# Essentials of Management Information Systems, 13E

**Laudon & Laudon**

**Lecture Files by Barbara J. Ellestad**

Chapter 1 Business Information Systems in Your Career

Computers continue to change every aspect of our lives from entertainment to shopping, from the work we do and where we do it, to how we communicate with friends, relatives, and business associates. As you can see from the opening vignette in the text, many businesses are remodeling their products and services to take advantage of expanded channel outlets such as the Internet, cell phones, and iPad and tablet devices.

This chapter gives you an overview of many of the subjects we’ll touch on in this course. It will help you understand how **information technology** is being used by many businesses worldwide to increase efficiency, save money, and create better relationships with suppliers and customers.

# 1-1 Why are information systems so essential for running and managing a business today?

Ask managers to describe their most important resources and they’ll list money, equipment, materials, and people – not necessarily in that order. It’s very unusual for managers to consider information an important resource, and yet it is. As electronic business and electronic commerce grow in popularity and more firms digitize their operations, having useful information is becoming even more important to the global business community. This chapter will begin to explain why you need to manage your information resources as closely as any other in your organization.

## How Information Systems Are Transforming Business

The next time you’re in your workplace or on your school’s campus, even walking down the street, take a closer look at the people around you and observe what they’re doing. It’s very likely someone will be using a computer or a tablet computer. Someone will be using a cell phone, perhaps taking pictures with it or buying tickets to a sports game. Another person will probably have an iPod device, listening to music or a podcast. Chances are most people around you will be engaged in some sort of electronic information gathering or dissemination. Such is our world in the twenty-first century. Businesses must adapt to this new world of digitization or stand to lose thousands of customers and millions of dollars.

Technology, to a large extent, has driven organizations to change the way they operate and that includes the way they manage. There’s no better example than newspapers and the music industry. Both have suffered drastic changes in demand for their products. The music industry has adapted much better than the newspaper industry, which still drags its feet toward changes in how customers receive their information.

We’re going to take an in-depth look at how organizations work and how they’ve been transformed by technology.

## What’s New in Management Information Systems?

It seems that changes in technology are never-ending. The use of technology now extends far beyond the simple desktop computer, especially in the business world. As the text points out, three interrelated changes are affecting companies worldwide:

* The mobile digital platform
* Growth of big data
* Growth of “cloud computing”

Table 1-1 in the text divides the changes in management information systems into three categories— technology, people, and organizations—and assesses the impact each change is having on businesses. The predominant theme in this table is the Internet and networking.

It may be a fun exercise to peruse the list and see how many of the changes you’ve had experience with.

Interactive Session: People: Can You Run Your Company with Your iPhone? (see p. 9 of the text) describes the proliferation of mobile digital devices in businesses. Whether it’s an Android , iPhone, or other mobile handheld device, organizations of all kinds must adapt the way they work, communicate, and coordinate with employees, customers, and suppliers.

## Globalization Challenges and Opportunities: A Flattened World

Thanks to the Internet, businesses can operate around the corner or around the world. While that may pose new challenges, it also brings new opportunities. A few years ago, your main competition was likely another local company. Or at least one located in the same country as you. Now your competition may be located half a world away. On the other hand, a few years ago it’s likely most of your customers were local. Now you can sell to customers all over the world, opening up new markets much more easily than was ever possible before. You must have efficient and effective information systems to make that happen.

## Business Drivers of Information Systems

Businesses don’t spend millions of dollars each year on new technology just because it’s popular. They do so out of necessity. Let’s take a look at the six major reasons for such massive spending on information technology:

* Achieve operational excellence through higher levels of efficiency and productivity.
* Create new products, services, and business models.
* Raise revenue and profits while lowering costs by increasing customer and supplier intimacy.
* Improve decision making for managers and employees.
* Increase competitive advantages.
* Insure survival related to business environment changes.

Business models continue to change as new technology is introduced. One of the best examples is how the music industry’s **business model** has migrated from traditional distribution of records and C D s in brick-and-mortar stores to instant online downloads of single songs. The industry didn’t cause the change, consumers did. But the major record producers have had to spend millions of dollars fighting the changes while also adapting their business practices to the new distribution channels. Other industries, such as retailers and banks, have readily adapted their business models to take advantage of new information technologies because of the six reasons outlined above.

The common thread throughout all of these objectives is the effective use of databases to supply useful information to employees, managers, and executives throughout the firm. As we’ll see later in this chapter, each functional area of an organization is impacted by how well the information system transforms data, or raw facts, into information that helps achieve the business’s objectives.

**Bottom Line: Business models in thousands of industries throughout the world are being transformed by technology. Technology helps businesses improve operations, increase profits, reduce costs, improve decision making, increase competitive advantages, and insure a business’s survival.**

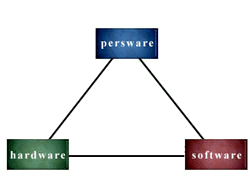
# 1-2 What exactly is an information system? How does it work? What are its people, organizational, and technology components?

As **information technology** becomes the glue that holds a business together, it’s important that you understand exactly what is involved.

## What Is an Information System?

Too often you hear someone say, “Oh yeah, I know how to use a computer. I can surf the web with the best of them and I can play Solitaire for hours. I’m really good at computers.” Okay. So that person can pound a keyboard, use a mouse at lightning speed, and has a list of favorite websites a mile long. But the real question is: “Is that person information literate?” Just because you can pound the keyboard doesn’t necessarily mean you can leverage the technology to your advantage or to the advantage of your organization. An organization can gather and keep all the data on its customers that a hard drive can hold. You can get all the output reports that one desk can physically hold. You can have the fastest Internet connection created to date. But if the organization doesn’t take advantage of customer **data** to create new opportunities, then all it has is useless information. If the output report doesn’t tell management that it has a serious problem on the factory floor, then all that’s been accomplished is to kill a few more trees. If you don’t know how to analyze the **information** from a website to take advantage of new sales leads, then what have you really done for yourself today?

Most of us think only of hardware and software when we think of an **information system**. There is another component of the triangle that should be considered, and that’s the people side or “persware.” Think of it this way:



In this section of the text, Laudon & Laudon discuss the components of an information system. They talk about the **input**, **processing**, **output,** and **feedback** processes. Most important is the feedback process; unfortunately, it’s the one most often overlooked. The hardware (input and output) and the software (processing) receive the most attention. With those two alone, you have **computer literacy**. But if you don’t use the "persware" side of the triangle to complete the feedback loop, you don’t accomplish much.

Add the “persware” angle with good feedback and you have the beginnings of **information literacy**. You also create formal systems structured to collect, store, process, disseminate, and use data in well-designed and well-built information systems.

As the text points out, “Knowing how computers and computer programs work is important in designing solutions to organizational problems, but computers are only part of an information system.”

## It Isn’t Simply Technology: The Role of People and Organizations

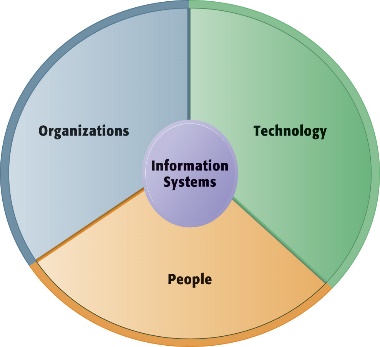
Using feedback completes the information processing loop. To be a successful manager, however, you must bring into that loop far more than just computer data. For instance, your information system reports that you produced 100,000 widgets last week with a “throwback” rate of 10 percent. The feedback loop tells you that the throwback rate has fallen 2 percent in the last month. “Wow,” you say, “that’s a pretty good improvement. So far, so good.” But if you put that information into the broader context of the organization, you’re still costing the organization a huge sum of money because each percentage point on the throwback rate averages $10,000. And when you bring in available external environmental information, your company is 5 percent above the industry norm. Now that’s information you can use – to your advantage or disadvantage!

There is a distinct difference between possessing **information systems literacy** and simple **computer literacy**. If you, as a manager, can combine information from internal sources and external environments, if you can be part of the solution and not part of the problem, you can consider yourself “information literate.”

An organization can’t afford to view its information resources as belonging to either the techies (technical approach) or the non-techies (behavioral approach). Responsibility for information belongs to everyone in the organization. Everyone has to work together to ensure that **management information systems (M I S)** serve the entire organization.

## Dimensions of Information Systems

As Figure 1.3 shows, there are three basic dimensions of information systems.



***Figure 1.3: Information Systems are More Than Computers***

### Organizations

Organizations are funny things. Each one tends to have its own individual personality and yet share many things in common with other organizations. Look at some of the organizations you may be associated with – baseball team, fraternity/sorority, health club, or a child’s soccer team. Organizations exist everywhere, and each has its own structure, just as workplace organizations have structures and personalities to fit their needs, or in some cases, their old habits.

Baseball teams have playbooks that outline how each player will fulfill his tasks, from the pitcher to the shortstop to the outfielder. Behind-the-scenes team members also have an outline they follow to make sure the team can perform to the best of its ability. Business organizations have their major **business processes,** which need many kinds of players with various talents, who are well-trained and well-informed, in order to succeed.

The larger the organization, the more formal the management structure, including the need for standardized business processes. Formal business processes help managers and employees properly complete their tasks in a more efficient manner. Many companies now integrate these business processes into their information systems to ensure uniformity, consistency, and compliance. As we’ll see in upcoming chapters, many companies are even incorporating their informal work processes into their information systems in an effort to capture as much corporate knowledge as possible and support the organizational **culture.**

### People

Just as every baseball team needs good players at different positions, a business organization requires different employees to help it succeed. Knowledge workers help create new knowledge for the organization and data workers help process the paperwork necessary to keep an organization functioning. Without production or service workers, how would the company get its products and services to the customer?

Every good organization needs good managers. Pretty simple, pretty reasonable. Take professional baseball managers. They don’t actually play the game, they don’t hit the home run, catch the fly ball for the last out, or hang every decoration for the celebration party. They stay on the sidelines during the game. Their real role is to develop the game plan by analyzing their team’s strengths and weaknesses. But that’s not all; they also determine the competition’s strengths and weaknesses. Every good manager has a game plan before the team even comes out of the locker room. That plan may change as the game progresses, but managers pretty much know what they’re going to do if they are losing or if they are winning.

The same is true in workplace organizations. In every organization you’ll find senior managers making long-range decisions, middle managers carrying out the plans and goals set by senior managers, andoperational managers handling the day-to-day operations of the company. As we’ll see, information systems’ output must be geared to each of these levels of management.

### Technology

Do you own a high-definition, 3-D television? Maybe not, since the technology has only been on the market for a short time. How old is your car or truck? Manufacturers are constantly offering us new vehicles, yet we tend to upgrade only every few years. Your personal computer may be a year old or three years old. Do you have the latest gadgets? Chances are you don’t. Face it, you just can’t keep up with all the new **hardware**. No one can.

Think about how hard, not to mention expensive, it is for an individual to acquire each new **software** program introduced to the marketplace. Think how difficult it is sometimes to learn how to use every feature of all those new products.

No matter how big your computer’s storagedevice seems to be, you’re constantly running out of room to store all the new software programs and all the data you create. Speaking of data, what kind of **data management technology** do you use to organize all of your music, pictures, and word documents? As the products and services on the Internet expand everyday, your need for new **telecommunications technology** and better **networking** links just seems to grow and grow.

Now put those thoughts into a much larger context of an organization’s **information technology (I T) infrastructure.** Yes, it would be nice if your company could purchase new computers every three months so you could have the fastest, best technology on the market. But it can’t. Not only is it expensive to buy the hardware and the software, but the costs of installing, maintaining, updating, integrating, and training must all be taken into account. We’ll look at the hardware and software sides of the information systems triangle in upcoming chapters, but it’s important that you understand now how difficult it is for an organization, large or small, to take advantage of all the newest technology.

The fastest and biggest change in modern computing is the **Internet.** To say that the Internet is transforming the way we live, work, and play is probably the greatest understatement in years. Businesses can create new opportunities, but they can also lose opportunities just as quickly. Now an organization has to design new systems, or transform old ones, with not just the company in mind, but 100 million other users of the Internet, **extranets**, and **intranets**. They have to decide how much or how little information to provide, in what way, with what level of access, and how best to present it. It’s a huge job!

The **World Wide Web** allows big companies to act “small,” and small companies to act “big.” It has leveled the playing field so entrepreneurs can break into new markets previously closed to them. A website, consisting of a few pages or hundreds of pages, enables businesses to get close and stay close to their customers in new ways. It is truly a revolution in our global economy.

Interactive Session: Technology: U P S Competes Globally with Information Technology (see p. 19 of the textbook) describes how U P S is using information technology to compete in a global economy. Analyze the four components of U P S’s information system: input, output, processing, and feedback.

Once upon a time, technology was considered “too technical” for the rest of us to understand. Computers were relegated to the back room with a few technicians running around in white coats. No one else understood what these people did or how they did it. It was a whole different world and actually seemed disconnected from the mainstream operations of the company.

Technology and its associated information systems are now integrated throughout the organization. Everyone is concerned about its role and impact on their work activities. End users take on greater responsibility for the success of the information systems and are actually doing a lot of the work that belonged to the techies. Even the executive levels of an organization can no longer ignore the technology as they realize the importance of managing their information resources to help achieve greater profits with reduced costs.

**Bottom Line: Information technology (I T) infrastructures include hardware, software, data management, telecommunications, and networking technologies. As a successful manager, you must concentrate on all three parts of the information systems triangle (hardware, software, and persware) and integrate them into a single, cohesive system that serves the organization, customers, and employees. Information literacy is all about integrating organizations, technology, and people into a successful enterprise. The Internet has caused many businesses to restructure themselves and take advantage of extranets, intranets, and the World Wide Web distribution channels.**

# 1-3 How will a four-step method for business problem solving help you solve information system-related problems?

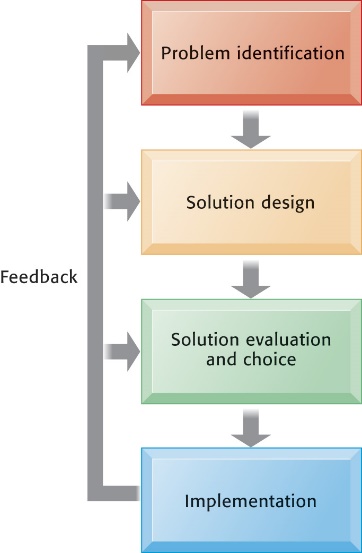
Is this new technology worth the headaches and heartaches associated with all the problems that can, and will, arise? Yes. The opportunities for success are endless. The new technologies offer solutions to age-old problems. Improvements are possible in the way you operate and do business.

## The Problem-Solving Approach

Your ability to solve business problems using information technology is a major benefit to any business. Taking organizations, technology, and people into account when you approach problem solving can make you a better employee. Information technology can help you solve problems easier and faster by giving you a structured approach to the task.

## A Model of the Problem-Solving Process

Most of us don’t realize that problems, personal or business, large or small, can all be solved using a standard four-step process. Figure 1.4, depicts how these four steps work together.



***Figure 1.4: Problem Solving Is a Continuous Four-Step Process***

### Problem Identification

Lots of times businesses think they know what the problem is, only to find out they really don’t. Is the problem caused by lazy workers or is it a case of poor employee training? Perhaps the problem isn’t a lack of technology resources, but failure of the business to change its work processes to take full advantage of new opportunities.

Before a business can begin to adequately solve problems, it must properly gather facts, interview people involved in the problem, and analyze documents to fully understand the scope of the problem. Most business problems usually involve some element of each of the three dimensions: organizations, people, and technology.

### Solution Design

Most of the time there are several different ways to solve a problem. The important thing to remember is that the best solution uses a combination of new technologies and changes in the business processes and models. It won’t do much good to throw new technology at an old problem and expect it to be solved if the way managers and employees work doesn’t change.

### Solution Evaluation and Choice

The third step in problem solving is often influenced by how well people will accept and adapt to the chosen solution. Choosing the best solution involves determining the cost, feasibility, and the time it will take to implement the choice. Usually the time to implement is vastly underestimated.

### Implementation

Problem solving in today’s digital firm involves more than simply buying new hardware or software. As information systems become more complex, businesses must also factor in the amount of training employees will need and how they will react to the new system. Most people do not react favorably to changes in their environment and require a great deal of persuasion and encouragement to accept new processes. **Change management** is the art and science of persuading and encouraging employees to adapt to the problem solutions that involve changes in business processes and models. Failing to adequately manage changes has led many companies to waste valuable resources on solutions that looked good on paper but ultimately did not succeed in real time.

### Problem Solving: A Process, Not an Event

When we discussed the components of information systems earlier in this chapter we mentioned feedback as an important part of the input, output, and processing functions. Feedback is also an important part of problem solving. It enables managers and employees to determine if the right choice was made and if any further problems need solving.

That leads us to the realization that solving a single problem is not the ultimate end that many people would like to see. Problem solving is an endless process.

## The Role of Critical Thinking in Problem Solving

The key to effective problem solving is to not jump to conclusions too soon and assume you fully understand the problem right away. The four elements of **critical thinking** that you should pay close attention to are:

* Maintain doubt and suspend judgment.
* Be aware of different perspectives.
* Test alternatives and let experience guide you.
* Be aware of organizational and personal limitations.

Remember to view each problem from the three perspectives we’ve been discussing: organizations, technology, and people. Sometimes you may have to approach problem solving from one dimension at the expense of the other two. For instance, a perfect solution to a problem may require a business to purchase all new computer hardware and software. However, organizational limitations may not allow this solution. Therefore you will have to determine a different solution that meets these limitations while still meeting the goals of the business.

## The Connections Among Business Objectives, Problems, and Solutions

As you use the four steps of problem solving – problem identification, solution design, solution evaluation and choice, and implementation, you should relate them to the one of the business objectives we outlined in the beginning of this chapter. Will your solution:

* Achieve operational excellence through higher levels of efficiency and productivity.
* Create new products, services, and business models.
* Raise revenue and profits while lowering costs by increasing customer and supplier intimacy.
* Improve decision making for managers and employees.
* Increase competitive advantages.
* Insure survival caused by business environment changes.

If your problem involves information systems, will your solution adequately meet the needs of the organization, technology, and people?

**Bottom Line: The four steps of problem solving can be used to help meet the six business objectives for the three dimensions of information systems. By developing your critical thinking skills and concentrating on the four important elements, you will make yourself a more valuable employee and manager.**

# 1-4 What information systems skills and knowledge are essential for business careers?

It is no longer enough to know the technical data of your chosen career field. Even though you may be a pro at creating marketing campaigns or producing the best widget, you must also know how to employ technology within your business functional area. Marrying the business functional area with technology is now required in each career field throughout the business world.

## How Information Systems Will Affect Business Careers

Regardless of your choice of career fields, you should count on the fact that each one will be affected by information systems. Here’s how:

* Accounting: increasing record keeping for auditing and accounting functions
* Finance: helping organizations manage their investments, cash, and risks
* Marketing: using new Internet-based channels for brand development, production promotion, and sales
* Operations: managing new databases, modeling tools, and business analytical software
* Management: enhancing leadership and coordination capabilities, including database management
* Information Systems: enhancing customer and supplier intimacy, improving decision making, and ensuring firm survival

There’s a dominant theme in this section of the text. Almost all the career field descriptions use the words change, future, new, emerging, and enhance. You can count on a continual need to educate yourself, not just during your college career, but for the rest of your life.

When discussing careers in Information Systems, it is worth discussing all of the media hype of the last few years regarding outsourcing. While it’s true that many I T careerists have lost jobs because of outsourcing either within the United States or to foreign countries, it’s not as dire as some have predicted (unless, of course, you were one that lost your job).

According to the Bureau of Labor Statistics, computer network support specialists with employment of 167,980 in May 2012 was one of the largest new occupations in the 2010 Standard Occupational Classification system.

Several other newly defined occupations earned high wages relative to the U.S. annual mean of $45,790. Information security analysts had an annual mean wage of $89,290 and computer network architects drew an annual salary of $94,000.

The highest paying major occupational groups were management, legal, computer and mathematical, and architecture and engineering occupations. Most of the detailed occupations in these groups were also high paying. In fact, all 19 of the detailed occupations in the computer and mathematical group had mean annual wages above the $45,790 average for all occupations. Within these 19 occupations, annual mean wages ranged from $50,130 for computer user support specialists to $106,680 for actuaries. In the architecture and engineering group, 34 of the 35 detailed occupations paid above-average wages according to the Bureau of Labor Statistics.

To be sure, technology is changing the landscape of the job market in many different ways.

A less dramatic change, but one with a potentially far larger impact on employment, is taking place in clerical work and professional services. Technologies like the web, artificial intelligence, big data, and improved analytics—all made possible by the ever increasing availability of cheap computing power and storage capacity—are automating many routine tasks. Countless traditional white-collar jobs, such as many in the post office and in customer service, have disappeared. W. Brian Arthur, a visiting researcher at the Xerox Palo Alto Research Center’s intelligence systems lab and a former economics professor at Stanford University, calls it the “autonomous economy.” It’s far more subtle than the idea of robots and automation doing human jobs, he says: it involves “digital processes talking to other digital processes and creating new processes,” enabling us to do many things with fewer people and making yet other human jobs obsolete.

It is this onslaught of digital processes, says Arthur, that primarily explains how productivity has grown without a significant increase in human labor. And, he says, “digital versions of human intelligence” are increasingly replacing even those jobs once thought to require people. “It will change every profession in ways we have barely seen yet,” he warns.” (“How Technology is Destroying Jobs,” *M I T* *Technology* *Review*, Rotman, David, June 12, 2013, copied from TechnologyReview.com)

The key to surviving any outsourcing initiatives within your company is to continually train yourself on new technologies and techniques, ensure you understand how technology supports business objectives, and prepare yourself for the inevitable changes technology will bring about.

## Information Systems and Business Careers: Wrap-Up

Here’s what you have to look forward to as you’re continually challenged by new technologies in information systems:

* Understand how firms use information systems to achieve business objectives.
* Understand the central role of databases in technology and how to use them effectively.
* Develop skills in information analysis and help firms understand and make sense of their environments.
* Ensure that systems serve business purposes and provide required information resources.
* Understand that every employee will be impacted by changes in the ethical, social, and legal business environments.

## How this Book Prepares you for the Future

The rest of the text will help you achieve these goals regardless of your chosen career field. Good luck.

**Bottom Line: Each career field is impacted by technology and information systems. Mastering the necessary skills each career demands will be a lifelong challenge to each and every employee.**

# 1-5 How will M I S help my career?

The chapter’s elements and information can help in securing a good job as a financial client support and sales assistant. These types of jobs are becoming more popular as information technology becomes more important in the workplace.