As per New CBCS Syllabus for B.Com.
for Various Universities in Telangana State w.e.f. 2018-19

Management Information System

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MANAGEMENT INFORMATION SYSTEM

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PREFACE

For the foreseeable future, Management Information System is likely to be one of the most potent growth areas in advanced industrialised countries. Indeed, it is now widely recognised that long-term economic prosperity will crucially depend upon people's success in developing, mastering, exploiting and marketing information systems.

This book is designed for B.Com., B.Sc., BCA, MBA and MCA students under various universities of India. Its main objective is to create awareness about Information Technology and Formation System to the students. The subject matter is explained in step by step manner. Concepts are explained through diagrams so that readers can understand in a better way.

However, there are still ways in which the presentation can be improved. Valuable comments from the students and teachers for further improvement of this book are welcome; we assure that suggestions will be incorporated in the next edition. We believe that our approach will bring unique benefits to all groups of readers.

No project could ever get in progress much less accomplished, without help from a lot of fantastic friends and colleagues. We are grateful to God who has given us strength to take and complete this project. We would like to express gratitude to our parents and family members who have encouraged us to complete this project.

We thank Mr. Niraj Pandey, Director, Mr. Vijay Pandey, General Manager (Marketing) and Mr. G. Anil Kumar, Sales Manager of Himalaya Publishing House Pvt. Ltd., Hyderabad, who is the key inspirer for publishing of this book in time. We also thank Shri K. Raghuveer, Principal and Shri Sandeep Agarwalla, Faculty at Computer Science, Indian Institute of Management and Commerce, Hyderabad and FR. A. Arogya Reddy, Principal, St. Mary's Centenary Degree College, Secunderabad for their continuous encouragement to author this book.

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SYLLABUS

UNIT - 1 : AN OVERVIEW OF MANAGEMENT INFORMATION SYSTEMS (MIS): Concept and Definition of MIS — MIS vs. Data Processing — MIS and Decision Support Systems — MIS and Information Resources Management — End-user Computing — MIS Structure — Managerial View of IS — Functions of Management — Management Role — Levels of Management.

UNIT - 2 : FOUNDATION OF INFORMATION SYSTEMS: Introduction to Information System in Business — Fundamentals of Information Systems — Solving Business Problems with Information Systems — Types of Information Systems, Effectiveness and Efficiency Criteria in Information System — Framework for IS — Sequence of Development of IS.

UNIT - 3 : CONCEPT OF PLANNING AND CONTROL: Concept of Organisational Planning — Planning Process — Computational Support for Planning — Characteristics of Control Process — Nature of Control in an Organisation — IS Planning — Determination of Information Requirements — Business Systems Planning — End Means Analysis — Organising the Plan.

UNIT - 4 : BUSINESS APPLICATIONS OF INFORMATION TECHNOLOGY: Internet and Electronic Commerce — Intranet — Extranet and Enterprise Solutions — Information System for Business Operations — Information System for Managerial Decision Support — Information System for Strategic Advantage.

UNIT - 5 : ADVANCED CONCEPTS IN INFORMATION SYSTEMS: Enterprise Resource Planning — Supply Chain Management — Customer Relationship Management and Procurement Management — Systems Analysis and Design — System Development Life Cycle (SDLC) — Prototyping — SAD — Project Management — Cost Benefit Analysis — Detailed Design — Implementation.

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UNIT : 1

AN OVERVIEW OF MANAGEMENT INFORMATION SYSTEMS (MIS)

1.1 CONCEPT AND DEFINITION OF MIS

Introduction

The Management information system (MIS) is an idea which is associated with man, machine, marketing and methods for collecting informations from the internal and external source and processing this information for the purpose of facilitating the process of decision-making of the business.

Eg: Bank Information System

Railway Information System

Educational Information System

Management Information System is an integrated set of components or entities that interact to achieve a particular function, objective or goal. Therefore, it is a computer-based system that provides information for decision-making on planning, organising and controlling the operations of the subsystem of the firm and provides a synergistic organisation in the process.

The component of an information system includes: **hardware** used for input/output process and storage of data, **software** used for processing data and also to instruct the hardware component, **databases** which is the location in the system where all the organisation data will be automated and procedures which is a set of documents explaining the structure of that Management Information System.

There are various driving factors of management information system, for example:

Technological disruptions in all sectors make modern managers request access to large amount of selective information for complex tasks and decisions.

The life-span of most products continue getting shorter and shorter and therefore the challenge to the manager is to design a product that has a longer shelf life. In order to do this, the manager must be able to keep abreast of the factors that influence the products and services of the organisation. Thus, management information system comes in handy in supporting the decision-making process.

The scope and purpose of MIS is better understood if each part of them is defined individually.

Management

Management can be defined as the planned, controlled implementation of processes or activities that describe what managers do in the operation for their organisation — *plan, organise, initiate and control operations*. They plan by setting strategies and goals, and selecting the best course of action to achieve the goals. They organise the necessary tasks for the operational plan, set these tasks up into homogeneous groups and assign authority delegation; they control the performance standards and avoid deviation from standard.

The decision-making is a fundamental pre-requisite of each of the foregoing process. The job of MIS is facilitating decisions necessary for planning, organising and controlling the work and functions of the business so that specified goals of business are achieved.

Information

Data must be distinguished from information and the distinction is clear and important for present purpose. Data are facts and figures that are not currently being used in a decision-making process. Usually, data is obtained from historical records that are recorded and filled without immediate intent to retrieve for decision-making.

Information consists of data that has been retrieved, processed or otherwise used for information or interference purpose, argument or as a basis for forecasting or decision-making regarding any business unit. Information is knowledge that one derives from facts for effective functioning of systems placed in the right context. This helps reduce uncertainty regarding the alternative courses of action as they are based on description and measurement of attributes of various entities associated with the enterprise.

System

The system can best be described as a set of elements joined together for a common objective. A subsystem is a part of a larger system with which one is concerned. All systems for our purpose — the organisation is the system and the parts (divisions, departments, functions, unit, etc.) — are the subsystem.

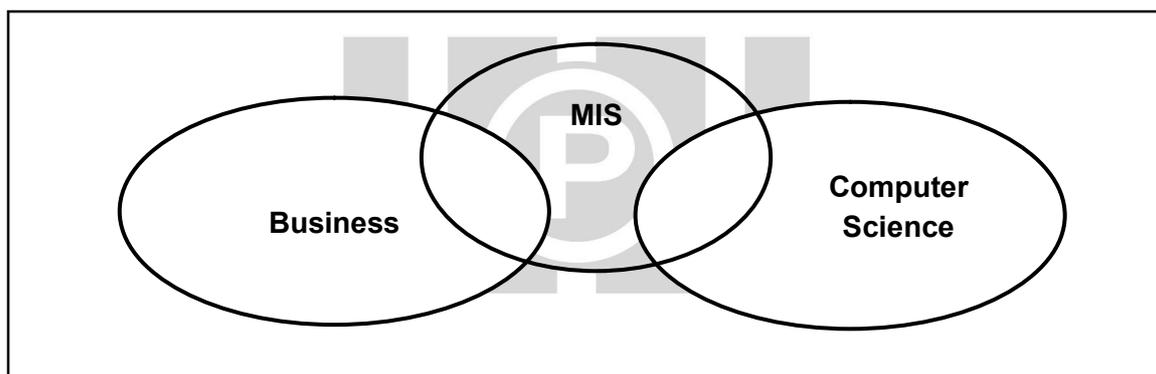## Definition of Management Information System

Management Information System (MIS) can be defined as a formal method of collecting timely information in a presentable form in order to facilitate effective decision-making and

implementation, in order to carry out operations for the purpose of achieving the organisational goal. MIS is a system design to provide selected decision-orientation information needed by management to plan, control and evaluate the activities of the corporation. It is designed within the framework that emphasises profit, planning, performance planning and control at all levels. It complements the ultimate integration of required business information subsystems.

According to Philip Kotler, 'A Marketing Information System (MIS) consists of people, equipment, and procedures to gather, sort, analyse, evaluate and distribute needed, timely and accurate information to marketing decision makers.'

Professor Allen S. Lee states that 'research in the information systems field examines more than the technological system or just the social system or even both side-by-side; in addition, it investigates the phenomena that emerge when the two interact.'

An Information System can be any organised combination of people, hardware, software, communication network and data resources that collects, transforms and disseminates information in an organisation.

MIS is the combination of Business, Information System and Technology

Purpose of Management Information System

Information processing is a major social activity. A significant part of an individual's working and personal time is spent in recording, searching for, and absorbing information. As much as 80% of a typical executive's time is spent on processing and communicating information. Their duties involve the production and use of information outputs documents, reports, analysis, plans, etc.

The system provides information on past, present, and project the future and on relevant events inside and outside the organisation in the society. It may be defined as a planned and integrated system for gathering relevant data, converting it into right information and supplying the same to the right people. The main purpose of Management Information System is to communicate and manage the right and correct information to the right people at the right time.

Another important purpose of Management Information System is that it is needed by all business organisations because of increased complexity and rate of change in today's business environment. For example, Marketing Manager needs information about sales performance and

trends; Financial Manager needs information on returns; Production Manager needs information analysing resource requirement and workers' productivity; and Personnel Manager needs information concerning employee compensation and professional development.

Management Information System concept is vital to effective computer use in business for two major reasons:

1. It serves as a system framework for organising business computer applications. Business applications of computer should be viewed as interrelated and integrated computer based Information System and not as an independent data processing job.

2. It emphasises the management orientation of electronic information processing in business. The primary goal of computer based information should be the processing of data generated by business operations.

Advantages of Management Information System (MIS)

1. Management Information System helps the managers to **plan** and **control** decisions.

2. Facilitates planning — MIS improves the quality of plans by providing relevant information for sound decision-making. Due to increase in size and the complexity of organisation, managers have lost personal contact with operations.

3. Minimise information overload — MIS changes the larger amount of data into summarised form and thereby avoids the confusion which frequently arises when managers are flooded with an overload of details. The right level of summarised details is essential for speed agility in operations.

4. Bring co-ordination — MIS facilitates integration of specialised activities by keeping each department aware of the problem and their requirement. It connects all decision centres in the organisation.

5. Make control easier — MIS serves as a link between managerial planning and control. It improves the ability of management to evaluate and improve performance. The use of computers has increased data processing and storage capability, hence reducing the cost.

6. MIS assembles processes — It stores, retrives, evaluates, and disseminates the information.

7. It ensures that appropriate data is collected from various sources, processed, and sent further to all the required destinations.

8. MIS helps in strategic planning, management control, operational control and transaction processing.

9. It 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 reference on a variety of documents.

Objectives of Management Information System (MIS)

1. The main objective of MIS is to perform the transaction processing of data of an organisation effectively. Transaction processing is applied in conversion and analysis of raw data.

2. MIS is the management of marketing, finance, production, and the personnel resulting in enhanced efficiency.

3. MIS is making the forecasting and long-term prospective planning more effective.

4. It tries to create a structured database in knowledge-base for all the people in the organisation.

Characteristics of Management Information System (MIS)

Management Information System and top management — Management Information System is a comprehensive and coordinated set of information subsystems which are rationally integrated and which transform data information in a variety of ways to enhance productivity in conformity with the manager's style and characteristics on the basis of established quality.

1. **Management oriented:** The system is designed from top to bottom. This does not mean that the system will be geared to provide information directly to top management; rather it means that the system development starts from an appraisal of management needs and overall business objectives. It is possible that top management is the focus of the system such as their needs is the cornerstone on which the system is built. For example, a Marketing Information System, basic sales order processing, the shipment of goods to the customers and the billing of the goods are fundamental operation control activities. However, if the system is designed properly, this transaction information can be traced by salesman, sales territory, size of order, geography and product line. Furthermore, if designed with strategic management needs in mind, external competition, market and economic data can be created to visualise how well the company's product is faring in the market *vis-a-vis* the competing product. It also serves as the base for a new product introduction in market. The initial application is geared towards operations and management control areas, but in such a way so as not to preclude its integration into strategic planning subsystem for upper management.

2. **Management directed:** Because of MIS, it is imperative that management actively directs the system development efforts to determine what information is necessary to improve its control of operation. It is rare to find a MIS where the manager himself or a high level representative of his department is not spending a good deal of his time in system design. It is not a non-time involvement for continued review and participation is necessary to ensure that the implemented system meets the specification of the system being designed. Therefore, management is responsible for setting system specification and it must play a major role in subsequent trade-off decision that inevitably occurs in system development. An important element of effective system planning is the process for determining the priority of application development. Management must control this process if a Management Information System is the objective. A company without a formal application approval cycle and a management steering to determine priorities will never develop a Management Information System.

3. **Integrated:** Integration is significant because of the ability to produce more meaningful management information. For example, in order to develop an effective production scheduling system, we must balance such factors as:

- ❖ Set-up cost.
- ❖ Work-force.
- ❖ Overtime rates.
- ❖ Production capacity.
- ❖ Capital requirement.
- ❖ Customer service.

4. **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. For example, customer orders are the basis for billing the customer, for goods ordered, setting up the accounts receivable, initiating production activity, sales analysis, sales forecasting and so on. It is prudent to capture this data closest to the source where the event occurs and use it throughout the functional area. It is also prudent to capture it once and thus avoid the duplicate entry of source data into several systems.

5. **Heavy planning elements:** MIS does not occur overnight. They take around three to five years and more to get established firmly within a company. A heavy planning element must be present in Management Information System development. The Management Information System designer must have the future objectives and needs of the company firmly in mind. The designer must avoid the possibility of system outdate before the system goes into production. Planning is an essential ingredient to successful Management Information System. The Management Information System provides meaningful direction towards which one strives.

6. **Subsystem concept:** In tackling a project as broad and complex in scope as a Management Information System, one just avoids losing sight of both the forest and its trees. Even though the system is viewed as a single entity, it must be broken down into digestible subsystems that can be implemented one at a time. The breakdown of Management Information System into meaningful subsystems set the stage for prioritised implementation. The subsystem analysis is essential for applying boundaries to the problem, thus enabling the designer to focus on manageable entities that can be assigned and computerised by the selected system and programming team.

7. **Flexibility and ease of use:** Despite a careful analysis of the future management information needs, it is impossible to predict what is desired five years in future. This is true in most industries and especially in industries with rapid change patterns. It is naive to think that if anyone possesses the omniscience to predict the future with this as a premise, the next best thing a MIS developer can do is to build in the flexibility to incorporate as many manufacture nuances as possible. This is done by allocating tolerance specifications both in terms of time and product specifications. In terms of time, allocations for possible delays are usually made at each stage of the product being planned, designed and implemented.

8. **Database:** The data is the mortar that holds the functional systems together. Each system requires access to a master file or data covering inventory, personnel, vendors, customers, general ledger, and work in progress and so on. If the data is stored efficiently and with

common usages in mind, one master file can provide the data needed by any of the functional systems. It seems logical to gather data once properly, validate it and place it on a central storage medium that can be accessed by any system. However, it is not unusual to find a company with multiple data files, one serving one functional system and another serving another system.

9. **Distributed data processing:** The majority of the companies implementing Management Information System have a geographic network of sales offices, distribution channels, manufacturing plants and so on. Some of these entities are operated in a completely independent fashion and therefore may not be a part of the integrated MIS. More often than not, the remote site has a connection with each other and with a host of operations, in order to create an effective Management Information System with geographical boundaries. Some form of distributed data processing is necessary. Distributed data processing can be thought of as the delivery system, placing information in the hands of those who need it when they require it.

10. **Information as a resource:** Providing the entire organisation must be a concept that information is a valuable resource. Particularly in the management, control and strategic planning areas must be properly managed. This is a subtle but important change in thinking. It was common in the past to view the data processing.

Models/Types of Management Information Systems

1. **Accounting Management Information Systems:** All levels of accounting managers share all accounting reports.

2. **Financial Management Information Systems:** It provides financial information to all the financial managers within an organisation including the Chief Financial Officer. The CFO analyses historical and current financial activity.

3. **Manufacturing Management Information Systems:** More than any functional area, technology has impacted operations. As a result, manufacturing operations have changed. For instance, inventories are provided right in time so that great amounts of money is not spent for warehousing huge inventories, in some instance raw material, or even inventories on rail-road cars waiting to be sent directly to the factory. Thus minimising the need for warehousing.

4. **Marketing Management Information System:** A Marketing Management Information System supports managerial activity primarily in the area of product development, distribution, pricing decision, promotional effectiveness and sales forecasting.

5. **Human resource Management Information System:** It is concerned with activities related to workers, managers and other individuals employed by an organisation. The human resource Management Information System plays a valuable role in ensuring organisation system including work-force analysis and planning, hiring, training, and job assignment.

6. **Structure of Management Information System:** The Management Information System has been described in terms of support for decision-making management activity and organisational functions.

7. **Conceptual structure:** The conceptual structure of a Management Information System is defined as a federation of functional subsystems, each of which is divided into four major information processing: components transaction processing, operational control information system support, managerial control information system and strategic planning information system, which has some unique data files which are used by only that subsystem.

8. **Physical structure:** The physical structure of Management Information System would be identical to the conceptual structure of all applications consisting of completely separate programs used by only one function, but this is frequently not the case. Substantial information can be achieved from:

   1. Integrated processing,
   2. Use of common modules.

Integrated processing is achieved by designing several related applications as a single system in order to simplify the interconnection and reduce the duplication of input. A good example is an order entry system. The recording of an order initiates a sequence of processing — each step using new data but also includes most of the data from prior processing. In other words, an integrated order entry system crosses functional boundaries.

1.2 MIS VS. DATA PROCESSING

Data processing is a term used to describe the series of actions taken to provide useful information from data.

Data processing systems, whether manual, mechanical or electronic, are used to produce the Management Information System for running the organisation. Data is the term used to describe the basic fact regarding an organisation's activities which are collected and put into a system. The facts are to produce useful output or information. The process of output or information is also known as a reporting system. Therefore, the data processing system processes the transactions and processes the reports. Prior to computer (before the use of computers), this was done manually. In the age of computers, other data processing methods, like the electronics data processing (EDP) method, continue to be used in organisations. But it should not be confused with other data processing methods, and may be used in conjunction with computer data processing, for example, to produce input or deal with output.

Definition. Data Processing: The execution of a systematic sequence of operations performed upon data to transform it into information.

Data processing involves a number of transactions and file maintenance in order to provide a database for generating and providing information to various users at the management levels. A transaction is an activity like making a purchase or sales, manufacturing product or recruiting employees. It may be internal in nature and can also involve an external agency. The records to be transacted can be routed through the following ways:

1. Direct transaction to the action (automatic action).
2. Reporting or explaining the performance (through the information report).
3. Communicate the information about the issue (ad hoc support).

The other processing activities are master file maintenance, report generation inquiry and creating support applications. The output of these processing functions provide the base to other management activities. They are routine and are in a programmed form.

A MIS is more comprehensive than data processing, with only process transaction and produce reports.

Before the advent of computers, data processing was performed manually or with simple machines. MIS encompasses processing in support of a wider range of organisational functions and management processes. The system also includes transaction processing, which is illustrated by the computer-based data processing diagram below.

It is clear from the diagram that the input data has entered into the system and formed as database, and it has again transformed into output for the decision makers as information.

The important difference between MIS and routine data process are the capability to provide analysis, planning and decision-making support. A MIS orientation means users have access to decision-models and methods for querying the data-set. Information resources are utilised so as to improve decision-making and achieve improved organisational effectiveness.
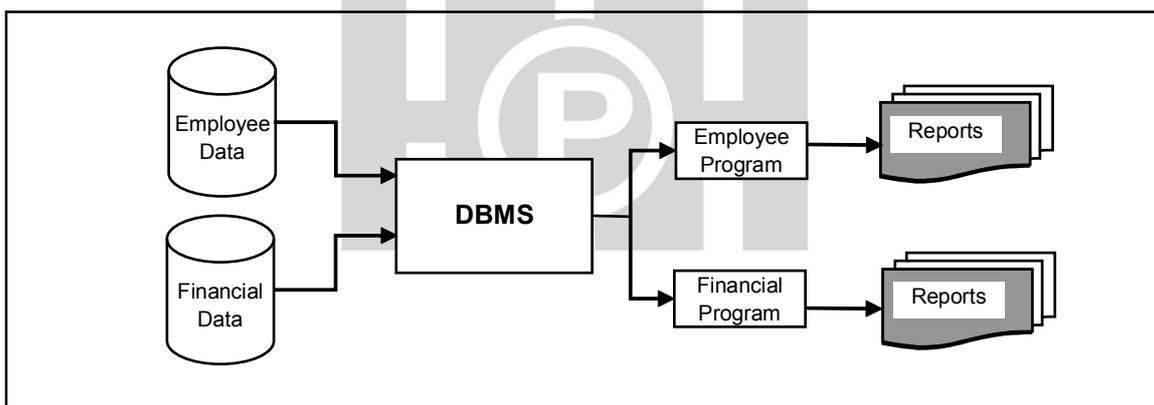
Database Processing

1.3 MIS AND DECISION SUPPORT SYSTEMS

A **Decision Support System** (**DSS**) is a computer-based information system that supports business or organisational decision-making activities. DSS serve the management, operations, and planning levels of an organisation (usually mid and higher management) and help people make decisions about problems that may be rapidly changing and not easily specified in advance, *i.e.,* Unstructured and Semi-structured decision problems. Decision Support Systems can be either fully computerised, human-powered or a combination of both.

Components of Decision Support Systems
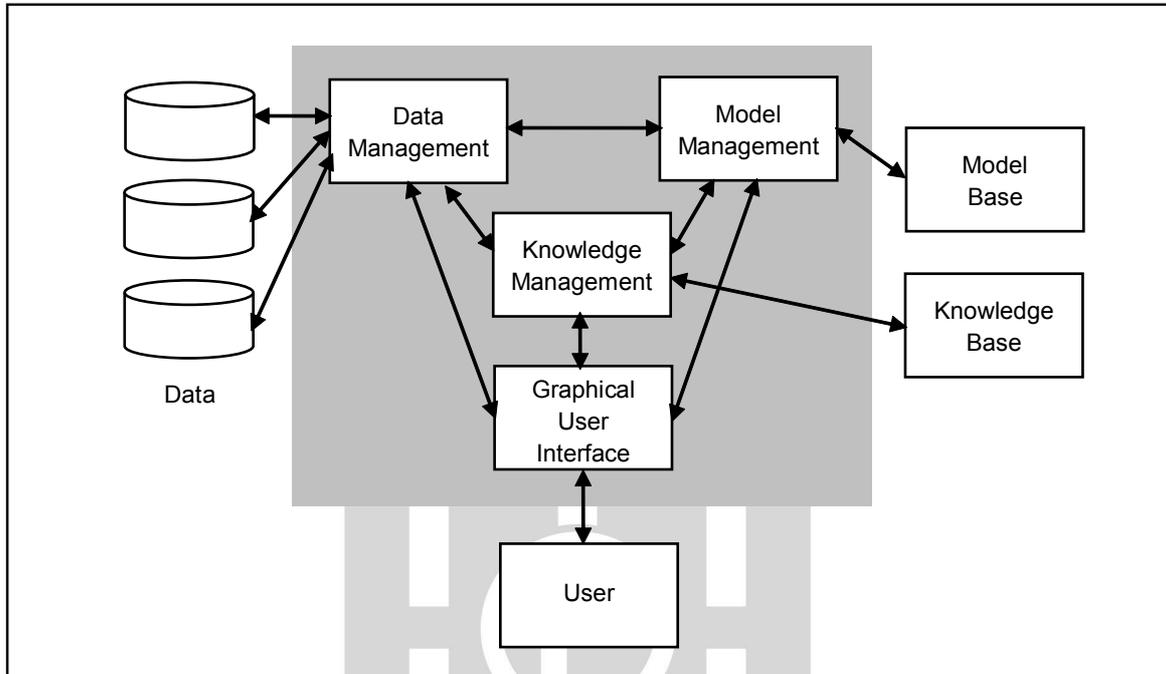
Typical **Decision Support System has** four components:

1. Data Management
2. Model Management
3. Knowledge Management
4. User Interface Management

1. Data Management Component

The Data Management Component performs the function of storing and maintaining the information that you want your Decision Support System to use. The Data Management Component, therefore, consists of both the Decision Support System information and the Decision Support System Database Management System.

The information you use in your Decision Support System comes from one or more of the below three sources:

Organisational information: We may want to use virtually any information available in the organisation for your Decision Support System. What you use, of course, depends on what you need and whether it is available. You can design your Decision Support System to access this information directly from your company's database and data warehouse. However, specific information is often copied to the Decision Support System database to save time in searching through the organisation's database and data warehouses.

External information: Some decisions require input from external sources of information.

Personal information: You can incorporate your own insights and experiences into your Decision Support System. You can design your Decision Support System so that you enter this personal information only as needed, or you can keep the information in a personal database that is accessible by the Decision Support System.

2. Model Management Component

The Model Management Component consists of both the Decision Support System models and the Decision Support System model management system.

A model is a representation of some event, fact or situation. As it is not always practical or wise to experiment with reality, people build models and use them for experimentation. Models can take various forms.

Businesses use models to represent variables and their relationships. For example, you would use a statistical model called analysis of variance to determine whether newspaper, TV and billboard advertising are equally effective in increasing sales.

Decision Support Systems help in various decision-making situations by utilising models that allow us to analyse information in many different ways. The models we use in a Decision Support System depend on the decision you are making and consequently, the kind of analysis you require. For example, we would use what-if analysis to see what effect the change of one or more variables will have on other variables, or optimisation to find the most profitable solution given operating restrictions and limited resources. Spreadsheet software such as Excel can be used as a Decision Support System for what-if analysis.

The model management system stores and maintains the Decision Support System's models.

Its function of managing models is similar to that of a Database Management System. The Model Management Component cannot select the best model for us to use for a particular problem. That requires your expertise but it can help you create and manipulate models quickly and easily.

3. Knowledge Management Component

The Knowledge Management Component, like that in an expert system, provides information about the relationship among data that is too complex for a database to represent. It consists of rules that can constrain possible solution as well as alternative solutions and methods for evaluating them.

For example, when analysing the impact of a price reduction, a Decision Support System should signal if the predicted volume of activity exceeds the volume that the projected staff can service. Such signaling requires the Decision Support System to incorporate some rules-of-thumb about an appropriate ratio of staff to sales volume. Such rules-of-thumb, also known as *heuristics*, make up the knowledge-base.

4. User Interface Management Component

The User Interface Management Component allows you to communicate with the Decision Support System. It consists of the User Interface Management System. This is the component that allows you to combine your know-how with the storage and processing capabilities of the computer.

The User Interface is the part of the system you see through it when you enter information, commands and models. This is the only component of the system with which you have direct contact. If you have a Decision Support System with a poorly designed User Interface, if it is too rigid or too cumbersome to use, you simply won't use it no matter what its capabilities. The best User Interface uses your terminology and methods and is flexible, consistent, simple and adaptable.

Decision Support System Performs Three Tasks

1. **Data Management:** The Decision Support System stores customer and product information. In addition to this organisational information, the DSS also needs external information, such as demographic information and industry and style trend information.

2. **Model Management:** The Decision Support System has to have models to analyse the information. The models create new information that decision-makers need to plan product lines and inventory levels. For example, Lands' End, (a clothing retailer) uses a statistical model called regression analysis to determine trends in customer buying patterns and forecasting models to predict sales levels.

3. **User Interface Management:** A User Interface enables Lands' End decision-makers to access information and to specify the models they want to use to create the information they need.

Types of Decision Support Systems (DSS)

A Decision Support System may present information graphically and may include an expert system or Artificial Intelligence (AI). It may be aimed at business executives or some other group of knowledge workers.

There are a number of Decision Support Systems. They can be categorised into five types:

1. Communication-driven DSS
2. Data-driven DSS
3. Document-driven DSS
4. Knowledge-driven DSS
5. Model-driven DSS

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                        │ Types of DSS│
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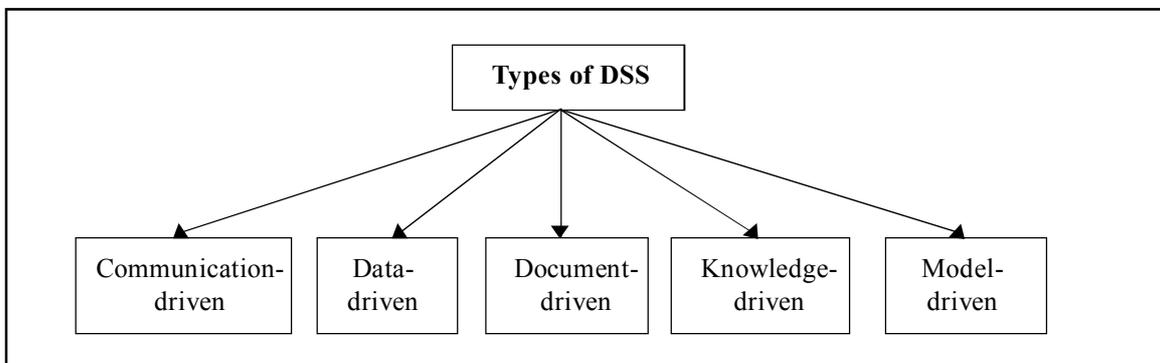
1. **Communication-driven DSS:** Most communication-driven DSS are targeted at internal teams, including partners. Its purpose is to help conduct a meeting or for users to collaborate. The most common technology used to deploy the DSS is a web or client server. *Examples:* chats and instant messaging software, online collaboration and net-meeting systems.

2. **Data-driven DSS:** Most data-driven DSS are targeted at managers, staff and also product/ service suppliers. It is used to query a database or data warehouse to seek specific answers for specific purposes. It is deployed via a main frame system, client/server link, or via the web. *Examples:* computer-based databases that have a query system to check (including the incorporation of data to add value to) existing databases.

3. **Document-driven DSS:** Document-driven DSS are more common, targeted at a broad base of user groups. The purpose of such a DSS is to search web pages and find documents on a specific set of keywords or search terms. The usual technology used to set up such DSS is via the web or a client/server system.

4. **Knowledge-driven DSS:** Knowledge-driven DSS or 'knowledge-base' as they are known, are a catch-all category covering a broad range of systems covering users within the organisation setting it up, but may also include others interacting with the organisation — *for example,* consumers of a business. It is essentially used to provide management advice or to choose products/services. The typical deployment technology used to set up such systems could be client/server systems, the web, or software running on stand-alone PCs.

5. **Model-driven DSS:** Model-driven DSS are complex systems that help analyse decisions or choose between different options. These are used by managers and staff members of a business, or people who interact with the organisation, for a number of purposes depending on how the model is set up — scheduling, decision analysis, etc. These DSS can be deployed via software/hardware in stand-alone PCs, client/server systems or the web.

Comparison between the MIS (Management Information System) and the DSS (Decision Support System)

DSS:

1. DSS generally provides support for unstructured or semi-structured decisions (decisions that cannot be described in detail).

2. DSS problems are often characterised by incomplete or uncertain knowledge or the use of qualitative data.

3. DSS will often include modeling tools in them, where various alternative scenarios can be modeled and compared.

4. Investment decisions are an example of those that might be supported by DSS.

MIS:

1. MIS is generally more sophisticated reporting system built on existing transaction processing systems.

2. Often used to support structured decision-making (decisions that can be described in detail before the decision is made).

3. Typically will also support tactical level management, but sometimes is used at other levels.

4. Examples of structured decisions supported by MIS might include deciding on stock levels or the pricing of products.

DSS	MIS
Focus is mainly on the semi-structured/unstructured tasks, which demand managerial judgment.	The main focus is on the structured tasks and the routine decisions.
Develops certain tools for using in the decision process.	Identifies the information requirement.
The main emphasis is on the data-manipulation.	Data storage is of great importance.
Current data can be used in the Decision Support System.	Delivers system depending on the frozen requirements.
Managers enjoy direct access to the data.	Only indirect access to the data by the managers is provided.
Depends on managerial judgment.	Very much dependent on the computer expert.
Waiting is not at all required.	Access to the data possibly requiring a 'wait' for the manager's turn.
Manager possesses the knowledge about the nature of the decision and the decision-making environment.	MIS manager may not completely understand the nature of the decision.
Main emphasis is laid on the effectiveness.	Main stress is on the efficiency.

1.4 MIS AND INFORMATION RESOURCES MANAGEMENT

Information Resources Management (IRM) is an emerging discipline that helps managers assess and exploit their information assets for business development. It draws on the techniques of Information Science (libraries) and Information Systems (IT related). It is an important foundation for knowledge management that deals systematically with explicit knowledge. Knowledge centres often play an important part in introducing IRM into an organisation.

The five key activities for effective IRM management:

- ❖ **Identification** – What information is there? How is it identified and coded?
- ❖ **Cost and Value** – A basic model for making judgments on purchase and use.
- ❖ **Development** – Increasing its value or stimulating demand.
- ❖ **Ownership** – Who is responsible for different information entities and co-ordination?
- ❖ **Exploitation** – Proactive maximisation of value for money.

IRM may be viewed as having five major dimensions:

1. Strategic Management
2. Operational Management
3. Resource Management
4. Distributed Management
5. Technology Management

Strategic Management: Information Technology must be managed to contribute to a firm's strategic objectives and competitive advantages, not just for operational efficiency or decision-making.

Operational Management: Information Technology and Information Systems can be managed by functional organisational structures and managerial techniques commonly used throughout other business units.

Resource Management: Data and information, hardware and software, telecommunication networks, and IS personnel are vital organisational resources that must be managed like other business assets.

Distributed Management: Managing the use of Information Technology and Information system resources in business units or workgroups is a key responsibility of managers, no matter what their function or level is in the organisation.

Technology Management: All technologies that process, store, and communicate data and information throughout the enterprise should be managed as integrated systems of organisational resources.

Benefits of Implementing an IRM Strategy

Few organisations have developed a comprehensive IRM strategy. Those that have started with some of its key processes of information audit and information mapping, cite the following benefits:

- ❖ Identifies gaps and duplication of information
- ❖ Clarifies roles and responsibilities of owners and users of information
- ❖ Provides cost saving in the procurement and handling of information
- ❖ Identifies cost/benefits of different information resources
- ❖ Actively supports management decision processes with quality information

Few Points for Managing Information Resource as a Strategic Asset

1. Cognize the role of Information.
2. Assign Responsibility for Leading the IRM Initiative.
3. Develop Clear Policies on Information Resources.
4. Conduct an Information Audit.
5. Link to Management Processes.
6. Systematic observation.
7. Enhance our information purchases.
8. Introduce mining and refining processes.
9. Develop Appropriate Technological Systems.
10. Encourage Sharing Culture.

1. Cognize the role of Information: Information can add value to our products and services. Information can improve the quality of decision-making and internal operations. Many managers do not fully understand the real impact of information.

2. Assign Responsibility for Leading IRM Initiative: Developing value from information resources is often a responsibility that falls between the cracks of several departments: the user departments in different business units, and corporate planning, MIS units or librarians.

3. Develop Clear Policies on Information Resources: Strategies for ascertaining information needs, acquiring and managing information throughout its life cycle. Pay particular attention to ownership, information integrity and sharing. Make the policies consistent with our organisational culture.

4. Conduct an Information Audit: Categorise current knowledge and information resources (or entities), their users, usage and importance. Identify sources, cost and value. Classify information and knowledge by its key attributes. Develop knowledge maps. As knowledge management gains prominence, this is sometimes called a knowledge inventory "knowing what you know".

5. Link to Management Processes: Make sure that key decision and business process are supported with high leverage information. Assess each process for its information needs.

6. Systematic Observation: Systematically scan the business environment. This includes the wider environment — legal and regulatory, political, social, economical and technological — as well as the inner environment of the industry, markets, customers and competitors. Provide selective and tailored dissemination of vital signs to key executives. This goes beyond the daily abstracting service provided by many suppliers.

7. Enhance our information purchases: We do not have to control purchasing, but most organisations do not know how much they are really spending on external information. By treating consultancy, market research, library expenses, report and databases as separate categories, many organisations are confusing media with content.

8. Introduce mining and refining processes: Good information management involves 'data mining', 'information refining' and 'knowledge editing'.

9. Develop Appropriate Technological Systems: Effective information management and knowledge management technologies improve organisational growth.

10. Encourage Sharing Culture: Information acquires value when turned into intelligence. Market Intelligence Systems (MKIS) are human expert-centered. Raw information needs interpretation, discussing and analysing teams of experts, offering different perspectives. This know-how sharing is a hallmark of successful organisations.

1.5 END-USER COMPUTING

End-User Computing (EUC) refers to systems in which non-programmers can create working applications. EUC is a group of approaches to computing that aim to better integrate end-users into the computing environment.
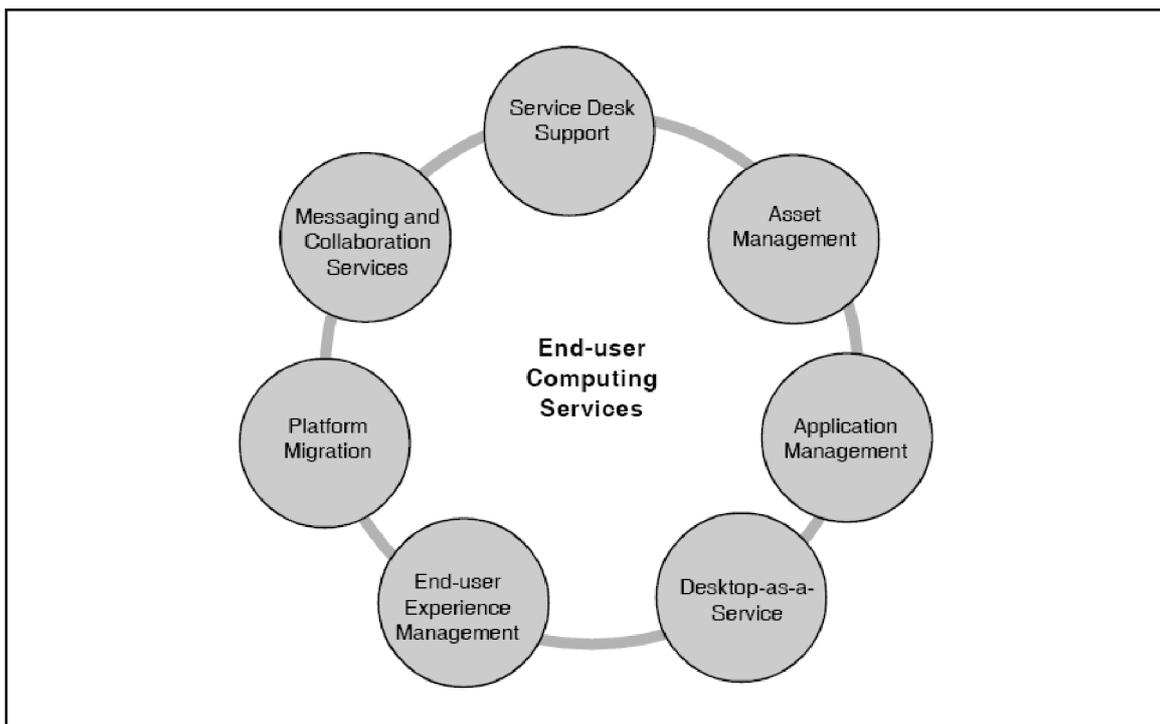
End-user Computing Services

Some common **classifications** of end-users are:

1. Environment
2. Skill Level
3. Software Used

4. Frequency of Use

5. Features Used

6. Location (Internal Users, External Users)

Resources End-users Need

1. Basic Hardware

2. Add-on Peripherals

3. Hardware Maintenance and Upgrades

4. Software and Software Upgrades

5. Supplies

6. Data and Information

7. Technical Support

8. Facilities, Administration

End-user Applications Software

1. Electronic Mail and Instant Messaging

2. Web Browser

3. Word Processing

4. Spread sheets

5. Database Management

6. Graphics

7. Planning and Scheduling

8. Desktop Publishing

9. Web Site Development

10. Educational and Entertainment Software

Problems with End-user Computing

1. Computer Crime

2. Piracy

3. Invasion of Privacy

4. Loss of Data

5. Computer Viruses

6. Health Problems

1.6 MIS STRUCTURE

MIS Structure can be divided into two categories:

1. Based on organisational functions
2. Based on management activity

1. Based on Organisational Functions

The structure of MIS can be described in terms of organisational functions which make use of information. The term organisational function information systems is used to describe a variety of information system that support an organisational function such as accounting, finance, production, marketing, human resource management, etc. Each of these functions has its own information needs.

MIS is a typically an integrated combination of functional information systems that is designed to meet the information requirements of the functional subdivisions of an organisation. Each of these functions is considered as a subsystem. These subsystems have information application related to that function only. In addition there are common programs applicable to all functional subsystems. Within each of these functional subsystems, there will be application for transaction processing, operation control, managerial control and strategic planning.

The important functional subsystems are the following:

1. Production Subsystem
2. Marketing Subsystem
3. Human Resource Subsystem
4. Finance and Accounting Subsystem
5. Logistics Subsystem
6. Information Processing Subsystems
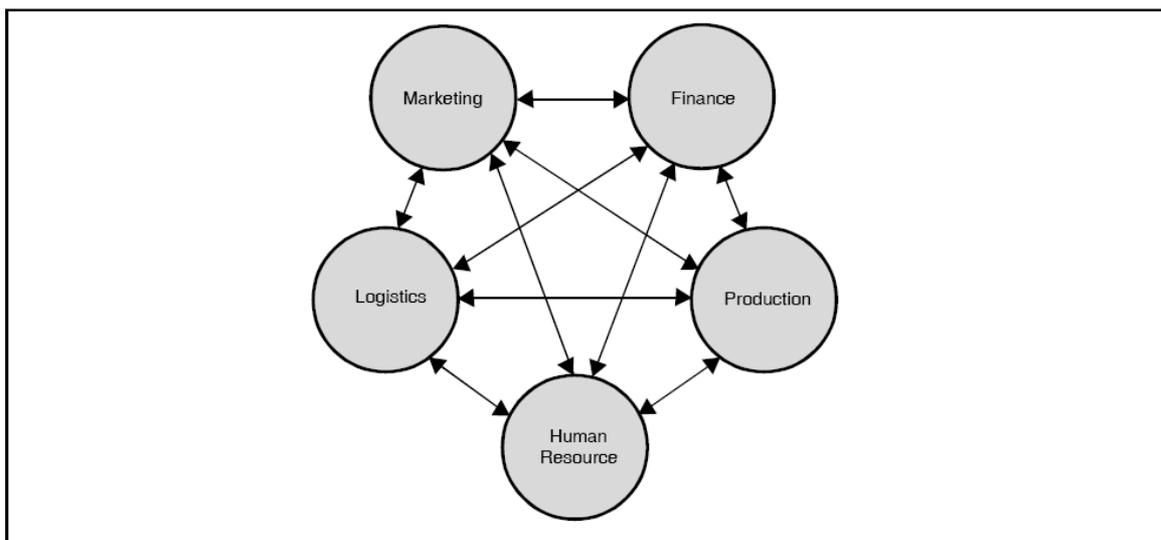
Production Subsystem

Production information system support the production function which includes all activities concerned with the planning and control of the processes that produce goods or services. In the production subsystem, there are transaction processing, operation control, managerial control and strategic planning. The typical information required at the transaction processing level is production orders. The production order is generally based on the sales orders required by the company.

At the same time, operational control level requires detailed reports comparing actual performance with the production schedule and identifying the weak areas. However, management control requires a summary report which compares the overall performance to actual performance. Strategic planning is concerned with simplifying, automating and integrating many of the activities needed to produce goods.

Marketing Subsystem

Marketing is another important function of an organisation. The success of an organisation depends on the efficiency of marketing. The marketing function of an organisation is related with the planning, promotion, sale of existing products in existing markets, the development of new products and new markets to satisfy existing and potential customers. Thus, marketing performs a vital function in the operation of the business enterprise.

MIS helps in analysing different products in different regions. It is mainly concerned with marketing the right product to target customers. Marketing info system provides information for planning, control and transaction processing in the market function. Strategic and operational information system assists marketing managers in product planning, pricing decisions, advertising and sales promotion strategies. MIS provides information that helps management to decide the number of sales executives to assign specific products in specific geographical areas.

The basic transaction to be processed at transaction processing level is customer's orders and preparing invoices and bills. The operational control activity includes the day-to-day scheduling of sales promotional activities. Managerial control level is concerned with comparison of overall performance with the marketing plan. They require information related to customers, competitors, etc. Consideration of new markets and new product marketing strategies are the issues dealt at the strategic planning level.

Human Resource Subsystem

The HRM function to quote Dr. Ashwathappa 'HRM refers to a set of programmes, functions and activities designed and carried out to maximise both employee as well as organisational effectiveness.' It mainly helps in record keeping and employee evaluation. Every organisation must maintain correct record of its employees, produce pay cheques and pay reports, maintain personal records and analyse performance records.

The use of personnel in business operation is an important activity done at the transaction processing level. Management control level conducts budget analysis, turnover analysis, etc. and shows the variance resulting from planned and actual performance. Strategic planning of personnel involved with the planning of alternative strategies for recruiting, training and compensating employees. In this regard, they have to collect different types of information from external sources.

Finance and Accounting Subsystem

Financial subsystem undertakes the function of arranging adequate finance to the business at minimum cost. This function includes granting credit to customers, cash management and financial arrangement, accounting information system record reports the flow of funds through the organisation on a historical basis and prepares important financial audit statements.

Transaction processing system is engaged in the legal and historical record keeping and produces financial statements. They undertake activities like order processing, inventory control, payroll and general ledger systems. Management control level focuses on planning and control of business operations while comparing the actual cost of financial resources with the targeted cost. The strategic planning level for accounting and finance involves long-term strategies connected with financial and accounting matters.

Logistics Subsystem

The logistics subsystem includes activities like purchasing, receiving, inventory control and distribution. The transactions to be processed are purchase requisitions, manufacturing orders, receiving reports and shipping orders. The operational control function makes use of information contained in reports like out-of-stock items, overstocked items, inventory, turnover reports, etc. Managerial control level compares the planned and actual inventory levels, cost of purchased items, stock-outs, etc. analysis of new distribution strategies and adoption of new policy towards the sellers are some of the common tasks dealt at the strategic planning level.

Information Processing Subsystems

It is the responsibility of the information processing subsystem to provide the necessary information processing, services and resources. Typical transactions for information processing are requests for processing, changes in data and program, etc. Managerial control over information processing requires data on planned and actual performance. Acquisition of hardware, software and automation of information processing, etc. are some of the strategic decisions to be taken at the top level management.

2. Based on Management Activity

MIS provides useful information to the different levels of management for discharging their function more effectively and efficiently in order to understand design of suitable Management Information System.

This means that the structure of Management Information System can be expressed in terms of different levels of management activity. There are three important levels of management namely:

1. Strategic Management
2. Management Control or Tactical Management
3. Operational Management

These levels of management activity are discussed below:
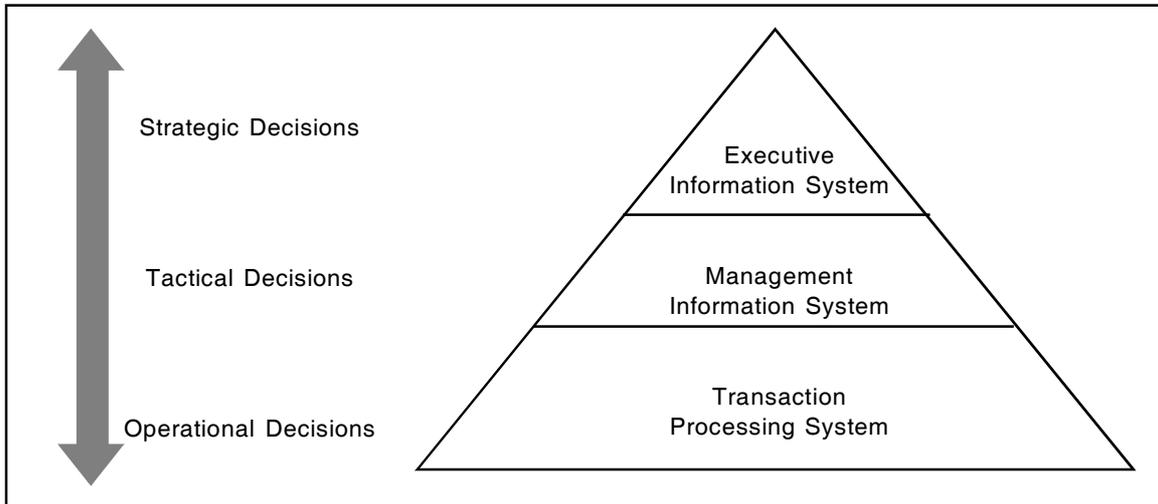
Strategic Management

The first area of management is strategic planning level or top level management. Top level management consists of Board of Directors and other Chief Executives. They are ranking officers of the organisation. Top level management develops overall organisational goals, strategies, policies and objectives through long range strategic planning. They integrate the functions of the entire organisation.

Strategic managers make decisions that affect the entire organisation. Their decisions may also leave a long-term impact in the organisation. Here, the decision-maker develops objectives and allocates resources to attain these objectives. Decisions of this type are made over a long period of time and usually involve huge investments. Developing and introducing a new product in the market, the opening of branches abroad, mergers or acquisition, etc. are some of the examples for strategic decisions.

Tactical Management

Management control level or middle level management decisions involve financial or personal consideration. They make wide-ranging decisions for their subordinates on the basis of general guidelines received from the top level management. They develop medium range plans and define the objectives of their departments. These managers are responsible for finding the best operational measures to accomplish the strategic decisions set by the top level management.

They make plans and compare the actual performance with standards. Then they determine variances if any and take remedial measures to avoid them in future. For example, the top level managers make decisions regarding the acquisition of hardware, software and imparting training to staff under him.

Operational Management

Operational Management or lower level management deals with routine activities. They make short-term plans to carry out day-to-day activities more effectively and efficiently. They are incharge of small group or subordinates. These managers implement policies handed over to them by their superiors. Within these policies, they make decisions that affect their small units for a short period. Preparation of payroll and inventory management are examples of operational control level decisions.

1.7 MANAGERIAL VIEW OF IS

1. Information requirement
2. Operational management
3. Tactical management
4. Strategic management

Management Level and Information Requirement

The information requirement of management depends on the different levels of management. The model of 'managerial pyramid' was popularised by Robert N. Anthony. He contributed new levels of management on the basis of planning level, management control level and operational control level. These are three revised levels of management.

It is true that the top level managers spend more time on strategic decisions than supervisors at the bottom level of management. While top managers spend very little time, operational supervisors spend more time to make operational decisions. The type of information required by managers is directly related to the level of management and structure of decision situation. The operational management level requires regular detailed reports to manage the day-to-day affairs of business.

Three levels of management activity can be differentiated on the basis of the planning aspects for each level. Different management activities functions will have different information characteristics.

Information System for Operational Management

The responsibility of operational level management is to supervise operational activities. Operational control makes use of pre-established procedures and decision rules. A large percentage of decisions are programmable. The procedures to follow are quite stable. They supervise the day-to-day activities.

The information source of operational control mainly comes from internal data generated from transactions.

Information System for Tactical Management

Management control information is required by managers of departments, profit centers, etc. to measure performance and decide control actions.

Formulate new decision rules to be applied by operational personnel. They require only information in summary form.

Management control makes use of both internal and external data.

Information System for Strategic Management

The purpose of strategic planning is to formulate strategies to achieve organisation goals. They make long-term plans. Strategic planning decisions occur only once in a while. Strategic planning requires summarised data from a variety of sources. They depend upon external data such as competitor's policies, market condition, government policies, etc. for decision-making.

Management information system cannot be applied effectively at the strategic planning level. The success of the strategic decisions depends on the skills, experience and the judgment ability of human decision makers in the interpretation of data and information. Hence, decisions at the strategic level are unstructured and non-programmed.

1.8 FUNCTIONS OF MANAGEMENT

Management has been described as a social process involving responsibility for economical and effective planning and regulation of operation of an enterprise in the fulfillment of given purposes. It is a dynamic process consisting of various elements and activities. These activities are different from operative functions like marketing, finance, purchase, etc. Rather, these activities are common to each and every manager irrespective of his level or status.

Different experts have classified functions of management. According to George and Jerry, "There are four fundamental functions of management, *i.e.,* planning, organising, actuating and controlling".

Most widely accepted functions of management given by Koontz and O'Donnell are Planning, Organising, Staffing, Directing and Controlling.
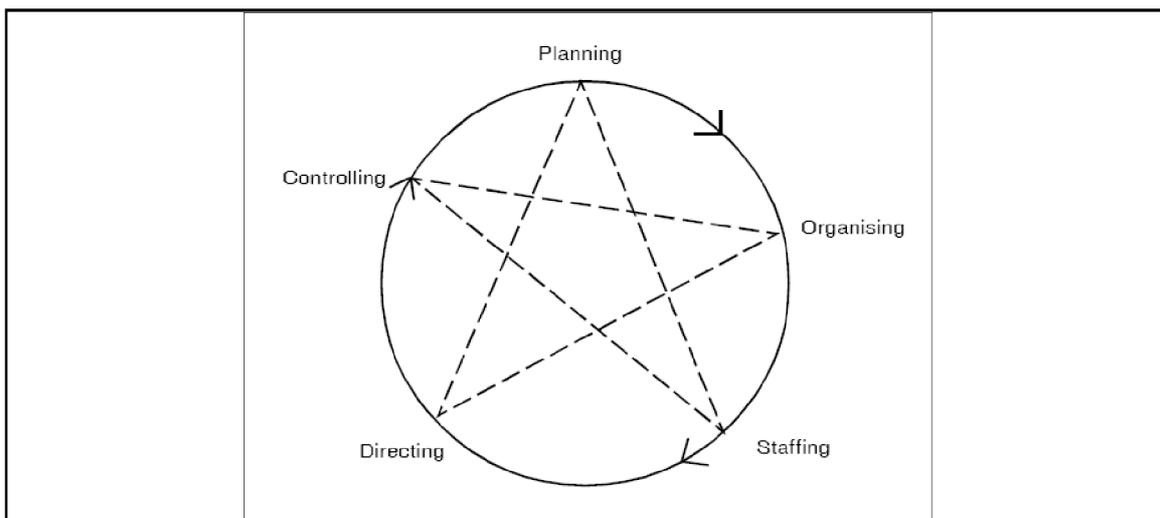
Planning

It is the basic function of management. It deals with chalking out a future course of action and deciding in advance the most appropriate course of action for achievement of pre-determined goals. According to Koontz, "Planning is deciding in advance — what to do, when to do and how to do. It bridges the gap from where we are and where we want to be". A plan is established to determine the future ready state from existing state through a set of actions. It is an exercise in problem solving and decision-making. Thus, planning is a systematic thinking about ways and means for accomplishment of pre-determined goals. Planning is necessary to ensure proper utilisation of human and non-human resources. It is all-pervasive, it is an intellectual activity and it also helps in avoiding confusion, uncertainties, risks, wastages, etc.

Organising

It is the process of bringing together physical, financial and human resources, and developing productive relationship between them for achievement of organisational goals. According to Henri Fayol, "To organise a business is to provide it with everything useful or its functioning, *i.e.,* raw material, tools, capital and personnel". To organise a business involves determining and providing human and non-human resources to the organisational structure. Organising as a process involves:

(a) Identification of activities.

(b) Classification of grouping of activities.

(c) Assignment of duties.

(d) Delegation of authority and creation of responsibilities.

(e) Coordinating authority and responsibility relationships.

Staffing

It is the function of manning the organisational structure and keeping it manned. Staffing has assumed greater importance in the recent years due to advancement of technology, increase in size of business, complexity of human behaviour, etc. The main purpose of staffing is to put the right man on the right job, *i.e.,* square pegs in square holes and round pegs in round holes. According to Koontz and O'Donnell, "Managerial function of staffing involves manning the organisational structure through proper and effective selection; appraisal and development of personnel to fill the roles designed in the structure". Staffing involves:

(a) Manpower Planning (estimating manpower in terms of searching, choose the right person and giving the right place).

(b) Recruitment, Selection and Placement.

(c) Training and Development.

(d) Remuneration.

(e) Performance Appraisal.

(f) Promotions and Transfer.

Directing

It is that part of managerial function which actuates the organisational methods to work efficiently for achievement of organisational purposes. It is considered life-spark of the enterprise which sets it in motion the action of people because planning, organising and staffing are the mere preparations for doing the work. Direction is that inter-personnel aspect of management which deals directly with influencing, guiding, supervising and motivating subordinates for the achievement of organisational goals. Direction has following elements:

(a) Supervision

(b) Motivation

(c) Leadership

(d) Communication

Supervision

Implies overseeing the work of subordinates by their superiors. It is the act of watching and directing work and workers.

Motivation

Means inspiring, stimulating or encouraging the subordinates with zeal to work. Positive, negative, monetary and non-monetary incentives may be used for this purpose.

Leadership

May be defined as a process by which manager guides and influences the work of subordinates in desired direction.

Communications

Is the process of passing information, experience, opinion, etc. from one person to another. It is a bridge of understanding.

Controlling

It implies measurement of accomplishment against the standards and correction of deviation, if any, to ensure achievement of organisational goals. The purpose of controlling is to ensure that everything occurs in conformism with the standards. An efficient system of control helps to predict deviations before they actually occur. According to Theo Haimann, "Controlling is the process of checking whether or not proper progress is being made towards the objectives and goals and acting if necessary, to correct any deviation". According to Koontz and O'Donnell, "Controlling is the measurement and correction of performance activities of subordinates in order to make sure that enterprise objectives and the plans desired to obtain them are being accomplished". Therefore, controlling has following steps:
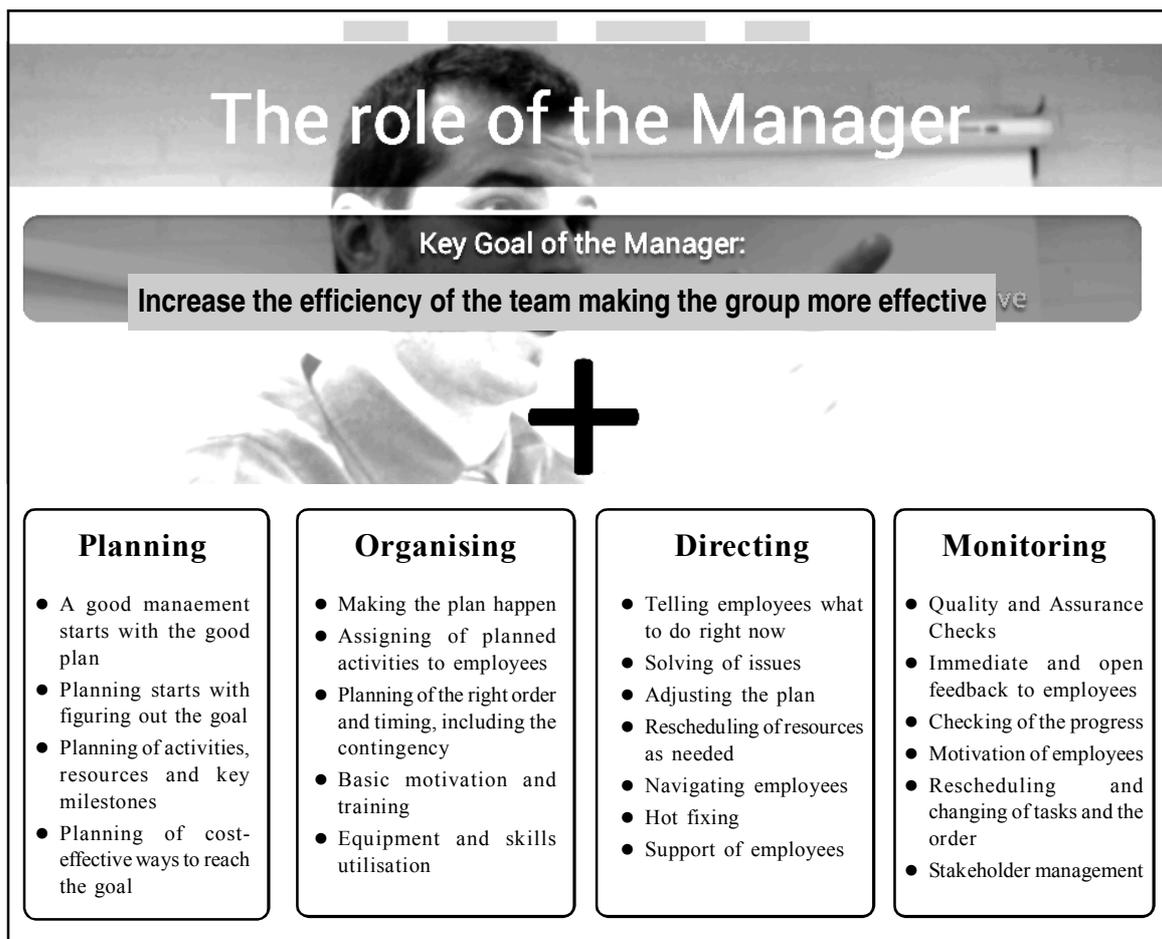
(a) Establishment of standard performance.

(b) Measurement of actual performance.

(d) Comparison of actual performance with the standards and finding out deviation, if any.

(d) Corrective action.

1.9 MANAGEMENT ROLE

Employees who have the job title of manager have diverse responsibilities for people and functions.

❖ **Plan:** Planning the operation and function of the area over which the manager is assigned responsibility in a way that accomplishes the goals for which he or she is responsible.

❖ **Organise and Implement:** Organising the production of the work, and the workforce, training, and resources necessary, in a way that accomplishes the desired and required outcome to meet the goals.

❖ **Direct:** Providing the employees and their resources with enough guidance, direction, leadership, and support necessary to ensure that they are able to accomplish their goals.


The role of the Manager

Key Goal of the Manager:

Increase the efficiency of the team making the group more effective

Planning	Organising	Directing	Monitoring
• A good manaement starts with the good plan • Planning starts with figuring out the goal • Planning of activities, resources and key milestones • Planning of cost-effective ways to reach the goal	• Making the plan happen • Assigning of planned activities to employees • Planning of the right order and timing, including the contingency • Basic motivation and training • Equipment and skills utilisation	• Telling employees what to do right now • Solving of issues • Adjusting the plan • Rescheduling of resources as needed • Navigating employees • Hot fixing • Support of employees	• Quality and Assurance Checks • Immediate and open feedback to employees • Checking of the progress • Motivation of employees • Rescheduling and changing of tasks and the order • Stakeholder management

❖ **Monitor:** Following up to ensure that the plan to achieve the goals is being carried out in such a way that its accomplishment is guaranteed.

❖ **Evaluate:** Reviewing and assessing the success of the goal, the plan, and the allocation of the employees and their resources.

❖ Performing other responsibilities as defined by Management.

1.10 LEVELS OF MANAGEMENT

The term "**Levels of Management**' refers to a line of demarcation between various managerial positions in an organisation. The number of levels in management increases when the size of the business and workforce increases and *vice versa*. The level of management determines a chain of command, the amount of authority and status enjoyed by any managerial position. The levels of management can be classified into three broad categories:

1. Top level/Administrative level
2. Middle level/Executor
3. Low level/Supervisory/Operative/First-line managers

Managers at all these levels perform different functions. The role of managers at all the three levels is discussed below:
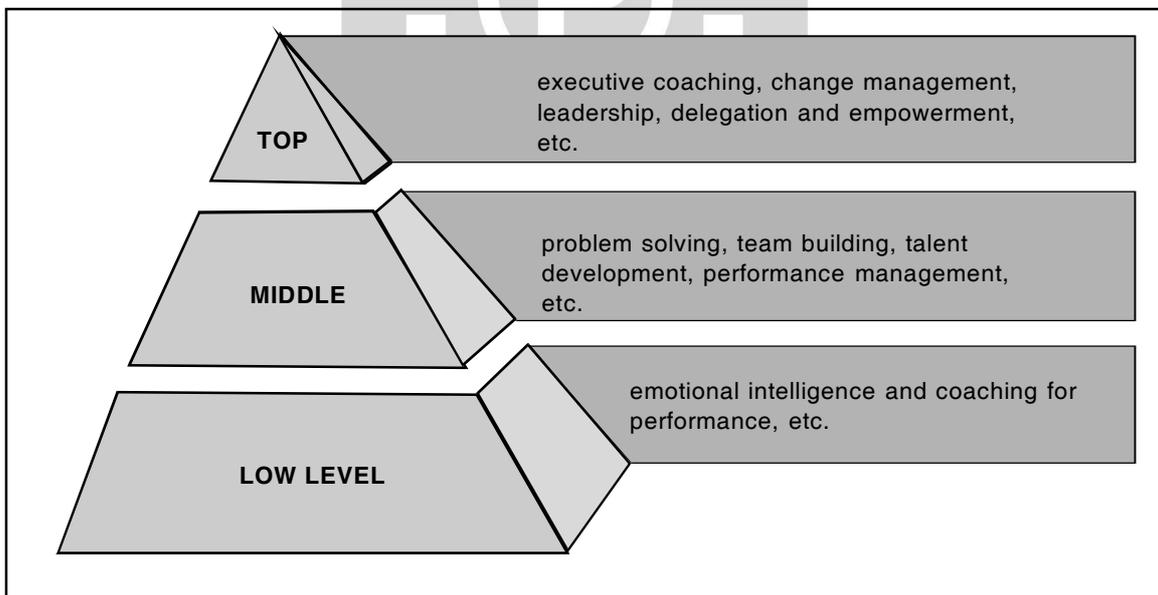
Levels of Management

1. Top Level of Management

It consists of Board of Directors, Chief Executive or Managing Director. The top management is the ultimate source of authority and it manages goals and policies for an enterprise. It devotes more time on planning and coordinating functions.

The role of the top management can be summarised as follows:

- ❖ Top management lays down the objectives and broad policies of the enterprise.
- ❖ It issues necessary instructions for preparation of department budgets, procedures, schedules, etc.
- ❖ It prepares strategic plans and policies for the enterprise.
- ❖ It appoints the executive for middle level, *i.e.,* departmental managers.
- ❖ It controls and coordinates the activities of all the departments.
- ❖ It is also responsible for maintaining a contact with the outside world.
- ❖ It provides guidance and direction.

The top management is also responsible towards the shareholders for the performance of the enterprise.

2. Middle Level of Management

The branch managers and departmental managers constitute middle level. They are responsible to the top management for the functioning of their department. They devote more time to organisational and directional functions. In small organisation, there is only one layer of middle level of management but in big enterprises, there may be senior and junior middle level management.

Their role can be emphasised as:

- ❖ They execute the plans of the organisation in accordance with the policies and directives of the top management.
- ❖ They make plans for the sub-units of the organisation.
- ❖ They participate in employment and training of lower level management.
- ❖ They interpret and explain policies from top level management to lower level.
- ❖ They are responsible for coordinating the activities within the division or department.
- ❖ It also sends important reports and other important data to top level management.
- ❖ They evaluate performance of junior managers.
- ❖ They are also responsible for inspiring lower level managers towards better performance.

3. Lower Level of Management

Lower level is also known as supervisory/operative level of management. It consists of supervisors, foreman, section officers, superintendent, etc. According to *R.C. Davis*, "Supervisory management

refers to those executives whose work has to be largely with personal oversight and direction of operative employees". In other words, they are concerned with direction and controlling function of management.

Their activities include:

- ❖ They assign jobs and tasks to various workers.
- ❖ They guide and instruct workers for day-to-day activities.
- ❖ They are responsible for the quality as well as quantity of production.
- ❖ They are also entrusted with the responsibility of maintaining good relations in the organisation.
- ❖ They communicate workers' problems, suggestions, and recommendatory appeals, etc. to the higher level and higher level goals and objectives to the workers.
- ❖ They supervise and guide the subordinates.
- ❖ They are responsible for providing training to the workers.
- ❖ They arrange necessary materials, machines, tools, etc. for getting things done.
- ❖ They prepare periodical reports about the performance of the workers.

REVIEW QUESTIONS

I. Multiple Choice Questions

1. Management Information System (MIS)
   (a) Create and share documents that support day-to-day office activities
   (b) Process business transactions (*e.g.,* time cards, payments, orders, etc.)
   (c) Use the transaction data to produce information needed by managers to run the business
   (d) None of the above

2. AI is the short form of
   (a) Artificial Information
   (b) Artificial Intelligence
   (c) Artificial Integration
   (d) None of the above

3. Which of the following is not a component of MIS?
   (a) Hardware
   (b) Software
   (c) Database
   (d) AC

4. Operational information is required by
   (a) Middle managers
   (b) Line managers

(c) Top managers

(d) All workers

5. Computer-based information system is needed because

(a) The size of organisations have become large and data is massive

(b) Timely decisions are to be taken based on available data

(c) Computers are available

(d) Difficult to get clerks to process data

6. For taking decisions, data must be

(a) Very accurate

(b) Massive

(c) Processed correctly

(d) Collected from diverse sources

7. Tactical information is needed for

(a) Day-to-day operations

(b) Meet government requirements

(c) Long range planning

(d) Short range planning

8. Tactical information is required by

(a) Middle managers

(b) Line managers

(c) Top managers

(d) All workers

9. Organisations are divided into departments because

(a) It is convenient to do so

(b) Each department can be assigned a specific functional responsibility

(c) It provides opportunities for promotion

(d) It is done by every organisation

10. Which of the following functions is most unlikely in an university?

(a) Admissions

(b) Accounting

(c) Conducting examination

(d) Marketing

Answers:

1. [c]	2. [b]	3. [d]	4. [b]	5. [a and b]
6. [c]	7. [d]	8. [a]	9. [b]	10. [d]

II. Fill in the Blanks

1. Information is _____ data.
2. _____ can be defined as a formal method of collecting timely information in a presentable form in order to facilitate effective decision-making and execution.
3. _____ analyses historical and current financial activity.
4. The execution of a systematic sequence of operations performed upon data to transform it into information is called _____.
5. A _____ system is a computer-based information system that supports business or organisational decision-making activities.
6. IRM stands for _____.
7. _____ refers to systems in which non-programmers can create working applications.
8. An expert system is also called as _____.
9. The _____ function is concerned with the recruitment, placement, compensation and development of employees in an organisation.
10. The _____ managers and _____ managers constitute middle level management.

Answers:

1. Processed
2. MIS
3. Chief Financial Officer
4. Data Processing
5. Decision Support
6. Information Resource Manager
7. End-User Computing
8. Artificial Intelligence
9. Human Resource Management
10. Branch, department

III. Short Answer Questions

1. Define MIS.
2. What is Data Processing?
3. What are the components of Decision Support Systems?
4. What are the different levels of Management?
5. Define IRM.

IV. Long Answer Questions

1. Explain characteristics of MIS.
2. Differentiate MIS and Data Processing.
3. MIS and Decision Support Systems.
4. Explain classification of DSS.
5. Explain about End-user Computing in MIS.
6. Describe MIS Structure.
7. Discuss Managerial View of IS.
8. Explain the functions of Management.
9. Explain Management Role.
10. Explain the levels of Management.

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