

# MANAGEMENT INFORMATION SYSTEM FOR EFFECTIVE AND EFFICIENT DECISION MAKING

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## ABSTRACT

Decision making is an integral part of the functioning of any organization. To facilitate Decision making in this ever-competitive world it is imperative that managers have the right information at the right time to bridge the gap between need and expectation. To facilitate better flow of information adequate Management Information Systems (MIS) is the need of the hour. Thus it is important to have an understanding of the MIS followed in an organization by all levels of management in order to take effective decisions

A management information system collects and processes data (information) and provides it to managers at all levels who use it for decision making, planning, program implementation, and control. The MIS has many roles to perform like the decision support role, the performance monitoring role and the functional support role.

Significant improvements have been made in the application systems and infrastructure. From Batch processing to on-line systems, from IBM1401 to the latest UNIX and Windows 2003 based machines it has made timely transitions determined by available technologies and business requirements. The MIS has greatly facilitated and synchronized the information flow in the organization and the management feels that it has played a role in the growth and increased performance of the company.

## INTRODUCTION

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

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

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

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

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

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

**Objectives of MIS :**

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

**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.

**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.

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

**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.

**Hebert Simon model:**

- INTELLIGENCE
- DESIGN
- CHIOCE

**Intelligence** :In this phase MIS collects the raw data. Further the data is sorted and merged with other data and computation are made, examined and presented. In this phase, the attention of the manager is drawn to the entire problem situation, calling for a decision.

**Design :**Manager develops a model of problem situation on which he can generate and test, summarizing the different decision alternatives and test the feasibility of implementation. Assess the value of the decision outcome.

**Choice :**In this phase the manager evolves a selection criterion and selects one alternative as decision based on selection criteria.

In these three phases if the manager fails to reach a decision, he starts the process all over again from intelligence phase where additional data and information is collected, the decision making process is refined, the selection criteria is changed and a decision is arrived at.

### **Need for management information system**

This is a universally accepted fact that all managerial functions are performed through decision making. For taking rational decisions, timely and reliable information is essential and is procured through a logical method of information collecting, processing and disseminating to decision makers. In today's world of ever increasing complexities of carrying out business, every organization, in order to survive and grow, must have a properly planned, analyzed, designed and maintained MIS. This need is even more increased because organizations now have to compete not only locally but also globally. MIS assist decision makers, by providing the required information at various stages of decision making and thus greatly help the organization to achieve its goals and objectives. On the other hand, if an MIS is poorly planned and constructed, it may provide inaccurate, irrelevant or obsolete information, which may even prove fatal for the organization.

### **TYPES OF MIS AND USES**

MIS is a concept, which is a matter of degree rather than an absolute one. In management there are perhaps few other areas other than MIS which has created so much controversy. We would make an attempt to try to look into different types of MIS as they have evolved during the course of time.

1. Transaction Processing System
2. Management Information System
3. Decision Support System
4. Executive Support System
5. Office Automation System
6. Business Expert System

**Transaction Processing System:** It processes transactions and produces reports. It represents the automation of fundamental, routine processing used to support business operations. It does not provide any information to the user for decision making. TPS uses data and produces data.

**Management Information System:** : MIS is an information system that processes data and converts it into information. A management information system uses TPS for its data inputs. The information generated by the information system may be used for control of operations, strategic and long-range planning, short-range planning, management control and other managerial problem solving.

**Decision Support System:** A decision support system is an information system application that assists decision-making. DSS tends to be used in planning, analyzing alternatives and trial and error search solutions. They incorporate a variety of decision-making models and thus are capable of performing what-if analysis.

**Executive Support System:** An ESS is a special kind of DSS. It is specially tailored for the use of chief executives of an organization to support his decision-making. Thus ESS is a comprehensive information system that includes various types of decision support systems, but it is more specific and person oriented.

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

**Business Expert System:** A BES is a knowledge based information system that uses its knowledge about a specific, complex application area to act as an expert.

#### **Components of MIS:**

**Executives:** Executives are the people who utilize MIS. These people are computer professionals who operate MIS for data processing to achieve organizational goals like planning and decision-making.

**Hardware:** The hardware components of MIS include various input and output devices that help in feeding data as well as displaying the information when required. The input devices include the keyboard, scanners and mouse. The output devices may be the monitor, printer, network devices, and so on.

**Software:** Computer programs which are designed to do a specific task for example, MS Office, Banking Software's, Railway's applications etc, different kinds of software

available to process the data/information in an organization such as ERP (enterprise resource planning) and CRM (customer relationship management).

**Organizational Procedures:** Procedures are sets of rules or guidelines that an organization establishes for the use of a computer-based information system. The procedures may vary from one organization to another. It may also vary from one department to another as per the requirement. For example, the working of production department is different from the working of sales department. The production department requires information regarding the raw material or quantity of goods to be produced. So, the production department sets its procedures in such a way that the MIS system helps in retrieving the information required by the department.

#### **Functions of MIS:**

**To collect useful data:** MIS executes the data through computer system using the sources of an organization. The organizational data is stores in computer system or as a paper record by its end users.

**Data Processing:** Processing data includes converting the storage data into the required information to take beneficial actions. Data processing includes mathematical and logical operations like, calculations, sorting, classifying and summarizing the data.

**Information storage and retrieval:** MIS stores data as an organizational record and processed for future use. The data organizes as a fields, records, files and databases for future use. Information retrieval comprises to access the stored data as per the requirements of the management users.

**System :** System is an organized collection of parts (or subsystems) that are highly integrated to accomplish an overall goal. The system has various inputs, which go through certain processes to produce certain outputs, which together, accomplish the overall desired goal for the system. So a system is usually made up of many smaller systems, or subsystems. For example, an organization is made up of many administrative and management functions, products, services, groups and individuals. If one part of the system is changed, the nature of the overall system is changed, as well.

#### **Types of System :**

**Physical or Abstract :** Physical system is tangible entities that may be static or dynamic in nature. Abstract system is conceptual or non-physical. The abstract is conceptualization of physical situations.

**Open and Closed :** An open system continually interacts with its environment. It receives input from the outside and delivers output to outside. A closed system is isolated from environment influences.

**Sub System and Super System :** Each system is part of a large system. The business firm is viewed as the system or total system when focus is on Management Information Systems 9 production, distribution of goal and sources of profit and income. The total system consists of all the objects, attributes and relationship necessary to accomplish an objective given a number of constraints. Sub systems are the smaller systems within a system. Super system denotes extremely large and complex system

**Permanent and Temporary System :** A permanent system is a system enduring for a time span that is long relative to the operation of human. Temporary system is one having a short time span.

**Natural and Man Made System :** System which is made by man is called man made system. Systems which are in the environment made by nature are called natural system.

**Deterministic and Probabilistic :** A Deterministic system is one in which the occurrence of all events is perfectly predictable. If we get the description of the system state at a particular time, the next state can be easily predicted. Probabilistic system is one in which the occurrence of events cannot be perfectly predicted.

**Man-made Information System :** It is generally believed that the information reduces uncertainty about a state or event. An information system is the basis for interaction between the user and the analyst. It determines the nature of relationship among decision makers. An information system may be defined as a set of devices, procedures and operating system designed around user-base criteria to produce information and communicating it to the user for planning control and performance.

**Types of Information System:**

- a) Formal Information System
- b) Informal Information System
- c) Computer Based Information System

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

**Informal Information System :** it is an employee based system designed to meet personal and vocational needs and to help in the solution of workrelated problems. It also

funnels information upward through indirect channels. It works within the framework of the business and its stated policies.

**Computer Based Information System (CBIS) :** This category of information system depends mainly on the computer for handling business applications. System analyst develops different types of information systems to meet variety of business needs. There is a class of system collectively known as computer based information system. They can be classified as

Transaction Processing System (TPS)

Management Information System(MIS)

Decision Support System (DSS)

Office Automation System (OAS)

**MIS Goals and Objectives :** It is necessary to develop the goal and objectives for the MIS which will support the business goals. The MIS goals and objectives will consider management philosophy, policy constraints, Business risk, internal and external environment of the organization and business. The goals and objectives of the MIS would be so stated that they can be measured. The typical statements of the goals can be providing online information on the stock and market; the query processing should not exceed more than three seconds and the like.

**Strategy for Plan Achievement :** The designer has to take a number of strategic decisions for the achievement of MIS goals and objectives. They are

**Development Strategy :** Ex. an online, batch , a real time.

**System Development Strategy :** Designer selects an approach to system development like operational verses functional, accounting verses analysis.

**Resources for the Development :** Designer has to select resources. Resources can be in-house verses external, customized or use of package.

**Manpower Composition :** The staff should have the staffs of an analyst, and programmer.

**The Architecture of MIS :** The architecture of the MIS plan provides a system and subsystem structure and their input, output and linkage. It spells out in details the subsystem from the data entry to processing, analysis to modeling and storage to printing.

**The System Development Schedule :** A schedule is made for development of the system. While preparing a schedule due consideration is given to importance of the

system in the overall information requirements. This development schedule is to be weighed against the time scale for achieving certain information requirements.

**Hardware and Software Plan :** Giving due regards to the technical and operational feasibility, the economics of investment is worked out. Then the plan of procurement is made after selecting the hardware and software. One can take the phased approach of investing starting from the lower configuration of hardware going to the higher as development take place. The process needs matching the technical decisions with the financial decisions.

**Functional MIS:**

**MIS for Marketing :**In order to pursue market opportunities as well as anticipate marketing problem, manager need to collect comprehensive and reliable information. Managers cannot carryout marketing analysis, planning, implementation and control without monitoring and researching customers , competitors, dealers and their sales and cost data. Every firm has many information flows of interest to marketing management. Many companies are studying their executive's information needs and design information system for marketing to meet these needs. Instead of plethora of unrelated data, an MIS combines various inputs and present integrated reports.

**MIS for Personnel Management :**Personnel management has the primary objective of providing suitable manpower in number and with certain ability, skills and knowledge, as the business organization demands from time to time. Its goal is to control personnel cost through continuous increase in manpower productivity resorting to the following techniques :

- a) Motivation through Leadership and Job Enrichment
- b) Grievance Handling
- c) Structuring the Organization
- d) Promotion and Rewards through Performance Appraisal
- e) HRM through Training and Upgrading the Skills

The information and scope of personnel function have resulted in greater complexity in field. There is need to cope with incredible volume of information and maintaining it. There is need to classify, reclassify and cross this information. This can be achieved by computerized personnel system which enables personnel management to manage more efficiently and effectively and to provide more positive services to the organization.

**MIS for Financial Management** :Financial management function has a primary objective of meeting the financial needs of the business. The second objective of FM is to meet the statutory compliance by way of declaring the auditing financial result, submitting reports and returns to the govt. and Tax authorities and fulfill the obligations to the shareholders. FM uses variety of tools and techniques like Break Even Analysis, ABC Analysis, Ratio Analysis, Management Accounting and Cost Analysis.

**Input Documents :**

Receipts from customers, authorities, employees, shareholders, financial institution and others. Payment to suppliers, authorities, shareholders, financial institutions and others. Data from stock exchange on the shares prices consolidated financial results of the other companies etc. Transactions are payments and receipts and they are documented through journal vouchers, bills, debit notes, credit notes, receipts and transfer documents.

**Conclusion:**

MIS is an integrated user-machine system that provides information to support operations, management and decision-making functions at various levels of an organization. Organizations are aware that MIS is a special-purpose system useful for management objectives. The study has highlighted that MIS should be accessible in supplying appropriate and high quality of information from its generation to its users. To MIS, to be vital and effective, a carefully conceived, designed and executed database should exist to communicate the adaptive decisions. In short, the results of the descriptive statistics revealed that MIS primarily used to enhance Strategic planning in the banks. The study also revealed that MIS is the least implemented in the Tactical planning.

**References:**

1. Uma Gupta ,Management Information Systems – A Managerial Perspective, Golgoti Publication , 2004
2. Post and Anderson , Management Information Systems, TMH , 2008
3. [https://gurukpo.com/Content/BCA/Management\\_Information\\_System.pdf](https://gurukpo.com/Content/BCA/Management_Information_System.pdf)
4. RajanManro ,SunitaManro, Management Information Systems.