information ■ System ■ Management Information System ■ Expert System ■ Decision Support System ■ Transaction Process System ■ Management Support System ■ Office Automation System

Learning Objectives

To understand:

- The meaning of Management Information System
- Components of Management Information System
- Utilization of Management Information System in Indian Business World
- Management Information System and its relation with other Information Systems
- Management Information System and its Application in Different Spheres of Business

Lesson Outline

- Definition of Management Information System
- Components of Management Information System
- Utilization of Management Information System in Indian Business World
- Management Information System and Its relation with other Information Systems
- Application of Management Information System
- Management Information System and Security
- Lesson Round-Up
- Glossary
- Test Yourself

INTRODUCTION

Management Information Systems (MIS) is the study of people, technology, organizations, and the relationships among them. MIS is a people-oriented field with an emphasis on service through technology. The system gathers data from the internal and external sources of an organisation.

One of the most important tools which aims to provide reliable, complete, accessible and understandable information to managers for effective decisions making and improving business performance is Management information system. The use of management information systems has become necessary for every organization to facilitate the work procedures and improve efficiency and productivity and improve performance in general.

Moreover the importance of management information systems comes from the benefits that generated by that system such providing useful information in a timely manner, improved labor productivity, cost savings, providing the information without any delays and mistakes, and improved the management of work.

"A formal method of collecting timely information in a presentable form in order to facilitate effective decision making and implementation, in order to carryout organisational operations for the purpose of achieving the organisational goals." – Walter I. Kennevan

"An MIS is a system designed to provide selected decision-oriented information needed by management to plan, control and evaluate the activities of the corporation. It is designed within a framework that emphasises profit planning, performance planning and control at all levels.

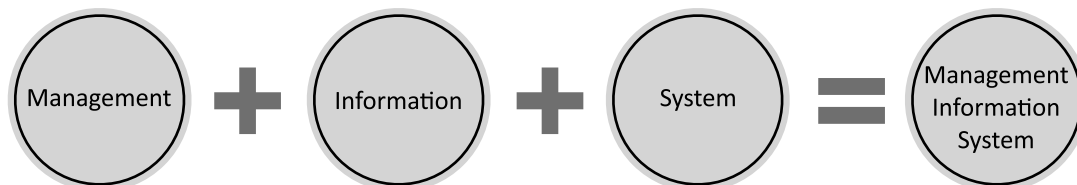
It contemplates the ultimate integration of required business information, sub systems both financial and non-financial within the company"

– Management Information System Committee of the Financial Executive Institute

"Management information system is a computer-based information system that provides for management-oriented reporting based on transaction processing and business operations of the organization."

– Nowduri & Al-Dossary

A Management Information System is an acronym of three words, viz., Management, Information, System.



- 1. Management:** Management is the art of getting things done through and with the people in formally organised groups.
- 2. Information:** Information is data that is processed and is presented in a form which assists decision making. It may contain an element of surprise, reduce uncertainty, or provoke a manager to initiate an action.

Data usually take the form of historical records. In contrast to information, raw data may not be able to surprise us, may not be organised and may not add anything to our knowledge.

- 3. System:** The term system is the most loosely held term in management literature because of its use in different contexts. However, a system may be defined as a set of elements which are joined together to achieve a common objective. The elements are interrelated and interdependent.

Evolution of the Concept of Management Information System

The earliest use of information system was in a Sumerian temple in the third millennium B.C., to record receipts and issues of grain to individuals out of the temple grain store. But the information system had its fast growth in the last few centuries.

Even though the concept was introduced as a single highly integrated system, it was later demonstrated to be too complex to implement; and now it is considered as a combination of subsystems conforming to overall plan, standards, and procedures of the organization.

Expansion in organisation size, professionalism, development of technology, etc., is a great fillip to the evolution of the management information system. After the invention of computers, they have been playing a predominant role in MIS.

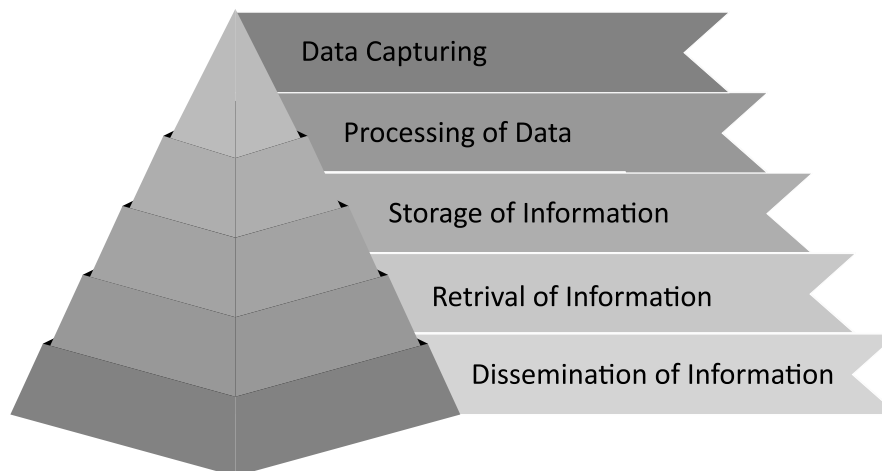
Advancement of computer hardware and software led to the wider application of MIS. Thus, MIS commonly came to be referred to as Information Reporting System since it was mainly used to produce reports for managerial purposes.

In the 1970's, improvements in database technology paved the way for Decision Support System (DSS), office automation technologies like word processing, desktop publishing, electronic mail, etc. By 1980, Information Technology attained greater momentum, which led to the further development of MIS as a strategic weapon. At present, rather than a single, global MIS, an organization may have many related information systems, serving the various managerial needs.

The periods of evolution and the changing focus of MIS are traced below:

<i>Period</i>	<i>Major Focus</i>	<i>Main Functions</i>
1950-1960	EDP	Transaction processing, record keeping and accounting
1960-1970	IRS	Information Reporting
1970-1980	DSS	Decision Support
1980-Onwards	EIS and KBS	Special information needs of top management and use of artificial intelligence in problem solving

Objectives of Management Information System



- a. **Data Capturing :** MIS capture data from various internal and external sources of the organization. Data capturing may be manual or through computer terminals.
- b. **Processing of Data:** The captured data is processed to convert into the required information. Processing of data is done by such activities as calculating, sorting, classifying, and summarizing.
- c. **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.
- d. **Retrieval of Information:** MIS retrieves information from its stores as and when required by various users.
- e. **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 a computer terminal.

Characteristics of Management Information System

Following are the main characteristics of Management Information System:

- a. **System approach:** The management information system follows a System approach. The system's approach implies a holistic approach to the study of the system and its performance to achieve the objective for which it has stood formed.
- b. **Management-oriented:** For designing MIS top-down approach should follow. The top-down approach suggests that system development starts from the determination of the management needs and overall business objectives. Management-oriented characteristic of MIS also implies that the management actively directs the system development efforts.
- c. **Need-based:** The design of the MIS should be as per the requirements of managers at different levels that are strategic planning level, management control level, and operational control level.
- d. **Exception-based:** MIS should develop with the exception-based reporting principle. This means an abnormal situation, that is the maximum, minimum or expected values vary beyond the limits. In such cases, there should be exceptions reporting to the decision-maker at the required level.
- e. **Future-oriented:** Besides exception-based reporting, MIS should also look at the future. In other words, MIS should not merely provide past or historical information. Rather it should provide information based on projections based on which actions may initiate.
- f. **Integrated:** Integration means taking a comprehensive view of the subsystems that operate within the company and it is significant because of its ability to produce more meaningful information.

For example, to develop an effective production scheduling system, it is necessary to balance such factors as set-up costs, workforce, overtime rates, production capacity, inventory level, capital requirements, and customer services, so that meaningful and reliable information can be derived by the managers working in such production scheduling system.

- g. **Common data flows:** Because of the integration concept of MIS, there is an opportunity to avoid duplication and redundancy in data gathering, storage, and dissemination. System designers are aware that a few key source documents account for much of the information flow. For example, customer's orders are the basis for billing the customer for the goods ordered, setting up accounts receivables, initiating production activity, sales analysis, sales forecasting, etc.

Advantages of Management Information System

Following are the benefits being offered by Management Information System to the organisations:

- a) **Increased Efficiency:** One of the primary advantages of MIS is that it can help organizations become more efficient. MIS systems automate many routine tasks, freeing up employees to focus on higher-level tasks. This can save time and reduce errors, ultimately leading to cost savings for the organization.
- b) **Improved Decision-Making:** MIS systems provide organizations with real-time data and analytics, which can help managers make more informed decisions. For example, an MIS system can provide data on sales trends, inventory levels, and customer preferences, allowing managers to make decisions based on facts rather than intuition.
- c) **Enhanced Communication:** MIS systems can improve communication within an organization. For example, an MIS system can provide a centralized platform for employees to share information, collaborate on projects, and coordinate tasks. This can help teams work more effectively and achieve their goals more efficiently.
- d) **Better Data Management:** MIS systems can help organizations better manage their data. For example, an MIS system can provide tools for data entry, storage, and retrieval. This can help ensure data is accurate, up-to-date, and easily accessible when needed.
- e) **Competitive Advantage:** MIS systems can provide organizations with a competitive advantage. By using data and analytics to make informed decisions, organizations can become more efficient, more responsive to customer needs, and better able to compete in the marketplace.

Disadvantages of Management Information System

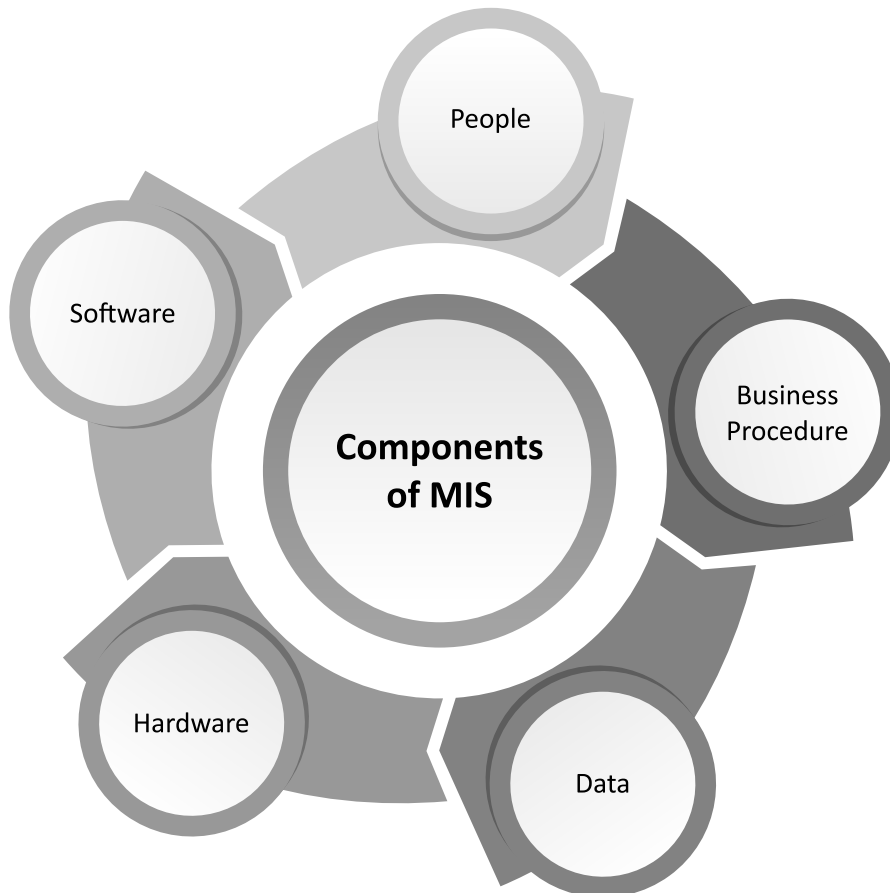
Despite of various advantages and benefits provided by the Management Information System, there are some disadvantages as well which are associated with it, following are some disadvantages of implementing management information system:

- a) **Costly Implementation:** Implementing an MIS system can be costly for organizations. There may be expenses related to purchasing software, hardware, and training employees to use the system. This can be a significant investment for some organizations.
- b) **Technical Issues:** MIS systems can experience technical issues, such as system crashes or data loss. This can be frustrating for employees who rely on the system to do their jobs. Organizations may need to invest in additional technical support to address these issues.
- c) **Security Risks:** MIS systems can also pose security risks. If the system contains sensitive data, such as customer information or financial records, it could be targeted by cybercriminals. Organizations need to ensure that their systems are secure and take steps to protect against potential data breaches.
- d) **Dependence on Technology:** MIS systems are dependent on technology, which means that if the system goes down, employees may not be able to perform their job duties. This can lead to lost productivity and revenue for the organization.
- e) **Potential for Human Error:** MIS systems can be prone to human error. If employees enter incorrect data or fail to update the system in a timely manner, it can lead to inaccurate data and decision-making. This can be a significant issue for organizations that rely heavily on data to make informed decisions.

COMPONENTS OF MANAGEMENT INFORMATION SYSTEM

A management information system is made up of five major components namely people, business processes, data, hardware, and software. All these components must work together to achieve business objects.

- a) **People:** People are the users who use the information system to record the day-to-day business transactions. The users are usually qualified professionals such as accountants, human resource managers, etc. The ICT department usually has the support staff who ensure that the system is running properly.



- b) **Business Procedures:** Business procedures are agreed upon best practices that guide the users and all other components on how to work efficiently. Business procedures are developed by the people i.e., users, consultants, etc.
- c) **Data:** Data encapsulated the recording of day-to-day business transactions. For example, for a bank, data is collected from activities such as deposits, withdrawals, loans, credit cards etc.
- d) **Hardware:** Hardware is made up of physical components like the CPU, printers, networking devices, etc. The hardware provides the computing power for processing data. It also provides networking and printing capabilities. The hardware speeds up the processing of data into information.
- e) **Software:** Software are programs that run on the hardware. The software is broken down into two major categories namely system software and applications software. System software refers to the operating system i.e., Windows, Mac OS, and Ubuntu, etc. Applications software refers to specialized software for accomplishing business tasks such as a payroll program, banking system, point of sale system, etc.

MIS and Its Functional Subsystems

Based on organizational functions, subsystems can be divided into various categories. Since MIS is a federation of subsystems each organisational function can have a subsystem. Each of these functional systems is unique in its procedures, programmes, models etc. The functional subsystems of MIS are:

- I. **Production subsystem:** It deals with production of data reports, and makes production planning, scheduling, and cost control analysis.
- II. **Marketing subsystem:** It collects data for sales forecasting and planning. It includes data relating to distribution cost, promotion cost, etc.
- III. **Finance and accounting subsystem:** It keeps data on customer credit, accounts payable, accounts receivable, cash management, fund allocation, etc.
- IV. **Personal (HRO) subsystem:** This subsystem is concerned with planning personnel requirements, analysing performance, salary administration, etc.
- V. **Information processing subsystem:** It focuses on information system planning, cost-effectiveness analysis, etc.
- VI. **R&D subsystem:** It deals with research and development activities in an organization.

UTILIZATION OF MANAGEMENT INFORMATION SYSTEM IN INDIAN BUSINESS SCENARIO

Management Information Systems provide the owner and other decision-makers at a business with the data needed to make informed decisions for the company. A MIS provides background, current data, and trend analysis so you have ready information on all areas of the business.

Information systems gain their importance by processing the data from company inputs to generate information that is useful for managing your operations.

Management information system can be utilised in below mentioned manner for more efficient utilisation of such information system:

1. **Business Communication System:** Part of management is gathering and distributing information, and information systems can make this process more efficient by allowing managers to communicate rapidly. Email is quick and effective, but managers can use information systems even more efficiently by storing documents in folders that they share with the employees who need the information. This type of communication lets employees collaborate in a systematic way.

Each employee can communicate additional information by making changes that the system tracks. The manager collects the inputs and sends the newly revised document to his target audience.
2. **Business Operations Management:** How the company's operations are being managed are highly depended on information such company managers possess. Information systems can offer more complete and more recent information, allowing managers to operate the company more efficiently, one can use information systems to gain a cost advantage over competitors or to differentiate itself by offering better customer service. Sales data give sales managers insights about what customers are buying and let one knows stock or produce items that are selling well. With guidance from the information system, company can streamline your operations.
3. **Company Decision-Making:** The company information system can help decision maker to make better decisions by delivering all the information one need and by modelling the results decisions taken. A decision involves choosing a course of action from several alternatives and carrying out the corresponding tasks. When company's decision makers have accurate, up-to-date information, they can make the choice with confidence.

If more than one choice looks appealing, managers can use information system to run different scenarios. For each possibility, the system can calculate key indicators such as sales, costs, and profits to help them to determine which alternative gives the most beneficial result.

- 4. Company Record-Keeping:** Company needs records of its activities for financial and regulatory purposes as well as for finding the causes of problems and taking corrective action. The information system stores documents and revision histories, communication records and operational data. The trick to exploiting this recording capability is organizing the data and using the system to process and present it as useful historical information. Users can use such information to prepare cost estimates and forecasts and to analyze how your actions affected the key company indicators.

Role of Management Information System in Decision Making

Management information systems can help the decision maker to make valid decisions by providing accurate and up-to-date information and performing analytic functions. The user has to make sure the management information system that has been chosen can work with the information formats available within the company and has the features the organisation need. Suitable management information systems can structure the basic data available from the company operations and records into reports to present users with guidance for the decisions.

Following points highlights how Management Information System assist the organisations in decision making:

- 1. Information from Company Operations:** When the base of decisions on data available from management information systems, it reflects information that comes from the operations of the company. Management information systems take data generated by the working level and organize it into useful formats. Management information systems typically contain sales figures, expenses, investments, and workforce data. If one need to know how much profit the company has made each year for the past five years to decide, management information systems can provide accurate reports giving you that information.
- 2. Capability to Run Scenarios:** The capability to run scenarios is a key decision-making tool. Some management information systems have this feature built in, while others can provide the information required for running scenarios on other applications, such as spreadsheets. The decision is influenced by what happens if decision maker decide a certain way. What-if scenarios show you how different variables change when one plan.

The manager can enter reduced staff levels or increased promotion budgets and see what happens to revenue, expenses, and profit for different levels of cuts or increases. Management information systems play a critical role in making realistic scenarios possible.

- 3. Projections to Assist in Decision Making:** Any decisions decision maker make result in changes in the projected company results and may require modifications in the business strategy and overall goals. Management information systems either have trend analysis built in or can provide information that lets managers carry out such an analysis. Typical business strategies include projections for all fundamental operating results.

A trend analysis allows the managers to show what these results would be in the current situation and how they will change once you have implemented the decisions decision maker have taken. The new values form the basis of your strategic approach going forward.

- 4. Implementation and Evaluation:** While decisions made with specific goals in mind and have the documentation from management information systems and trend analysis to support your expectations, the managers must track company results to make sure they develop as planned. Management

information systems gives the data the managers need to determine whether the decisions have had the desired effect, or whether decision maker must take corrective action to reach organisation's goals. If specific results are not on track, managers can use management information systems to evaluate the situation and decide to take additional measures if necessary.

MANAGEMENT INFORMATION SYSTEM AND OTHER INFORMATION SYSTEMS

Information System is a computer or manual-based system used to store and process data into information or knowledge. O'Brien and Marakas (2010:4) also explain that Information System can be defined as a combination of individuals, hardware, software, telecommunication network, data, and policy procedures used to store and receive data to be subsequently transformed into information in an organization. Thus, it can be said that Information System is related and interconnected components/elements to gather, change and spread processed data result useful for an organization in decision-making.

An Information System depends on human resources (system users and system developers), hardware (machinery and media), software (programs and procedures), data (data and knowledge base) and network (telecommunication and network support).

On the other hand, Management Information System is a group of users, procedure, software, database, and devices that provide information for managers and decision makers. Management Information System refers to a system that changes data into useful information for managers and other users. Management Information System is a system providing feedback on organisations activities and supporting managerial decision making. From the experts' opinion, it is concluded that Management Information System is a set of Hardware, Software, database, procedures, user and interconnected and integrated telecommunication network in processing data into useful information to support managerial decision-making process.

The management information system is not something distinct and separate from other information systems. It provides a general framework based on the information systems that are compatible with each other. Over time it became clear that it is very difficult to implement the concept of a fully integrated system.

Management Information System encapsulates other information systems to assist the managers to take well informed and proper decision, management information system utilizes other information systems to derive data and help management to take decisions, following are some vital information systems that are part of management information system:

1. **Expert System:** An expert system provides managers with insights and advice based on artificial intelligence (AI). In an expert system, the AI is trained to simulate the knowledge of a human expert in a particular field.
2. **Decision Support System:** Decision support systems (DSS) are interactive software-based systems intended to help managers in decision-making by accessing large volumes of information generated from various related information systems involved in organizational business processes, such as office automation system, transaction processing system, etc.

DSS uses the summary information, exceptions, patterns, and trends using the analytical models. A decision support system helps in decision-making but does not necessarily give a decision itself. The decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

3. **Transaction Process System:** Transaction processing is a style of computing, typically performed by large server computers, that supports interactive applications. In transaction processing, work is divided into individual, indivisible operations, called transactions.

A transaction processing system allows application programmers to concentrate on writing code that supports the business, by shielding application programs from the details of transaction management

4. **Management Support System:** The Management Support System stores and organizes data, enabling end users to generate reports and analyze data to address business needs and inform planning. A data warehouse is an example of a Management Support System.
5. **Office Automation System:** Office automation systems (OAS) are configurations of networked computer hardware and software. A variety of office automation systems are now applied to business and communication functions that used to be performed manually or in multiple locations of a company, such as preparing written communications and strategic planning.

APPLICATIONS OF MANAGEMENT INFORMATION SYSTEM

Today's business managers are faced with an abundance of information. Information as data processing system must be able to understand, diagnosis, maintenance, and retrieval. On the other hand, systems management, and monitoring tools changes manifolds over the time.

Information is crucial in solving organizational problems and non-enterprise, Management Information Systems remain as consultants interacted with the users and administrators are not inevitable.

A Management Information Systems supports various levels of management (individual and group), from top managers to lower managers and supports all decision process level and various styles of deciding.

One of the major utilisations of management information system is in education sector and Smooth MIS application in educational institutions can be implemented with the following conditions:

- Crucial and demanded by the majority of university personnel processes primary inclusion in the plan of university automation which performance is impossible without IT application.
- MIS is not created for one or two managers.
- MIS application responsibility division between administrative personnel, developers, and employees.
- Advanced development of administrative and educational problems solution techniques and technologies focused on IT application.
- Necessary resources (material and human) allocation for high-grade pre-project inspection, analysis, and technical designing of MIS components.
- Standardizations and documenting of all automation stages.
- University structure reorganization and processes re-engineering management.
- Firm belief about transition to modern information technologies inevitability creation in university collective.
- Parameters system creation, which will allow defining an extent of goals achievement in the field of MIS application.
- Economic and other kinds of MIS effects on university's activities estimation.

In consideration of the technical aspects the most suitable conception for MIS creation is rather popular during last year's ideas of integration connected with WEB-technologies use. The concept of WEB-technologies or WEB-services allows uniting various technologies in the uniform information environment and is deprived negative sides of other integration technologies.

Applications of Management Information System in Service Sectors

Customer satisfaction is the main goal of the service industry while this is not true for the manufacturing industry and varies from industry to industry. To maintain its position in the market and remain ahead of others the industry must provide services that are distinct in nature. The service industry must know the services that are required, perceptions and expectations. It must also perform customer and market research to identify the segments that it is going to serve. It is also necessary to carry out the research on perceptions, requirements, and expectations on a regular basis for enhancing and upgrading the facilities provided by the services because the demands for services are dynamic in nature as compare to products.

In the service industries, Management Information System (MIS) gives its prime focus on the services that are needed to the people. Hence, a continuous monitoring should be done in order to understand the changes occurring to the services demand based on level and scope.

A regular scrutiny should be done to understand what the customer perceives by good service. After that a strategy should be adopted that will address the perception of good service to a customer. With the help of the MIS, the management can provide services of the highest level by understanding the needs that enhances the communication, physical and human related processes to maintain this level.

Information systems are also used in the service sector for process automation in order to take competitive advantages over the others. The information system that is being used differs from service to service. Some of these services are listed below:

- a. **Hospital Information Systems :** Hospital's management provides distinctive services to a wide variety of customers having different perceptions and expectations regarding the services. Discrimination can be easily carried out by the customers regarding various aspects such as personal and medical treatment (quality of caring and quality of care), effective and efficient service and service provided at minimum cost. Customer mainly focuses on the result of the service and appraises the management on the performance of service process.

So it is concluded that, "Hospital Information System (HIS) is a computerized system that regulates all the medical and administrative information processing activities in order to achieve an efficient and effective work performance by health professionals of a hospital."

The hospital information system is also known as Integrated Hospital Information Processing System (IHIPS) because it integrates various components like Clinical Information System (CIS), Financial Information System (FIS), Laboratory Information System (LIS), Nursing Information System (NIS), Pharmacy Information System (PIS), etc.

- b. **Hotel Information System:** People generally take the service of the hotels when they are visiting some other place and do not have a place to stay there. It is a place where a person can stay conveniently. However, in the recent times there have been several changes in the concept of hotel due to several causes. People always search for differentiated services in a hotel.

One of the common problems that are faced by the managers of hotels is regarding differentiated service to the customers. The prime objective of any hotel is to offer a room with the basic facilities and amenities to the customer and ensure that the stay is comfortable. The hotel gets a successful business if the most of the rooms are occupied and the visitors take those services that can be billed separately. The hotel business is said to perform well if its occupancy and turnover is high.

The Management Information System that is used in the hotels helps in understanding the expectations and perceptions of the customers.

Following are the main responsibilities of Hotel Information System:

- Keep Track of the Customer Profile;
- Monitoring Occupancy Level;
- Project Future Needs;
- Monitor the Level of Expectations;
- Monitor the Communication Needs;
- Customer Database.

- c. **Banking Information System:** Banks are organisations that provide various types of financial services such as savings, clearing checks, and providing loans to the account holders. The function of the bank in today's world has increased as they are offering financial assistance to the customers by offering various policies. The bank also has to meet various socio-economic obligations.

The banks handle many transactions which are different from each other in terms of complexity and length. Like the customer of any other service, the customer of the bank also expects to get the end results as fast as possible.

The prime service that is offered in the banking industry is to solve the financial problems that the customers of the bank are facing. The time elapsed for executing a transaction is the most widely used measurement for performing a service. The MIS in a bank must be designed in such a manner that it is able to provide differentiated services to the varied service requests of the customers.

Factors and Requirements Affecting Bank Information System Design:

- Customer Database;
- Service to the Account Holders;
- Service for Business Promotions;
- Index Monitoring System;
- Human Resource Upgrade.

Management Information System and Other Academic Disciplines

Many ideas of MIS are found in various other academic disciplines. Four major areas related to MIS are:

- (i) **Management Accounting vs. MIS:** Management accounting is concerned with determining relevant costs and performing other analyses useful for managerial decision making and control. It tends to be the focus for the preparation of budgets and performance analysis. Historically, the accounting development is always responsible for data processing. Management accounting knowledge is of great help in ascertaining the information requirements, carrying analysis in designing forms for processing, procuring, and providing information. Thus, the MIS concept includes much of the content of management accounting.
- (ii) **Operations Research vs. MIS:** Operations research is the use of scientific methods and quantitative analysis to solve the problems of management. It has a significant relationship with MIS since it has developed procedures for analysis and computer-based solutions to decision problems. The systematic approach to problem solving, use of models, and computer-based solution algorithms are generally incorporated in the Decision Support System of MIS.

- (iii) **Management Theory vs. MIS:** There were several management theories-Behavioral, Empirical, Quantitative, Decision theory and Management process. Out of these, decision theory and management process are the more relevant to MIS. According to decision theory, the most important task of managers is to take decisions. Under the management process concept, management is defined as what managers do. The knowledge of these theories enabled the MIS designers to ascertain the type of decisions made and functions performed by executives in business organizations.
- (iv) **Information Technology vs. MIS:** Computer science is used in information systems to provide accurate and speedy information to the managers. Information technology facilitated the growth of MIS. It is important because it covers topics such as algorithms, computation software, and data structures. Today, computer has a major role in data processing. So, computer technology has been considered a major factor for MIS development.

MANAGEMENT INFORMATION SYSTEM AND SECURITY

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 –

- a. *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.
- b. *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.

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).

LESSON ROUND-UP

- Management Information Systems (MIS) is the study of people, technology, organizations, and the relationships among them. MIS is a people-oriented field with an emphasis on service through technology.
- The management information system follows a System approach. The system's approach implies a holistic approach to the study of the system and its performance to achieve the objective for which it has stood formed.
- Management Information System (MIS) can improve communication within an organization. For example, an MIS system can provide a centralized platform for employees to share information, collaborate on projects, and coordinate tasks. This can help teams work more effectively and achieve their goals more efficiently.

- A management information system is made up of five major components namely people, business processes, data, hardware, and software.
- Information systems can offer more complete and more recent information, allowing managers to operate the company more efficiently, one can use information systems to gain a cost advantage over competitors or to differentiate itself by offering better customer service.
- Management information systems gives the data the managers need to determine whether the decisions have had the desired effect, or whether decision maker must take corrective action to reach organisation's goals.
- The Management Support System stores and organizes data, enabling end users to generate reports and analyze data to address business needs and inform planning. A data warehouse is an example of a Management Support System.
- A Management Information Systems supports various levels of management (individual and group), from top managers to lower managers and supports all decision process level and various styles of deciding.
- In the service industries, Management Information System (MIS) gives its prime focus on the services that are needed to the people. Hence, a continuous monitoring should be done in order to understand the changes occurring to the services demand based on level and scope.

GLOSSARY

System: The term system is the most loosely held term in management literature because of its use in different contexts. However, a system may be defined as a set of elements which are joined together to achieve a common objective. The elements are interrelated and interdependent.

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People: People are the users who use the information system to record the day-to-day business transactions. The users are usually qualified professionals such as accountants, human resource managers, etc. The ICT department usually has the support staff who ensure that the system is running properly.

Business Procedures: Business procedures are agreed upon best practices that guide the users and all other components on how to work efficiently. Business procedures are developed by the people i.e., users, consultants, etc.

System software: It refers to the operating system i.e., Windows, Mac OS, and Ubuntu, etc.

Applications software: It refers to specialized software for accomplishing business tasks such as a payroll program, banking system, point of sale system, etc.

Operations Research: It is the use of scientific methods and quantitative analysis to solve the problems of management. It has a significant relationship with MIS since it has developed procedures for analysis and computer- based solutions to decision problems.

