

Management Information System

2.1 INTRODUCTION

A system is a combination or arrangement of parts/components to form an integrated whole according to some common principles or rules. A system is an assembly of elements arranged in an order to achieve certain objectives. The organization is also a system of people where people are selected on the basis of number, quality and ability and are placed in hierarchical order plan and execute the business activities to achieve certain goals and objectives.

A system is a scientific method of inquiry, that is, observation, formulation of an idea, testing of that idea, and application of the results. The scientific method of problem solving is systems analysis in its broadest sense. Data are facts and figures. However, data have no value until they are compiled into a system and can provide information for decision making.

Information is a collection of facts organized in such a way that they have additional value beyond the value of the facts themselves. Information is data that has been interpreted or processed so that it has meaning for the user. In simpler terms, data endowed with relevance and purpose is information. An alternative definition of information is "information is produced through processing, manipulating and organizing data to answer questions, adding to the knowledge of the recipient".

Management is usually defined as planning, organizing, directing, staffing and controlling the business operation. It can also be defined as the process of allocating an organization's inputs, including human and economic resources, by planning, organizing, directing, and controlling for the purpose of producing goods or services desired by customers so that organizational objectives are accomplished. If management has knowledge of the planning, organization, directing, and controlling of the business, its decisions can be made on the basis of facts, and decisions are more accurate and timely as a result.

2.2 EVOLUTION OF MANAGEMENT INFORMATION SYSTEM

When computers were first used in the mid-1950s, the applications were primarily simple processing of transaction records and preparation of business documents and standard

2.5 ADVANTAGES OF MANAGEMENT INFORMATION SYSTEMS

1. **Ability to link and enable employees:** Electronic communication increases the overall communication within a firm. The most important aspect is that people from the various units of a corporation can interact with each other and thus horizontal communication is promoted. All the obvious advantages of quicker information availability is the outcome of this function of information technology but it must also be remembered that too much electronic communication leads to increased alienation of employees due to increased impersonality.
2. **Increases boundary spanning:** An individual can access any information in any part of the organization with the aid of the appropriate technology. This eliminates the need for the repetition of information and thus promotes non-redundancy. If information provided is adequate, one can deal with factors like business risk and uncertainties effectively.
3. **Ability to store and retrieve information at any instance:** Means that the organization does not have to rely solely on the fallibility of human error, which is subject to error and erosion. Information can be stored, retrieved and communicated far more easily and effectively. The information support improves the lack of knowledge, enriches experience and improves analytical ability leading to better business judgement. It helps managers to act decisively.
4. **Helps in forecasting and long-term planning:** A disciplined information system creates a structured database and knowledge base for all people in the organization. The information is available in such a form that it can be used either straightaway or using blending and analysis thereby saving manager's valuable time.
5. Management information systems can be used as a support to managers to provide a competitive advantage.
6. **Accounting management information systems:** All accounting reports are shared by all levels of accounting managers.
7. **Financial management information systems:** The financial management information system provides financial information to all financial managers within an organization including the chief financial officer. The chief financial officer analyzes historical and current financial activity, future financial needs of projects, and monitors and controls the use of funds over time using the information developed by the MIS department.
8. **Manufacturing management information systems:** More than any functional area, operations have been impacted by great advances in technology. As a result, manufacturing operations have changed. For instance, inventories are provided just in time so that great amounts of money are not spent for warehousing huge inventories. In some instances, raw materials are even processed on railroad cars waiting to be sent directly to the factory. Thus, there is no need for warehousing.
9. **Marketing management information systems:** A marketing management information system supports managerial activity in the area of product

development, distribution, pricing decisions, promotional effectiveness, and sales forecasting. More than any other functional areas, marketing systems rely on external sources of data.

- 10. **Human resources management information systems:** Human resources management information systems are concerned with activities related to workers, managers, and other individuals employed by the organization. Since the personnel function relates to all other areas in business, the human resources management information system plays a valuable role in ensuring organizational success. Activities performed by the human resources management information systems include, workforce analysis and planning, hiring, training, and job assignments.

2.6 MANAGEMENT INFORMATION SYSTEM AND THE USER

Management in all business and human organization activities is simply an act of getting people together to accomplish desired goals and objectives. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization (a group of one or more people or entities) or effort for the purpose of accomplishing a goal. Resourcing encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources. Management can also refer to the person or people who perform the act(s) of management.

Table 2.1 Decisions in Management

<i>Management activities</i>	<i>Decision taken by the management</i>
Planning	A selection from various alternatives – strategies, resources and methods, etc.
Organizing	A selection of combination out of various combinations of the goals, resources, methods and authority.
Staffing	Providing proper man power complement.
Directing	Choosing a method of directing the efforts in the organization for the accomplishment of the goals.
Coordinating and controlling	Coordinating the efforts for optimum results and selection of exceptional conditions and decision guidelines.

2.7 ELEMENTS OF MANAGEMENT INFORMATION SYSTEMS

Basically, there are three elements of MIS as follows:

- 1. **Management:** There are many different definitions of management, which vary from author to author, situation to situation and from occasion to occasion. A general definition is: “The art of getting things done through people, with the people”. Management may be thought of as the sum total of these activities which relate to the laying down of certain plans, policies and purposes, securing men, money, materials and machinery needed for their goal achievements; putting

all of them into operation, checking their performance and providing material rewards and mental satisfaction to the men engaged in the operation.

2. **Information:** In MIS, information is data that has been processed into meaningful format for use by decision makers within an organization. Thus, information is a source for increment in knowledge. Information must possess certain qualities to be useful.
3. **System** (i.e., information system): An efficient system uses its inputs economically for producing its outputs. An effective system produces the outputs that best meet the objectives of formal information support to the members of the organization.

These are the three basic elements or basic pillars on which MIS stands. These will be discussed in detail in the following:

An organization needs information for the following basic managerial activities:

1. Planning
2. Monitoring performance
3. Control
4. Decision making
5. Recording and processing transactions
6. Communication.

Information required by managers varies according to their specific role.

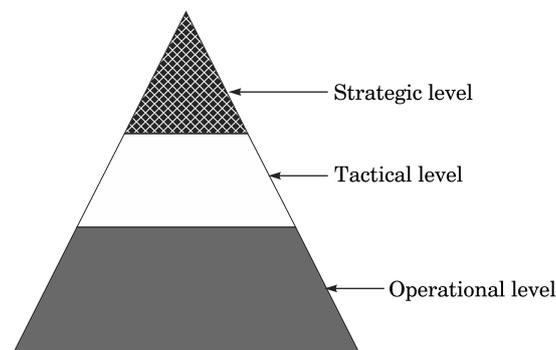


Fig. 2.1 Levels of management

1. **Strategic (top) level:** Top-level managers or strategic managers are involved in long-term objective setting and overall control of the organization.
2. **Tactical (middle) level:** Tactical managers are involved in some detailed operational decisions as well as implementing the policies of strategic management. They may be viewed as 'administrative' level.
3. **Operational (lower) level:** Operational managers are involved in day-to-day decision making in an organisation.

All levels of management are involved in planning and controlling activities, although the mix varies according to the level of management.

5. **Knowledge work system (KWS):** KWS is a computerized package designed to provide knowledge workers with the means to create and integrate new knowledge into an organisation.
6. **Office automation system (OAS):** OAS is a computerised package designed to increase the productivity of data workers by providing access to basic systems such as electronic mail and word-processing.
7. **Transaction processing system (TPS):** TPS is a computerised package designed to record the basic transaction data within an organisation.

Support systems provide support or assistance in respective field of action, whereas information system only reveals information (i.e., makes the unknown, known).

The management information system collects, transmits, processes, and stores data on the organization's resources, programs, and accomplishments. The system makes possible the conversion of these data into management information for use by decision makers within the organization. A management information system, therefore, produces information that supports the management functions of an organization.

MIS personnel must be technically qualified to work with computer hardware, software, and computer information systems. MIS managers, once they have risen through their technical ranks of their organization to become managers, must remember that they are no longer doing the technical work. They must cross over from being technicians to become managers. Their job changes from being technicians to being systems managers who manage other people's technical work. They must see themselves as needing to solve the business problems of the user, and not just of the data-processing department.

MIS managers are in charge of the systems development operations for their firm. Systems development requires four stages when developing a system for any phase of the organization.

- Phase I is systems planning. The systems team must investigate the initial problem by determining what the problem is and developing a feasibility study for management to review.
- Phase II identifies the requirements for the systems. It includes the systems analysis, the user requirements, necessary hardware and software, and a conceptual design for the system. Top management then reviews the systems analysis and design.
- Phase III involves the development of the systems. This involves developing technical support and technical specifications, reviewing users' procedures control, designing the system, testing the system, and providing user training for the system. At this time, management again reviews and decides on whether to implement the system.
- Phase IV is the implementation of the system. The new system is converted from the old system, and the new system is implemented and then refined. There must then be ongoing maintenance and reevaluation of the system to see if it continues to meet the needs of the business.

2.9 MIS SUPPORT TO THE MANAGEMENT

There are three mutually exclusive approaches towards MIS development.

Top-down approach

The top level defines the business objective/constraints and other parameters. A model of information flow is designed. Thus, several subsystems and their modules come into existence. The information system so developed is viewed as a total system fully integrated rather than as a collection of loosely coordinated subsystems.

The advantage of this system is that since the top level management becomes eager in development of top down approach, the development procedure seldom faces resource requirement.

The disadvantage is that the lower level may not be in the stage to adapt the new MIS. As a consequence, they may not be fully cooperative and participative in the system development and implementation process. Moreover, the functions/modules defined by the top level, may, in practical operation, need certain alterations, which the lower level may understand but may not be able to put to reality because it has been designed by someone above his rank.

Bottom-up approach

Here, the development of MIS starts right from the grass-roots level. Life stream systems are identified and developed. Life stream systems are those systems, which are essential for the day-to-day business activities. The examples of life stream include: payroll, sales order, etc. After ascertaining these, data/information requirement and flows are identified. Steps are taken to ensure data flow and data integration between these subsystems. The next stage is the addition of decision models and various planning models for supporting the planning activities involved in the model base facilitate and support higher management activities.

The advantage of this approach is that it is more realistic, more practical and less theoretical.

The disadvantage of this approach is that it may take more time to interpret the data/information flow and data integration part.

Integrated approach

The integrated approach is a combination of top-down and bottom-up approaches, where all levels of managers influence the design of the system.

Top management identifies the structure and design. This presented to the lower level management for making observations and suggesting alternative views and modifications. The revised design is drawn and evaluated by the top level and sent down again in a modified form for further consideration, if required. This is an iterative process, which is continued until a final design is achieved, that satisfies the requirements at all levels of the organisation. Then this design is transformed into operation and implemented into reality.

This approach aims to eradicate the disadvantages of the other two systems and simultaneously amalgamate the advantages of the other two approaches. If used impartially, the integrated approach, can neutrally overcome the limitations of the above top-down and bottom-up approaches.

The MIS will analyse the sales data to highlight sales trends of different product lines, to enable decisions to be made as to whether the product needs special promotion, or whether it should be discontinued.

(a) MIS deals with internal and external information

The internal information can be obtained easily from the various systems on the company network, e.g., sales figures for each product line.

The external information is gathered from:

1. Intelligence about competitors' activities. This can come through reading articles in the press, leaks, or even industrial espionage.
2. Information about population shifts. As the population gets older, the less likely they are to be interested in pop-music or customising cars, but are more likely to be interested in weight-loss products or holidays for the over 50s.
3. Economic and social factors. Sales of cars would go down in an area where a major employer had just closed down a plant.
4. Government legislation. financial forecasts would change if the minimum wage rose.

(b) MIS can be used to gather information from both formal and informal flows of information

1. A formal flow of information is one in which a procedure is adopted, e.g., the downloading of sales figures from several branches first thing on a Monday morning. External data can be collected using specialised data collection agencies such as Dun and Bradstreet who produce economic data for academic and commercial organisations. Formal flows can also come from people working on the same document at several locations, or by use of e-mail, or by use of company intranets.
2. Informal information flows come from chance meetings, reading magazines or newspapers, or watching the news on TV.

(c) MIS must produce information for managers on three levels

1. Operational: day-to-day decisions such-as ordering in more stock
2. Tactical: decisions that have a short- to medium-term effects, e.g., introducing a new product to a particular retail outlets
3. Strategic: long term decisions that will affect the future of the organisation, e.g., whether to open a new store, or take over a rival concern.

2.10 ORGANIZATIONS AS SYSTEM

MIS is not as important for smaller organizations as it is for the larger ones. The smaller locally run businesses are run usually by owners who rarely need instant access to

information that larger companies require. Large corporates with varied product lines definitely cannot do without a computer-based MIS in order to survive and keep pace with the competitors.

MIS performs various roles in an organization, namely:

1. Supports day-to-day business operations.
2. Supports managerial decision-making.
3. Supports strategic decision-making and competitive advantage.
4. Optimizing operational cost.
5. Provide timely and accurate information.
6. Provide expert advice to the managers on selected domains.

For example, an organization may use MIS to keep track of inventory, evaluate sales trends of different products, keep information about client and employees, etc.

MIS provides information to all levels of management organizations for the following purposes:

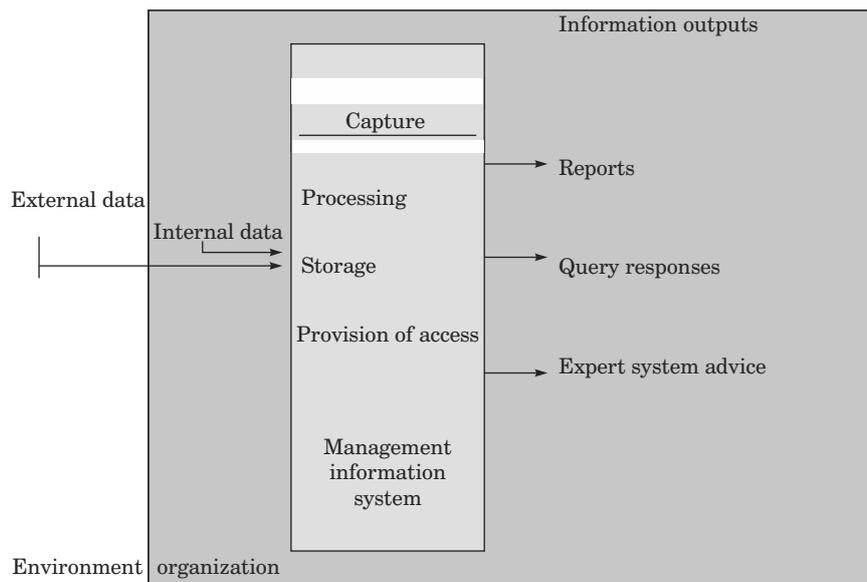


Fig. 2.4 Organizations system

1. To define the objectives of the organization.
2. To formulate strategies and policies to achieve the objectives set by the management.
3. To report the organization's performance to tax authorities, shareholders, regulatory authorities and other stakeholders such as suppliers and customers, etc.
4. To prepare future plans for short and long-term basis.

2. OB has proved instrumental for managers in getting their work done effectively.
3. OB lays emphasis on the interaction and relations between organization and individual behaviour. It works as a positive attempt in fulfilling psychological agreement between the organization and the individuals.
4. OB delivers job satisfaction to employees and helps in developing work-related behaviour in the organization.
5. OB helps in building motivating climate in the organization.
6. OB helps in building cordial industrial relations.
7. OB smoothes the progress of marketing by providing deeper insight of consumer behaviour and motivating and managing field employees.
8. OB helps in predicting behaviour and its application in meaningful way delivers effectiveness in the organization.
9. OB implies effective management of human resources.
10. OB helps in improving functional behaviour within the organization. It helps in attaining higher productivity, effectiveness, efficiency, organizational citizenship. It works effectively in reducing dysfunctional behaviour at workplace like absenteeism, employee turnover, dissatisfaction, tardiness, etc.

2.12 ORGANIZATION EFFECTIVENESS ON MIS

The Department of Inland Security of any Country/State has Detective or Spy or Informer by whatever name to gather information, which is reported to higher authority and then to highest authority, as per requirement. Decision and subsequent actions follows. This procedure, or similar procedure, had been in operation all over World, since human civilization. Computers are used nowadays to assist searching (e.g., photo matching of criminals/wanted; quicken signature or other verification(s), etc.). Thus we see that computer is used just as an aid or assistant.

Gone are the days of Rajas and Maharajas. However, in that era, businessmen used to appoint special persons to 'hear' the incomes and expenses from the accountant and accordingly report them. The word "audit" came from 'audire' - which means 'to hear'. This concept has been still in operation, under the name "auditing". There are professionals (chartered accountants), who do the job of this 'listening'. Presently, Computers are used in auditing: Computer Assisted Audit Techniques. Furthermore, Computers are still used in Accounting-procedure, which was discovered for manual operation. This does not mean that accounting and/or auditing cannot be performed without computers.

Conceptually, Management Information System can exist without Computer; but it is the power of computer which makes MISs feasible. MISs are characterized mainly by their ability to produce periodic reports (e.g., quarterly sales forecast, etc.), compared with set target (e.g., budget) and providing required representation of analysis to be made thereof – all done in minimum time with minimum human involvement.

Following are the advantages of using computer for MIS:

1. Data access from several (remote) locations. It is possible to assimilate data from multiple (remotely situated) business locations, where these data are input and

validated. After data processing/analysis, reports can be sent back to the remote locations, if required.

2. Data security.
3. Data confidentiality. The confidential nature of data and information can be maintained in a computer system. With this application, the MIS becomes a safe application in the organization.
4. Data storage.
5. Faster computation.
6. Integrates working of different information subsystems.
7. Widened scope of analysis.
8. Better decision making.
9. Increased effectiveness of information systems.
10. User-friendly.
11. More comprehensive information. The use of computer for MIS enables system experts to provide more complete and wide-ranging information to executives on business matters, so as to assist better decision making.
12. Easy access using non-procedural languages (4GLs). The software, an integral part of a computer system, further enhances the capability of hardware. The software handles the procedural and non-procedural data processing. For example, if one wants to use a formula to calculate a certain result, an efficient language is available to handle the situation. Whereas, if one is not required to use a formula but has to resort every time to a new procedure, the non-procedural languages are available.

An effective organizational structure facilitates working relationships between various entities in the organization and may improve the working efficiency within the organizational units. Organization shall retain a set order and control to enable monitoring the processes. Organization shall support command for coping with a mix of orders and a change of conditions while performing work. Organization shall allow for application of individual skills to enable high flexibility and apply creativity. When a business expands, the chain of commands lengthens and the spans of control widen. When an organization comes to age, the flexibility will decrease and the creativity will fatigue. Therefore, organizational structures shall be altered from time to time to enable recovery. If such alteration is prevented internally, the final escape is to turn down the organization to prepare for a re-launch in an entirely new set-up. It should be an open system capable of adjusting itself to the changing environment.

2.13 DEVELOPMENT OF LONG RANGE PLANS OF THE MIS

Management Information Systems should be flexible enough to deal with the changing information needs of the organization. It should be conceived as an open system continuously interacting with the business environment with a built-in mechanism to provide the desired information as per the new requirements of the management. The designing of such an open system is a complex task. It can be achieved only if the MIS is

planned, keeping in view, the plan of the business management of the organization. The plan of MIS is consistent to the business plan of the organization. The information needs for the implementation of the business plan should find place in the MIS. To ensure such an alignment possibility, it is necessary that the business plan, strategic or otherwise, states the information needs. The information needs are then traced to the source data and the systems in the organization which generate such data. The plan of development of the MIS is linked with the steps of the implementation in a business development plan. The system of information generation is so planned that strategic information is provided for the strategic planning, control information is provided for short-term planning and execution.

(a) Contents of the MIS Plan

A long range MIS plan provides direction for the development of the systems, and provides a basis for achieving the specific targets or tasks against a time frame.

(b) MS Goals and Objectives

It is necessary to develop the goals and objectives for the MIS which will support the business goals. The goals and objectives of MIS will consider management philosophy, policy constraints, business risks, internal and external environment of the organization and the business. The goals and the objectives of the MIS would be so stated that they can be measured.

The typical statements of the goals are as under:

- It should provide online information on the stock, markets and the accounts balances.
- The query processing should not exceed more than three seconds.
- The focus of the system will be on the end user computing and access facilities.

2.14 DECISION SUPPORT SYSTEM (DSS)

DSSs constitute a class of computer-based information including knowledge-based systems that support decision activities. A DSS is a class of information systems (including but not limited to computerized systems) that support business and organizational decision-making activities. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, personal knowledge, or business models to identify and solve problems and make decisions.

Typical information that a decision support application might gather and present are:

1. An inventory of all of your current information assets (including legacy and relational data sources, cubes, data warehouses, and data marts).
2. Comparative sales figures between one week and the next.
3. Projected revenue figures based on new product sales assumptions.

A cooperative DSS allows the decision maker (or its advisor) to modify, complete, or refine the suggestions provided by the system, before sending them back to the system for validation. The system again improves, completes, and refines the suggestions of the

decision maker and sends them back for validation. The whole process then starts again, until a consolidated solution is generated.

Taxonomy for DSS has been created by Daniel Power. Using the mode of assistance as the criterion, Power differentiates communication-driven DSS, data-driven DSS, document-driven DSS, knowledge-driven DSS, and model-driven DSSs.

- A communication-driven DSS supports more than one person working on a shared task; examples include integrated tools like Microsoft's NetMeeting or Groove[7]
- A data-driven DSS or data-oriented DSS emphasizes access to and manipulation of a time series of internal company data and, sometimes, external data.
- A document-driven DSS manages, retrieves, and manipulates unstructured information in a variety of electronic formats.
- A knowledge-driven DSS provides specialized problem-solving expertise stored as facts, rules, procedures, or in similar structures.
- A model-driven DSS emphasizes access to and manipulation of a statistical, financial, optimization, or simulation model. Model-driven DSSs use data and parameters provided by users to assist decision makers in analyzing a situation; they are not necessarily data-intensive. Decodes is an example of an open source model-driven DSS generator.

Using scope as the criterion, Power differentiates enterprise-wide DSS and desktop DSS. An enterprise-wide DSS is linked to large data warehouses and serves many managers in the company. A desktop, single-user DSS is a small system that runs on an individual manager's PC.

2.14.1 DSS Components

There are several ways to classify DSS applications. Not every DSS fits neatly into one category, but a mix of two or more architectures in one.

Holsapple and Whinston classify DSS into the following six frameworks: text-oriented DSS, database-oriented DSS, spreadsheet-oriented DSS, solver-oriented DSS, rule-oriented DSS, and compound DSS.

A compound DSS is the most popular classification for a DSS. It is a hybrid system that includes two or more of the five basic structures described by Holsapple and Whinston. The support given by DSS can be separated into three distinct, interrelated categories: personal support, group support, and organizational support.

DSS components may be classified as:

1. Inputs: Factors, numbers, and characteristics to analyze.
2. User knowledge and expertise: Inputs requiring manual analysis by the user.
3. Outputs: Transformed data from which DSS "decisions" are generated.
4. Decisions: Results generated by the DSS based on user criteria.

DSSs performing selected cognitive decision-making functions and are based on artificial intelligence or intelligent agent's technologies are called Intelligent Decision Support Systems (IDSS).

A spatial decision support system typically consists of the following components:

1. A database management system holds and handles the geographical data. A standalone system for this is called a geographical information system, (GIS).
2. A library of potential models that can be used to forecast the possible outcomes of decisions.
3. An interface to aid the user's interaction with the computer system and to assist in analysis of outcomes.

This concept fits dialog, data and modelling concepts outlined by Sprague and Watson as the DDM paradigm. An SDSS usually exists in the form of a computer model or collection of interlinked computer models, including a land use model. Although various techniques are available to simulate land use dynamics, two types are particularly suitable for SDSS. These are cellular automata (CA) based models and agent based models (ABM).

An SDSS typically uses a variety of spatial and nonspatial information, like data on land use, transportation, water management, demographics, agriculture, climate or employment. By using two (or, better, more) known points in history the models can be calibrated and then projections into the future can be made to analyze different spatial policy options. Using these techniques spatial planners can investigate the effects of different scenarios, and provide information to make informed decisions. To allow the user to easily adapt the system to deal with possible intervention possibilities, an interface allows for simple modification to be made.

2.17 TYPES OF DECISION SUPPORT SYSTEMS

Decision support systems can be categorized into five types:

(a) Communication-driven DSS

Most communication-driven DSSs 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 softwares', online collaboration and net-meeting systems.

(b) Data-driven DSS

Most data-driven DSSs 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 mainframe 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).

(c) Document-driven DSS

Document-driven DSSs 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 DSSs is via the web or a client/server system.

(d) Knowledge-driven DSS

Knowledge-driven DSSs or 'knowledge base' as they are known, are a catch-all category covering a broad range of systems covering users within the organization setting it up, but may also include others interacting with the organization, 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.

(e) Model-driven DSS

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

Decision Support System Models

Types of decision support system models/tools:

- (i) Behavioural models
 - (ii) Management science models
 - (iii) Operation research models
- (i) **Behavioural Models:** The decision maker can make the decisions for such behavioural relationships. For example, trend (development) analysis, forecasting and statistical analysis models. The trend analysis indicates how different variables behave in trend setting in the past and in future.
 - (ii) **Management Science Models:** These models are developed on the principles of the business management, accounting and economics. For example, the budgetary systems, cost accounting system, inventory management system. In the budgetary system, budgets are used for planning and control. In all the organizations, budgets are prepared with the use of graphical representation in the form of line charts or bar charts. For example, sales budget, production budget.
 - (iii) **Operation Research Models:** The operation research models are the mathematical models which gives the feasible solutions by satisfying the constraints. For example, linear programming.

2.18 APPLICATIONS OF DECISION SUPPORT SYSTEMS

- Ability to view data/information and sensing the problem through the different view.
- Ability to understand and evaluate the business performance.
- Ability to understand the problem and its result, and ability to judge the impact on business.
- Ability to evaluate the impact of any change in the business performance and enabling to focus on the areas where impact is negative.

- Ability to view the complex scenario or problem and to analyze it and develop alternatives to solve the problem.
- Ability to make a better decision due to quick analysis.
- Ability to control the risk exposure in decisions.

All these abilities together make a decision maker, a capable person to handle any complex business scenario or problem. Manager through DSS, builds capability to execute the decision-making process 'Intelligent - Design - Choice - Implement' built by Herbert Simon.

Summary

This chapter focused on introduction to management information systems. And discussed on general model of MIS, development of long range plans of MIS, requirement of information and management of information quality in the MIS. This chapter also describes the decision support system; types of decision support systems, decision support system models, behavioural models, management science models and operation research models. Finally, some applications of decision support systems are exposed.

Exercise

1. What is the main purpose of management information systems?
2. Name some advantages of management information systems.
3. What is the role of management information system in a system?
4. How management information system will make the control of the organization easier?
5. What is the main objective of management information system?
6. Define management information system.
7. Explain the elements of management information system.
8. Explain the structure of management information system.
9. Explain how management information system simplifies control?
10. How does management information system aid the top management in controlling?
11. Write a note on: DSS, CDSS, SDSS.
12. Classify decision making.
13. Explain decision structure.
14. Explain how decision making helps organizations.
15. Will individual decision making process lead the organization with good co-ordination and control?
16. Can an organization go smooth by the decisions at earlier time?
17. Explain the role of management information system in management processes.
18. What are different sources of information?
19. Describe utility of data mining for an organization.

48. Explain why prototyping has become a popular to develop new computer-based systems.
49. Examine in detail the various phases of system development life cycle. Which is the most important phase in the SDLC.
50. Give importance of management information system in banking, i.e., its different functions under account opening utility.
51. Describe benefits of strategic planning.
52. Which are phases of customer relationship management with blocks?
53. Draw diagram of expert system architecture.
54. List three types of strategies in strategic planning. Explain any one.
55. State importance of management information system in ticket booking in airline sector.
56. Explain SIMON model of decision making with appropriate diagram.
57. Enlist benefits of enterprise resource planning in any organization.
58. Explain the application of management information system in materials management.
59. What is role of management information system in hotel management?
60. How can information systems support a company's business operations, decision making by their managers, give them a competitive advantage? Give examples to illustrate your answer.
61. How important is information technology to the globalization of a business? Use examples to illustrate your answer.
62. How can a manager demonstrate that he or she is a responsible end user of information systems? Give examples.
63. How important is information technology to a company's competitive strategies? Use examples to illustrate your answer.
64. What software resources are required in a manual or mechanical (a non-computerized) information system? Give several examples to illustrate your answer.
65. Identify several uses of the term system in the chapter. Why is this concept so useful in the study of computers and information systems?
66. What is the difference between a computer system and computer-based information system? Give an example to illustrate your answer.
67. Why are there so many conceptual kinds of information systems? Why they are typically integrated in the information systems in the real world?
68. How can the Internet and intranets support enterprise collaboration and knowledge management?
69. Could you use the systems approach to problem solving as a way to solve a marketing problem? A financial problem? A human resource management problem? Explain.

70. Why do you think prototyping has become a popular to develop new computer-based business systems?
71. What application software packages end users use to develop business applications on Internet and intranet websites? Give examples.
72. Why is there trend toward cross-functional information systems in business?
73. Could the interactive marketing process on the Internet be a model for changes in mass marketing, and other types of marketing? Explain.
74. Refer to the real world case on Gulf States paper Corporation in the chapter. How could machine vision systems be used in other business processes not mentioned in this? Give an example to illustrate your answer.
75. How does sales force automation affect salesperson productivity, marketing management, and competitive advantage?
76. How do the Internet, intranets, and extranets enable collaborative manufacturing?
77. Refer to the Real World Case on Book-Of -The-month club in the chapter. Do you agree that customer service reps should deal only with customer inquiries, not customer orders? Why not?
78. How can Internet and intranets support human resource management in a business? Give examples.
79. How can Internet technologies be involved in some of the most common applications of computers in accounting and finance?
80. How can transaction-processing systems play a strategic role in gaining competitive advantages for a business?
81. What has been the impact of information technology on the work relationships, activities and resources of managers?
82. What can end user managers do about performance problems in the use of information technology and the development and operation of information systems in a business?
83. Refer to the real world case on the Home Depot in the chapter. Why has the hybrid centralized / decentralized IS management model become "the emerging best-practices model for international companies with distributed units"?
84. How is information technology affecting the structure and work roles of modern organizations? For example, will middle management wither away? Will companies consist primarily of self-directed project teams of knowledge workers? Explain your answer.
85. Should the IS function in a business be centralized or decentralized? What recent developments support your answer?
86. How will the Internet, intranets, and extranets affect each of the components of global IT management? Explain with examples.
87. How do cultural, political, or geo-economics challenges affect a global company's use of the Internet? Give examples.

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5. Use of new system at the same time and the old system to compare the results is known as _____
 - (a) Procedure writing
 - (b) Simultaneous processing
 - (c) Parallel operation
 - (d) File conversion
 6. A data flow can
 - (a) Only emanate from an external entity
 - (b) Only terminate in an external entity
 - (c) May emanate and terminate in an external entity
 - (d) May either emanate or terminate in an external entity but not both
 7. _____ can be defined as the most recent and perhaps the most comprehensive technique for solving computer problems.
 - (a) System analysis
 - (b) System data
 - (c) System procedure
 - (d) System record
 8. Which of the following is/are the characteristics of information?
 - (a) Accuracy and relevance
 - (b) Form of information and timeliness
 - (c) Completeness and purpose
 - (d) All a, b & c
 9. The data flow diagram is the basic component of _____ system
 - (a) Conceptual
 - (b) Logical
 - (c) Physical
 - (d) None of the above
 10. Data cannot flow between two data stores because
 - (a) It is not allowed in DFD
 - (b) A data store is a passive repository of data
 - (c) Data can get corrupted
 - (d) They will get merged
 11. The characteristics of well designed system are
 - (a) Practical (b) Effective (c) Secure (d) Reliable (e) Flexible (f) Economical
 - (a) a, b, c and d
 - (b) a, c, d and e
 - (c) a, b, c, d and e
 - (d) a, b, c, d, e and f
 12. _____ defines the flow of the data through and organization or a company or series of tasks that may or may not represent computerized processing.
 - (a) System process
 - (b) System flow chart
 - (c) System design
 - (d) Structured system
 13. Documentation is prepared
 - (a) At every stage
 - (b) At system design
 - (c) At system analysis
 - (d) At system development

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23. In study phase activities, which activity is filled by the user
(a) User review (b) User need
(c) Initial investigation (d) System review
24. _____ can be defined as data that has been processed into a form that is meaningful to the recipient and is of real or perceived value in current or prospective decisions.
(a) Information (b) Data collection
(c) Internal data (d) Sample data
25. Changing the relationship with and services provided to customers in such a way that they will not think of changing suppliers is called _____
(a) Lock in customers (b) Lock out customers
(c) Lock in competitors (d) Lock out competitors
26. _____ means coordinated effort, to communicate the information of the system written form.
(a) System documentation (b) Resource required
(c) Development schedule (d) User document
27. Changing an operational information system is
(a) Impossible (b) Expensive and done selectively
(c) Never required (d) Usually done
28. The main objective of system evaluation is
(a) To see whether the system met specification
(b) To improve the system based on operational experience for a period
(c) To remove bugs in the programs
(d) To assess the efficiency of the system
29. To easily modify the existing system it is necessary to
(a) Use good software tools
(b) Use the best hardware available
(c) Design the system which can be changed at low cost
(d) Keep the programming team happy
30. Changing an operational information system is
(a) Impossible (b) Expensive and done selectively
(c) Never required (d) Usually done
31. To create vehicle of information to provide evidence in the development process and to monitor the process. This is one of the objectives of
(a) Analysis (b) Design
(c) Development (d) Documentation
32. _____ is a good example of deterministic system.
(a) Life cycle (b) Computer program
(c) Software program (d) None of the above