Unit - 1

Information System

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1.0 Objectives

After going through this unit, you should be able to :–

- Understand the information system and its impact.
- Learn the characteristics, components of an information system.
- Know about the classification of information.
- Learn the function ,dimension and approaches of information system.

1.1 Introduction

We are in the midst of a swiftly moving river of technology and business innovations that is transforming the global business landscape. An entirely new Internet business culture is emerging with profound implications for the conduct of business. You can see this every day by observing how business people work using high-speed Internet connections for e-mail and information gathering, portable computers connected to wireless networks, cellular telephones connected to the Internet, and hybrid handheld devices delivering phone, Internet, and computing power to an increasingly mobile and global workforce.

This unit will briefly discuss the information systems and its impact on business, organizations and individuals. It is a well-realised fact that despite the ever-increasing importance of the information resource, evaluating the actual benefits of using information systems remains problematic. Nevertheless, due to cost and time factors involved in designing and implementing information systems, it is essential to work out cost benefit analysis and total cost of owning the system. We will be discussing these as well as the Empirical studies which have been getting due recognition due to the human angle involved in the information systems implementation. The cultural considerations are the other important factor in information systems implementation which will be discussed here.

1.2 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 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.

1.2.1 Information Vs Data

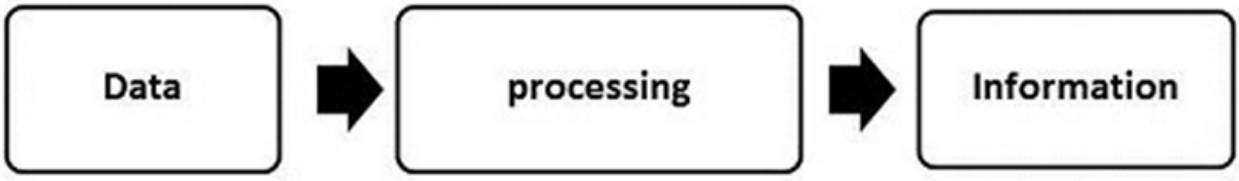
Data can be described as unprocessed facts and figures. Plain collected data as raw facts cannot help in decision-making. However, data is the raw material that is organized, structured, and interpreted to create useful information systems.

Data is defined as ‘groups of non-random symbols in the form of text, images, voice representing quantities, action and objects’.

Information is interpreted data; created from organized, structured, and processed data in a particular context.

According to Davis and Olson : “Information is a data that has been processed into a form that is meaningful to recipient and is of real or perceived value in the current or the prospective action or decision of recipient.”

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 understand and use.



1.2.2 Information, Knowledge, and Business Intelligence

Professor Ray R. Larson of the School of Information at the University of California, Berkeley, provides an Information Hierarchy, which is :–

- Data - The raw material of information.
- Information - Data organized and presented by someone.
- Knowledge - Information read, heard, or seen, and understood.
- Wisdom - Distilled and integrated knowledge and understanding.

Scott Andrews' explains Information Continuum as follows :–

- Data - A Fact or a piece of information, or a series thereof.
- Information - Knowledge discerned from data.
- Business Intelligence - Information Management pertaining to an organization's policy or decision-making, particularly when tied to strategic or operational objectives.

1.2.3 Information/Data Collection Techniques

The most popular data collection techniques include :–

- **Surveys :** A questionnaire is prepared to collect the data from the field.
- **Secondary data sources or archival data :** Data is collected through old records, magazines, company website, etc.
- **Objective measures or tests :** An experimental test is conducted on the subject and the data is collected.
- **Interviews :** Data is collected by the system analyst by following a rigid procedure and collecting the answers to a set of pre-conceived questions through personal interviews.

1.2.4 Attributes Of Information

- **Accuracy :** The degree of precision decides the accuracy in the representation.

- **Presentation :** Forms may be qualitative or quantitative, numeric or text, picture or graphics, print or display, summarized or detail.
- **Frequency :** How often the information is needed and updated ?
- **Scope of reporting :** the coverage of information is represented in terms of area entities.
- **Source of collection :** It can be internal or external to the organization.
- **Timescale :** Information may be related to past, current, future or it can cover the entire time span.
- **Relevance :** The information has relevance to the situation and also to the decision-making and data.
- **Complete :** The information that covers all the aspect of decision, scope is known as complete information.
- **Timeliness :** The receipt of information on time when needed is highly useful.
- **Redundant information :** The extra unnecessary repetition of data is called as redundant information.

1.2.5 Information A Quality Product

Information is a product of data processing. The quality of information is high if it creates the managerial impact leading to attention, decision and action.

The quality of the information can be measured in four dimensions :–

- Utility.
- Satisfaction.
- Errors.
- Bias.

Utility dimension has 4 facets : the firm, the time, access and the possession. If the information is represented in the form manager requires then its utility increases. If the information is available when needed then the utility is optimized. If the information is easily and quickly accessible through the online process, its utility gets efficient technology. If the information is possessed by the manager who needs it then its utility is highest. To increase the utility the cost factor should be increased.

Since the information is available to many users in system the subjectiveness would vary. The degree of **satisfaction** could determine the quality of information. If the organization has high degree of satisfaction then the information can be available at all the levels to the manager.

Errors occur because of various reasons such as incorrect data measurement, incorrect data collection, failure in data processing, incomplete data, poor application of data and

control system and deliberate biasing. To clear the errors it is necessary to follow the methods of system analysis & design.

Procedure of communicating the information should be such that the system is able to detect the degree and the nature of the **bias** and correct information accordingly.

1.3 Components of Information Systems

An information system is essentially made up of five components hardware, software, database, network and people. These five components integrate to perform input, process, output, feedback and control.

Hardware consists of input/output device, processor, operating system and media devices. Software consists of various programs and procedures. Database consists of data organized in the required structure. Network consists of hubs, communication media and network devices. People consist of device operators, network administrators and system specialist.

Information processing consists of input; data process, data storage, output and control. During input stage data instructions are fed to the systems which during process stage are worked upon by software programs and other queries. During output stage, data is presented in structured format and reports.

1.4 Classification of Information

In any given organization information can be classified based on the characteristic and its application

1.4.1 Classification by Characteristic

Based on Anthony's classification of Management, information used in business for decision-making is generally categorized into three types :–

Strategic Information : Strategic information is concerned with long term policy decisions that defines the objectives of a business and checks how well these objectives are met. For example, acquiring a new plant, a new product, diversification of business etc., comes under strategic information.

Tactical Information : Tactical information is concerned with the information needed for exercising control over business resources, like budgeting, quality control, service level, inventory level, productivity level etc.

Operational Information : Operational information is concerned with plant/business level information and is used to ensure proper conduction of specific operational tasks as planned/intended. Various operator specific, machine specific and shift specific jobs for quality control checks comes under this category.

1.4.2 Classification by Application

In terms of applications, information can be categorized as :–

- **Planning Information :** These are the information needed for establishing standard norms and specifications in an organization. This information is used in strategic, tactical, and operation planning of any activity. Examples of such information are time standards, design standards.
- **Control Information :** This information is needed for establishing control over all business activities through feedback mechanism. This information is used for controlling attainment, nature and utilization of important processes in a system. When such information reflects a deviation from the established standards, the system should induce a decision or an action leading to control.
- **Knowledge Information :** Knowledge is defined as "information about information". Knowledge information is acquired through experience and learning, and collected from archival data and research studies.
- **Organizational Information :** Organizational information deals with an organization's environment, culture in the light of its objectives. Karl Weick's Organizational Information Theory emphasizes that an organization reduces its equivocality or uncertainty by collecting, managing and using these information prudently. This information is used by everybody in the organization; examples of such information are employee and payroll information.
- **Functional/Operational Information :** This is operation specific information. For example, daily schedules in a manufacturing plant that refers to the detailed assignment of jobs to machines or machines to operators. In a service oriented business, it would be the duty roster of various personnel. This information is mostly internal to the organization.
- **Database Information :** Database information construes large quantities of information that has multiple usage and application. Such information is stored, retrieved and managed to create databases. For example, material specification or supplier information is stored for multiple users.

1.5 Quality of Information

Information is a vital resource for the success of any organization. Future of an organization lies in using and disseminating information wisely.

Good quality information placed in right context in right time tells us about opportunities and problems well in advance.Good quality information: Quality is a value that would vary according to the users and uses of the information.

According to Wang and Strong, following are the dimensions or elements of Information Quality :–

- **Intrinsic :** Accuracy, Objectivity, Believability, Reputation.
- **Contextual :** Relevancy, Value-Added, Timeliness, Completeness, Amount of information.
- **Representational :** Interpretability, Format, Coherence, Compatibility
- **Accessibility :** Accessibility, Access security.

Various authors propose various lists of metrics for assessing the quality of information. Let us generate a list of the most essential characteristic features for information quality :–

- **Reliability :** It should be verifiable and dependable.
- **Timely :** It must be current and it must reach the users well in time, so that important decisions can be made in time.
- **Relevant :** It should be current and valid information and it should reduce uncertainties.
- **Accurate :** It should be free of errors and mistakes, true, and not deceptive.
- **Sufficient :** It should be adequate in quantity, so that decisions can be made on its basis.
- **Unambiguous :** It should be expressed in clear terms. In other words, in should be comprehensive.
- **Complete :** It should meet all the needs in the current context.
- **Unbiased :** It should be impartial, free from any bias. In other words, it should have integrity.
- **Explicit :** It should not need any further explanation.
- **Comparable :** It should be of uniform collection, analysis, content, and format.
- **Reproducible :** It could be used by documented methods on the same data set to achieve a consistent result.

1.6 Impact of Information Systems

Information systems play a role in almost every field of activity in the modern world. They have a major effect on businesses and organizations; they even have a deep impact on our private lives and our culture. Information is an organizational resource and it is a very important production source in information-based industries and services (e.g., banking).

The role of business information systems has changed and expanded over the last four decades. In the incipient decade (1950-1960) it started with calculator (bookkeeping; Texas Instruments, HP) and moved on to computers (accounting, payroll; mainframe, mini (IBM)). However, computers could be afforded during that period by only the largest organizations. They were used to record and store bookkeeping data such as journal entries and specialised

journals. These were used to generate a **limited range of predefined reports, including income statements, balance sheets and sales reports.** They were trying to perform a decision-making support role, but they were not up to the task.

By the 1970s **"Management Information system and decision support systems"** were introduced. They were interactive in the sense that they allowed the user to choose between numerous options and configurations. Not only was the user allowed to customize outputs; they also could configure the programs to their specific needs. There was a cost though. As part of the mainframe leasing agreement, it was possible to have an IBM system developer permanently on site by paying.

The main development in the 1980s was the introduction of **decentralised computing**. Instead of having one large mainframe computer for the entire enterprise, numerous PCs were spread around the organization. This meant that instead of submitting a job to the computer department for batch processing and waiting for the experts to perform the procedure, each user had has/her own computer that could be customize for their own purposes. People who used these systems and struggled with DOS protocols, BIOS functions, and DOS batch programming during that period, tell their stories with pride.

As people became comfortable with their new skills, they discovered all the things their system was capable of. Computers, instead of creating a paperless society, as was expected, produced mountains of paper, most of it of no value. Mounds of reports were generated just because it was possible to do so. This information overload was mitigated somewhat in the 1980s with the introduction of **"executive information systems"**. They streamlined the process, giving the executive exactly what s/he wanted, and only what was wanted.

The 1980s also saw the first commercial application of artificial intelligence techniques in the form of **"expert systems"**. These programs could give advice within a very limited subject area. The promise of decision making support, first attempted in management information systems back in the 1960s, had step-by-step, come to fruition.

The 1990s saw the introduction of the Communicators (e-mail, document management; networks; Microsoft, Cisco) and *Strategic information system*. These systems used information technology to enable the concepts of business strategy.

The role of business information systems had now expanded to include strategic support. The latest step was the commercialization of the Internet, and the growth of intranets and extranets at the turn of the century.

All indications are that e-commerce will continue to grow in the coming years. e-commerce, or the use of the internet and the web to conduct business, is typically categorised into business-to-consumer (B2C), business-to-business (B2B), and intra-organizational e-business. Businesses, governments, and nonprofit organizations are increasingly investing in information technology (IT) infrastructures to be able to conduct digitally enabled transactions. Online shoppers, constituting the B2C segment, spent a record Rs.782 billion during the year

2005, according to Research Giant Nielsen / ComScore, representing a 24 percent increase from 2004. While we have witnessed promising growth in the B2C area, there is a tremendous opportunity for generating business value from B2B e-commerce.

With all these developments the **impact of the Information Systems** is that at present expectations have shifted towards **"Now Economy and Integrated Economy"**.

(a) "**Now economy**", a real-time enterprise – organization that is expected to react instantaneously to changes in its business. To provide "instant gratification" to customers, products and services to be delivered to customers: Anytime (24/7), anywhere (global reach), any form (mass customisation), any price (dynamic pricing depending on real-time supply-demand adjustment). This will require Real-time Monitoring, Reporting and Decision-making.

(b) "**Integrated economy**" – suppliers, customers, affinity groups, and competitors. We may in due course of time observe all the mega-mergers and alliances and mass marketing being slowly replaced by molecular marketing with specific customer groups. Businesses have already started moving outside the boundaries of countries. Business Process Outsourcing across countries is already a reality.

Social Global Impact of Information Systems

Information technology is not the cause of the changes we are living through. But without new information and communication technologies none of what is changing our lives would be possible. In the 1990s the entire planet is organised around telecommunicated networks of computers at the heart of *information systems* and communication processes. The entire realm of human activity depends on the power of information, in a sequence of technological innovation that accelerates its pace by month. Genetic engineering, benefiting from this wealth of information processing capacity, is progressing by leaps and bounds, and is enabling us, for the first time, to unveil the secrets of living matter and to manipulate life with extraordinary potential consequences. Software development is making possible user-friendly computing, so that millions of children, when provided with adequate education, can progress in their knowledge, and in their ability to create wealth and enjoy it wisely, much faster than any previous generation. Internet today used by about 100 million people, and doubling this number every year, is a channel of universal communication where interests and values of all sorts coexist, in a creative cacophony. Certainly, the diffusion of information and communication technology is uneven. Most of Africa is being left in a technological apartheid, and the same could be said of many other regions of the world.

Technology does not solve social problems. But the availability and use of information and communication technologies are a pre-requisite for economic and social development in our world. *They are the functional equivalent of electricity in the industrial era.* Econometric studies show the close statistical relationship between diffusion of information technology, productivity and competitiveness for countries, regions, industries and firms. They also show

that an adequate level of education in general and of technical education in particular, is essential for the design and productive use of new technologies. But neither the sheer number of scientists and engineers nor the acquisition of advanced technology can be a factor of development by itself without an appropriate organizational environment.

The crucial role of information and communication technologies in stimulating development is a two-edged sword. On the one hand, it allows countries to leapfrog stages of economic growth by being able to modernize their production systems and increase their competitiveness faster than in the past. The most critical example is that of the Asian Pacific economies, and particularly the cases of Hong Kong, Taiwan, Singapore, Malaysia and South Korea. This is so despite the current financial crisis, which is unrelated to competitive performance and may be related, in fact, to the attractiveness of booming Asian economies to global capital flows. On the other hand, for those economies that are unable to adapt to the new technological system, their retardation becomes cumulative. Furthermore, the ability to move into the Information Age depends on the capacity of the whole society to be educated, and to be able to assimilate and process complex information. This starts with the education system, from the bottom up, from the primary school to the university. It relates, as well, to the overall process of cultural development, including the level of functional literacy, the content of the media, and the diffusion of information within the population as a whole.

The IT executive must meet these challenges head-on, contending with an environment where businesses are more interconnected and network-enabled than ever before, and information system capabilities will determine the success and failure of core business capabilities. **Today's technology executives must manage risk and ensure that their IT initiatives and investments deliver**:

- The **high availability** and **performance** required meeting the needs of the global business environment, ensuring that transactions are processed with utmost reliability and security;
- Collaboration between disparate and geographically dispersed development teams around the globe;
- The foresight and capability to support emerging technology initiatives such as service-oriented architectures (SOA).

1.7 Function of an Information System

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 more 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.

An information system contains information about an organization and its surrounding environment. Three basic activities—input, processing, and output—produce the information organizations need. Feedback is output returned to appropriate people or activities in the organization to evaluate and refine the input. Environmental factors such as customers, suppliers, competitors, stockholders, and regulatory agencies interact with the organization and its information systems.

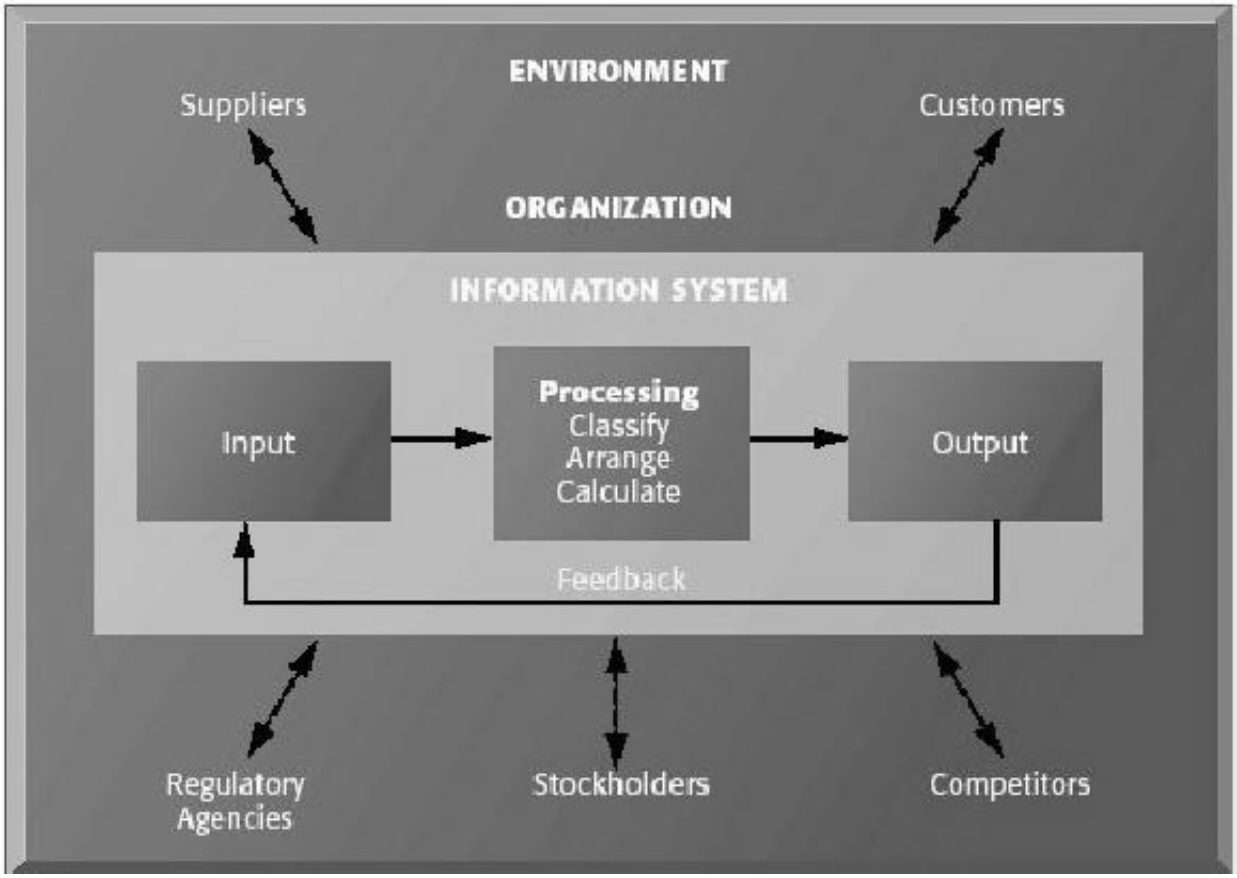
Example : In Integrated Volume Planning system of vehicles, raw input consists of dealer identification number, model, color, and optional features of cars ordered from dealers. Computers store these data and process them to anticipate how many new vehicles to manufacture for each model, color, and option package. The output would consist of orders to suppliers specifying the quantity of each part or component that was needed and the exact date each part was to be delivered to production facilities to produce the vehicles that customers have ordered. The system provides meaningful information such as what models, colors, and options are selling in which locations; the most popular models and colors; and which dealers sell the most cars and trucks. The system requires numbers or codes for identifying each vehicle part or component and each supplier. Informal information systems (such as office gossip networks) rely, by contrast, on unstated rules of behavior. There is no agreement on what is information or on how it will be stored and processed. Such systems are essential for the life of an organization, but an analysis of their qualities is beyond the scope of this text.

Formal information systems can be either computer based or manual. Manual systems use paper-and-pencil technology. These manual systems serve important needs. Computer-Based Information Systems (CBIS), in contrast, rely on computer hardware and software technology to process and disseminate information. From this point on, when we use the term information systems, we are referring to computer-based information systems—formal organizational systems that rely on computer technology. eg.: United Parcel Service (UPS) invests heavily in information systems technology to make its business more efficient and customer- oriented. It uses an array of information technologies including bar-code scanning systems, wireless networks, large mainframe computers, handheld computers, the Internet, and many different pieces of software for tracking packages, calculating fees, maintaining customer accounts, and managing logistics.

Although computer-based information systems use computer technology to process raw data into meaningful information, there is a sharp distinction between a computer and a computer program on the one hand, and an information system on the other. Electronic computers and related software programs are the technical foundation, the tools and materials,

of modern information systems. Computers provide the equipment for storing and processing information. Computer programs, or software, are sets of operating instructions that direct and control computer processing. Knowing how computers and computer programs work is important in designing solutions to organizational problems, but computers are only part of an information system. Using a handheld computer called a Delivery Information Acquisition Device (DIAD), UPS drivers automatically capture customers' signatures along with pickup, delivery, and time-card information.UPS information systems use these data to track packages while they are being transported.

The function of an information System can be represented pictorially as given below



Function of an Information System

Managers and business firms invest in IT and systems because they provide the economic value to the business. From a business perspective, information systems are part of a series of value-adding activities for acquiring, transforming and distributing the information that managers can use to improve decision making, enhance organizational performance to increase the firm profitability. Using the information systems it is expected to understand the organization, management and IT shaping the systems. An information system creates value for the firm as an organizational and management solution to challenges posed by the environment .

1.8 Dimensions of Information Systems

Organization

Information system is the integral part of the organization. The key elements of organization are its people, structure, business process, politics, and culture. Organizations are composed of different levels and specialties in terms of levels and functions. An organization coordinates work through a structured hierarchy. It can be formal or informal in nature. Organization requires many different kinds of skills and people such as knowledge workers, data workers and production workers. Each organization has a unique culture. Different levels and specialties in an organization create different interests and points of view.

Management

Management is responsible to take a sense out of many situations faced by organizations, make decisions and formulate action plans to solve the problems. It rests to the managerial level people. It is important to know the managerial roles and decisions vary at different levels of the organization such as senior, middle, operational and junior manager. All the level of management is expected to be creative, to develop novel solutions to a broad range of problems. Each level of management has different needs and requirements.

Technology

IT is one of the tools to cope up with the change. Computer hardware is the physical equipment used for input, processing and output activities in system. Computer software consists of detailed preprogrammed instructions that control and coordinate the hardware components. Storage technology includes both the physical media for storing data in magnetic disk, optical disk, tape etc. Communication technology consisting both the physical and software recourses links the various parts of hardware and transfers data from one location to other. Computers and communication equipments can be connected into network for sharing the resources.

1.9 Contemporary Approaches to Information System

Multiple perspectives on information systems show that the information systems are the sociotechnical systems. It can be divided into two approaches :–

Technical approach

This emphasizes mathematically based models to study information systems as well as the physical technology and formal capabilities of these systems. Computer science is concerned with establishing methods of computation, storage and access. Management science emphasizes on development of models for decision making and management practices.

Behavioral approach

It is concerned with the issues like strategic business integration, design, implementation, utilization and management. It majorly focuses on the cognitive style of an individual. It also focuses on technical solutions, changes in attitudes, management and organizational policies.

1.10 Information System Architecture

The architecture is an art and science of designing.

An information system architecture is a formal definition of the business processes and rules, systems structure, technical framework, and product technologies for a business or organizational information system.

An information system architecture usually consists of four layers :–

- Business process architecture,
- Systems architecture,
- Technical architecture,
- Product delivery architecture.

The architecture of an information system encompasses the hardware and software used to deliver the solution to the final consumer of services.

The architecture is a description of the design and contents of a computerized system. If documented, the architecture may include information such as a detailed inventory of current hardware, software and networking capabilities; a description of long-range plans and priorities for future purchases, and a plan for upgrading and/or replacing dated equipment and software.

The architecture should document: What data is stored? How does the system function? Where are components located? When do activities and events occur in the system? And Why does the system exist?

Information system architecture is a blue print used to develop, implement, and maintain the elements in the organization.

Business architecture is a blue print of enterprise that provides a common understanding of the organization and is used to align objectives and demands.

A **System architecture** is the conceptual model that defines the structure, behavior and more views of the systems. Here we set the conventions, rules and standards employed in a system.

A **Technical architecture** defines all the Technical requirements like operational, performance, etc.

Product delivery architecture as the information regarding the delivery of the product, maintenance, etc.

1.11 Information Technology Leadership and Strategic Planning

IT strategy is a comprehensive plan that information technology management professionals use to guide their organizations.Information technology (IT) is an essential part of any organization, and with rapidly changing technologies, funding challenges, and conflicting priorities, it's essential for organizations to have an effective plan or roadmap to follow. As Crawford Greenewalt, the former president of the DuPont Company, stated, "Every moment spent planning saves three or four in execution." It not only saves in execution time, but an effective IT strategic plan can result in a significantly higher return on investment.

Effective strategic plans help ensure that limited resource and funding can be prioritized for the projects and initiatives that provide the greatest benefit to the organization. Most IT strategic plans are three- to five-year plans containing goals, objectives, and guiding principles. Some plans are very specific, detailing costs, resources, and timeframes, while others can be more general, leaving it up to the department manager or senior management to determine the specifics to fulfill the goals and objectives.

The process followed to develop an IT strategic plan can be just as important as the plan itself. Successful IT strategic plan development should follow a comprehensive process focused on obtaining full stakeholder involvement. Since many stakeholders are involved in funding and implementing parts of a plan, getting their buy-in is essential. **The best way to obtain buy-in is to include them in the plan development process** as much as possible, and by doing so, it can help ensure that specific goals and objectives in the plan receive the necessary funding and resources to implement. The project must also receive full support from upper management so that stakeholders understand the importance of the project and will commit their time and resources to it.

Many organizations utilize consultants to undertake the process of creating a plan. This helps ensure objectivity and dedicates resources that can efficiently create a plan, usually within a three- to four-month timeframe depending on the scope of the project and the size of the organization. If an organization believes it has the expertise and resources to undertake the plan creation in-house, it's important that stakeholders outside of IT are directly involved in the plan's creation, as this will help with objectivity and buy-in across the organization.

Plan creation also needs to follow best practices in project management. This means creating a project charter, developing and following a detailed project plan, and forming a project team with a project manager to guide and oversee the process. **It is important to define roles and responsibilities up front.** The project team will still play a significant role in the project, and it's essential that the project team is composed of representatives from all major departments.

The next stage in creating a plan is the **discovery phase**. This is where information is gathered and feedback from stakeholders is garnered. A variety of documents will be needed, including hardware and software inventories, telecommunications services, organization charts,

network topology diagrams, policies and procedures, disaster recovery/continuity of operations plans, and other pertinent documents.

The consultant should also facilitate collecting feedback from all stakeholders. This can be accomplished in a variety of ways, including employee surveys, focus groups, and stakeholder interviews. The goal of the feedback is to assess how IT is performing and gather perspectives on what challenges and opportunities IT faces. The consultant will also want to obtain feedback from outside agencies, external customers, and gather industry best practices data.

The next phase of the project is the **analysis phase**. After all the data has been collected, the consultant will analyze the data, look at best practices, and perform gap analysis to determine what deficiencies exist in IT and develop initial findings and recommendations. It's important for the consultant to obtain feedback from the project team to ensure the initial findings are on target. Some of the specific recommendations will likely require additional research and might include emerging technologies that may not be widely deployed.

The next phase is the **document phase**. The consultant will form the goals and objectives, develop guiding principles, and write the plan. Guiding principles help with decision-making and are intended to assist IT and management when issues or technologies come up that are not part of the goals and objectives. The project team will need to provide plenty of feedback in the document phase and help with prioritizing the strategic initiatives or plan objectives. The group will also want to ensure that funding, resource, and timeframes are realistic and achievable. The consultant will then write the detailed plan and obtain feedback from the project group and other designated stakeholders.

The final phase is the **review and revise phase**. This is where the consultant takes the feedback and then revises and finalizes the plan. Often, the consultant or project manager will present the plan to senior management, IT staff, and other key stakeholders and publish it for internal, and sometime external, distribution, depending on the organization.

After the plan is completed, it's just as important to implement the objectives and initiatives within the specified timeframe and within the planned budget specified. Since a lot can happen during the span of a three- to five-year plan, it's important to track progress and update the plan. A Chinese proverb states it best, "A good plan is always under construction." No plan will be perfectly implemented, as external factors like the economy, funding, and emerging technologies could alter the course of the plan. **Disruptive technologies can especially alter the implementation**. For example, no one could have predicted the impact that the original Apple iPhone had on mobile computing, which forced nearly every organization to change plans and embrace this new, groundbreaking technology. After three to five years, the organization should plan on developing a new IT strategic plan and begin the process all over again.

Hence an IT strategy should cover all facets of technology management, including cost management, human capital management, hardware and software management, vendor

management, risk management and all other considerations in the enterprise IT environment. Executing an IT strategy requires strong IT leadership; the chief information officer (CIO) and chief technology officer (CTO) need to work closely with business, budget and legal departments as well as with other user groups within the organization.

Chief information officer (CIO) is an executive job title commonly given to the person at an enterprise in charge of **Information Technology (IT)** strategy and the computer systems required to support an enterprise's objectives and goals.

The Chief Technology Officer (CTO) most commonly has oversight for the information systems that run the enterprise's operations, as well as the technologies that drive the business. The CIO is usually the executive who manages research and development, oversees the development of technologies into products and services, and ensures that all IT initiatives are aligned with business goals.

In personal or business computing, a user group is a set of people who have similar interests, goals, or concerns. The members have regular meetings where they can share their ideas.

Ideally, the members of a user group live in the same geographic area, so they can get together in person. However, some user groups have members distributed throughout the world, and they meet using Internet chat rooms, message boards, or mailing lists. Members may also correspond by telephone and e-mail on a one-to-one basis. User groups often have Web sites that each member can visit on a regular basis to stay informed.A user group may be devoted to a particular technology, application, or corporation. For example, a digital-photography user group might discuss the assets and limitations of various digital cameras and image-processing programs.

A user group devoted to wireless Internet would share their experiences with the various providers of that technology. Some user groups are involved only with the products of a particular corporation. When devoted to a narrow range of products or ideas, the user group is sometimes called a special interest group (SIG).

1.12 Summary

This unit gives an introduction to information system. In this the information is categorized on the basis of its characteristics and its application in business. The function of information system and its socio global impact is also discussed in this chapter. Organization, Technology and Management are the three dimensions of information system. Technical and Behavioral approaches of information System are also explained in this unit.

1.13 Questions for Exercise

1. **What are the dimensions of information system?**
2. **Describe the capabilities of digital Firm. Why are digital firms so powerful?**

3. **Explain the term Globalization.**
4. **List and describe why information systems are so important for business today.**
5. **What is the purpose of information system from business perspective? What role does it play in the business information value chain.**
6. **What are the attributes of Information?**
7. **How do you measure the quality of information? Explain.**
8. **What is classification of information? Explain.**
9. **The character and value of information is linked to the people in the organization and to the management process in the organization. Explain.**
10. **What are the contemporary approaches to information system.**
11. **Discuss in detail the Information System architecture.**
12. **Discuss the Information Technology leaders.**
13. **What is Information Technology Strategic planning and discuss its different phases.**

1.14 Further Readings

1. Management Information System, Oz Thomson Learning 5th edition
2. Management Information System, W.S.Jawadekar, 3rd edition, TMH
3. Management Information System, James O'Brien, 7th edition, TMH
4. Information Systems the foundation of E-Business, Steven Alter, 4th Edition Person education
5. Information Technology for management, Turban, McLean, Wetherbe, 4th edition, Wiley
6. Management Information Systems, Loudon and Loudon, 10th edition, Pearsons Educations
7. Management Information Systems, Jaswal Oxford Press

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