# 6. MANAGEMENT INFORMATION SYSTEM

To the managers, Management Information System is an implementation of the organizational systems and procedures. To a programmer it is nothing but file structures and file processing. However, it involves much more complexity.

The three components of MIS provide a more complete and focused definition, where **System** suggests integration and holistic view, **Information** stands for processed data, and **Management** is the ultimate user, the decision makers.

Management information system can thus be analyzed as follows:

### Management

Management covers the planning, control, and administration of the operations of a concern. The top management handles planning; the middle management concentrates on controlling; and the lower management is concerned with actual administration.

### Information

Information, in MIS, means the processed data that helps the management in planning, controlling and operations. Data means all the facts arising out of the operations of the concern. Data is processed i.e. recorded, summarized, compared and finally presented to the management in the form of MIS report.

### System

Data is processed into information with the help of a system. A system is made up of inputs, processing, output and feedback or control.

Thus MIS means a system for processing data in order to give proper information to the management for performing its functions.

## Definition

Management Information System or 'MIS' is a planned system of collecting, storing, and disseminating data in the form of information needed to carry out the functions of management.

## Objectives of MIS

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

Following are the basic objectives of an MIS:

- **Capturing Data:** Capturing contextual data, or operational information that will contribute in decision making from various internal and external sources of organization.

- **Processing Data:** The captured data is processed into information needed for planning, organizing, coordinating, directing and controlling functionalities at strategic, tactical and operational level. Processing data means:

  o making calculations with the data

  o sorting data

  o classifying data and

  o summarizing data

- **Information Storage:** Information or processed data need to be stored for future use.

- **Information Retrieval:** The system should be able to retrieve this information from the storage as and when required by various users.

- **Information Propagation:** Information or the finished product of the MIS should be circulated to its users periodically using the organizational network.

# Characteristics of MIS

Following are the characteristics of an MIS:

- It should be based on a long-term planning.

- It should provide a holistic view of the dynamics and the structure of the organization.

- It should work as a complete and comprehensive system covering all interconnecting sub-systems within the organization.

- It should be planned in a top-down way, as the decision makers or the management should actively take part and provide clear direction at the development stage of the MIS.

- It should be based on need of strategic, operational and tactical information of managers of an organization.

- It should also take care of exceptional situations by reporting such situations.

- It should be able to make forecasts and estimates, and generate advanced information, thus providing a competitive advantage. Decision makers can take actions on the basis of such predictions.

- It should create linkage between all sub-systems within the organization, so that the decision makers can take the right decision based on an integrated view.

- It should allow easy flow of information through various sub-systems, thus avoiding redundancy and duplicity of data. It should simplify the operations with as much practicability as possible.

- Although the MIS is an integrated, complete system, it should be made in such a flexible way that it could be easily split into smaller sub-systems as and when required.

- A central database is the backbone of a well-built MIS.

## Characteristics of Computerized MIS

Following are the characteristics of a well-designed computerized MIS:

- It should be able to process data accurately and with high speed, using various techniques like operations research, simulation, heuristics, etc.

- It should be able to collect, organize, manipulate, and update large amount of raw data of both related and unrelated nature, coming from various internal and external sources at different periods of time.

- It should provide real time information on ongoing events without any delay.

- It should support various output formats and follow latest rules and regulations in practice.

- It should provide organized and relevant information for all levels of management: strategic, operational, and tactical.

- It should aim at extreme flexibility in data storage and retrieval.

## Nature and Scope of MIS

The following diagram shows the nature and scope of MIS:
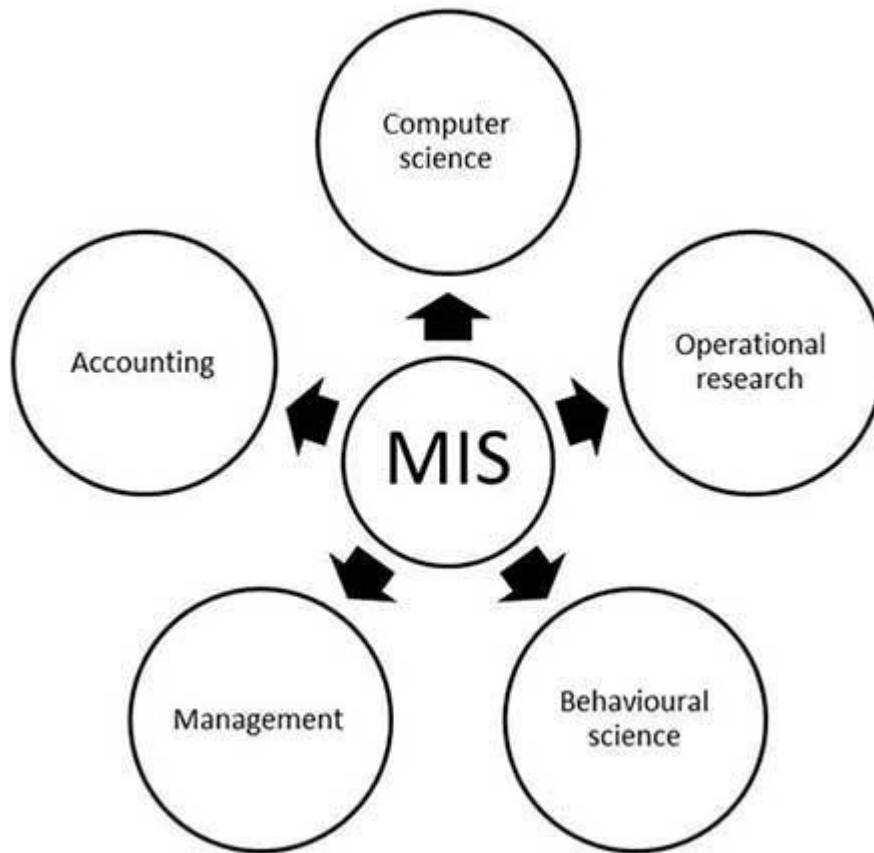
# 7. ENTERPRISE RESOURCE PLANNING

ERP is an integrated, real-time, cross-functional enterprise application, an enterprise-wide transaction framework that supports all the internal business processes of a company.

It supports all core business processes such as sales order processing, inventory management and control, production and distribution planning, and finance.
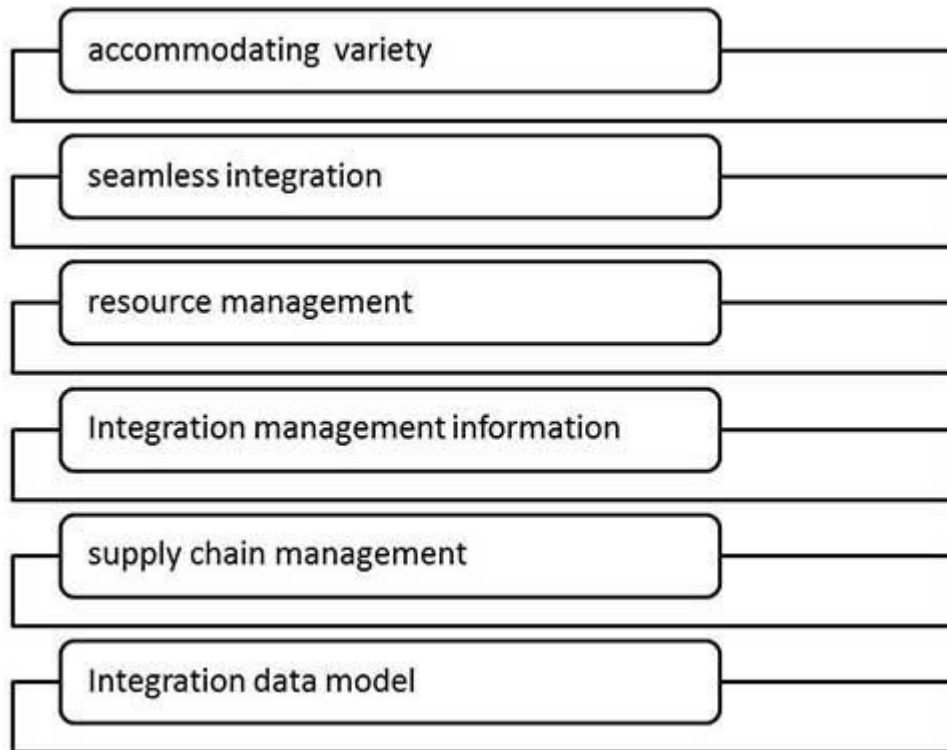


## Why ERP?

ERP is very helpful in the following areas:

- Business integration and automated data update
- Linkage between all core business processes and easy flow of integration
- Flexibility in business operations and more agility to the company
- Better analysis and planning capabilities
- Critical decision-making

- Competitive advantage

- Use of latest technologies

# Features of ERP

The following diagram illustrates the features of ERP:

| accommodating variety |
| --- |

| seamless integration |
| --- |

| resource management |
| --- |

| Integration management information |
| --- |

| supply chain management |
| --- |

| Integration data model |
| --- |

# Scope of ERP

- **Finance:** Financial accounting, Managerial accounting, treasury management, asset management, budget control, costing, and enterprise control.

- **Logistics:** Production planning, material management, plant maintenance, project management, events management, etc.

- **Human resource:** Personnel management, training and development, etc.

- **Supply Chain:** Inventory control, purchase and order control, supplier scheduling, planning, etc.

- **Work flow:** Integrate the entire organization with the flexible assignment of tasks and responsibility to locations, position, jobs, etc.

## Advantages of ERP

- Reduction of lead time
- Reduction of cycle time
- Better customer satisfaction
- Increased flexibility, quality, and efficiency
- Improved information accuracy and decision making capability
- Onetime shipment
- Improved resource utilization
- Improve supplier performance
- Reduced quality costs
- Quick decision-making
- Forecasting and optimization
- Better transparency

## Disadvantage of ERP

- Expense and time in implementation
- Difficulty in integration with other system
- Risk of implementation failure
- Difficulty in implementation change
- Risk in using one vendor

# 9. 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.

## Programmed and Non-programmed Decisions

There are two types of decisions - programmed and non-programmed decisions.

Programmed decisions are basically automated processes, general routine work, where:

- These decisions have been taken several times.

- These decisions follow some guidelines or rules.

> For example, selecting a reorder level for inventories, is a programmed decision.

Non-programmed decisions occur in unusual and non-addressed situations, so:

- It would be a new decision.

- There will not be any rules to follow.

- These decisions are made based on the available information.

- These decisions are based on the manger's discretion, instinct, perception and judgment.

> For example, investing in a new technology is a non-programmed decision.

Decision support systems generally involve non-programmed decisions. Therefore, there will be no exact report, content, or format for these systems. Reports are generated on the fly.

## Attributes of a DSS

- Adaptability and flexibility

- High level of Interactivity

- Ease of use

- Efficiency and effectiveness

- Complete control by decision-makers

- Ease of development

- Extendibility

- Support for modeling and analysis

- Support for data access

- Standalone, integrated, and Web-based

## Characteristics of a DSS

- Support for decision-makers in semi-structured and unstructured problems.

- Support for managers at various managerial levels, ranging from top executive to line managers.

- Support for individuals and groups. Less structured problems often requires the involvement of several individuals from different departments and organization level.

- Support for interdependent or sequential decisions.

- Support for intelligence, design, choice, and implementation.

- Support for variety of decision processes and styles.

- DSSs are adaptive over time.

## Benefits of DSS

- Improves efficiency and speed of decision-making activities.

- Increases the control, competitiveness and capability of futuristic decision-making of the organization.

- Facilitates interpersonal communication.

- Encourages learning or training.

- Since it is mostly used in non-programmed decisions, it reveals new approaches and sets up new evidences for an unusual decision.

- Helps automate managerial processes.

# Components of a DSS

Following are the components of the Decision Support System:

- **Database Management System (DBMS)**: To solve a problem the necessary data may come from internal or external database. In an organization, internal data are generated by a system such as TPS and MIS. External data come from a variety of sources such as newspapers, online data services, databases (financial, marketing, human resources).

- **Model Management System**: It stores and accesses models that managers use to make decisions. Such models are used for designing manufacturing facility, analyzing the financial health of an organization, forecasting demand of a product or service, etc.

- **Support Tools:** Support tools like online help; pulls down menus, user interfaces, graphical analysis, error correction mechanism, facilitates the user interactions with the system.

# Classification of DSS

There are several ways to classify DSS. Hoi Apple and Whinstone classifies DSS as follows:

- **Text Oriented DSS:** It contains textually represented information that could have a bearing on decision. It allows documents to be electronically created, revised and viewed as needed.

- **Database Oriented DSS:** Database plays a major role here; it contains organized and highly structured data.

- **Spreadsheet Oriented DSS:** It contains information in spread sheets that allows create, view, modify procedural knowledge and also instructs the system to execute self-contained instructions. The most popular tool is Excel and Lotus 1-2-3.

- **Solver Oriented DSS:** It is based on a solver, which is an algorithm or procedure written for performing certain calculations and particular program type.

- **Rules Oriented DSS:** It follows certain procedures adopted as rules.

- **Rules Oriented DSS:** Procedures are adopted in rules oriented DSS. Export system is the example.

- **Compound DSS:** It is built by using two or more of the five structures explained above.

# Types of DSS

Following are some typical DSSs:

- **Status Inquiry System:** It helps in taking operational, management level, or middle level management decisions, for example daily schedules of jobs to machines or machines to operators.

- **Data Analysis System:** It needs comparative analysis and makes use of formula or an algorithm, for example cash flow analysis, inventory analysis etc.

- **Information Analysis System:** In this system data is analyzed and the information report is generated. For example, sales analysis, accounts receivable systems, market analysis etc.

- **Accounting System:** It keeps track of accounting and finance related information, for example, final account, accounts receivables, accounts payables, etc. that keep track of the major aspects of the business.

- **Model Based System:** Simulation models or optimization models used for decision-making are used infrequently and creates general guidelines for operation or management.