IS105

Information System Principles

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Introduction

Information systems (IS) are concerned with the information that computer systems can provide to aid a company, non-profit or governmental organization in defining and achieving its goals. It is also concerned with the processes that an enterprise can implement and improve using information technology. IS professionals must understand both technical and organizational factors, and must be able to help an organization determine how information and technology-enabled business processes can provide a foundation for superior organizational performance. They serve as a bridge between the technical and management communities within an organization.

What information does the enterprise need? How is that information generated? Is it delivered to the people who need it? Is it presented to them in ways that permit them to use it readily? Is the organization structured to be able to use technology effectively? Are the business processes of the organization well designed? Do they use the opportunities created by information technology fully? Does the organization use the communication and collaboration capabilities of information technologies appropriately? Is the organization capable of adapting quickly enough to changing external circumstances? These are the important issues that businesses rely on IS people to address.

A majority of IS programs are located in business schools; however, they may have different names such as management information systems, computer information systems, or business information systems. All IS degrees combine business and computing topics, but the emphasis between technical and organizational issues varies among programs. For example, programs differ substantially in the amount of programming required.

Traditionally, many graduates of IS programs have functioned in roles that are similar to the roles for which IT programs explicitly prepare their students. Information systems graduates continue to fill these roles, but the new programs in information technology offer an alternative path to these positions.

Occupations in this field include:

- Project Managers
- Chief Information Officers (CIO)
- Technical Writers
- System Analysts
- Data Communication Analysts

WHY INFORMATION SYSTEMS ARE IMPORTANT

An understanding of the effective and responsible use and management of information systems is important for managers and other business knowledge workers in today's global information society. Information systems and technologies have become a vital component of successful businesses and organizations. Information systems constitute an essential field of study in business administration and management, as they are considered a major functional area in business operations.

Having an understanding of information systems provides added insight into other fields, such as computer networking, information security and database management. It also develops ideas about ways to use information systems and technology to solve problems in business and communication.

WHAT YOU NEED TO KNOW

Managerial end users need to know how information systems can be employed successfully in a business environment. The important question for any business end user or manager is: What do you need to know in order to help manage the hardware, software, data, and network resources of your business, so they are used for the strategic success of your company.

An IS Framework for Business Professionals:

Managers or business professionals are not required to know the complex technologies, abstract behavioral concepts, or the specialized applications involved in the field of information systems. It illustrates a useful conceptual framework that outlines what a manager or business professional needs to know about information systems. It emphasizes five areas of knowledge:

- Foundation Concepts.
- Information Technologies.
- Business Applications.
- Development Processes.
- Management Challenges.

Information System

Almost all programs in business require students to take a course in something called ***information systems***. But what exactly does that term mean? Let's take a look at some of the more popular definitions, first from Wikipedia and then from textbooks:

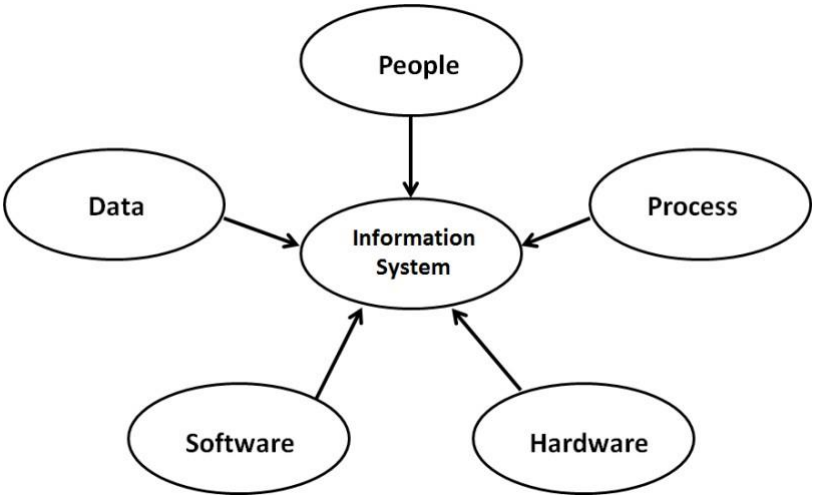
- "**Information systems** (IS) are the study of complementary networks of hardware and software that people and organizations use to collect, filters, and process, create, and distribute data."
- "**Information systems** are combinations of hardware, software, and telecommunications networks that people 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 system** (IS) is typically considered to be a set of interrelated elements or components that **collect** (input), **manipulate** (processes), and **disseminate** (output) data and information and provide a **feedback** mechanism to meet an objective."

As you can see, these definitions focus on two different ways of describing information systems: the ***components*** that make up an information system and the ***role*** that those components play in an organization. Let's take a look at each of these.

The Components of Information Systems

They are made up of five components: hardware, software, data, people, and process. The first three, fitting under the category ***technology***, but the last two, people and process, are really what separate the idea of information systems from more technical

fields, such as computer science. In order to fully understand information systems, we must understand how all of these components work together to bring value to an organization.



Technology

Technology can be thought of as the application of scientific knowledge for practical purposes. From the invention of the wheel to the harnessing of electricity for artificial lighting, technology is a part of our lives in so many ways that we tend to take it for granted. As discussed before, the first three components of information systems – hardware, software, and data – all fall under the category of technology. Each of these will get much lengthier discussion, but we will take a moment here to introduce them so we can get a full understanding of what an information system is.

Hardware

Information systems hardware is the part of an information system you can touch – the physical components of the technology. Computers, keyboards, disk drives, iPads, and flash drives are all examples of information systems hardware.

Software

Software is a set of instructions that tells the hardware what to do. Software is not tangible – it cannot be touched. When programmers create software programs, what they are really doing is simply typing out lists of instructions that tell the hardware what to do. There are several categories of software, with the two main categories being operating-system software, which makes the hardware usable, and application software, which does something useful. Examples of operating systems include Microsoft Windows on a personal computer and Google's Android on a mobile phone. Examples of application software are Microsoft Excel and Angry Birds.

Data

The third component is data. You can think of data as a collection of facts. For example, your street address, the city you live in, and your phone number are all pieces of data. Like software, data is also intangible. By themselves, pieces of data are not really very useful. But aggregated, indexed, and organized together into a database, data can

become a powerful tool for businesses. In fact, all of the definitions presented at the beginning focused on how information systems manage data. Organizations collect all kinds of data and use it to make decisions. These decisions can then be analyzed as to their effectiveness and the organization can be improved.

Networking Communication: A Fourth Technology Piece?

Besides the components of hardware, software, and data, which have long been considered the core technology of information systems, it has been suggested that one other component should be added: communication. An information system can not exist without the ability to communicate – the first personal computers were stand-alone machines that did not access the Internet. However, in today's hyper-connected world, it is an extremely rare computer that does not connect to another device or to a network. Technically, the networking communication component is made up of hardware and software, but it is such a core feature of today's information systems that it has become its own category.

People

When thinking about information systems, it is easy to get focused on the technology components and forget that we must look beyond these tools to fully understand how they integrate into an organization. A focus on the people involved in information systems is the next step. From the front-line help-desk workers, to systems analysts, to programmers, all the way up to the chief information officer (CIO), the people involved with information systems are an essential element that must not be overlooked.

Process

The last component of information systems is process. A process is a series of steps undertaken to achieve a desired outcome or goal. Information systems are becoming more and more integrated with organizational processes, bringing more productivity and better control to those processes. But simply automating activities using technology is not enough – businesses looking to effectively utilize information systems do more. Using technology to manage and improve processes, both within a company and externally with suppliers and customers, is the ultimate goal. Technology buzzwords such as "business process reengineering," "business process management," and "enterprise resource planning" all have to do with the continued improvement of these business procedures and the integration of technology with them. Businesses hoping to gain an advantage over their competitors are highly focused on this component of information systems.

The Role of Information Systems

Now that we have explored the different components of information systems, we need to turn our attention to the role that information systems play in an organization. So far we have looked at what the components of an information system are, but what do these components actually do for an organization? From our definitions above, we see that these components collect, store, organize, and distribute data throughout the organization. In fact, we might say that one of the roles of information systems is to take data and turn it into information, and then transform that into organizational knowledge. As technology has developed, this role has evolved into the backbone of the organization.

The Three Fundamental Roles of Information Systems in Business

Organizations strive to be market leaders in their given industry. In climates where factors such as recession, inflationary pressures and increased competition can hinder the achievement of this goal, companies look for strategies that lead to competitive advantages. One such strategy is the adoption of information systems within the company. Information systems help a company make adequate use of its data, reduce workload and assist with compliance with various mandatory regulations.

Information Storage and Analysis

At the date of publication, many companies no longer manage their data and information manually with registers and hard-copy formats. Through the adoption of information systems, companies can make use of sophisticated and comprehensive databases that can contain all imaginable pieces of data about the company. Information systems store, update and even analyze the information, which the company can then use to pinpoint solutions to current or future problems. Furthermore, these systems can integrate data from various sources, inside and outside the company, keeping the company up to date with internal performance and external opportunities and threats.

Assist With Making Decisions

The long-term success of a company depends upon the adequacy of its strategic plans. An organization’s management team uses information systems to formulate strategic plans and make decisions for the organization's longevity and prosperity. The business uses information systems to evaluate information from all sources, including information from external references such as Reuters or Bloomberg, which provide information on the general economy. This analysis of and comparison to market trends helps organizations analyze the adequacy and quality of their strategic decisions.

Assist With Business Processes

Information systems aid businesses in developing a larger number of value added- systems in the company. For example, a company can integrate information systems with the manufacturing cycle to ensure that the output it produces complies with the requirements of the various quality management standards. Adoption of information systems simplifies business processes and removes unnecessary activities. Information systems add controls to employee processes, ensuring that only users with the applicable rights can perform certain tasks. Further, information systems eliminate repetitive tasks and increase accuracy, allowing employees to concentrate on more high-level functions. Information systems can also lead to better project planning and implementation through effective monitoring and comparison against established criteria.

Advantages and disadvantages of Information Systems

The competitiveness of most companies is in a large degree based on the effective use of information technologies and information systems especially. The main purposes of information systems are provide the right information to the right people at the right time. It is used to track, store, manipulate and distribute the information from gathered data to appropriate persons when necessary.

In this post I thought to think about what advantages and disadvantages can bring to the businesses and society the integrating information systems. Of course, without any doubt the efficient usage of information systems will give lot opportunities to the

companies and advantages to their business. Sometime it can make kind of new job environments but on the other hand it can make some group of employees unemployed.

Advantages

Communication – with help of information technologies the instant messaging, emails, voice and video calls becomes quicker, cheaper and much efficient.

Globalization and cultural gap – by implementing information systems we can bring down the linguistic, geographical and some cultural boundaries. Sharing the information, knowledge, communication and relationships between different countries, languages and cultures becomes much easier.

Availability – information systems has made it possible for businesses to be open 24×7 all over the globe. This means that a business can be open anytime anywhere, making purchases from different countries easier and more convenient. It also means that you can have your goods delivered right to your doorstep with having to move a single muscle.

Creation of new types of jobs – one of the best advantages of information systems is the creation of new and interesting jobs. Computer programmers, Systems analyzers, Hardware and Software developers and Web designers are just some of the many new employment opportunities created with the help of IT.

Cost effectiveness and productivity – the IS application promotes more efficient operation of the company and also improves the supply of information to decision-makers; applying such systems can also play an important role in helping companies to put greater emphasis on information technology in order to gain a competitive advantage. IS has a positive impact on productivity, however there are some frustrations can be faced by systems users which are directly linked to lack of training and poor systems performance because of system spread.

Disadvantages

Unemployment and lack of job security – implementing the information systems can save a great deal of time during the completion of tasks and some labor mechanic works. Most paperwork's can be processed immediately; financial transactions are automatically calculated, etc. As technology improves, tasks that were formerly performed by human employees are now carried out by computer systems. For example, automated telephone answering systems have replaced live receptionists in many organizations or online and personal assistants can be good example also. Industry experts believe that the internet has made job security a big issue as since technology keeps on changing with each day. This means that one has to be in a constant learning mode, if he or she wishes for their job to be secure.

Dominant culture – while information technology may have made the world a global village, it has also contributed to one culture dominating another weaker one. For example it is now argued that US influences how most young teenagers all over the world now act, dress and behave. Languages too have become overshadowed, with English becoming the primary mode of communication for business and everything else.

Security issues – thieves and hackers get access to identities and corporate saboteurs target sensitive company data. Such data can include vendor information, bank records, intellectual property and personal data on company management. The hackers distribute the information over the Internet, sell it to rival companies or use it to damage the company's image. For example, several retail chains were targeted recently by hackers who stole customer information from their information systems and distributed Social Security numbers and credit card data over the Internet.

Implementation expenses – to integrate the information system it require pretty good amount of cost in a case of software, hardware and people. Software, hardware and some other services should be rented, bought and supported. Employees need to be trained with unfamiliar information technology and software.

Information systems contribute to the efficient running of organizations. Information systems are showing the exponential growth in each decade. Today's information technology has tremendously improved quality of life. Modern medicine has benefited the most with better information system using the latest information technology. By understanding and learning what advantages and disadvantages it can bring, we have to try, believe and put an effort with our best to make that existing advantage much better and navigate the disadvantages to have a less impact on organizations and society.