

BIM

Semester: I

FOUNDATION OF INFORMATION TECHNOLOGY

Information Technology and Business



REFERENCE NOTE

Unit-2: Information Technology and Business

Business in the information age

According to the United Nations Public Administration Network, the Information Age was formed by capitalizing on computer microminiaturization advances, which led to modernized information and communication upon broader usage within society becoming the driving force of social evolution.

The Information Age, also called the Computer Age, the Digital Age and the New Media Age, is coupled tightly with the advent of personal computers. Companies whose businesses are built on digitized information have become valuable and powerful in a relatively short period of time

The data represented in organized and structured format that can help in evaluating certain problems or making decisions termed as information in computer. In simple term, we can say, processed data is called information.

Characteristics of information

I) Accuracy

Accuracy of data plays vital role in helping the decision making. So as accurate the information will be, better will be decision making. Accuracy of information means the ratio of correct information to the total information gathered over certain time period.

II) Validity

Information should be generated with help of reliable and valid data to be helpful in contributing to effective decision making.

III) Completeness

Information must be complete to contribute in decision making.

IV) Concise:

An accurate information will always be centralized and to the point. It should not contain unnecessary details not related to the event on which decision making is in progress.

V) Relevant

Information must be relevant to the topic. It should not be messed up with unwanted details to confuse decision makers.

VI) Timeliness:

Information should on time. Delayed information is not very useful. For example, if a newspaper publish the breaking news of today after one month then would that be so relevant to anyone. That is why to make more impact the information should follow the timeliness.

VII) Reliable

The information should always be reliable and thus authentic to help in taking decision on any purpose,

Information System

- Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings."
- Information systems are interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization.
- Information systems have become as integrated into our daily business activities as accounting, finance, operations management, marketing, human resource management, or any other major business function.
- Information systems and technologies are vital components of successful businesses and organizations—some would say they are business imperatives.

Information Technology

- Information technologies, including Internet-based information systems, are playing vital and expanding roles in business.
- Information technology can help all kinds of businesses improve the efficiency and effectiveness of their business processes, managerial decision making, and workgroup collaboration, which strengthens their competitive positions in rapidly changing marketplaces.

Role of information Technology in Business

Information technology plays a major role in reengineering most business processes. The speed, information-processing capabilities, and connectivity of computers and Internet technologies can substantially increase the efficiency of business processes, as well as communications and collaboration among the people responsible for their operation and management.

Information technology (IT) is the backbone of technological innovation. This innovation has played a massive role in developing business management. Today, there is not a single business in this world that does not use various IT tools and technologies to conduct day-to-day operations, design marketing

strategies, and even recruit employees. Let's take a look at how information technology drives business management today.

1. Streamlining Operations

Information technology is now used in daily operations of any business. IT has enabled an ease of doing business by managing overheads, regulating recruitment, dealing with market uncertainty, managing inventory, monitoring employee performance, dealing with employee grievances and so much more.

Today, IT has also automated various manual and time consuming tasks to speed up regular operations. For example, there are multiple software available today to record the daily attendance of employees, process leaves, and compute monthly salaries of employees with minimal human interference.

2. Implementing Cloud-based Solutions

Cloud technology is another useful tool that helps businesses store their data on third party servers through the internet. It is a revolutionary tech that has helped small and large businesses massively cut down costs and opt for subscription packages to suit their business needs.

Businesses do not have to worry about hiring a substantial IT team to maintain and manage large servers within their workspace. They can pay third party companies to store relevant data. Things like servers crashing, downtime and data being lost are now a thing of the past with cloud technologies coming into the picture.

3. Facilitating Cyber Security

As more and more businesses store data online, the risk of cyber-attacks arises. Even third party companies that offer cloud solutions to businesses need to safeguard the data of their clients from cyber-attacks. Businesses in the banking and finance sector need to be more concerned about cyber security. There are many top management colleges in Nashik that offer a comprehensive undergraduate program in cyber security to help create skilled IT professionals for the future. Businesses that develop a proper cyber security network can assure their clients that their data will always remain safe and grow their client base in this manner.

4. Conducting Data Analysis

Companies depend on IT professionals to gather, assimilate, segregate and study relevant data to understand current market trends and customer behavior. They then use the data to make various organizational-level decisions to develop their business.

Data analysis is another important tool used by businesses to develop business strategy, analyses market forecasts, stay ahead of the competition, understand customer behavior and develop product development strategies accordingly. It can also help businesses stay ahead of the competition in a cut-throat market.

5. Enabling Efficient Communication

Easy and efficient communication is one of the main advantages of information technology. Communication does not only refer to communication done on an organisational level, it also means communication done with clients and customers.

IT software like emails, WhatsApp, personalized chatbots, feedback forms etc. can be categorized as a form of communication. Living in the information technology era means that businesses can receive instantaneous communication. This communication includes sales figures, consumer feedback, customer enquiries, market trends and so much more.

6. Enhancing Customer Experience

Most businesses today use IT to enhance their customer's experience and maintain a great relationship with customers. Businesses use tools like CRM (Customer Relationship Management) to keep a track of customer behavior, any issues faced by the customer, and ensure quick resolution of issues.

Suppose a customer has an issue with a product purchased or a service used, they can call up the company which will be captured by the CRM. A customer relationship executive will then review the customer's shopping history through the CRM program and efficiently solve the issue without a glitch or a delay.

7. Reducing Operational Cost

Overall, implementing the above mentioned IT software and programs can help businesses reduce their operational costs by a large margin. They do not need to recruit more staff members to do tasks that can be done by software and programs. Instead, they can instead recruit top notch professionals from the industry to drive their business ahead.

This helps businesses invest more money on other avenues such as marketing, enhanced cyber security, employee rejuvenation programs and better financial investments for a sound financial portfolio. Better returns and finances means the company is more stable and reliable for customers and employees.

Organizational structure and IT Support

Organization refers to a collection of people, who are involved in pursuing defined objectives can be understood as a social system which comprises all formal human relationships. The organization encompasses division of work among employees and alignment of tasks towards the ultimate goal of the company.

Every organization has its own typical management structure that defines and governs the relationships between the various employees, the tasks that they perform, and the roles responsibilities and authority provided to carry out different tasks. An organization that is well structured achieves effective coordination, as the structure defines formal communication channels, and describes how separate actions of individuals are linked together.

Organizational structure defines the manner in which the roles, power, authority, and responsibilities are assigned and governed, and depicts how information flows between the different levels of hierarchy in an organization. An organizational chart is the visual representation of this structure. It is therefore very important for an organization to take utmost care while creating the organizational structure. The structure should clearly determine the reporting relationships and the flow of authority as this will support good communication- resulting in efficient and effective work process flow. Some of the critical factors that need to be considered are:

- The size of the organization
- Nature of the business
- The objectives and the business strategy to achieve them
- The organization environment

Most common types of organizational structures

1. Hierarchical organizational structure:

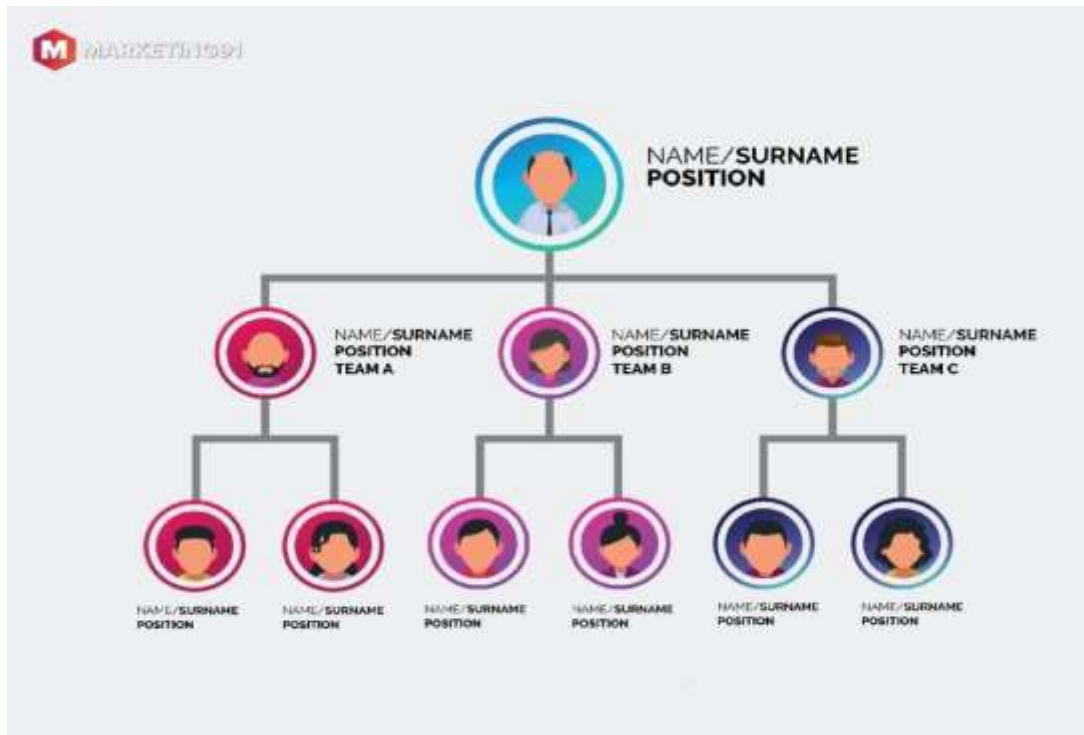
A hierarchical organizational structure contains a direct chain of command from the top of the organization to the bottom.

Advantages

1. Control orientation
2. Clear career and promotion path
3. Clearly defined authority

Disadvantages

1. Poor communication
2. Slow decision making
3. Added costs



2. Functional Structure

A functional organizational structure is a business structure that groups employees by specialty, skill, or related roles.

The functional organizational structure works best for larger companies that employ multiple people with similar roles.



Advantages

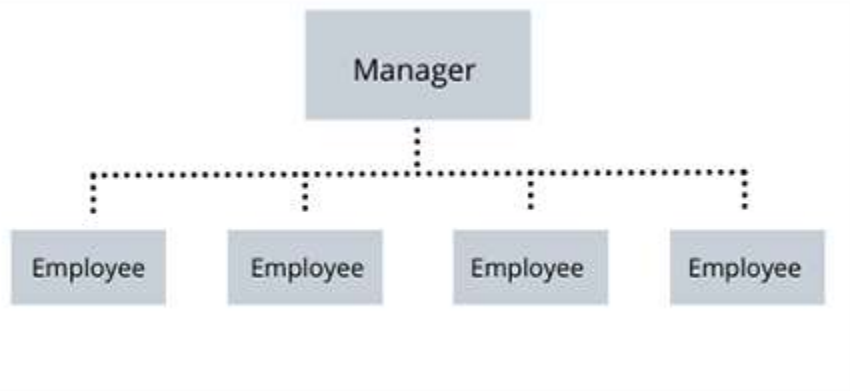
1. Increase productivity
2. Skill development
3. Clarity
4. Minimized cost of operation

Disadvantages

1. Hindered decision making
2. Competition between departments
3. Narrow scope

3. Horizontal or Flat Structure

An organizational model with relatively few or no levels of middle management between the executives and the frontline employee. Example, tech industry- amazon, Hub spot etc.



Advantages

1. Lower operating costs
2. Improved communication
3. Increased employee motivation and satisfaction

Disadvantages

1. Difficult for large organizations
2. Low employee retention
3. Create power struggles

4. Matrix Structure

A combination of two or more different kinds of organizational structures, such as project management or functional management. Example, Philips Company.



Advantages

1. Encourage collaboration
2. Increase efficiency
3. Develop new skill sets

Disadvantages

1. Unclear managerial and team roles
2. Slow decision making process
3. Too much work can cause overload
4. Difficult to measure performance

5. Network Structure

A network structure is one in which more than one organization combines to produce a good or provide a service. Example, Outsourcing.

Network organisational structure



Advantages

1. Clearer focus
2. Lower costs
3. Flexibility

Disadvantages

1. Lack of reliability and consistency
2. Lack of secrecy
3. Loss of control
4. Sacrificing of profit

IT support in Organization Structure

An IT organizational structure involves the process of how a company assigns and coordinates tasks within its IT department. Organizational structure helps to keep operations efficient by outlining specific roles and duties and optimizing the use of IT policies, systems and procedures.

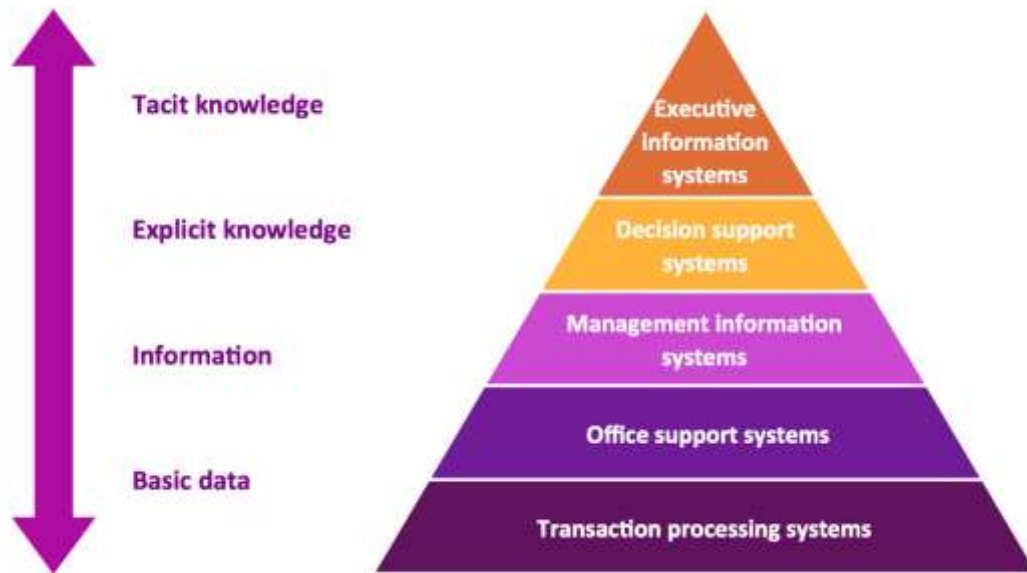
Here are various reasons organizational structure is helpful for IT teams, including:

- **Acts as a guide:** Since IT specialists, like IT technicians and IT managers, handle complex technology that involves specialized knowledge, having an organizational structure offers structure and guidance in case they need clearance on a project or equipment upgrade.
- **Helps new employees:** IT professionals who are new to a department can refer to the organizational structure to better understand who they report to in their service line.
- **Outlines leadership:** Organizational structures define the department's chain of command so IT professionals can understand who makes decisions and what the boundaries of their position are.
- **Opportunities for development:** A clear team structure defines each team member's roles, which allows IT professionals to specialize in an area like installation, repair or help desk.

Types of information systems

Information system depends mainly on the computer for handling business applications. System analysts develop several different types of information system to meet a variety of business needs. There is a class of systems collectively known as Computer Based Information Systems.

Information system is a system which processes supplied/collected data and generates information that can be used for decision making at different levels.



The types of information system are:

1. **Transaction processing systems (TPS):** It processes data resulting from business transactions, updates operational database such as sales and inventory processing and accounting systems.
2. **Office Automation systems(OAS):** The information system that supports general office work for handling and managing documents and facilitating communication is known as office automation systems.
3. **Enterprise collaboration systems (ECS):** Enterprise collaboration System Support team, workgroup, and enterprise communications and collaborations. Examples: e-mail, chat, and videoconferencing groupware systems.
4. **Management information systems (MIS):** It is the integrated modern approach of management, information and computerized system. It provides information to support the operations, management, decision making functions of an organization.
5. **Decision support systems (DSS):** It is the information system at the organization's senior level management that combines data and sophisticated analytical models or data analysis tools to support semi-structures and unstructured decision makings.
6. **Executive support systems (ESS):** It is also known as executive information system. It operates on the executive level of management. It provides critical information from many sources customized to the information needs of executives.
7. **Expert systems (ES):** Knowledge-based systems that provide expert advice and act as expert consultants to users. Examples: credit application advisor, process monitor, and diagnostic maintenance systems.
8. **Knowledge management systems (KMS):** Knowledge-based systems that support the creation, organization, and dissemination of business knowledge within the enterprise. Examples: intranet access to best business practices, sales proposal strategies, and customer problem resolution systems.
9. **Strategic information systems (SIS):** Support operations or management processes that provide a firm with strategic products, services, and capabilities for competitive advantage. Examples: online stock trading, shipment tracking, and e-commerce Web systems.
10. **Functional business systems (FBS):** Support a variety of operational and managerial applications of the basic business functions of a company. Examples: information systems that support applications in accounting, finance, marketing, operations management, and human resource management.

1. Transaction processing systems (TPS):

A Transaction Process System (TPS) is a type of information system that collects, stores, modifies and retrieves the data transaction of an enterprise. A transaction is any event that passes the ACID (Atomicity, Consistency, Isolation, and Durability) test in which data is generated or modified before storing in an Information system.

Transaction processing systems. Process data resulting from business transactions, update operational databases, and produce business documents. Examples: sales and inventory processing and accounting systems.

- Process control systems. Monitor and control industrial processes. Examples: petroleum refining, power generation, and steel production systems.
- Enterprise collaboration systems. Support team, workgroup, and enterprise communications and collaborations.

Examples: e-mail, chat, and videoconferencing groupware systems.

2. Management Information System (MIS):

A Management Information System (MIS) is a system or process that provides the information necessary to manage an organization effectively. MIS and the information it generates are generally considered essential components of prudent and reasonable business decisions.

3. Decision Support Systems (DSS):

Decision Support System (DSS) is computerized information system that helps in the decision-making process of an organization. In other words, DSS are a specific class of computerized information system that supports business and organizational decision-making activities. It helps to analyze the business information and data for making better and suitable decisions.

IT for Business

Information technology drives innovation and innovation is the path to business success Information technology fosters innovation in business. It results in smarter apps, improved data storage, faster processing and wider information distribution. It makes businesses run more efficiently and increases value, enhances quality, and boosts productivity.

Businesses that have embraced the IT systems tend to have the following characteristics

- They have more accurate business planning.
- They have more effective marketing.
- They have higher global sales
- They have more systematic management.
- They use real time monitoring
- They offer instant customer support

The technological revolution has improved businesses this century in the following five Primary ways

1. Information technology has given business the tools to solve complex problems improved hardware (more memory, faster processors, and sharper visual displays combined with smarter applications have made it easier to research data, analyze it, and Plan scalability

2. Information technology allows businesses to make better decisions Good decisions in business are based on solid market research. This can be done through engaging teams through video conferences, reviewing public sentiment on social media and industry forums, and using online surveys to get customer feedback.

3. Information technology has improved marketing Internet marketing using online advertising methods (SEO, PPC, Social Media Ads) are far more accurate ways than traditional marketing of finding target

audiences, discovering their needs, and building a marketing campaign to persuade them to buy. It's difficult to see how many people read a newspaper ad. It's easy to figure out how many people clicked on an online banner

4. Information technology has improved customer support. Customers can receive support from multiple channels telephone, emails, social media platforms, webinars, and so on. Additionally, customer relationship management systems help businesses understand customer behavior.

5. Information technology has improved resource management: Cloud computing allows a company's employees to use any device anywhere in the world to access their enterprise level software.

IT for Individuals

Technology affects almost every aspect of 21st century life, from transport efficiency and safety, to access to food and healthcare, socialization and productivity. The power of the Information Technology has enabled global communities to form and ideas and resources to be shared more easily. However, the overuse of some technology has been linked to a decline in mental health, increased social division and privacy concerns.

Some of the impacts of Information Technology in our lives in recent years are

1. Communication has improved.
2. Privacy has decreased.
3. Shopping is accessible.
4. Information access is better.
5. Virtual social lives are popular.
6. Flexible working place and time (Working from home) is a common practice.
7. Health tracking is smarter.
8. IT based job opportunities is increasing.

Computers in Past and Present

Today the computer has become indispensable in every household and comes in numerous physical forms. The first modern day computer was developed in the mid-20th century, though the concept of computer and various similar machines existed before. It actually started in 1837, when The Analytical Engine, the first fully programmable mechanical computer, was designed by Charles Babbage.

The Earlier versions were huge and bulky and occupied whole room EDSAC (Electronic Delay Storage Automatic Calculator) was one of the very first computers that could implement the stored program architecture. In comparison to them, modern computers have tiny integrated circuits and are much better in terms of capacity and speed as well a accuracy. Today's tinier version can even fit in your wrist watch and are powered from the watch battery. Personal computers can be found in almost every house today and in various forms. They are in fact the icons of the information age

What makes computers highly versatile and distinguishable from other appliances is that it can be programmed. A calculator can only calculate, just like a washing machine can only wash, but a computer can be programmed to do any kind of job. Software programs are a list of instructions that can be stored and executed by the computer.

A general computer has four major sections, the arithmetic and logical unit or ALU, the control unit or CU, memory and the interface for input and output devices. These parts of computer are interconnected by buses. The ALU, control unit, registers, and the interface for input and output devices are collectively

known as the central processing unit or CPU. The early CPUs used to be composed of different separate components, however since the 1975, the CPUs are being constructed on a single integrated circuit, the microprocessor.

The earlier version of computer used magnetic core memory but today it has been replaced by the semiconductor memory. The main memory of computer is divided in two parts. RAM or random access memory and ROM or read-only memory.

I/O is hardware by the means of which a computer can receive information from the outside world and also sends back results. Common input devices are the keyboard and mouse while common output devices include monitor and printer. In addition to these, devices containing touch screen, different types of sensors are common at present.

Internet has literally changed our lives. Today people can search all types of information on various subjects, advertise their company or products pass information to a large group of people and do much more merely by a few clicks of the mouse. Whether we want to search a new home or compare prices of the latest mobile or fill up your college form or read the latest

Harry Potter book, everything can be done on the Internet through the computer. With increase of computers and its uses, an increasing number of professions involving computers have also developed.

The advancement in computing technology is in its rapid speed. The common technologies popular at present are: cloud computing, artificial intelligence, machine learning, artificial neural network, distributed systems. IOT and many more.