

# Information Systems for Managers

By: Sumeet Sharma

This reference book can be useful for  
BBA, MBA, B.Com, BMS, M.Com, BCA, MCA  
and many more courses for Various Universities



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# INFORMATION SYSTEMS FOR MANAGERS

## Information Technology: An Overview



Information is a basic resource in today's society. We are living in an information society whose economy is heavily dependent on the creation, management and distribution of information resources. We no longer live in an agricultural society, composed primarily of farmers, or even an industrial society, where a majority of the work force consists of factory workers. Instead, the work force today consists mainly of workers in service occupations or knowledge workers, that is people who spend most their workday creating, using, and distributing information.

This category of knowledge workers includes executives, managers and supervisors; professionals such as accountants, engineers, scientists, stockbrokers and teachers; and staff personnel such as secretaries and clerical office personnel. These people all make their living using information systems to create, distribute, manage and use information resources, which are then used to help them manage the human, financial, material, energy, and other resources involved in their responsibilities.

Thus, Information is valuable commodity to knowledge workers, their organizations and society. Information systems have become a vital component of successful business firms and other organizations. They, thus, constitute an essential field of study in business administration and management. That's why

most business majors must take a course or two in information systems. Since you probably intend to be a manager, entrepreneur, or business professional, it is just as important to have a basic understanding of information systems as it is to understand the basics of accounting, marketing or other functional areas in business.

A major challenge for the information society is to manage its information resources to benefit all members of society. This information and information systems must properly managed for an organization to succeed. That's because organizations are faced with continual changes in the size, complexity and scope of their operations. For example, business firms are continually battling with their competitors to provide better products and services to a variety of customers at many locations with a minimum number of employees. Organizations rely on information system to provide the many types of information necessary for their efficient operations and effective management. This information must be reasonable accurate, timely and tailored to the needs of managers and end users. It must also help organizations gain strategic advantages over their competitors.

However, information systems that do not properly support an organization's strategic objectives, corporate culture, or employee needs can seriously

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damage that organization's prospects for survival and success. The proper management of information systems is thus a major organizational challenge. For managerial end users, information systems represent

- a major part of the resources of an organization and its cost of doing business, thus posing a major resource management challenge.
- an important factor affective operational efficiency, employee productivity and morale, and customer service and satisfaction.
- a major source of information and support need to promote effective decision-making by managers.
- an important ingredient in developing competitive products and services that give an organization a strategic advantage in the marketplace.
- a vital, dynamic and challenging career opportunity for millions of men and women.

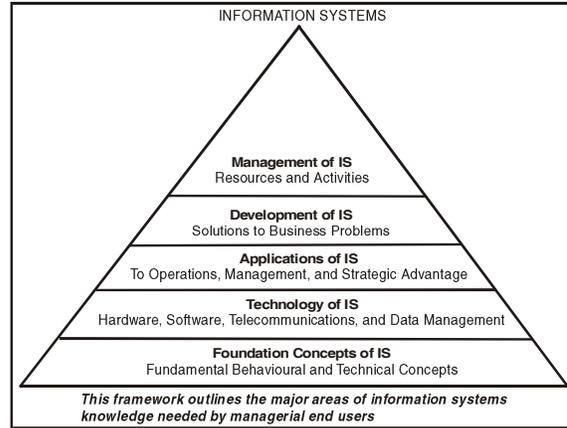
Computer Science, Engineering, and Mathematics are disciplines that contribute to the *technological aspects* of information systems. It is these disciplines along with the information systems discipline, whose research drives developments in computer hardware, software, telecommunications and other information-processing technologies.

Areas such as Psychology, Sociology and Political Science, on the other hand contribute to the *behavioural aspects* of information systems. The research findings of these disciplines and the discipline of information systems shed light on the effective use and management of technology by individuals and organizational goals and helping individuals and organizations take advantage of the benefits of information system technology.

Both these technological and behavioural aspects are important for managerial end users. Although computer-based information systems are heavily dependent on information-processing technologies, they are designed, operated and used by people in a variety of organizational settings. For managerial end users, the success of an information system should be measured not only its technical efficiency, but also by its effectiveness in meeting end user and organizational goals.

The following diagram illustrates a useful conceptual framework that outlines what a managerial end user needs to know about information systems. It emphasizes that you should concentrate your efforts in

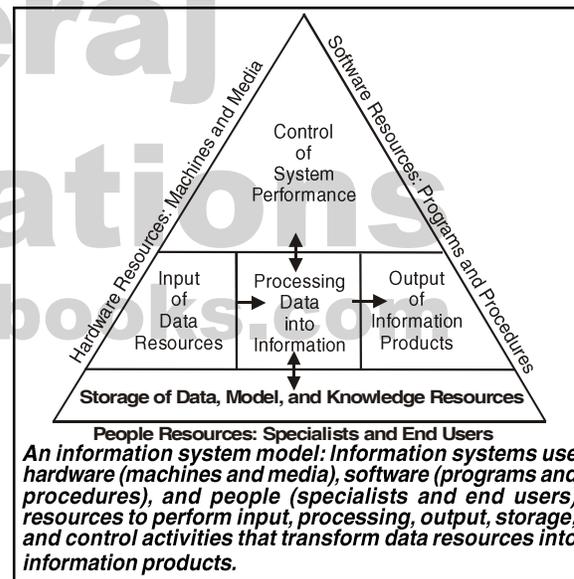
five areas of knowledge: *foundation concepts, technology, applications, development and management.*



FUNDAMENTAL INFORMATION SYSTEM CONCEPTS

What is System?

An Information System Model



The above diagram illustrates an information system model that provides the following fundamental conceptual framework, or model of the major components and activities of an information system.

This information system model will help you tie together many of the facts and concepts involved in the study of computer-based information systems. It emphasizes three major concepts:

- Hardware (machines and media), software (programs and procedures), and people

(specialists and end users) are the primary resources needed to accomplish information processing activities in information systems.

- Data resources are transformed into a variety of information products by the information processing activities of information system.
- Information processing consists of the basic system activities of input, processing, output, storage and control.

### INFORMATION SYSTEMS FOR OPERATIONS AND MANAGEMENT

Each information system performs three major roles in an organization:

- Support of business operations.
- Support of management decision-making.
- Support of strategic competitive advantage.

It means that information systems perform operation, managerial and strategic support roles in businesses and other organizations. Hence information systems can be classified conceptually as either operations or management information systems.

#### Classifications of Information Systems

**Operations information systems** process data generated by and used in business operations. The following roles are played by major categories of such systems:

- **Transaction-processing systems** record and process data resulting from business transactions, update databases and produces a variety of documents and reports.
- Operational decisions that control physical processes are produced by **process control systems**.
- Office communications and productivity are supported by **office automation systems**.

### EXERCISES

**Q. 1. Define an information system and list its major components.**

**Ans.** An Information Systems is a set of people, procedures and resources that collects, transforms, and disseminates information in an organization. Today's organizations rely on many types of *Information systems* (IS). They include simple *manual* (paper-and-pencil) information systems and *informal* (word-of-mouth) information systems.

**Management Information System:** Many people use this term as a synonym for *information system*. Others use it to describe an information system that provides information in the form of standardized reports and displays to managers. Management Information System (MIS) is used to describe a broad class of information systems that are designed to

provide information needed for effective decision-making by managers.

The various components of information system are:

- **Information** is data (for example, raw facts or observations) that have been put into a meaningful and useful context. This gives the information value for specific persons and meets their particular information needs. This information is a basic resource that individuals and organizations must have to survive and succeed in today's society.
- **End User:** Anyone who uses an information system of the information it produces. This usually applies to most people in an organization; as distinguished from the smaller number of people who are information system specialists, such as system analysts or professional computer programmers.
- **Managerial end user:** A manager, entrepreneur, or managerial-level professional who personally uses information systems. Also, the manager of a department or other organizational unit that relies on information systems. This book is written for potential managerial end users like you and other students of business administration and management.

**Q. 2. Explain the various fundamental concepts of information system.**

**Ans.** System concepts underline the field of information systems. Other disciplines may use the term "system" as an important concept or as a convenient way of describing the phenomena they must deal with. However, knowledge of systems concepts is vital to a proper understanding of the development, technology, applications and management of information system.

A system can be simply defined as *a group of interrelated or interacting elements forming a unified whole*. Many examples of systems can be found in the physical and biological sciences, in modern technology and in human society.

**Definition:** A system is a group of interrelated components working together towards a common goal by accepting inputs and producing outputs in an organized transformation process.

Such a system has three basic interacting components or functions:

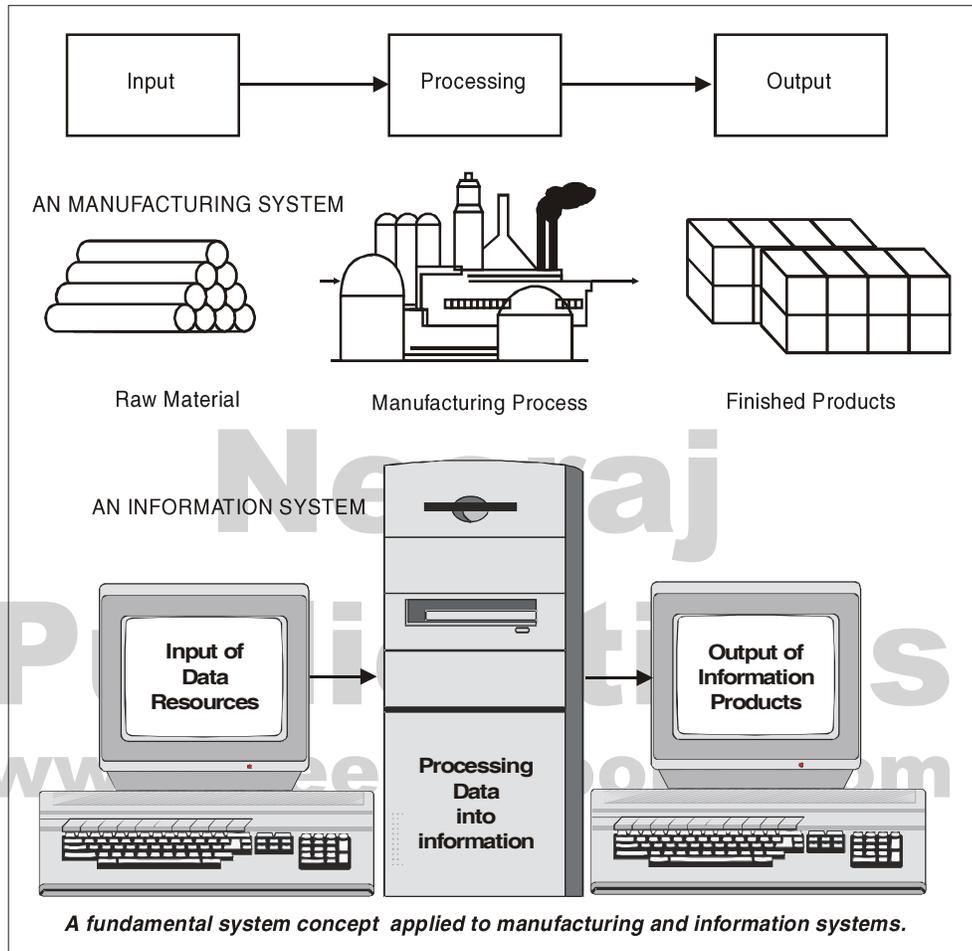
- **Input** involves capturing and assembling elements that enter the system to be processed. For example, raw materials, energy, data and

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human efforts must be secured and organized for processing.

- **Processing** involves transformation processes that convert input into output. Examples are a manufacturing process, the human breathing process and data calculations.

- **Output** involves transferring elements that have been produced by the transformation process to their ultimate destination. For example, finished products, human services and management information must be transmitted to their human users.



**FEEDBACK AND CONTROL**

The systems concepts can be made even more useful by including two additional components: *feedback* and *control*. A system with feedback and control components is sometimes called a “cybernetic” system that is a *self-monitoring, self-regulating* system.

- **Feedback** is data about the performance of a system.
- **Control** is a major system function that monitors and evaluates feedback to determine whether the system is moving toward the

achievement of its goal. It then makes any necessary adjustments to the input and processing components of the system to ensure that proper output is produced.

It is frequently included as part of the concept of the control function because of the essential role feedback plays in control. The following diagram shows the relationship of feedback and control to the other components of a system. The flow of feedback data to the control component and the resulting control signals to the other components are shown as dotted arrows. This emphasized that the feedback and control