

Information System

An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers to analyze problems, visualize complex subjects, and create new products. . Information systems contain information about significant people, places, and things within the organization or in the environment surrounding it. By information we mean data that have been shaped into a form that is meaningful and useful to human beings. Data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can effectively understand and use.

Three activities in an information system produce the information that organizations need to make decisions, control operations, analyze problems, and create new products or services. These activities are input, processing, and output **Input** captures or collects raw data from within the organization or from its external environment. **Processing** converts this raw input into a meaningful form. **Output** transfers the processed information to the people who will use it or to the activities for which it will be used. Information systems also require **feedback**, which is output that is returned to appropriate members of the organization to help them evaluate or correct the input stage.

DIMENSIONS OF INFORMATION SYSTEMS

To fully understand information systems, We must understand the broader organization, management, and information technology dimensions of systems and their power to provide solutions to challenges and problems in the business environment. It encompasses an understanding of the management and organizational dimensions of systems as well as the technical dimensions of system. It includes a behavioral as well as a technical approach to studying information system and focuses primarily on knowledge of information technology. The field of management information systems (MIS) tries to achieve this broader information systems. MIS deals with behavioral issues as well as technical issues surrounding the development, use, and impact of information systems used by managers and employees in the firm. Let's examine each of the

dimensions of information systems-organizations, management, and information technology.

Organizations

Information systems are an integral part of organizations. The key elements of an organization are its people, structure, business processes, politics, and culture. Organizations have a structure that is composed of different levels and specialties. Their structures reveal a clear-cut division of labor. Authority and responsibility. in a business firm is organized as a hierarchy, or a pyramid structure, of rising authority and responsibility. The upper levels of the hierarchy consist of managerial, professional, and technical employees, whereas the lower levels consist of operational personnel. Senior management makes long-range strategic decisions about products and services as well as ensures financial performance of the firm. Middle management carries out the programs and plans of senior management and operational management is responsible for monitoring the daily activities of the business. Knowledge workers, such as engineers, scientists, or architects, design products or services and create new knowledge for the firm, whereas data workers, such as secretaries or clerks, assist with paperwork at all levels of the firm. Production or service workers actually produce the product and deliver the service. Experts are employed and trained for different business functions. The major business functions, or specialized tasks performed by business organizations, consist of sales and marketing, manufacturing and production, finance and accounting, and human resources.

Management

Management's job is to make sense out of the many situations faced by organizations, make decisions, and formulate action plans to solve organizational problems. Managers perceive business challenges in the environment; they set the organizational strategy for responding to those challenges; and they allocate the human and financial resources to coordinate the work and achieve success. Throughout, they must exercise responsible leadership. But managers must do more than manage what already exists. They must also create new products and services and even re-create the organization from time to time. A substantial part of management responsibility is creative work driven by new knowledge and information. Information technology can play a powerful role in helping managers design and deliver new products and services and redirecting and redesigning their organizations.

Technology

Information technology is one of many tools managers use to cope with change. Computer hardware is the physical equipment used for input, processing, and output activities in an information system. It consists of the following: computers of various sizes and shapes; various input, output, and storage devices; and telecommunications devices that link computers together. Computer software

consists of the detailed, preprogrammed instructions that control and coordinate the computer hardware components in an information system. Data management technology consists of the software governing the organization of data on physical storage media. Networking and telecommunications technology, consisting of both physical devices and software, links the various pieces of hardware and transfers data from one physical location to another. Computers and communications equipment can be connected in networks for sharing voice, data, images, sound, and video. A network links two or more computers to share data or resources, such as a printer. The world's largest and most widely used network is the Internet. The Internet is a global "network of networks" that uses universal standards to connect millions of different networks with more than 350 million host computers in over 200 countries around the world. The Internet has created a new "universal" technology platform on which to build new products, services, strategies, and business models. This same technology platform has internal uses, providing the connectivity to link different systems and networks within the firm. Internal corporate networks based on Internet technology are called intranets. Private intranets extended to authorized users outside the organization are called extranets, and firms use such networks to coordinate their activities with other firms : most business firms today, using Internet technology is both a business necessity and a competitive advantage.

FUNCTIONS OF INFORMATION SYSTEM :

The information systems function represents :

1. It is a major functional area of a business as like accounting, finance, operations management, marketing, marketing, and HRM.
2. It is an important contributor to operational efficiency, employee productivity and morale, and customer service and satisfaction.
3. It is a major source of information and support needed to promote effective decision making by managers.
4. It is an important ingredient in developing competitive products and services that give an organization a strategic advantage in the global marketplace.
5. It is a major part of the resources of an enterprise and its cost of doing business, thus posing a major resource management challenge.
6. A vital, dynamic, and challenging career opportunity for millions of men and women.

Nature and functions of Management Information System :

Evolution of MIS :-

Earliest use of Information System was recorded during third millennium BC in a Sumerian Temple. They used clay tablets for recording receipts and issues of grains to the individual workers. The industrial revolution and growth in business industry along with development of accounting systems, organization size, and

development of computing technology have ensured the fast growth of information systems during the last few centuries. As business grows (from sole trading firms to global corporations), it is found impossible to a manager to visit all his organizations facilities, plants and warehouses. It was the information system that kept informed of this organization activities. A full fledged information system requires in an organization to collect data at source measured with precision, process it immediately and keep its entire file updated to feed the managers, with most current, highly accurate information.

Data is used in the form of raw material and must be subjected to manipulation or processing to produce useful information. An information system produces information using data. If information system produces information, which is useful for managers in planning, organizing, directing and controlling of the organization, then such system is called “Management Information System”.

The information provided by MIS supports the manager to take structured (or programmed) decisions which are those that are based on predictable patterns of activity.

Definition of MIS :

MIS can be defined as a system that

- a. Provides information to support managerial functions like planning, organizing ,directing, controlling.
- b. Collects information in a systematic and a routine manner which is in accordance with a well defined set of rules.
- c. Includes files, hardware, software and operations research models of processing, storing, retrieving and transmitting information to the users.

Objectives of MIS :

- a. Facilitate the decisions-making process by furnishing information in the proper timeframe. This helps the decision-maker to select the best course of action.
- b. Provide requisite information at each level of management to carry out their functions.
- c. Help in highlighting the critical factors to the closely monitored for successful functioning of the organization.
- d. Support decision-making in both structured and unstructured problem environments
- e. Provide a system of people, computers, procedures, interactive query facilities, documents for collecting, storing, retrieving and transmitting information to the users.

Components of MIS :

As predicted by McLeod, in 1986, a typical MIS is based on four major components. They are :

- a. **Data gathering** – data required to the operations of the organization have to be gathered from both internal and external sources.
- b. **Data entry** – stored in databases.
- c. **Data transformation** – in to useful information by means of computer programs and judgments made by technical staff and other system users.
- d. **Information utilization** – applied to decision making process related to organizations operation.

Functions of MIS :

- a. **Collect data** – Internal data can be collected from company records or reports, marketing data, financial data, production data, personnel data and information compiled by manager themselves. External sources include trade publications, customers and consultants, government data, technology data, social change data, Economic data etc..
- b. **Store and process data** – using computers.
- c. **Present information to Managers** – for their use.

Resources of MIS :

People, hardware, software, data, and networks are the five basic resources of information systems.

<p>People Resources Specialists—systems analysts, programmers, computer operators. End Users—anyone else who uses information systems.</p>
<p>Hardware Resources Machines—computers, video monitors, magnetic disk drives, printers, optical scanners. Media—floppy disks, magnetic tape, optical disks, plastic cards, paper forms.</p>
<p>Software Resources Programs—operating system programs, spreadsheet programs, word processing programs, payroll programs. Procedures—data entry procedures, error correction procedures, paycheck distribution procedures.</p>
<p>Data Resources Product descriptions, customer records, employee files, inventory databases.</p>
<p>Network Resources Communications media, communications processors, network access and control software.</p>
<p>Information Products Management reports and business documents using text and graphics displays, audio responses, and paper forms.</p>

1. People resources include end users and IS specialists, hardware resources consist of machines and media, software resources include both programs and procedures, data resources can include data and knowledge bases, and network resources include communications media and networks.
2. Hardware Resources : by which MIS system is constructed physically
3. Data resources are transformed by information processing activities into a variety of information products for end users.
4. Network Resources : Include communication process to transfer data between component of MIS and organization.
5. Information processing consists of input, processing, output, storage, and control activities.

Characteristics of Management Information Systems :

(a) Management oriented :

- The system is designed from the top to work downwards. It does not mean that the system is designed to provide information directly to the top management.
- Other levels of management are also provided with relevant information.

(b) Management directed :

- Because of management orientation of MIS, it is necessary that management should actively direct the system development efforts.
- In order to ensure the effectiveness of system designed, management should continuously make reviews.

For example, in the marketing information system, the management must determine what sales information is necessary to improve its control over marketing operations.

(c) Integrated :

The word 'integration' means that the system has to cover all the functional areas of an organization. It has to consider various sub systems, their objectives, information needs, and recognize the interdependence, that these sub-systems have amongst themselves, so that common areas of information are identified and processed without repetition and overlapping.

For example, in the development of an effective production scheduling system, a proper balance amongst the following factors is desired :

- (i) set up costs
- (ii) manpower
- (iii) over time
- (iv) production capacity
- (v) inventory level
- (vi) money available
- (vii) Customer service.

(d) Common data flows :

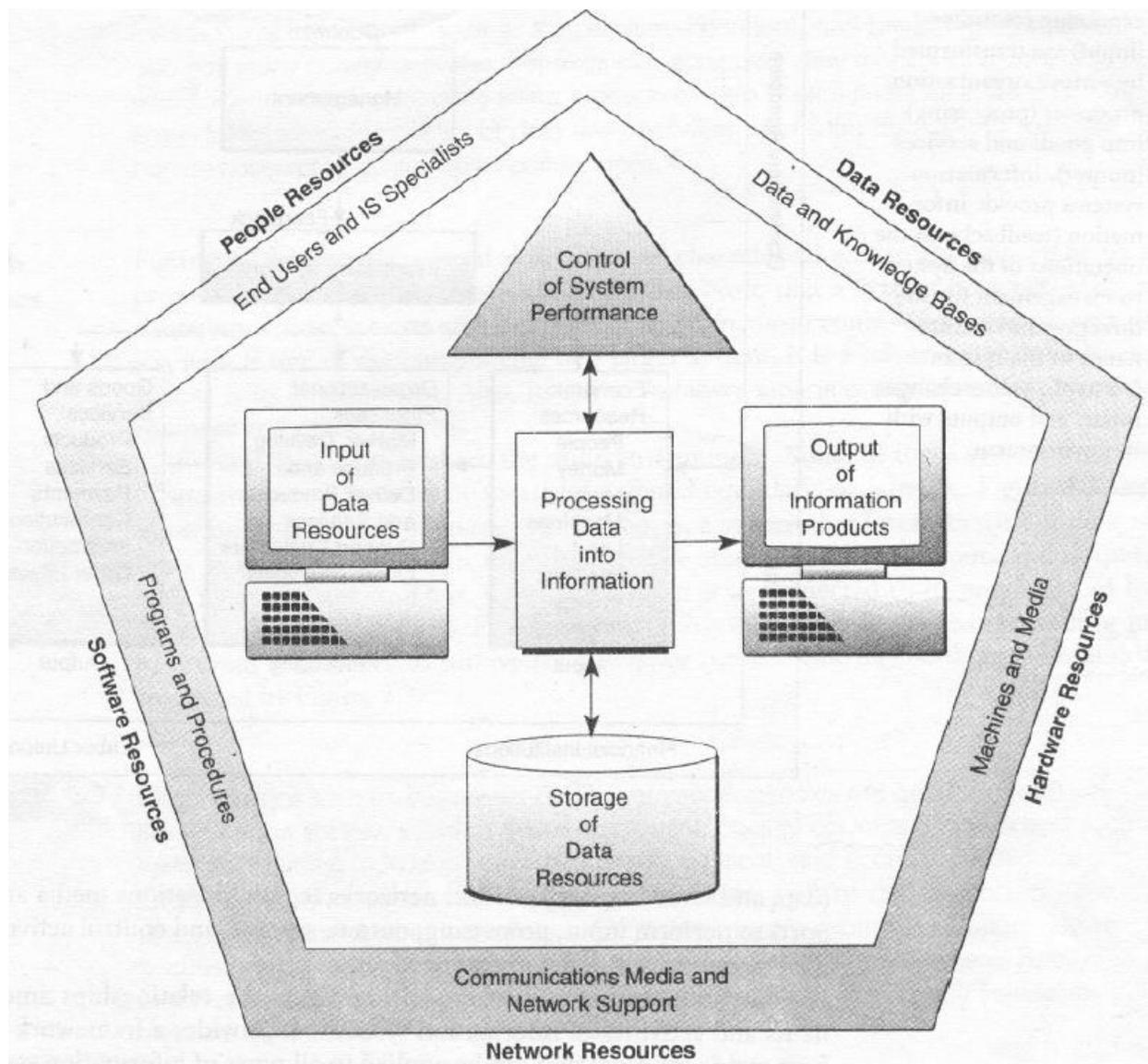
Because of the integration concept of MIS, common data flow concept avoids repetition and overlapping in data collection and storage, combining similar functions, and simplifying operations wherever possible.

For example, in the marketing operations, orders received for goods become the basis of billing of goods ordered, setting up of the accounts receivable, initiating production activity, sales analysis and forecasting, etc.

(e) Heavy planning element :

A management information system cannot be established overnight. It takes almost 2 to 4 years to establish it successfully in an organization. Hence, long-term planning is required for MIS development in order to fulfill the future needs and objectives of the organization.

The designer of an information system should therefore ensure that it will not become obsolete before it actually gets into operation.



An example of such a feature of MIS may be seen in a transportation system where a highway is designed not to handle today's traffic requirements but to handle the traffic requirements five to ten years.

(f) **Flexibility and ease of use :**

- While building an MIS system all types of possible means which may occur in future are added to make it flexible.
- A feature that often goes with flexibility is the ease of use.
- The MIS should be able to incorporate all those features that make it readily accessible to a wide range of users with easy usability.

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