MANAGEMENT INFORMATION SYSTEM

- **MIS** provides information about the performance of an organization
- Think of entire company (the firm) as **a system.**
- An MIS provides management with **feedback**

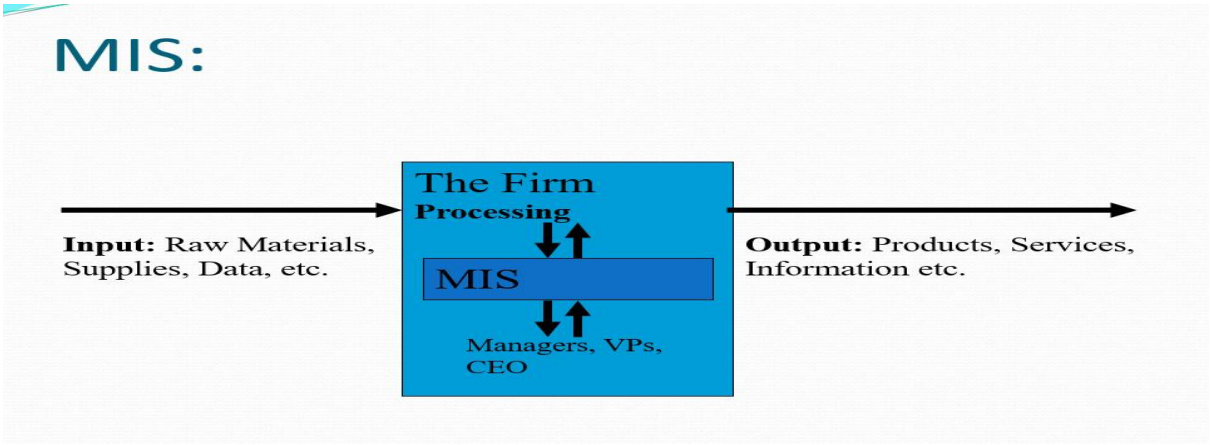
  The MIS is defined as a system based on the database of the evolved for the purpose of providing information to the people in the organization.
- Management information systems are distinct from regular information systems in that they are used to analyze other information systems applied in operational activities in the organization. MIS involve three primary resources: technology, information, and people.

What is MIS?

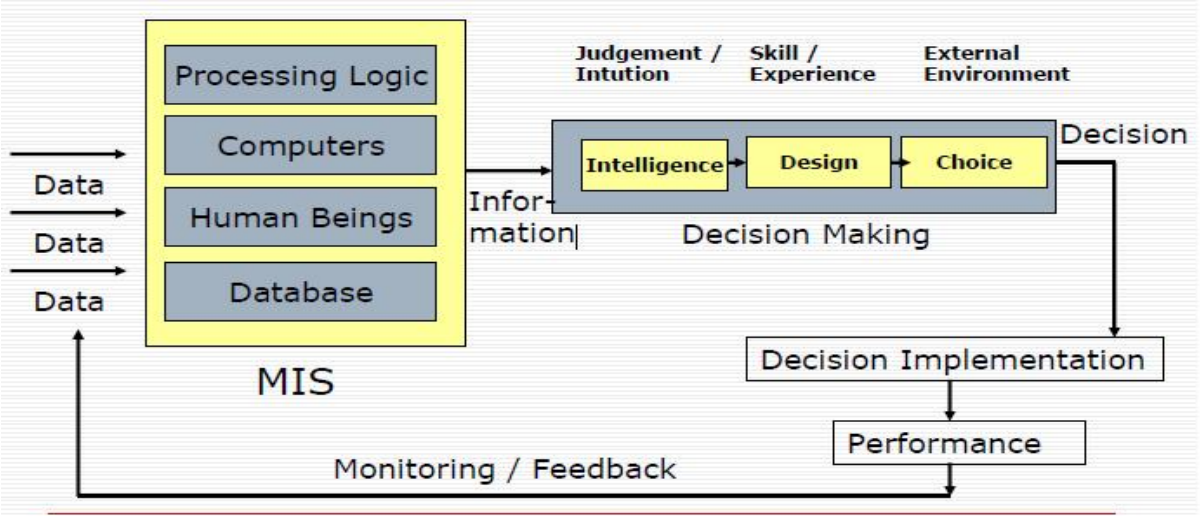
- **Short for *Management Information System* –**
- **MIS refers broadly to a computer-based**

system that provides managers with the tools for organizing, evaluating and efficiently running their departments.

- **Right Information**
- To the right person
- At the right place
- At the right time
- In the right form
- At the right cost



The Concept of MIS



Role Of MIS

- The role of MIS in an organization can be compared to the role of heart in the body.
- The information is the blood and MIS is the heart. In the body the heart plays the role of supplying pure blood to all the elements of the body including the brain.
- The MIS plays exactly the same role in the organization.
- The system ensures that an appropriate data is collected from the various sources, processed, and sent further to all the needy destinations.
- The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries: the managers and the top management.
- The MIS satisfies the diverse needs through a variety of systems such as Query Systems, Analysis Systems, Modeling Systems and Decision Support Systems.
- The MIS helps in Strategic Planning, Management Control, Operational Control and Transaction Processing.

Characteristics of MIS

- **Management-oriented:** The basic objective of MIS is to provide information support to the management in the organization for decision making.
- **Management directed:** When MIS is management-oriented, it should be directed by the management because it is the management who tells their needs and requirements more effectively than anybody else.
- **Integrated:** It means a comprehensive or complete view of all the subsystems in the organization of a company.
- **Common data flows:** The integration of different subsystems will lead to a common data flow which will further help in avoiding duplicacy and redundancy in data collection, storage and processing.
- **Heavy planning-element:** The preparation of MIS is not a one or two day exercise. It usually takes 3 to 5 years and sometimes a much longer period.
- **Subsystem concept:** When a problem is seen in 2 sub parts, then the better solution to the problem is possible.
- **Common database:** This is the basic feature of MIS to achieve the objective of using MIS in business organizations.

- **Computerized:** MIS can be used without a computer. But the use of computers increases the effectiveness and the efficiency of the system.
- **User friendly/Flexibility:** An MIS should be flexible.
- **Information as a resource:** Information is the major ingredient of any MIS.

Features of MIS

- Timeliness
- Accuracy
- Consistency
- Completeness
- Relevance

Components of MIS

1) Marketing Research System (MRS)

Marketing research can be seen as the systematic and objective search for and analysis of data and information relevant to the identification and solution of any problem in the field of marketing.

2) Marketing Intelligence System (MIS)

The process of acquiring and analyzing information in order to understand the market (both existing and potential customers) to determine the current and future needs and preferences, attitudes and behavior of the market and to assess changes in the business environment that may affect the size and nature of the market in the future.

3) Internal Record System (IRS)

Marketing managers rely on internal reports on orders, sales, prices, costs, inventory levels, receivables, payables, and so on. By analyzing this information, they can spot important opportunities and problems.

4) Decision Support System(DSS)

A decision support system (DSS) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization and help to make decisions, which may be rapidly changing and not easily specified in advance.

Aim of Management Information System

- The main aim of MIS is to inform management and help them make informed decisions about management and the way the business is run.

Elements of MIS

1.Hardware
2.Software
3.Control
4.Databases and application programs
5.People
6.Telecommunications and Networks

Outputs Of a MIS

- **Scheduled reports** which are produced periodically, or on a Schedule (daily, weekly, monthly).
- **Key-indicator report** which summarizes the previous day's critical activities and also it is typically available at the beginning of each day.
- **Demand report** which gives certain information at a manager's request.
- **Exception report** which is automatically produced when a situation is unusual or requires management action.

Benefits of MIS

- It improves personal efficiency.
- It expedites problem solving(speed up the progress of problems solving in an organization).
- It facilitates interpersonal communication
- It promotes learning or training.
- It increases organizational control.
- It generates new evidence in support of a decision.
- It creates a competitive advantage over competition.
- It encourages exploration and discovery on the part of the decision maker.
- It reveals new approaches to thinking about the problem space.
- It helps automate the Managerial processes.

MIS for a Organization :

1. **Support the Business Process :** Treats inputs as a request from the customer and outputs as services to customer. Supports current operations and use the system to influence further way of working.

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

3. **To Support Decision Making :** MIS supports the decision making by employee in their daily operations. MIS also supports managers in decision making to meet the goals and objectives of the organization. Different mathematical models and IT tools are used for the purpose evolving strategies to meet competitive needs.

4. **Strategies for an Organization :** Today each business is running in a competitive market. MIS supports the organization to evolve appropriate strategies for the business to assented in a competitive environment.

MIS: Feedback for a Firm

- **How are we doing?**

  →Look at the report from the MIS

  - Generic reports: Sales, Orders, Schedules, etc.
  - Periodic: Daily, Weekly, Quarterly, etc.
  - Pre-specified reports

  →Obviously, such reports are useful for making good decisions.

Data Processing :

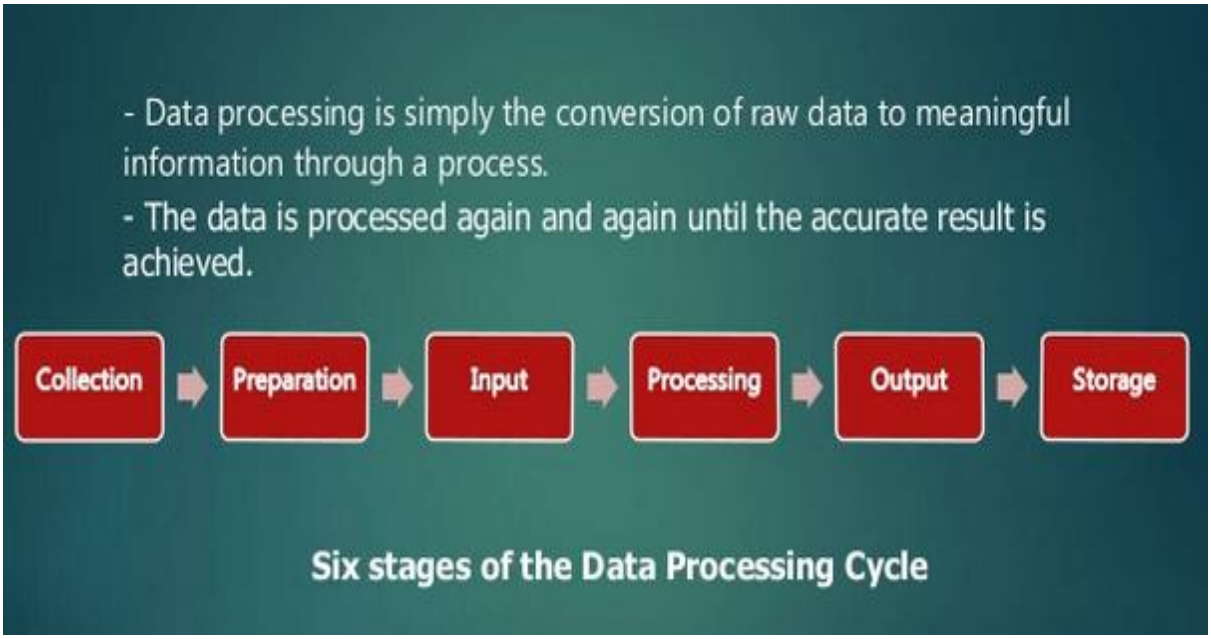
- The execution of a systematic sequence of operations performed upon data to transform it into information.
- Data Processing is a process that converts data into information or knowledge. both terms are roughly synonymous, performing similar conversions.
- **data-processing systems typically manipulate raw data into information,** and **information systems typically take raw data as input to produce information as output**.

Data processing functions

Data processing may involve various processes, including

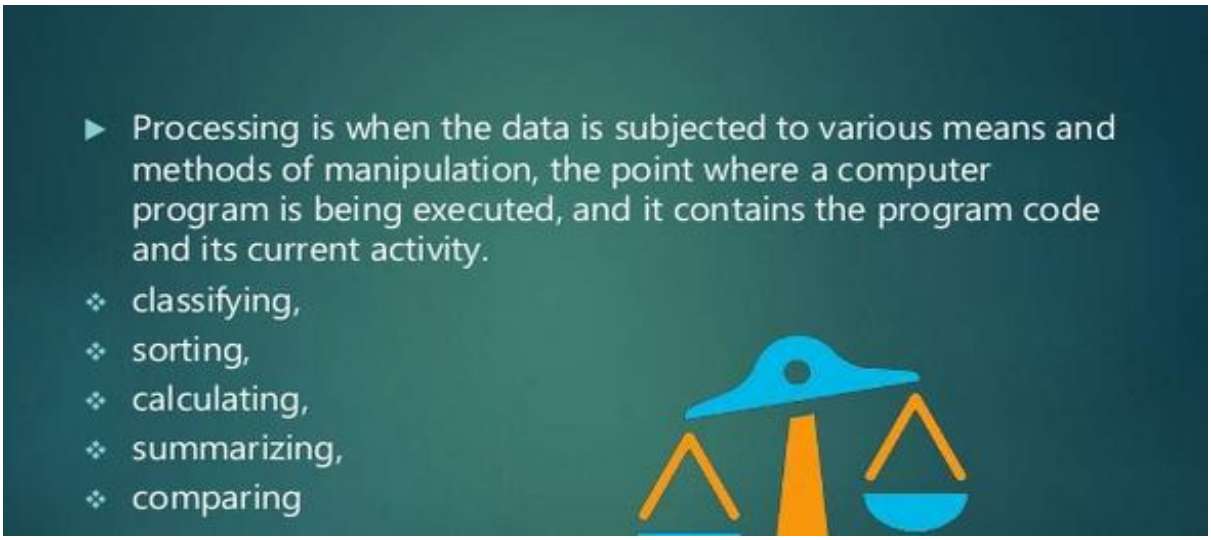
- Validation:-ensuring that supplied data is correct and relevant.
- Sorting:- arranging item in some sequence.
- Summarization:- reducing details data to its main point.
- Aggregation :- combining multiple pieces of data.
- Reporting :-list detail or summary data or computed information.
- Classification:- separation of data into various categories.

Data processing cycle



Input

Processing



Methods of data processing

- Manual data processing (MDP):- in this method data is processed manually without the use of machine, tool or electronic device. All calculation and logical operation are performed manually on the data.
- Electronic data processing (EDP):- use of computers for recording, manipulation and summarizing data.
- Computer can help:-
- Accuracy
- Speed
- Consistency
- Storage capacity
- Automatic

MIS VS DATA PROCESSING

- **Data processing is 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 organization.**
- **A MIS is more comprehensive than data processing with only process transaction and produce reports.**
- **The important difference between MIS and routine data process are the capability to provide analysis, planning and decision-making support**

Comparison of MIS and Data processing

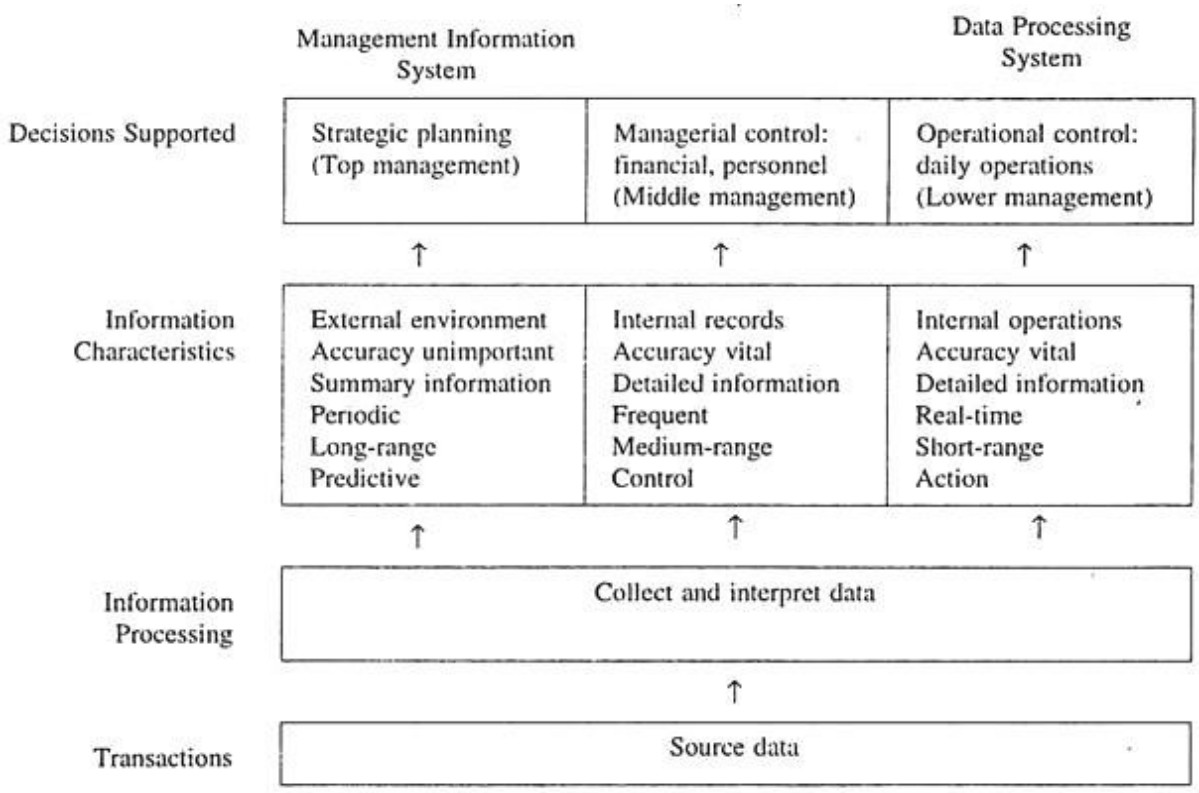


Fig. 39.2 A comparison of data processing and management information systems.

Decision Support Systems

- *Decision support systems (DSS)*
    - *Offer potential to assist in solving both semi-structured and unstructured problems.*

MIS vs. DSS

	MIS	DSS
Decision Support	**Provide Info about performance of organization**	**Provide Info and decision support techniques/modeling to analyze specifics problems**
Report Form	**Periodic reports or On Demand**	**Interactive Inquiries**
Format	**Pre-specified Fixed format**	**Flexible and Adaptable**
Processing	**Information produced by Extraction and manipulation**	**Information produced by analytical modeling of business data**

	of business data	

The main objectives of MIS

- MIS captures data from various internal and external sources of organization.
- **P**rocesses the captured data to convert into required information.
- **S**tores the processed or unprocessed data for future use.
- MIS retrieves information from its stores as and when required by various users.
- Information, which is a finished product of MIS.

Limitations of MIS

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

- It cannot meet the special demands of each person.
- The MIS is not good if the basic data is obsolete and outdated.
- MIS cannot be used independently
- Employee Training

CONCEPT OF AN MIS

- The MIS is an idea which is associated with man, machine, marketing and methods for collecting information's from the internal and external source and processing this information for the purpose of facilitating the process of decision-making of the business.
- MIS is an organized method of providing past, present and projection information relating to internal operations and externals intelligence. It supports the planning, control and operational functions of an organization.
- MIS is not new, only the computerization is new , before computers MIS techniques existed to supply managers with the information that would permit them to plan and control business operations. The computer has added on more dimensions such as speed, accuracy and increased volume of data that permit the consideration of more alternatives in decision-making process.

Structure of Management Information System

- The structure of MIS can be described in following terms
- Operating elements
- Decision support
- Managerial activity
- Organizational function.

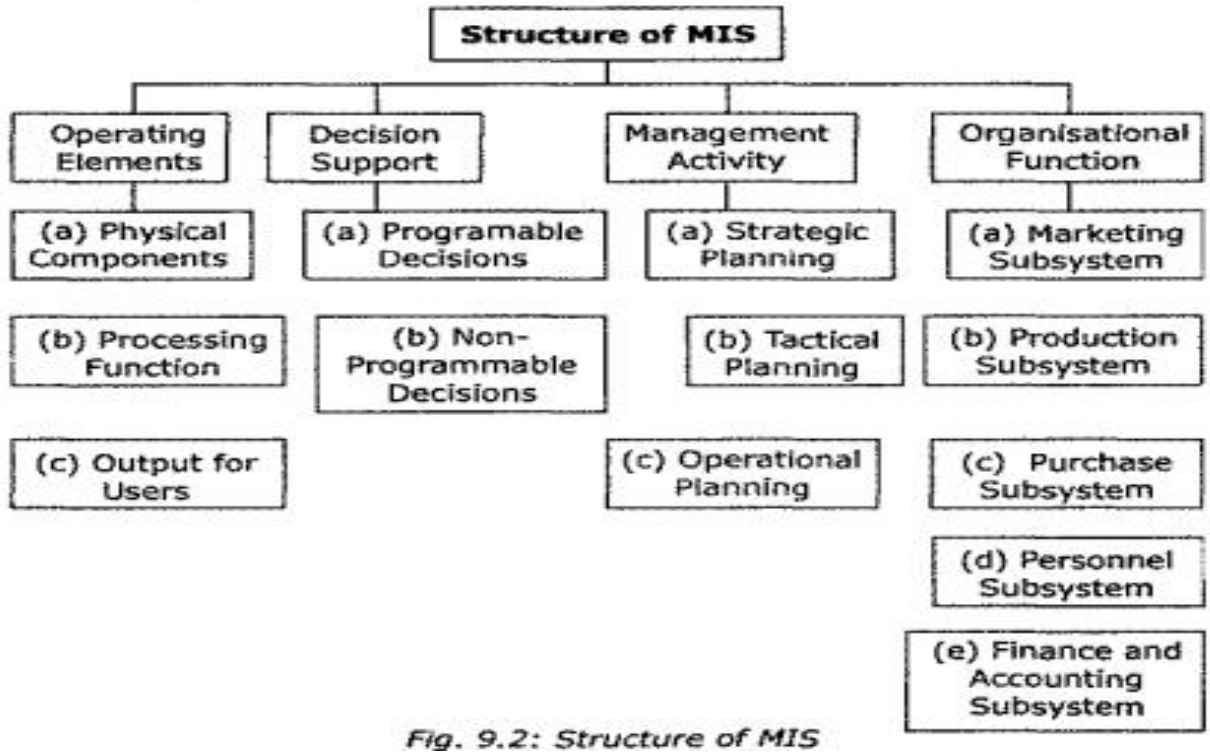


Fig. 9.2: Structure of MIS

Operating elements of MIS

The operational elements of MIS are:

(a) **Physical components:** The physical components of an information system include:

(i) **Hardware** - which refers to the physical computer instrument and related devices performing various functions like input, output, secondary storage, CPU and Communication.

(ii) **Software** - which refers to the instructions given to the hardware to perform various operations.

(iii) **Database** - which is the collection of logically related and centrally controlled records containing various stored data.

(iv) **Procedures** - which include the set of instructions to the users, data preparation group, operating personnel.

(v) **Operating personal** - they may be computer operators system analysts, programmers, data administrators, or data preparation personnel.

- (b) **Processing functions:** On the basis of processing functions, information system consists of the following:

(i) **Processing transactions** - transaction is an activity, which acts as the source of data. The information system functions include the recording and measurement of these transactions.

(ii) **Maintaining master files** - it involves the creation and maintenance of master files for permanent storage of data.

(iii) **Producing reports** - one of the major jobs of the information system is to generate and provide reports to the user at various levels of management.

(iv) **Processing inquiries** - information systems provide responses to inquiries from various levels.

(v) **Process interactive support applications information systems** provide interactive facilities to end-user and facilitate system planning, analysis, and decision-making. They enable the user to ask questions and receive immediate results.

- (c) **Output for users:** The output provided by an information system to the end-user may take any of the following forms:

(i) Transaction documents or screen - examples are purchase order, payroll, sales invoice, etc.

(ii) Preplanned reports containing regular contents.

(iii) Preplanned inquiry responses.

Decision support:

One of the major roles of managers in an organization is decision-making; and, as a tool to the managers, the purpose of information systems is to facilitate the decision making process. As a decision support tool, MIS consists of two types of decisions - structured and unstructured.

(a) **Structured decisions** (Programmable decisions): These are well-defined, repetitive and routine decisions, having predetermined decision models or rules.
The important features of these decisions are:
(1) These decisions can be delegated since they do not require any specialized knowledge.
(2) Programmable decisions can be automated,
(3) The cost involved is very low when compared to non-programmable decisions

- **Unstructured decisions** (Non-programmable decisions): These decisions are occasional in nature. They have no pre-established decision models or procedures, new solution for each unique problem. The information requirements cannot be predicted in advance, so that the retrieval may be ad hoc in nature. due to the absence of decision rules, these decisions are subject to human judgment, and involve very high risk.

- **Management Activity** (Levels of Management and Information Requirements):

On the basis of managerial activities MIS consists of three activities.

1.Strategic planning.

2.Tactical planning.

3.Operational planning.

Strategic planning

- The functions of strategic planning level include the fixation of goals, policies, general guidelines, setting up of organizational objectives, which involve long-range considerations. Decisions made at this level are connected with the choice of business directions, market strategy.

Tactical planning

- At the tactical planning level, the emphasis is on managerial control, and it is concerned with raising and utilization of resources effectively and efficiently. The activities at these levels include acquisition of resources, tactics, plant location, new product development, establishment and monitoring of budgets. This level of management requires information about the targets, budgets and the actual corresponding to the target performance, because at this stage control measures are adopted.

Operational planning

- The responsibilities of management at the operational, planning and control levels include effective and efficient use of resources, and the execution of the day-to-day activities of the organization. They relate also to short-term decisions or current decisions like pricing, production levels, stock level, etc. The pieces of information required at this level of management are well defined and restricted.

Organizational Functions

- The structure of MIS can also be explained in terms of organizational functions. These functions do not have a standard classification, The normal functions in a manufacturing organization include, purchase, production, marketing, personnel, finance and accounting. MIS is developed to support the functional subsystems of the organization. With in each functional subsystem, there will be four levels of managerial activities, such as transaction processing, operational control, managerial control and strategic planning.

- **Marketing Subsystem:** Transactions in marketing subsystem are sales orders, promotion orders.

- **Personnel Subsystem :**This subsystem is concerned with employment requisitions, job description, training specification, personnel data, pay rate changes, hours worked, benefits, termination notices.

- The various subsystems are:

- **Purchase Subsystem:** The transactions to be processed consist of purchase requisition, purchase orders, manufacturing orders, receiving reports.

- **Production Subsystem:** The functions of this subsystem include planning of production, facilities, scheduling of production activities, engineering of product, employment and training of production

- **Finance and Accounting subsystem:** Transactions involved in finance subsystem are processing of credit applications, sales, billing, collection payment vouchers, cheques, journal vouchers, ledgers, stock transfers.

Decision Support Systems

- Decision support systems (DSS)
- Offer potential to assist in solving both semi-structured and unstructured problems.

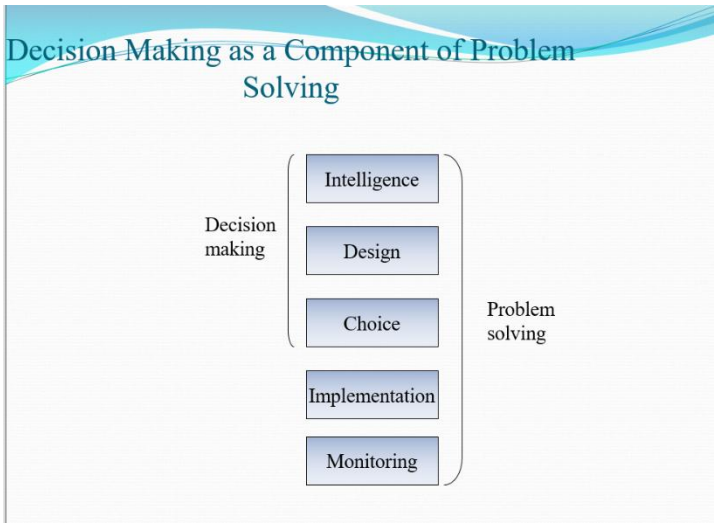
Components of a DSS

- Model management software
  - Provides a variety of solution models
    - Financial, statistical, graphical, project management
- Dialogue Manager
  - Allows user interaction with DSS

Model Base

- Model Base
  - Provides decision makers with access to a variety of models and assists them in decision making.
- Models
  - Financial models
  - Statistical analysis models
  - Graphical models
  - Project management models

Decision Making as a Component of Problem Solving



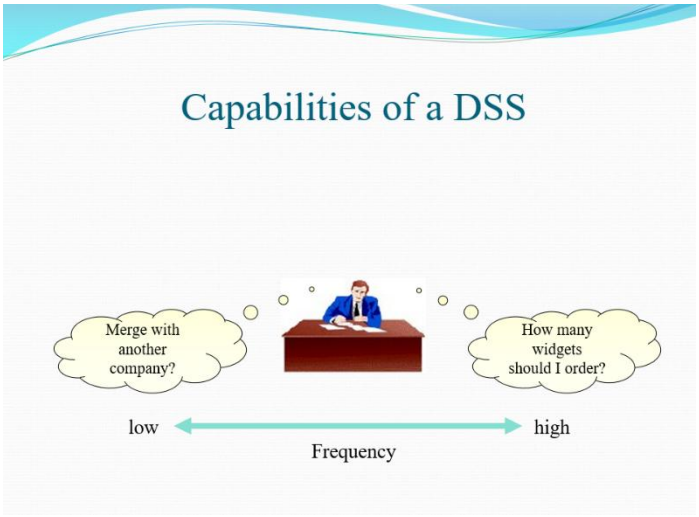
Solution Types

- Optimization model
  - Finding the best solution
- Heuristics
  - Commonly accepted guidelines or procedures that usually find a good solution
- Satisfying model
  - Finding a good -- but not necessarily the best -- solution to a problem

Characteristics of a DSS

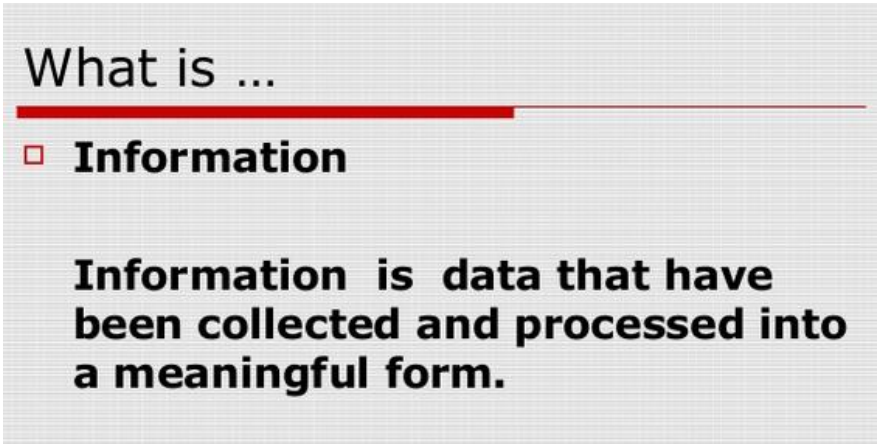
- Supports drill down analysis.
- Performs complex and comparisons using advanced software packages.
- Supports optimization, satisfying, and heuristic approaches. Interactive.
- integrated set of hardware and software tools.
- produce information to support decision-making process.
- **Semi-structured & unstructured** problems.
- Most effective for tactical & strategic management levels.
- Interactive and user-friendly; **little IT help needed.**

Capabilities of a DSS



- Highly structured problems
  - Straightforward problems, requiring known facts and relationships.
- Semi-structured or unstructured problems
  - Complex problems where in relationships among data are not always clear, the data may be in a variety of formats, and are often difficult to manipulate.

IRM(*Information Resource Management*)



What is ...

- **Resources**

  A re-usable source of supply to produce something. Examples include human, financial, material, and information resources. To maximize the efficient and effective use of resources, they must be classified in order to share them and eliminate unwanted redundancy, and controlled in order to receive, store and distribute them properly.

What is ...

- **Management**

  A set of activities (including planning and decision making, organizing, leading, and controlling) directed at an organization's resources (human, financial, physical, and information) with the aim of achieving organizational goals in an efficient and effective manner.

What is IRM???

- IRM can be stated simply as a **process to manage information efficiently and effectively in fulfilling the objectives of the firm.**

- IRM concepts rest under the premise that **information, information related activities, technologies and personnel are important organizational resources** that deserve to be managed like any other resources in the organization (Trauth, 1989).

Definitions of IRM

IRM is the management (planning, organization, operations and control) of the resources (human and physical) concerned with the systems support (development, enhancement and maintenance) and the servicing (processing, transformation, distribution, storage and retrieval) of information (data, text, voice, image) for an enterprise.

Information Resource Management

- Information Resource Management (IRM):
  To manage and control all of the resources required to produce information.

- The way IRM works is similar to Materials Resource Planning (MRP) in manufacturing.
  → Both concern with cost effective and efficient use of resources.
  → MRP is concerned with managing products while IRM is concerned with managing information.

- Three disciplines of Information Resource Management:"
  1. Database Management:
     --> To manage the data on daily basis using database in corporations.
  2. Records Management
     --> To handle effective storage, retrieval and the use of documents in corporations.
  3. Data Processing Management
     --> To provide better support for corporate decision making.

IMPORTANCE OF IRM

- By mid-1980s, businesses realized that automation was not the only answer to increase productivity but information is a resource that needs to be managed to **increase productivity.**
- Automation is just a tool, to provide access to information that is required to **make decisions**
- IRM is required
  - To **assimilate new information management technologies**
  - To **minimize risks**
  - To **ensure regulatory compliance**
  - To **safeguard vital information**