

Information Technology in the Workplace

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WHAT'S COVERED

Businesses and organizations utilize information technology for a variety of purposes. Some may use information technology as a way to quickly share information with employees over long distances, while others may only wish to share resources, such as a network-connected printer. However, as information technology has evolved, many businesses and organizations have come to realize the full potential of information technology as a way to collect and analyze data, that can then be used to obtain competitive advantage or improve overall performance. As such, this has increased the importance of information technology within businesses and organizations. In this tutorial, we will discuss the role of information technology, and the specialist whose job it is to maintain information technology organizationally.

Our discussion will break down as follows:

1. Organizational Role of I.T.

In the early years of computing, the information-systems function (generally called data processing) was placed in the finance or accounting department of the organization. Before the advent of the personal computer, the information-systems function was centralized within organizations in order to maximize control over computing resources. When the PC began proliferating and computing became more important, a separate information-systems function was formed, but it still was generally placed under the chief financial officer (CFO) and considered an administrative function of the company. Some departments created an internal information-systems group, complete with systems analysts, programmers, and even database administrators. These departmental-information systems groups were dedicated to the information needs of their own departments, providing quicker turnaround and higher levels of service than a centralized I.T. department. However, having several information systems groups within an organization led to a lot of inefficiencies: there were now several people performing the same jobs in different departments. This decentralization also led to company data being stored in several places all over the company. In the 1980s and 1990s, when companies began networking internally and then linking up to the Internet, the information-systems function was combined with the telecommunications functions and designated the information technology (I.T.) department. As the role of information technology continued to increase, its place in the organization also moved up the ladder. In many organizations today, the head of I.T. (the CIO) reports directly to the CEO. Generally, the I.T. department within an organization is responsible for planning, data management, security, and support of an organization to insure that employees can do their job effectively. The table below lists the major functions of I.T. organizationally.

I.T. Function	Description
Planning	--Involves working with organization leaders/managers to create a plan that will aid in reaching all organizational goals --Assesses available I.T. resources and makes recommendations for improvement and sustainability --Plans, designs, and develops custom applications that will meet the needs of entire organization or individual departments
Data Management	--Involves development of solutions (software) to collect, store, secure, and safely share company financial, organizational, and product data --Involves development of solutions to extract data from third party sources such as manufacturers and retailers --Maintains organization databases, customer records, and transaction data
Data Security	--Protects the company database from malware attacks such as viruses --Develops solutions to prevent organizational data from entering into the wrong hands (competitors) --Development of Acceptable Use Policy
Network Development and Maintenance	--Design, develop, and maintain organization's computer networks to ensure employees are able to communicate and work with each other (i.e. share data) --Stay abreast of new Internet protocols and work to ensure organization's network can make effective use of the Internet and its protocols --Devise ways for customers and clients to obtain organization information securely
Information Technology Support	--Provides technical support to organization employees --Provides training on new software tools to employees --Implements Help Desk within organization --Installs software --Maintains organization's computer network
Infrastructure and Equipment Management	--Maintains organization's specialized equipment, such as printers, scanners, and computer servers --Provides technical support to users of specialized equipment within an organization --Manages organization's enterprise management/information system --Makes recommendations to management for how to improve specialized equipment, networks, servers, and information system

2. Maintaining I.T.

Recall that one of the principle reasons for developing an information system is to store various types of data, so that the data can then be analyzed for decisions to be made. This means that the effective development of information systems plays a huge role in the overall success of an organization or business. One of the last phases of information system development deals with how the system is to be maintained over time to ensure its data is continually accurate. The process of maintaining information systems consists of four major activities: acquiring requests for maintenance, processing the request for maintenance, designing maintenance solutions, and implementing maintenance solutions.

Maintenance Phase	Description
Acquiring Request for Maintenance	Details the process by which an information system failure is identified, acknowledged, and a request for service is submitted. Typically a help ticket is submitted by the person who identifies the failure to an I.T. specialist, who can process the request for service.
Processing Request for Maintenance	Details the process by which a request for maintenance is converted into a specific change or fix to occur within the information system. For example, if a department within an organization has a problem with its employees remembering their login ID and password for several separate applications, a manager may submit a request (help ticket) to the I.T. department to disable the login requirements for some of the applications. When this request is processed, the I.T. department may hold a meeting to detail the problem and brainstorm for solutions.
Designing Maintenance Solutions	Details the actual design of the change. This phase is also used to describe the actual steps for fixing a problem. In the example above, the I.T. department may decide to create a solution in which employees can use one password to access all organizational applications.
Implementing Maintenance Solution	Details how the change or fix is put into action. To implement a one password solution, the I.T. department may decide to create a separate user account, into which users enter one password to access all applications. The I.T. department may then hold trainings on the one password solution.

3. The I.T. Specialist

Working with information systems can be a rewarding career choice. Whether you want to be involved in very technical jobs (programmer, database administrator), or you want to be involved in working with people (systems analyst, trainer), there are many different career paths available. Regardless of which career path you choose, as an I.T. specialist you will be expected to have a general set of **hard skills** and **soft skills**. Hard skills are technical skills. The ability to use a software application to complete a task is an example of a hard skill. Soft skills are the skills required to be successful in interpersonal situations. For example, the ability to collaborate as a member of a team would be considered a soft skill. Listed below are some of the essential hard skills and soft skills required of the I.T. specialist.



TERMS TO KNOW

Hard Skills

Learnable technical skills, such as writing code in programming languages.

Soft Skills

Non-technical skills required to be successful in interpersonal situations, such as creativity. Soft skills are developed through internships, team projects, and direct instruction techniques.

3a. Hard Skills

Hard Skills Required of I.T. Specialist	Description	Example of Hard Skill Usage
	Refers to	The I.T. specialist would be required to know one or more

Programming/Knowledge of Programming Language	knowledge of programming languages and ability to write code	programming languages (C, C++, Java, etc.) and the techniques used to create computer software. As a member on a development team, a computer programmer might use a particular language to write a program or part of a program.
Program Structuring	Refers to the overall design of a software solution including its user interface	As an example, the I.T. specialist would need to have skills in this area as it may make it easier to manage the process of program structuring. This is usually done by a software engineer.
Network Management	Refers to maintaining an organization's computer network	A network manager might be responsible for implementing a content filter for an organization so that users of the network are not exposed to inappropriate content.
Program Debugging	Refers to the ability to recognize and resolve issues and/or errors with code	Programming debugging is the process by which a software application is tested to ensure that it functions as it was designed.
Testing Computer Systems	Refers to rigorous testing to ensure proper function	Testing the system often occurs during the debugging or immediately after. It requires that users be brought in to test and evaluate the system.

3b. Soft Skills

Soft Skills Required of I.T. Specialist	Description of the Skill	Example Usage of the Skill
Collaboration	Describes how people work together to accomplish a task	Software development teams are comprised of various people who work together to develop a piece of software.
Analytical Thinking/Problem Solving	Describes the logical step by step process that users may use to solve problems	Computer programmers use a process to write a computer program.
Communication Skills	Describes how information is exchanged	On a software development team, a project manager must communicate the broad vision for a piece of software as well as the

	between various parties.	schedule for deliverables.
Creativity	Refers to using imagination to solve problems	On a development project, the systems analyst may listen to the needs of the managers and the capabilities of the organization's hardware from the I.T. personnel. After hearing both sides, the analyst will develop a solution that serves as a compromise to both parties.
Attention To Detail	Refers to how meticulous and accurately a problem is solved	A project manager leads the development team at every phase of a development project.



SUMMARY

Information technology plays an integral role in the overall success of an **organization**. Without information technology and the people required to **maintain** information systems, businesses, and organizations would not be able to obtain a competitive advantage. In this tutorial, we discussed the overall role of **information technology** within an organization and the people and processes required to maintain information systems.

Source: Derived from Chapter 9 of "Information Systems for Business and Beyond" by David T. Bourgeois. Some sections removed for brevity.

<https://www.saylor.org/site/textbooks/Information%20Systems%20for%20Business%20and%20Beyond/Textbook.html>



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