

CHAPTER ONE

STUDENT LEARNING OUTCOMES

1. Describe the information age and the role of knowledge workers within it.
2. Define management information systems (MIS).
3. Describe key factors shaping today's economic environment.
4. Validate information as a key resource and describe both personal and organizational dimensions of information.
5. Define how people are the most important organizational resource, their information and technology literacy challenges, and their ethical responsibilities.
6. Describe the important characteristics of information technology (IT) as a key organizational resource.
7. List and describe the six roles and goals of information technology in any organization.

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THE INFORMATION AGE IN WHICH YOU LIVE

Changing the Face of Business

CASE STUDY: **INFORMATION TECHNOLOGY AT RITZ-CARLTON HOTELS HELPS STAFF DELIVER EXCELLENT SERVICE QUALITY**

The Ritz-Carlton manages more than thirty luxury hotels across North America, Europe, Asia, Australia, the Middle East, Africa, and Caribbean. This chain of hotels has become synonymous with elegance and excellent customer service worldwide. About 95% of guests leave its hotels with the impression that they had a “memorable visit.” It is the only hospitality organization which is a two-time recipient of the Malcolm Baldrige National Quality Award. Much of the secret to its success lies in its effective management of its knowledge workers in combination with Information Technology to track and fulfill customers’ needs.

Each hotel in the chain includes one or two guest recognition coordinators. Their job consists of “preemptively” ensuring superior quality of service personalized to each guest according to his or her preferences. After receiving a list of incoming guests, they link up to the guest-history database. This “guest recognition system” includes the histories and preferences of more than half a million guests. The system is a Windows-based application accessible across a network spanning all of its hotels no matter where they are situated in the world. According to Allison Frantz, corporate manager of training and devel-

opment for Ritz-Carlton, guest recognition coordinators consult the system and then “tell the manager, and everyone else about VIPs and other guests who may have had previous difficulties coming in that day, as well as any other information on new high-profile guests. Maybe somebody likes chocolate or enjoys having dinner early. This is the time to pass that information along so we can be ready with a box of candy or early dinner time when the guests check in.”

The “Ritz” realized that, although technology had to play a key role in providing this high a standard of service, its success crucially depended on getting all knowledge-workers involved. “We try to blend technology with a systematic approach in collecting information. It’s important to inspire the staff to hunt for the information” explains Jonathan Campbell, general manager at Ritz-Carlton in Kuala Lumpur, Malaysia. This consists of “active observation” by the hotel’s knowledge workers. They discreetly watch hotel guests for particular individual behaviours which may be linked to individual preferences. For instance, a waiter at the Ritz in Montreal, Quebec may notice that a guest prefers one “sweet and low” and no milk with her tea. Immediately, this preference is jotted down as a “guest preference” on a “guest recognition pad” and then entered into the chain’s worldwide system. Months later, if this guest ever finds herself ordering a tea in a Ritz-Carlton anywhere else in the world, the waiter will simply confirm whether she still prefers it with one “sweet and low” and no milk.¹

Introduction

It is the **information age**—a time when knowledge is power. Today, more than ever, businesses are using information (and information technology) to gain and sustain a competitive advantage. You'll never find a business whose slogan is "What you don't know can't hurt you." Businesses understand that what they don't know can become an Achilles' heel and a source of advantage for the competition.

Think about your major. Whether it's marketing, finance, accounting, human resources management, or any of the many other specializations in a business program, you're preparing to enter the business world as a knowledge worker. Simply put, a **knowledge worker** works with and produces information as a product. According to *U.S. News & World Report* in 1994, knowledge workers in North America outnumber all other workers by a four-to-one margin.² Unfortunately, we couldn't find a more up-to-date reference for the same statistic, but we would imagine today that knowledge workers outnumber all other types of workers by at least a five-to-one margin.

Sure, you may work with your hands to take notes or use a mouse and keyboard to produce a spreadsheet, but what you've really done is use your mind to work with, massage, and produce more information (hopefully meaningful and useful information). Accountants generate profit and loss statements, cash flow statements, statements of retained earnings, and so on, some of which appear on paper. But you wouldn't say that an accountant produces paper any more than you would say Michelangelo was a commercial painter of churches.

In the information age, management information systems is a vitally important topic. Why? Because it deals with the coordination and use of three very important organizational resources—information, information technology, and people. Formally, we define MIS as follows:

Management information systems (MIS) deals with the planning for, development, management, and use of information technology tools to help people perform all tasks related to information processing and management.

In that definition, you can find three key resources—information, information technology, and people. That is, people or knowledge workers use information technology to work with information. Indeed, if we were not in the information age, information technology would probably still be around but it wouldn't be nearly as important as it is today.

That's what this text is all about—management information systems or MIS. What you need to remember is that the sole focus of MIS is *not* technology. Technology is a set of tools that enables you to work with information. Pragmatically speaking, people and information are the most important resources within MIS, not technology. Of course, every organization today needs all three (and many others such as capital) to compete effectively in the marketplace. So don't think of this as a technology textbook, because it's not. You will read three very technology-focused chapters—Chapter 3 on databases and data warehouses, Chapter 4 on decision support systems and artificial intelligence, and Chapter 7 on technology infrastructures. But all the remaining chapters really focus on how people, information, and information technology work together to help an organization achieve a competitive advantage in the marketplace.

As we move forward in this chapter, let's first talk some more about today's exciting and dynamic market environment. Then, we'll explore information, people, and information technology as key resources. Finally, we'll address the specific roles and goals of information technology in both your life and the life of any business. It is these roles

THE GLOBAL PERSPECTIVE

CUSTOMER MOMENT OF VALUE

Canberra-Packard Canada (CPC), located in Mississauga, Ontario recognizes that managing the customer's "moment of value" is essential to quickly and appropriately responding to customers' varying needs. However, this was always a challenge, because the company specializes in distributing sophisticated scientific and laboratory equipment to clients from a wide range of areas, including government, medicine, and academia. According to president Keith Thompson, responding to individual customers' moments of value means having "the ability to understand the varied problems our customers may encounter, and provide not only the right solution, but the ongoing assistance and quick problem-solving techniques that may be needed. ..." The cornerstone of managing the customers' moment of value at CPC lies in the company's effective use of IT and in the quality of the company's knowledge workers. To better respond to customers' needs whenever and wherever these may

occur, CPC has equipped all sales and service staff with laptops giving them immediate access to the CPC's databases. All field service technicians carry a laptop and a portable printer. Customer requests are electronically sent to technicians. These are then able to pull up the complete service history for the customer's instrument directly on their laptop, printing the details right at the customer's location. This kind of attention to service means that CPC has been able to equate value to more than just a low price. The company's focus on customer value has enabled it to effectively use IT and provide optimal solutions and individualized after sales care ensuring that each and every customer is fully satisfied. However, the company recognizes the importance to keep track of new technological developments. "We will continue to adopt the latest technologies within our business to provide this value in the most efficient and cost-effective way possible," Thompson says.³

and goals that drive our organization of this text. They also define the ways in which businesses today can and are gaining and sustaining a competitive advantage in the marketplace.

Today's Economic Environment

To be successful in business today, you have to understand and operate effectively within a dynamic, fast-paced, and changing economic environment. As you'll see later in this chapter, many businesses must undergo a sort of transformation just to stay in business and compete effectively. Other businesses remain highly competitive by continuing to innovate product and service characteristics. Whatever the case, today's economic environment is changing at a dramatic pace. As you enter today's economic environment, you must:

- Know your competition, an accomplishment sometimes known as *competitive intelligence*
- Know your customers, through tools such as customer relationship management (CRM)
- Work closely with your business partners, through tools such as supply chain management (SCM)
- Know how each and every part of your organization works together to provide its products and services

Throughout this text, we focus on all these, including many "best business practices" such as CRM and SCM and the technologies that support them. Right now, let's take an overall look at today's economic environment.

THE ECONOMY

Electronic commerce is certainly the hottest topic in business today, and we've devoted all of Chapter 5 to it, as well as significant portions of other chapters (especially the next chapter). But what exactly is electronic commerce and what does it enable a business to do? Formally defined,

Electronic commerce is commerce accelerated and enhanced by information technology, in particular the Internet. It enables customers, consumers, and companies to form powerful new relationships that would not be possible without the enabling technologies.

Electronic commerce will make winners out of some businesses and losers out of others. Indeed, most of the early dot-com companies are out of business today because of their failure to implement electronic commerce correctly. In short, you can't simply create a Web site and expect your customers to beat a virtual path to your door. You must still follow sound business principles and guidelines. That's why most of the early dot-coms failed. They ignored sound business principles and focused solely on the technology. That's a bad road to travel, and one that will undoubtedly lead to failure. Remember—information technology is indeed a key organizational resource, but it is only one of many.

Electronic commerce is giving rise to many new and innovative “best business practices,” such as telecommuting and the virtual workplace (see Figure 1.1). Telecommuting and the virtual workplace go hand in hand:

Telecommuting is the use of communications technologies (such as the Internet) to work in a place other than a central location.

The **virtual workplace** is a technology-enabled workplace. No walls. No boundaries. Work anytime, anyplace, linked to other people and information you need, wherever they are.⁴

Figure 1.1

Telecommuting—Canadian Statistics⁵

Working from Home
31% of Canadians spend 20 hours or more working from home.
52% of Canadians find that the idea of working at home is either appealing or extremely appealing.
Benefits
68% of Canadians who telecommute report an improvement in overall quality of life.
57% of Canadians who telecommute report an improvement in finances.
60% of Canadians who telecommute report an improvement in standard of living.
36% of Canadians who telecommute report a positive impact on career advancements.
Telecommuting Leaders
Bell Canada: 5000 telecommuters
Canadian federal government: 5000 telecommuters
IBM Canada: 2300 telecommuters

Today, over 35 million people in North America telecommute, and that figure is expected to grow by 20 percent over the next several years. You may be participating in a form of telecommuting if you're taking this class via *distance learning*. Distance learning essentially enables you to learn in a virtual classroom without going to campus a couple of times of week. Of course, if you are participating in distance learning, your instructor is most probably participating in telecommuting as well. That is, he or she may be sitting at home right now sending you e-mails and leading class discussions in chat rooms.

Telecommuting is popping up in many business sectors—some make obvious sense and some may surprise you. For example, JC Penney has told its telephone service representatives who handle orders over the phone to go home and work there. In each home, JC Penney provides a computer, work space furniture, and a high-speed Internet connection. When you call the 1-800 number for JC Penney to order from its catalogue, your phone call is routed to the home of a telecommuter. The telephone service representative will answer the phone and use the Internet connection to record your order, inform you of a delivery time, and process your credit card. It makes sense when you think about it. If you're handling customer orders over the phone, all you really need is a computer with a connection to a database of product and customer information. You don't need to be sitting in a central office.

THE "NOW" ECONOMY

The "now" economy is one characterized by the immediate access customers have to the ordering of products and services. ATMs are an obvious and simple example. Using an ATM, you have access to your money any time of the day or night and just about anywhere in the world. You don't have to wait for your bank to open to cash a cheque or make a deposit. Business-to-consumer Web sites are also great examples. In the comfort of your home, apartment, or dorm, you can buy books from Amazon.com (www.amazon.com), make airline reservations (at www.aircanada.com for example, Air Canada's Web site), and purchase concert tickets from such sites as Ticketmaster (www.ticketmaster.com) or Admission (www.admission.com).

The truth is we've become a very impatient society. And we've come to expect businesses to provide us with products and services (or at a minimum the ability to order them) whenever and wherever we desire. Technology is certainly an integral facilitator here. **M-commerce**, the term used to describe electronic commerce conducted over a wireless device such as a cell phone or personal digital assistant, now gives you the ability to buy and sell stocks with your cell phone while driving down the road. And, using most Web-enabled personal digital assistants, you can bid on auctions at eBay or obtain up-to-the-minute weather forecasts.

A closely related concept is that of a wants-based economy. Some 30 years ago, people mainly purchased what they needed. Not so today. Consider these two examples. First, there's tennis shoes in which the heels light up with the pressure of each footstep. Now, how many people do you think really need tennis shoes with rear lights? Very few, if any, but if that's what they want, that's what they'll buy. A second example is that of dog bakeries, some of which even offer dog birthday cakes that range in price from \$100 to \$500. In reality, neither people nor dogs need to eat treats—some dog owners simply want to indulge their pets.

Why is it important to understand that you're in a wants-based economy? Because you will then realize that, while you can fairly easily forecast what your customers will need, you can't always predict what they'll want. So, the better you know your customers, the better you can determine what they might want.

TEAM WORK

I WANT IT!

Tennis shoes with lighted heels are just one of the many wants-based products that have recently surfaced. Take a walk around a mall, see how many wants-based products you can find, and then fill in the table below. Critically think about what information a business must know about its customers to identify potential buyers. Also, stay away from foods—we need very few actual food products, but our taste buds deserve variety.

Now that you've identified a few wants-based products, consider how technology could help you capture and process information relating to people who buy those products. Where would that information come from? Could you use technology to capture that information? Once you have the information, what technologies could you use to process that information?

Product	Price	Why People Want It	What Kind of People Buy It

THE GLOBAL ECONOMY

A **global economy** is one in which customers, businesses, suppliers, distributors, and manufacturers all operate without regard to physical and geographical boundaries.

Consider the table in Figure 1.2. It shows Canada's total import and export figures (in millions of Canadian dollars) from 1998 to 2000 with its top five trading partners. Notice the gradual and consistent increase in the amount of total imports to Canada. Although it's true that there are many foreign companies competing for consumer dollars in the Canadian market, Canadian export figures are also on the rise. So while foreign products and services are entering the Canadian market to an ever-greater extent, in parallel, Canadian companies are increasingly selling their goods and services to a world market of over six billion people worldwide.

You must realize that most large businesses (and even many small businesses) operate as **transnational firms**—firms that produce and sell products and services in countries all over the world. This is a substantial career opportunity for you. Think of how much better your résumé would look if you could speak a foreign language or had knowledge in subjects related to all aspects of international commerce.

THE ARRIVING DIGITAL ECONOMY

Right now, we are in the information age. But we are seeing a transition into the digital age. When we do arrive there, the **digital economy** will be one marked by the electronic movement of all types of information, including physiological information such as voice recognition and synthesization, biometrics (your retina scan and breath for example), and 3D holograms. A hologram is a three-dimensional image projected into the air. If you've ever watched *Star Trek*, then you're familiar with the *holodeck*, a sophisticated technology-based device that allows people to have virtual experiences

Figure 1.2

Total Import and Export Figures, 1998 to 2000 (millions of Canadian dollars)⁶

Canadian Imports in Billions of Dollars				Canadian Exports in Billions of Dollars			
Country	1998	1999	2000	Country	1998	1999	2000
United States	203.5	215.4	229.6	United States	269.9	308	359.2
Japan	14	15	16.6	Japan	8.6	8.4	9.1
United Kingdom	6.3	8.1	13	United Kingdom	4.4	4.7	5.7
Mexico	7.6	9.5	12	China and Mongolia	2.4	2.6	3.6
China and Mongolia	7.6	8.9	11.2	Germany	2.7	2.4	3.1
Germany	6	6.9	7.7	South Korea	1	1.9	2.2
Total imports (all countries)	298.3	320.2	356.8	Total exports (all countries)	318.4	355	412.8

without the need for today's clunky gloves, headsets, and walkers (found in current virtual reality systems).

Again, we're not there yet. But we are definitely moving in that direction. A few short years ago, pay-per-view movies and sporting events in your home were only a vision of the future. Today, they are a reality and a part of the upcoming digital economy. This represents another substantial career opportunity for you. Don't limit your thinking to the digital movement of just words, numbers, graphs, and photos. Think outside the box and envision moving all types of information electronically. For a rich and thought-provoking discussion of the future digital economy, you might want to read Chapter 9. (This isn't a novel, so reading ahead won't ruin the rest of the story for you.)

Today's economic environment is indeed unique, exciting, and full of opportunities for you. Tomorrow's economic environment will be even more exciting and holds much promise for you in your career. Are you ready to help a business use technology to gain and sustain a competitive advantage?

Information as a Key Resource

Information is important for several reasons today, two of which we've already stated. First, information is one of the three key components of management information systems along with information technology and people. Second, as we have said, we are in the "information age," a time when knowledge is power. And knowledge comes from having timely access to information and knowing what to do with it.

DATA VERSUS INFORMATION

To understand the nature of information and exactly what it is, you must first understand another term—data. **Data** are raw facts that describe a particular phenomenon. For example, the current temperature, price of a movie rental, and your age are all data. **Information** then is simply data having a particular meaning within a specific context.

For example, if you're trying to decide what to wear, the current temperature is information because it's pertinent to your decision at hand (what to wear)—the price of a movie rental, however, is not.

Information may be data that have been processed in some way or presented in a more meaningful fashion. In business, for instance, the price of a movie rental may be information to a checkout clerk, but it may represent only data to an accountant who is responsible for determining net revenues at the end of the month.

PERSONAL DIMENSIONS OF INFORMATION

As a knowledge worker, you work with and produce information. As you do, you can consider it from three points of view or dimensions—time, location, and form (see Figure 1.3).

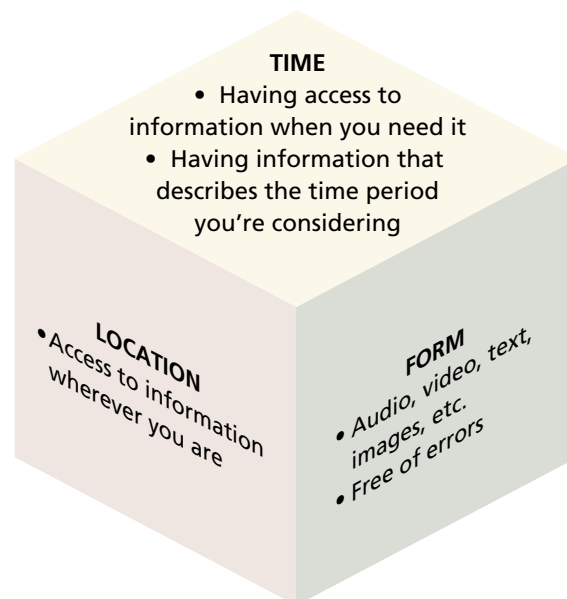
THE TIME DIMENSION The time dimension of information encompasses two aspects—(1) having access to information when you need it and (2) having information that describes the time period you're considering. The first really deals with timeliness. Information can in fact become old and obsolete. For example, if you want to make a stock trade today, you need to know the price of the stock right now. If you have to wait a day to get stock prices, you may not survive in the turbulent securities market. It's no wonder that over one-third of all stock transactions today occur over the Internet.

The second time aspect deals with having information that describes the appropriate time period. For example, most utility companies provide you with a bill that not only tells you of your current usage and the average temperature but also compares that information with that of the previous month and perhaps the same month last year. This type of information can help you better manage your utilities or simply understand that this month's high utility bill was caused by inclement weather.

THE LOCATION DIMENSION The location dimension of information deals with having access to information no matter where you are. This simply means that you should be able to access needed information from an airplane, in a hotel room, at

Figure 1.3

Personal Dimensions of Information



THE GLOBAL PERSPECTIVE

OVERCOMING LANGUAGE BARRIERS ON THE INTERNET

The Internet is certainly a technology that has eliminated geographical and location barriers. With almost one-sixth of the world's population having access to the Internet, "location, location, location" in the physical world is becoming less and less and less important.

However, now we have new issues to deal with, notably that of a language barrier. What happens if you connect to a site that offers information in a language you don't understand? How can you send an e-mail to someone in Japan who doesn't speak English?

One solution is language translation software. And one company leading the way in the development of language translation software is SYSTRAN. SYSTRAN Enterprise is a suite of software tools that enables you to, among other things, translate about 3700 words per minute, translate both e-mail and Web page content, and display Asian fonts.

Is it perfect? Not according to SYSTRAN's disclaimer, which says that although the software is designed to be as accurate as possible, "no automated translation

is perfect nor is it intended to replace human translators. Users should note that the quality of the source text significantly affects the translations."

As you might expect, automated translation software has a particularly difficult time with idioms. When Kentucky Fried Chicken wanted to translate its slogan "finger-lickin' good" into Chinese, it came out as "eat your fingers off." Now, KFC wasn't using SYSTRAN's software, but this example does illustrate the difficulty of translating idiomatic expressions. Product names are another example. When General Motors tried to sell the Chevy Nova in South America, people didn't buy it. As it turns out, in Spanish *no va* means "it won't go." GM subsequently changed the name to Caribe for its Spanish markets.

By the way, you might want to try out the software at SYSTRAN's Web site (www.systransoft.com). There is a box into which you can type a phrase or sentence and choose the language into which you would like it translated.⁷

home, in the student centre of your campus, at work, or even driving down the road. Of course, because of the Internet you can be almost anywhere in the world and access almost any information you need.

To keep certain information private and secure while providing remote access for employees, many businesses are creating intranets. An **intranet** is an organization's internal "Internet" guarded against outside access by a special security feature called a *firewall* (which can be software, hardware, or a combination of the two). So if your organization has an intranet and you want to access information on it while away from the office, all you need is Web browser software, a modem, and the password that will allow you through the firewall.

The Canadian design company silverorange has created an award-winning intranet that you can demo at demo.silverorange.com. Employees can connect to the intranet and meet in online chat rooms, exchange documents, and discuss ongoing projects, even with employees located in remote geographical areas. While they are doing this, the firewall ensures that no one outside silverorange can gain access to the intranet-based information.

THE FORM DIMENSION The form dimension of information deals with two primary aspects. The first is simply having information in a form that is most usable and understandable by you—audio, text, video, animation, graphical, and others. The second deals with accuracy. That is, you need information that is free of errors. Think of information as you would a physical product. If you buy a product and it's defective, you become an unsatisfied customer. Likewise, if you receive information that is incorrect, you're very unhappy as well.

For all these various information dimensions, be mindful that you provide your customers with information. Information you provide to your customers should be timely, describe the appropriate time dimension, accessible from anywhere, in the most usable form, and free of errors. Information is a valuable resource and also a commodity you provide to customers. Make sure they get it the way they want it.

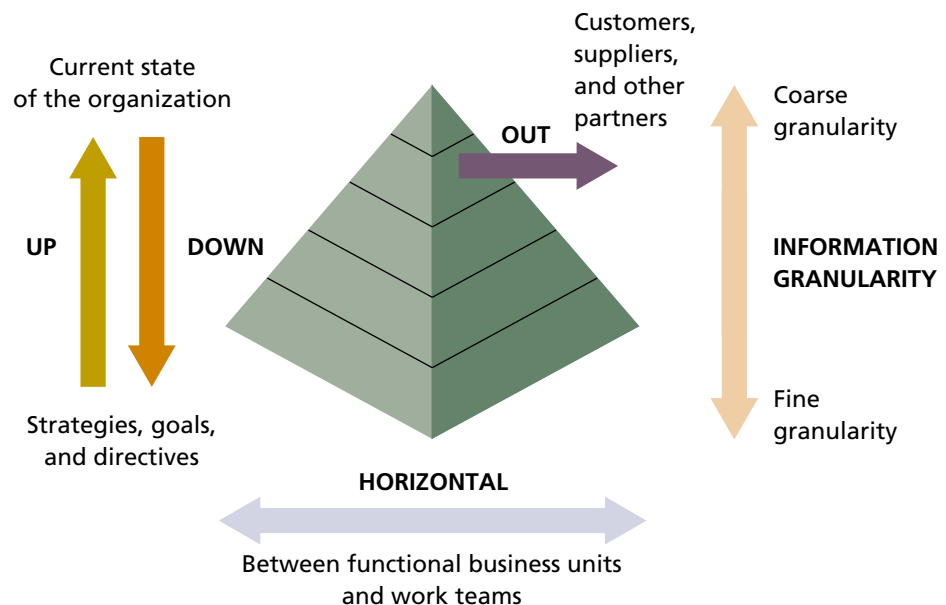
ORGANIZATIONAL DIMENSIONS OF INFORMATION

Even if your choice in life is to be an entrepreneur and run your own business, you also need to consider various organizational dimensions of information. These include information flows, what information describes, information granularity, and how information is used (for either mainly transaction processing or analytical processing, which we'll discuss in an upcoming section).

INFORMATION FLOWS Information in an organization flows in four basic directions—up, down, horizontally, and outward. To consider these flows, let's first briefly look at the structure of an organization. Most people view a traditional organization as a pyramid with four levels and many sides (see Figure 1.4). At the top is **strategic management**, which provides an organization with overall direction and guidance. The second level is often called **tactical management**, which develops the goals and strategies outlined by strategic management. The third level is **operational management**, which manages and directs the day-to-day operations and implementations of the goals and strategies. Finally, the fourth level of the organization comprises non-management employees who actually perform daily activities, such as order processing, developing and producing goods and services, and serving customers. If you consider your school as an example, strategic management would include the chancellor, president, and various vice-presidents. Tactical management would include the deans. Operational management would include the department chairs and directors of academic programs. The final level would include instructors who are responsible for teaching the classes.

The *upward flow of information* describes the current state of the organization on the basis of its daily transactions. When a sale occurs, for example, that information

Figure 1.4
An Organization, Its
Information Flows, and
Information Granularity



originates at the lowest level of the organization and then is passed up through the various levels of management. Information gathered as part of everyday operations is consolidated by information technology and passed upward to decision makers who monitor and respond to problems and opportunities.

The *downward flow of information* involves the strategies, goals, and directives that originate at one level and are passed to lower levels. The *horizontal flow of information* is between functional business units and work teams. For example, at your school, various departments are responsible for scheduling courses. That information is passed horizontally to the registrar's office, which creates a course schedule for your entire campus (which may be online—timely and accessible from anywhere by you).

Finally, there is an *outward flow of information* to customers, suppliers, distributors, and other partners for the purpose of doing business. This (and its corresponding inward flow) is really what electronic commerce is all about. Today, no organization is an island, and you must ensure that your organization has the right information technology tools to communicate outwardly with all types of business partners. In a later section, and in more detail in Chapter 2, we'll discuss this outward flow of information within the context of creating business partnerships and alliances.

INFORMATION GRANULARITY Figure 1.4 also illustrates another dimension of information—granularity. **Information granularity** refers to the extent of detail within the information. On one end of this spectrum is coarse granularity, or highly summarized information. At the other end is fine granularity, or information that contains a great amount of detail. As you might guess, people on the highest levels of the organization deal mainly with a coarse granularity of information, sales by year being an example. People on the lowest levels of the organization, on the other hand, need information with fine granularity. If you consider sales again, nonmanagement employees need information in great detail that describes each transaction—when it occurred, whether by credit or cash, who made the sale, to whom the sale was made, and so on.

So, when transaction information originates at the lowest level of an organization (with fine granularity), it is consolidated to a more coarse granularity as it moves up through the organization (the upward flow of information).

WHAT INFORMATION DESCRIBES Another organizational dimension of information is what the information describes. Information can be internal, external, objective, subjective, or some combination of the four.

- **Internal information** describes specific operational aspects of the organization.
- **External information** describes the environment surrounding the organization.
- **Objective information** describes quantifiably something that is known.
- **Subjective information** attempts to describe something that is unknown.

Consider a bank that faces the decision of what interest rate to offer on a CD. That bank will use internal information (how many customers it has who can afford to buy a CD), external information (what other banks are offering), objective information (what today's prime interest rate is), and subjective information (what the prime interest rate is expected to be several months down the road). As well, what other banks are offering is an example of not only external information (it describes the surrounding environment) but also objective information (it is quantifiably known).

As a general rule, people on the lowest levels of the organization deal mainly with internal and objective information (the price of a movie rental is an example). People on the highest levels of the organization, on the other hand, deal with all types of information.

INDUSTRY PERSPECTIVE

MICHAEL DELL PREACHES IMMEDIATE INFORMATION ACCESS

We can all learn a lot from Michael Dell, CEO and founder of Dell Computer. In the mid-1980s, Michael couldn't even wait to get out of college to start his own direct-sales computer business. In the 18 years since he started that small operation in his dorm room, Dell Computer has definitely become the market leader, with over \$30 billion in revenues in 2001.

Speaking to a group of entrepreneurs recently, Michael had this to say about the importance of timely information: "One of the great things about our business is that we have immediate information; we don't have to wait a week or a month. We get information every day, so that I know that yesterday we sold 77,850 computers. I know it by customer type, by product type, by geography, and what the mix was. So that immediacy of information is incredibly valuable to everything in our business, because it's changing very, very rapidly. We just

continue to shrink the time and space and distance between our customers and our suppliers and make that as efficient as we can. We're down to about three to four days of inventory now. We get deliveries every two hours based on what we just sold. You take out the guessing."

That's a powerful set of statements; look closely at them. By having access to timely information, Dell Computer is able to carry only three to four days of inventory. That's remarkable when you compare it to the industry standard of about 45 days. Businesses in the technology sector cannot afford to carry 45 days' worth of inventory when you consider the rapid speed at which technology is changing.

Notice also that timely information takes out the guesswork for Dell. If your business is guessing to determine its next move, you won't be in business very long. Perhaps it's time to get timely information.⁸

People as a Key Resource

The single most important resource in any organization is its people. People (knowledge workers) set goals, carry out tasks, make decisions, serve customers, and, in the case of IT specialists, provide a stable and reliable technology environment so the organization can run smoothly and gain a competitive advantage in the marketplace. This discussion is all about you. You're preparing to be a knowledge worker.

INFORMATION AND TECHNOLOGY LITERACY

In a business environment, your most valuable asset is *not* technology but rather your *mind*. IT is simply a set of tools that help you work with and process information, but it's really just a *mind support* tool set. Technology such as spreadsheet can help you quickly create a high-quality and revealing graph. But it can't tell you whether you should build a bar or pie graph and it can't help you determine whether you should show sales by territory or sales by salesperson. Those are your tasks and that's why your business curriculum includes classes in human resources management, accounting, finance, marketing, and perhaps production and operations management.

Nonetheless, technology is an important set of tools for you. Technology can help you be more efficient and can help you dissect and better understand problems and opportunities. So, it's important for you to learn how to use your technology set. And it's equally important that you understand the information to which you're applying your technology tools.

A **technology-literate knowledge worker** is a person who knows how and when to apply technology. The "how" aspect includes knowing what technology to buy, how to exploit the many benefits of application software, and what technology infra-

INDUSTRY PERSPECTIVE

POLAROID IS POLAR-PEOPLE

People are really the most important resource in any organization, no matter how big or small and no matter in what industry. People possess *intellectual capital*, and intellectual capital is what enables an organization to innovate.

At Polaroid, film isn't the most important asset—it's simply the product produced. The most important asset are the scientists who know everything about the chemistry of film. So Polaroid has created a very sophisticated model of its hiring requirements.

The model first combines employee-turnover information with forecasts and known trends of its current

workforce. For example, Polaroid forecasts probable retirement dates of every scientist and estimates how many people in each given skill area will leave within the next decade.

That information is then used extensively in the interviewing and hiring processes. Where Polaroid sees an intellectual capital vacancy upcoming in the next several years, it focuses its hiring efforts.

How many businesses do you believe have such an elaborate system for hiring new employees?⁹

structure is required to get businesses connected to each other, to name just a few. If you've had a class that deals with learning personal productivity software, then you already know the benefits of application software. In this text, we want to help you decide what technology an organization needs (if any) and how best to use it to support organizational goals and achieve a competitive advantage. If you can do that, then you'll truly be a technology-literate knowledge worker.

In many unfortunate cases, people and organizations have blindly decided to use technology to help solve some sort of business problem. What you need to understand is that technology is not a panacea. You can't simply apply technology to any given process and expect that process to instantly become more efficient and effective. Look at it this way—if you apply technology to a process that doesn't work correctly, then you'll only be doing things wrong millions of times faster. There are cases when technology is not the solution. Being a technology-literate knowledge worker will help you determine when and when not to apply technology.

Information-literate knowledge workers:

- Can define what information they need
- Know how and where to obtain that information
- Understand the information once they receive it
- Can act appropriately on the basis of the information to help the organization achieve the greatest advantage

Consider a unique, real-life example of an information-literate knowledge worker.

Several years ago, a manager of a retail store on the East Coast received some interesting information—diaper sales on Friday evening accounted for a large percentage of total sales for the week. Most people in this situation would immediately jump to the conclusion to make sure that diapers are always well stocked on Friday evening or run a special on diapers during that time to increase sales, but not our information-literate knowledge worker. She first looked at the information and decided it was not complete. That is, she needed more information before she could act.

She decided the information she needed was why a rash of diaper sales (pardon the pun) occurred during that time and who was buying them. That information was not stored within the store's computer system, so she stationed an employee in the diaper

aisle on Friday evening who recorded any pertinent information to the situation (i.e., she knew how and where to obtain information). The store manager learned that young businessmen purchased the most diapers on Friday evening. Apparently, they had been instructed to buy the weekend supply of diapers on their way home from work. Her response was to stock premium domestic and imported beer near the diapers. Since then, Friday evening is a big sale time not only for diapers but also for premium domestic and imported beer.

The store manager's information-literate knowledge—her ability to define what information she needed, know how and where to obtain that information, and understand the meaning of the information once she received it—enabled her to determine that diapers and premium beer were complementary products for most young businessmen. Would you have made that connection? By the way, this is an example of a wants-based economic environment. While diapers are a very necessary product (just ask any parent), premium beer is a wants-based product.

YOUR ETHICAL RESPONSIBILITIES

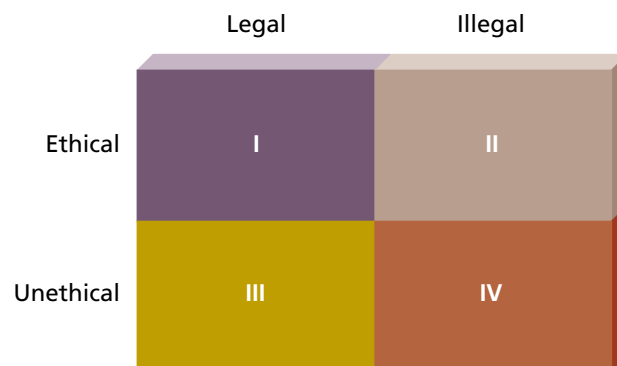
Your roles as a technology-literate and information-literate knowledge worker extend far beyond using technology and information to gain an advantage in the marketplace for your organization. You must also consider your social responsibilities—this is where ethics becomes important. **Ethics** are the principles and standards that guide our behaviour toward other people. Ethics are different from laws. Laws either require or prohibit some sort of action on your part. Ethics are more of a matter of personal interpretation, and thus have a right and wrong outcome according to different people. Consider the following examples:

1. Copying software you purchased, making copies for your friends, and charging them for the copies
2. Making an extra backup of your software just in case both the copy you are using and the primary backup fail for some reason
3. Giving out the phone numbers of your friends and family, without their permission, to a provider of some sort of calling plan so you can receive a discount

Each of these is either ethically or legally incorrect. In the second example, you may have been ethically correct in making an extra backup copy (because you didn't share it with anyone), but according to most software licences you're prohibited by law to make more than one backup copy.

To help you better understand the relationship between ethical and legal acts (or the opposite), consider Figure 1.5. The graph is composed of four quadrants and you

Figure 1.5
Acting Ethically and Legally¹⁰

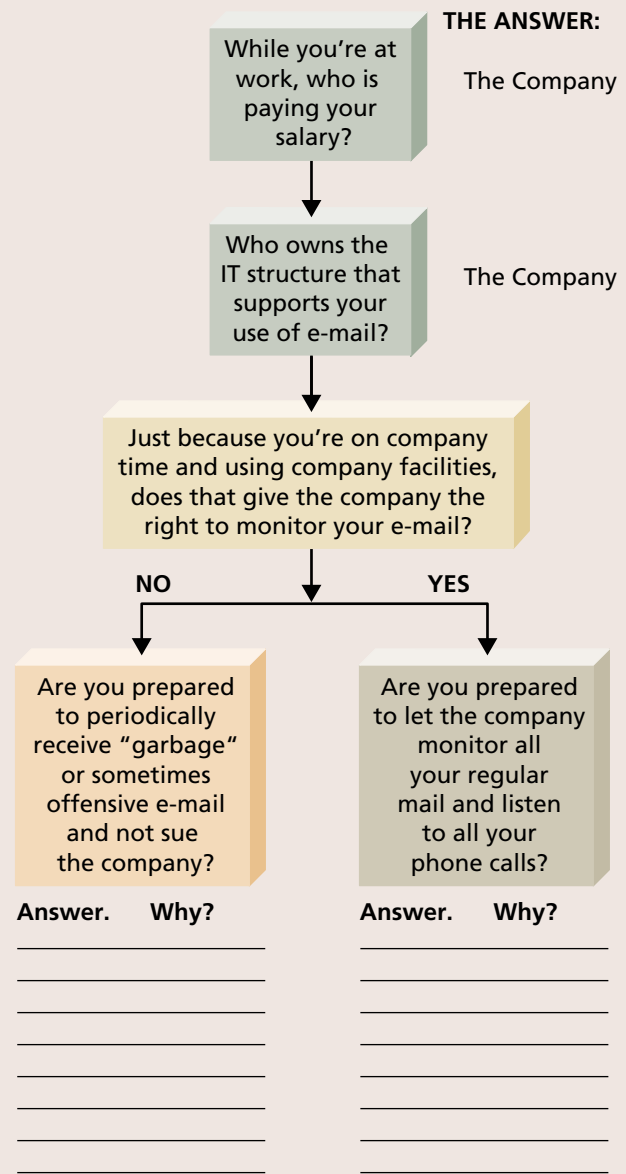


ON YOUR OWN

E-MAIL: ELECTRONIC MAIL OR EXPENSIVE MAIL?

In February 1995, an employee at Chevron came across what he thought was an interesting and funny list—“25 Reasons Why Beer Is Better Than Women.” He quickly logged into his e-mail and distributed the list to many people. The only problem was that one of the people who received the e-mail was a woman, and she was offended by it. What followed was a lot of legal mumbo jumbo and an eventual out-of-court settlement worth \$2 million that Chevron had to pay to the offended employee—definitely an example of when e-mail becomes expensive mail.

Most people agree that the original sender should not have distributed the list. It was mail that was potentially embarrassing and offensive to some people and, therefore, should not have been distributed as a matter of ethics. What people don't agree on, however, is whether or not the company was at fault for not monitoring and stopping the potentially offensive mail. What are your thoughts? Before you decide, follow the accompanying diagram and consider the consequences of your answers.¹¹



always want your actions to remain in quadrant I. If all your actions fall in that quadrant, you'll always be acting legally and ethically, and this in a socially responsible way.

In business, the question of ethics is an overriding concern because of the widespread use of IT to capture information. For example, if a business invests money to capture information about you as you make a purchase, does that information then belong to the business or do you still have privacy rights regarding its distribution?

Being socially and ethically responsible not only includes the actions you undertake yourself but also dealing with the actions of others, which may involve protecting yourself against cyber-crimes. Hackers are one group of people who commit cyber-crimes. A **hacker** is a very knowledgeable person who uses his or her knowledge to

invade other people's computers. There are actually many types of hackers today—white-hat hackers, black-hat hackers, crackers, hacktivists, and script bunnies. Each has different motives and each is largely a different group of people. To protect yourself and your organization from their hacking, you need to understand who they are and what they do. We explore hackers in more detail in Chapter 8.

People, again, are the most valuable resource in any organization. People, like you as a knowledge worker, use IT to work with and manage information. The most successful people understand their information and information processing needs, and they understand the benefits of technology and know how to use technology to facilitate their working with information.

Information Technology as a Key Resource

Within management information systems (MIS), the third key resource is information technology. Formally defined, **information technology (IT)** is any computer-based tool that people use to work with information and support the information and information processing needs of an organization. So IT includes a cell phone or PDA that you might use to obtain stock quotes, your home computer that you use to write term papers, large networks that businesses use to connect to other businesses, and the Internet that almost one in every six people in the world currently use.

KEY TECHNOLOGY CATEGORIES

There are two basic categories of technology—hardware and software (see Figure 1.6). **Hardware** is the physical devices that make up a computer (often referred to as a *computer system*). **Software** is the set of instructions that your hardware executes to carry out a specific task for you. So, if you have a Nintendo GameCube, the GameCube box itself and the controller are hardware devices, while the games you play are software. Let's briefly look at hardware and software; for a more thorough discussion, read Extended Learning Module C.

TECHNOLOGY HARDWARE

All hardware falls into one of six categories—input devices, output devices, storage devices, telecommunications devices, CPU and RAM, and connecting devices. Here's a quick summary.

- An **input device** is a tool you use to capture information and commands; input devices include such tools as a keyboard, mouse, touch screen, game controller, barcode reader, and skimmer (used for swiping credit cards and the like).
- An **output device** is a tool you use to see, hear, or otherwise accept the results of your information processing requests. Output devices include such tools as a printer, monitor, and set of speakers.
- A **storage device** is a tool you use to store information for use at a later time. Output devices include such tools as a floppy disk, hard disk, CD, and DVD.
- A **telecommunications device** is a tool you use to send information to and receive it from another person or location. For example, if you connect to the Internet using a modem, the modem (which could be a telephone, DSL, cable, wireless, or satellite modem) is a telecommunications device.

Figure 1.6

Information Technology Hardware and Software

Description	Examples
<i>Hardware: The Physical Devices That Make Up a Computer</i>	
Input device —tool you use to capture information and commands	<ul style="list-style-type: none"> • Keyboard, mouse • Touch screen, game controller • Barcode reader, skimmer
Output device —tool you use to see, hear, or otherwise accept the results of your information processing requests	<ul style="list-style-type: none"> • Printer • Monitor • Set of speakers
Storage device —tool you use to store information for use at a later time	<ul style="list-style-type: none"> • Floppy disk • Hard disk • CD, DVD
Central processing unit (CPU) —the actual hardware that interprets the software instructions and coordinates how all the other hardware devices work together	<ul style="list-style-type: none"> • Pentium 4 • AMD Athlon XP Thunderbird
RAM (random access memory) —temporary memory that holds information, application software, and operating system software	<ul style="list-style-type: none"> • Many manufacturers make RAM that will fit in a variety of computers
Telecommunications device —tool you use to send information to and receive it from another person or location	<ul style="list-style-type: none"> • Telephone modem • DSL modem • Cable modem • Microwave • Satellite
Connecting devices —tools that connect devices to each other	<ul style="list-style-type: none"> • Printer cord • Parallel and serial ports
<i>Software—The Set of Instructions That Your Hardware Executes to Carry Out a Specific Task</i>	
Application software —software that enables you to solve specific problems or perform specific tasks	<ul style="list-style-type: none"> • Word processing software • Payroll software • Spreadsheet software • Inventory management software
Operating system software —system software that controls your application software and manages how your hardware devices work together	<ul style="list-style-type: none"> • Windows XP • Windows 2000 • Windows Me • Mac OS • Linux • UNIX
Utility software —software that provides additional functionality to your operating system	<ul style="list-style-type: none"> • Antivirus software • Screensaver • Disk optimization software • Uninstaller software

- The **central processing unit (CPU)** is the actual hardware that interprets and executes the software instructions and coordinates how all the other hardware devices work together. Popular personal CPUs include the Pentium 4 and AMD Athlon XP Thunderbird. **RAM**, or **random access memory**, is temporary storage that holds the information you're working with, the application software you're using, and the operating system software you're using. Together, the CPU and RAM make up the "brains" of your computer.
- *Connecting devices* include such things as parallel ports into which you would connect a printer, connector cords to connect your printer to the parallel port, and internal connecting devices that mainly include buses over which information travels from one device such as the CPU to RAM.

That may be the shortest overview of hardware you've ever read. If you need more detail, please read the Extended Learning Module C on hardware and software.

TECHNOLOGY SOFTWARE

There are two main types of software—application and system. **Application software** enables you to solve specific problems or perform specific tasks. Microsoft Word, for example, can help you write term papers, so it's application software. From an organizational perspective, payroll software, collaborative software such as videoconferencing, and inventory management software are all examples of application software.

System software handles tasks specific to technology management and coordinates the interaction of all technology devices. Within system software, you'll find operating system software and utility software. **Operating system software** is system software that controls your application software and manages how your hardware devices work together. Popular personal operating system software includes Microsoft Windows XP, Microsoft Windows Me, Mac OS X (for Apple computers), and Linux (an open source operating system).

Utility software provides additional functionality to your operating system. It includes antivirus software, screensavers, disk optimization software, uninstaller software (for properly removing unwanted software), and a host of others. Again, in Extended Learning Module C we discuss software in greater detail.

DECENTRALIZED COMPUTING AND SHARED INFORMATION

All organizations use hardware and software to connect people to each other, reach out to customers, distributors, suppliers, and business partners, and to provide a reliable and stable computing environment for smooth operations. Because so many people perform so many different tasks within a business environment, the concepts of decentralized computing and shared information are very important (see Figure 1.7).

Decentralized computing is an environment in which an organization splits computing power and locates it in functional business areas as well as on the desktops of knowledge workers. This is possible because of the proliferation of less expensive, more powerful, and smaller systems including notebooks, desktops, minicomputers, and servers. The Internet is a great example of a decentralized computing environment. You use your computer or perhaps cell phone or PDA to access the information and services of host computers on the Internet. In this case, your computer is called a *client computer*, while the host computers are referred to as *server computers*.

ON YOUR OWN

IDENTIFYING HARDWARE AND SOFTWARE

Pick up a recent copy of your local newspaper or perhaps a computer magazine such as *PC Magazine* or *Wired* and find an ad for a personal computer system. What is the price of the complete system? What hardware devices does it include and to which of the six hardware categories does each belong? What software does it include? Which software, if any, is

application software? Which software, if any, is operating system software? Which software, if any, is utility software?

Now compare that system to a similar one that you can find on the Internet (you might want to start at Dell at www.dell.com). Which is cheaper? Does this surprise you? Why or why not?

Shared information is an environment in which an organization's information is organized in one central location, allowing anyone to access and use it as they need to. Shared information enables people in the sales department, for example, to access work-in-progress manufacturing information to determine when products will be available to ship. At your school, the registrar's office can access the information within the financial aid office to determine how much of your tuition bill is covered by a scholarship or loan. To support shared information, most businesses organize information in the form of a database. In fact, databases have become the standard by which businesses organize their information and provide everyone access to it. We've devoted all of Chapter 3 to databases as well as data warehouses, tools for organizing information to support decision-making tasks.

Now that we've provided you with a brief overview of information technology, let's look specifically at the roles and goals of information technology in any business. IT is an essential enabler of business operations. In the information age, all businesses need technology as tools for working with information.

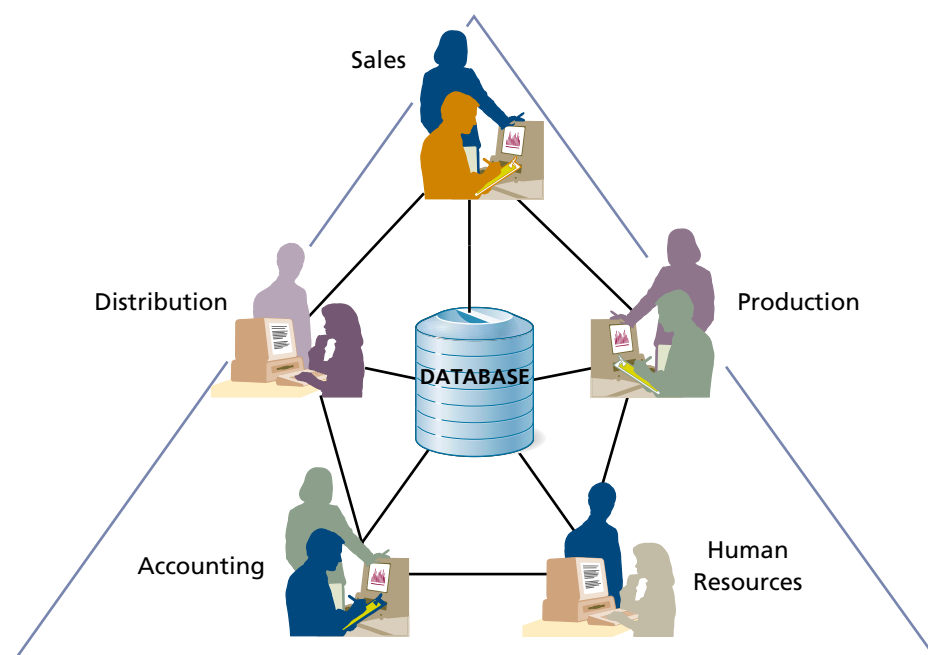


Figure 1.7

Decentralized Computing and Shared Information

Roles and Goals of Information Technology

The roles and goals of information technology are many and varied. Here we introduce you to six important roles and goals. And we will constantly refer back to these throughout the chapter. So they're not only important to learn so you can do well on an exam; they will also help you better organize your view of technology within an organization. The six major roles and goals of information technology include (see Figure 1.8):

1. Increase employee productivity
2. Enhance decision making
3. Improve team collaboration
4. Create business partnerships and alliances

Figure 1.8

The Roles and Goals of Information Technology

Role/Goal	IT Tool Examples	Business Benefits Examples
1. Increase employee productivity	<ul style="list-style-type: none"> • OLTP • TPS • CIS 	<ul style="list-style-type: none"> • Reduce time • Reduce errors • Reduce costs • Enable customers to process their own transactions
2. Enhance decision making	<ul style="list-style-type: none"> • OLAP • DSS • GIS • EIS • AI • Data warehouses 	<ul style="list-style-type: none"> • Generate alternatives • Recommend solutions • Drill down through information
3. Improve team collaboration	<ul style="list-style-type: none"> • WSS • Groupware 	<ul style="list-style-type: none"> • Manage knowledge within the organization • Support geographically dispersed teams • Facilitate communications • Develop applications quickly
4. Create business partnerships and alliances	<ul style="list-style-type: none"> • IOS • EDI 	<ul style="list-style-type: none"> • Manage supply chains • Share expertise and intellect • Enable B2B e-commerce
5. Enable global reach	<ul style="list-style-type: none"> • Internet • Translation phones 	<ul style="list-style-type: none"> • Take advantage of a cheaper/larger workforce • Advertise locally made • Tap into global intellectual expertise
6. Facilitate organizational transformation	<ul style="list-style-type: none"> • Just about any technology you can name, depending on its use 	<ul style="list-style-type: none"> • Stay competitive • Offer new customer interfaces • Enter new markets

5. Enable global reach
6. Facilitate organizational transformation

INCREASE EMPLOYEE PRODUCTIVITY

The original and still most fundamental role of information technology is to increase productivity. In short, because of its great speed and ability to store and process massive amounts of information accurately, IT can greatly reduce the time, errors, and costs associated with processing information in a variety of ways.

For example, if you have an automated payroll system, it can process payroll sheets and generate cheques more quickly than if you were doing it by hand. If your employees can submit time cards and expense reimbursement sheets electronically as opposed to submitting handwritten documents, then the likelihood of an error occurring is reduced. And when you decrease processing times and errors, you decrease costs. When you use technology to process transaction information, it's called **online transaction processing (OLTP)**—the gathering of input information, processing that information, and updating existing information to reflect the gathered and processing information.

IT systems such as our payroll example are called transaction processing systems. A **transaction processing system (TPS)** processes transactions that occur within an organization. Today, we pretty well accept these as rather dull and mundane. But your customers see them differently. If your TPSs don't process information correctly or don't work at all because of a computer outage, your customers may choose to do business with one of your competitors. Indeed, if you call an airline to make a reservation and you're informed that the computers don't work and your reservation cannot be processed, you may call another airline.

A vitally important hybrid of a TPS is a customer-integrated system. A **customer-integrated system (CIS)** is an extension of a TPS that places technology in the hands of an organization's customers and allows them to process their own transactions (see Figure 1.9). ATMs are a good example of a CIS. ATMs provide you with the ability to do your own banking anywhere at anytime. What's really interesting is that ATMs actually do nothing "new," but they give you greater flexibility in accessing and using your money. CISs further decentralize computing power in an organization by placing that power in the hands of customers.

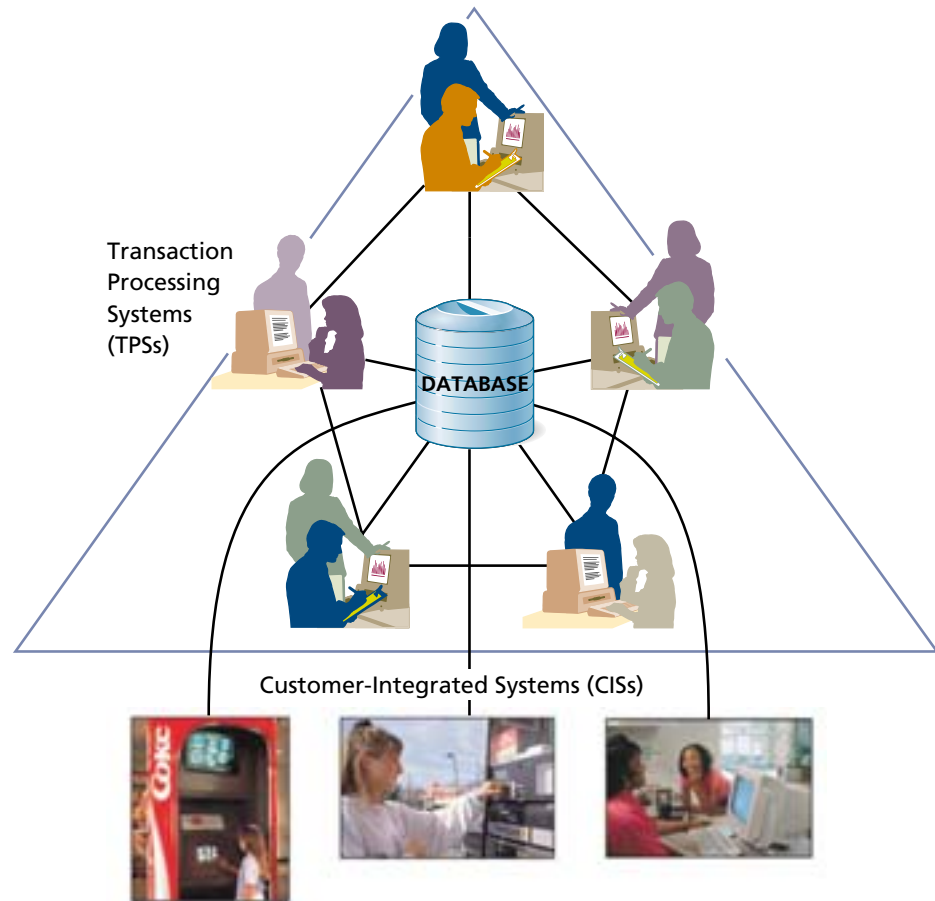
The Web is full of examples of customer-integrated systems. When you use any Web site that allows you to order and pay for products and services, you're using a CIS. Customer-integrated systems are the new popular IT system today. You can use a CIS to scan your groceries, pay for fuel at the pump instead of going inside, and perhaps even register for classes online. When you enter the business world, first make sure your transaction processing systems work correctly and all the time. Then, try to convert them to customer-integrated systems. It's a win-win situation for your organizations and your customers.

ENHANCE DECISION MAKING

The counterpart to online transaction processing is **online analytical processing (OLAP)**—the manipulation of information to support decision making. And IT can definitely play a significantly role here. Some decisions are easy to make. If you're deciding what to wear to school, you'll look at today's weather forecast and decide whether to wear shorts and a T-shirt or perhaps a sweatshirt and pants. However, deciding what to major in or which job to accept upon graduation is

Figure 1.9

Transaction Processing and Customer-Integrated Systems



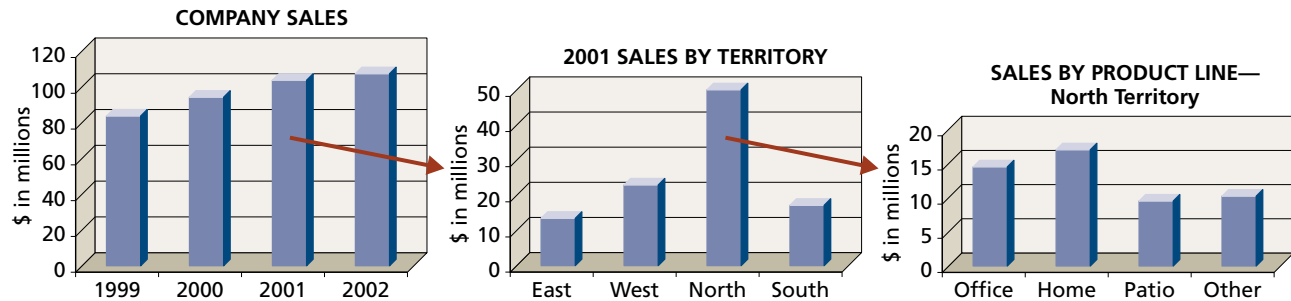
much more difficult. Likewise, in business, deciding how many inventory units to reorder is relatively simple, while deciding where to build a new distribution centre is not.

Technology to support decision making falls into one of two general categories— (1) those that help you analyze a situation and then leave the decision entirely up to you including decision support systems, executive information systems, and geographic information systems and (2) those that actually make some sort of recommendation concerning what to do. The first category includes such IT tools as decision support systems, executive information systems, and geographic information systems. For example, an **executive information system (EIS)** is a highly interactive IT system that allows you to first view highly summarized information and then choose how you would like to see greater detail, which may alert you to potential problems or opportunities. In Figure 1.10, you can see three graphs which might appear in an EIS. The first one of the left shows sales by year. By clicking on a particular year, you can then view sales by territory for that year. Then, by clicking on a particular territory, you can view sales by product line for that territory within a given year. These types of IT systems really offer you just great speed in massaging information, developing alternatives, and viewing information from various perspectives. However, they do not make recommendations concerning what you should do.

The second category includes technologies in the area of artificial intelligence. **Artificial intelligence (AI)** is the science of making machines imitate human thinking and behaviour. For example, a **neural network** is an artificial intelligence which is capable of learning to differentiate patterns. Your credit card company probably uses

Figure 1.10

Drilling Down with an Executive Information System



a neural network to monitor your card use and identify potential fraud if someone else happens to steal your card and attempt to use it. In this instance, the neural network has been fed every single credit card transaction you've performed, and it's developed a pattern of how, when, and why you use your card. Then, when a transaction occurs that doesn't fit the pattern of your profile, the neural networks alerts someone that your credit card may have been stolen.

We explore technology support for decision making throughout this text and specifically in Chapter 4.

IMPROVE TEAM COLLABORATION

Teams would certainly be characterized as a “best business practice” today. The adage “Two heads are better than one” does hold true. Of course, teams in the business world are often composed of more than two people with many being spread all over the globe, and that's why information technology plays such an important role in team collaboration. Collaboration-enabling technologies such as chat rooms, the Internet in general, and workgroup support systems are all fundamental to the success of a team.

A **workgroup support system (WSS)** is a system designed specifically to improve the performance of teams by supporting the sharing and flow of information. The foundation of any workgroup support system is **groupware**—the popular term for the software component that supports the collaborative efforts of a team. Popular groupware suites include Lotus/Notes Domino, Microsoft Exchange, Novell GroupWise, and NetSys WebWare.

Groupware contains software components for supporting the following three team functions:

1. Team dynamics—communications among team members and the facilitation and execution of meetings. Specific technologies that support team dynamics include group scheduling software, electronic meeting software, videoconferencing software, and whiteboard software.
2. Document management—a **group document database** that acts as a powerful storage facility for organizing and managing all documents related to specific teams. Most group document database employ multiple levels of security, allowing some teams to access the information of other teams. In these databases, you can store and search information of all kinds—text, graphs, images, audio clips, and even videos.
3. Applications development—facilities that allow a team to develop unique applications quickly, so the teams can literally “get to work.”

INDUSTRY PERSPECTIVE

SPAR AEROSPACE LAUNCHES INFORMATION-SHARING INTRANET

Spar Aerospace, with its major sites in Brampton, Ontario and Sainte-Anne-de-Bellevue, Quebec has opted for an intranet solution to facilitate information sharing between different business units. Each site is dedicated to different product lines (i.e., telerobotics/Canadarm in Ontario and satellites/satellites subsystems in Quebec). Before intranets were introduced, collaboration was difficult. Each site maintained different libraries focused on specific disciplines and on serving the needs of a specific client base. Document sharing between sites was complicated because of incompatible document formats. In early 1995, Spar's management realized that the Internet and the World Wide Web allowed the sharing of numerous files of

various formats. Consequently, the company decided to adopt an "internal Internet" solution—as Spar's management called it. The goal became to implement an integrated system giving employees companywide accessibility to the libraries' collections and to other useful information.

Today, when users within the Spar firewall type "biblio.spar.ca," a graphical menu appears offering a choice between the Ontario or the Quebec site. Clicking on either of these links leads the user to a listing of all information available at that site. Furthermore, conferencing capabilities have been added enabling engineering staff at either site to share various data and exchange project information with others.¹²

All of these technology-based tools and many more enable teams to work effectively, even when their members are geographically dispersed. Teams, as you'll learn in later chapters, are vitally important to the success of any organization. But concepts such as the virtual workplace and telecommuting are almost contradictory to the success of teams. If you consider even further that today's economy is a global one, any given team may be composed of people all over the world. In this case, technology, and specifically groupware, is an essential enabler of team innovation.

We'll talk more about the technologies that support team collaboration throughout this text and especially in Chapter 4. Your career opportunity lies in learning how to work effectively in a team environment. Many of your classes in school will probably require that you work in teams; the reason is because teams are such an important part of the business world.

CREATE BUSINESS PARTNERSHIPS AND ALLIANCES

Each and every business contains unique and strategically sensitive expertise and intellect. Wal-Mart, for example, is a premier retailer of home and family products such as clothing. Vanity Fair, on the other hand, is a premier manufacturer of clothing including Lee and Wrangler jeans. So these two organizations have created a strong and highly successful business partnership.

When a customer buys a pair of Wrangler jeans at a Wal-Mart store on a Wednesday, for example, that information is sent that night to Vanity Fair, via computer of course. If Vanity Fair has a replacement pair in stock, it's immediately sent out on Thursday and arrives at Wal-Mart on Saturday. Three days for inventory replenishment is an outstanding feat, and would not be possible without the use of technology.

But speed isn't the only advantage. Vanity Fair's market-response system also takes the guesswork out of reordering and provides retailers with only the best-selling styles and lines. Vanity Fair's extended market response system will even analyze the sales databases of retailers and determine groups of products—for instance, matching jeans, shirts, and jackets—to help retailers forecast ideal inventory supply levels. As you can

TEAM WORK

FINDING BUSINESS PARTNERS AND ALLIANCES ON THE WEB

Like any other type of business, no dot-com on the Web can be an island. Indeed, dot-coms have determined that they must develop business partners on the Web. These partnerships manifest themselves in many different ways. One such way is through a **banner ad**—a small ad on one Web site that advertises the products and services of another business, usually another dot-com.

Visit the Web and go exploring. Find five Web sites on which banner ads appear. Which Web sites did you find with banner ads? For what business was each ad? Did you find any Web sites with more than one? If so, which sites? Now wait a day and visit the same five sites. Did any of the banner ads change? If so, why do you think they changed?

see, business partnerships and alliances enable each participating organization to tap into the intellectual capital of the other participating organizations.

This type of business partnership is enabled by interorganizational systems and is form of business to business (B2B) e-commerce. An **interorganizational system (IOS)** automates the flow of information between organizations to support the planning, design, development, production, and delivery of products and services. A typical IOS includes **electronic data interchange (EDI)**—the direct computer-to-computer transfer of transaction information contained in standard business documents, such as invoices and purchase orders, in a standard format. In short, EDI replaces paper documents with digital records exchanged between business partnerships' computers. R. J. Reynolds uses EDI to order materials from its suppliers. In doing so, R. J. Reynolds has been able to cut order processing costs from \$75 per order (using paper) to only 93 cents using EDI.

EDI is becoming so important that most large businesses won't do business with your business if you don't support EDI. For example, General Motors will only order raw materials and parts from suppliers who support EDI capabilities.

Another important concept related to EDI is electronic funds transfer (EFT). EFT allows organizations to complete the full transaction without physically sending anything, including the payment. So EDI supports the electronic transfer of information such as sales invoice, and EFT supports the electronic transfer of the monies to pay the sales invoice amount. Just as EDI is becoming a common business practice, so is EFT. Think about filing your income tax returns electronically. It doesn't make much sense to file the paperwork and then still have to send a personal cheque or receive a refund cheque from the federal government.

ENABLE GLOBAL REACH

As we've already stated, you can characterize today's operating environment as one of a global economy. Because of technology, you now have the ability to market your products and services in countries all over the world and develop partnerships and alliances (which we just discussed) with other businesses throughout the globe. Not only can you do this, you *must* to be successful in the long run. Think about Honda cars for a moment, considered by most people to be manufactured in Japan, its "country" headquarters. Honda actually produces more cars outside than inside Japan. Not only that—Honda exports more cars from the United States than General Motors, Ford, or Chrysler.

A business can gain significant advantages by enabling global reach through technology. It can take advantage of a cheaper and larger workforce; many businesses in

North America locate their back-end office functions (accounting and the like) in Ireland for this reason. It can also tap into the intellectual expertise of a workforce in another country. Many North American software publishers actually write and produce much of their software in such countries as India and Pakistan.

To operate effectively using global reach, businesses must use technology to overcome the barriers of time and location. One simple example is that of translation phones. AT&T is currently perfecting a translation phone that will allow you to call anywhere in the world and use your native language for speaking while the person on the other end hears your speech in his or her native tongue. In between is a powerful automatic speech recognition system that captures your speech, converts it into another language digitally, and then synthesizes the speech in that language to the person on the other end of the line. There are also utilities on the Web that translate Web pages from one language to another.

To also operate effectively using global reach, you must consider the culture of other countries. **Culture** is the collective personality of a nation or society, encompassing language, traditions, currency, religion, history, music, and acceptable behaviour, among other things. For example, in many countries around the world workers take extended breaks at lunch well into the afternoon hours. So you shouldn't schedule a virtual team meeting during those particular hours. It's a simple example, but it does illustrate the fact that you have to consider the culture, in this case the work hours, of your various team members.

FACILITATE ORGANIZATIONAL TRANSFORMATION

And last, but certainly not least, information technology plays a critical role in facilitating organizational transformation. Organizational transformation is necessary to respond to the ever-changing needs (and wants) of today's marketplace. But organizational transformation doesn't have to be like going from a cocoon to a beautiful butterfly (one of nature's most dramatic and wonderful transformations). Businesses today can undergo a transformation by simply changing the way they deliver their products and services.

Consider Blockbuster Video—it has recently undergone one transformation (renting video games as opposed to just movies) and is in the middle of another. Blockbuster has created a business partnership with many cable TV services. Through a cable TV service, Blockbuster is now offering pay-per-view movies. So you don't have to go to a Blockbuster store to rent a video—you can order it from the comfort of your own home for about the same price. Not only that, once you order a movie, you can typically watch it several times within 24 hours.

This transformation for Blockbuster lies in changing how it delivers its products to you. Even more importantly, Blockbuster realizes that pay-per-view movies is the wave of the future, not going to a store to rent a video. Don't be surprised if, in ten years, you can't find a local video rental store. Of course, technology played a key role in Blockbuster's transformation. Without enabling network technologies and large servers that digitally store videos, Blockbuster would have no way of offering pay-per-view service.

Every business today must be willing to change, sometimes in minor ways but often in dramatic and “knee-breaking” ways. Just ask the folks at Kmart. At one point in time, it was considered to be a premier discount retailer. But it failed to transform itself to meet the changing desires of the market, and Kmart filed for bankruptcy in 2002.

As we study business transformations in this text, you'll learn about some information technologies, including enterprise software and object-oriented technologies. As you learn about them, don't focus too much on the technology itself. Instead, focus on how businesses can use those technology to enable organizational transformation.

INDUSTRY PERSPECTIVE

NOKIA—FROM PAPER, TO RUBBER, TO CELL PHONES AND TELECOMMUNICATIONS

The Nokia Company began over 150 years ago as a producer of paper. In 1967, the Nokia Corporation was formed, through a merger of the Nokia Company (paper), Finnish Rubber Works (rubber), and Finnish Cable Works (telecommunications cables).

As Nokia moved through the remainder of the 1960s, all of the 1970s, and into the 1980s, it saw huge possibilities in the wire-free telephone market. By transforming itself and focusing its energies in that area, Nokia produced the original and first hand-portable telephone in 1987.

You probably know the rest of the story. Today, Nokia is regarded as the premier innovator and manufacturer of cell phones. And it hasn't forgotten its past. For example, while producing rubber as a pri-

mary product, Nokia was the first to manufacture and sell brightly coloured rubber boots (you might as well be in fashion while as work). So it's no surprise that Nokia innovated the multicoloured, clip-on facias that literally made cell phones an overnight fashion sensation.

Businesses don't have to go out of business just because the products they manufacture are no longer needed in our society. If your business finds itself in a shrinking market, be bold and innovative. Undertake some sort of dramatic organizational transformation. Nokia went from a premier manufacturer of rubber boots to the world's leading provider of cell phones in less than 15 years. That's a rather dramatic organizational transformation, wouldn't you say?¹³

Summary: Student Learning Outcomes Revisited

- 1. Describe the information age and the role of knowledge workers within it.** The **information age** is a time when knowledge is power. That is to say, what you don't know can in fact hurt you and put you out of business. A **knowledge worker**, in the information age, works with and produces information as a product.
- 2. Define management information systems (MIS).** **Management information systems (MIS)** deals with the planning for, development, management, and use of information technology tools to help people perform all tasks related to information processing and management. MIS includes three key resources—information, information technology, and people.
- 3. Describe key factors shaping today's economic environment.** Key factors shaping today's economic environment include:
 - The “e.conomy”—characterized by **electronic commerce**, which is commerce accelerated and enhanced by information technology, in particular, the Internet
 - The “Now” economy—immediate access customers have to the ordering of products and services
 - The **global economy**—in which customers, businesses, suppliers, distributors, and manufacturers all operate without regard to physical and geographical boundaries
 - The arriving **digital economy**—the electronic movement of all types of information, not limited to numbers, words, graphs, and photos but including physiological information such as voice recognition and synthesization
- 4. Validate information as a key resource and describe both personal and organizational dimensions of information.** Information is not only one of the three key components of management information systems (MIS), we are also in the “information” age, a time when knowledge is power. The personal and organizational dimensions of information include:
 - Personal

- Time—access to information when you need it and information that describes the time period you're considering
 - Location—access to information no matter where you are
 - Form—information in a form that is most usable and understandable (audio, text, video, animation, graphical, and others) and information that is free of errors
 - Organizational
 - Information flows—up, down, horizontally, and outward with respect to an organization
 - Granularity—the extent of detail within information
 - What information describes—**internal** (specific operational aspects of the organization), **external** (the environment surrounding the organization), **objective** (quantifiably describing something that is known), and **subjective** (attempting to describe something that is unknown)
- 5. Define how people are the most important organizational resource, their information and technology literacy challenges, and their ethical responsibilities.** People are the single most important resource in any organization, setting goals, carrying out tasks, and making decisions.
- Technology-literate knowledge workers are people who know how and when to apply technology.
 - Information-literate knowledge workers (1) can define what information they need, (2) know how and where to obtain that information, (3) understand the information once they receive it, and (4) can act appropriately on the basis of the information.
- Most importantly, knowledge workers must be ethical. **Ethics** are the principles and standards that guide our behaviour toward other people.
- 6. Describe the important characteristics of information technology (IT) as a key organizational resource. Information technology (IT) is any computer-based tools that people use to work with information and support the information and information processing needs of an organization. All technology is either hardware (the physical devices that make up a computer) or software (the set of instructions that your hardware executes).**
- 7. List and describe the six roles and goals of information technology in any organization.** The roles and goals of information technology include:
- Increase employee productivity—reducing the time, errors, and costs associated with processing information
 - Enhance decision making—helping you analyze a situation and then leaving the decision entirely up to you or actually making some sort of recommendation concerning what to do
 - Improve team collaboration—improving the performance of teams by supporting the sharing and flow of information
 - Create business partnerships and alliances—helping organizations work together to provide better and more timely products and services
 - Enable global reach—marketing your products and services in countries all over the world and developing partnerships and alliances with other businesses throughout the globe
 - Facilitate organizational transformation—responding to the ever-changing needs (and wants) of today's marketplace

CLOSING CASE STUDY ONE

YOU AND YOUR INFORMATION

In the opening case study and throughout the chapter, you read about how pervasive and invasive technology is in your life today. No matter what you do or where you go, your information travels with you and is eventually captured and stored by a number of organizations. Many people simply accept this fact and think little beyond it. In this all-encompassing information and IT environment, let's consider two issues—trust and accuracy. As you'll see, they are related.

First, answer (with a simple yes or no) the questions below, which pertain to your everyday life.

1. Do you keep a paper record of all your long-distance phone calls—when you placed them by date and time, to whom, and the length—and then compare that list to your monthly phone bill?
Yes No
2. Do you meet with the meter reader to verify the correct reading of your water, gas, or electricity usage?
Yes No
3. As you shop, do you keep a record of the prices of your groceries and then compare that record to the register receipt?
Yes No
4. Do you frequently ask to see your doctor's medical record on you to ensure that it's accurate?
Yes No
5. When you receive a tuition bill, do you pull out your calculator, add up the amounts, and verify that the total is correct?
Yes No
6. Have you ever purchased a credit report on yourself to make sure your credit information is accurate?
Yes No
7. Have you ever called the police department to verify that no outstanding traffic violations have been inadvertently assigned to you?
Yes No

8. Do you count your coin change when you receive it from a store clerk?
Yes No
9. Do you verify your credit card balance by keeping all your credit card receipts and then matching them to charges on your statement?
Yes No
10. Do you keep all your paycheque stubs to verify that the amounts on your T4 form at the end of the year are accurate?
Yes No

To how many of those questions did you answer yes? To how many did you answer no? More than likely, you answered no to almost all the questions (if not all of them). What does that say? Well, basically, that you trust organizations to keep accurate information about you. The real question is "Is that necessarily the case?"

Now answer the set of questions below, which relate to the level of confidence organizations have in the accuracy of information you give them.

1. When interviewing with potential employers, do they take your word that you have a college degree?
Yes No
2. If you deposit several cheques into your chequing account at once, does the bank trust you to correctly add the amounts?
Yes No
3. When you register for a class that has a prerequisite, does your school assume that you have actually taken the prerequisite class?
Yes No
4. When you make a deposit at an ATM and enter the amount, does the bank assume that you entered the correct amount?
Yes No
5. When you're buying a house and negotiating a loan, does the bank assume that the price

you're paying for the house is correct and not inflated?

Yes No

6. When insuring your car, does the insurance company assume that you have a good driving record?

Yes No

7. When you apply for a parking permit at your school, does it assume that the car belongs to you?

Yes No

8. When you file your taxes, does the Canada Customs and Revenue Agency assume that you've reported all your income over the past year?

Yes No

The answer to each of those questions is probably no. And what does that say about the extent to which organizations trust you to provide accurate information? In this instance, it may not be strictly a matter of trust. Organizations today can't afford to have dirty information—information that's not accurate. Because organizations base so many of their decisions on information, inaccurate information creates a real problem that may equate to inefficient processes and lost revenue.

So, on the one hand, you're probably very trusting in your assumptions that organizations are maintaining accurate information about you; on the other, organizations don't really trust you to provide accurate information.

Questions

- Should you really trust organizations to maintain accurate information about you? In many instances, is it even worth your time and energy to verify the accuracy of that information?
- What other examples can you think of in which you simply trust that your information is accurate? What other examples can you think of in which specific organizations don't assume that you're providing accurate information?
- What sort of impact will cyberspace business have on the issues of trust and accuracy? Will it become easier or more difficult for cyberspace business to assume that you're providing accurate information? Will you trust cyberspace business to maintain your information more accurately than traditional organizations?
- What are the ethical issues involved in organizations sharing information about you? In some instances it may be okay and in your best interest. But what if the shared information about you is inaccurate? What damage could it cause? What recourse do you have, if any?
- It's a real dilemma—most people think that credit card offerers charge extremely high interest rates. But how many people do you know who actually go through the process of calculating their average daily balances, applying the interest rates, and then verifying that the interest charged on their accounts is correct? Why do people complain that they are being charged excessive interest rates and then fail to check the accuracy of the interest calculations?
- What about the future? As more organizations maintain even more information about you, should you become more concerned about accuracy? Why or why not?

CLOSING CASE STUDY TWO

HOW MUCH OF YOUR PERSONAL INFORMATION DO YOU WANT BUSINESSES TO KNOW?

The information age has brought about great debates with respect to information availability and privacy. For example, most cities in North America provide searchable Internet-based databases with real estate information. You can type in an address and see what a family paid for a home, when they bought it, and often even how it's financed. You can also type in a person's name and find the same information. Is that good or bad? Probably depends on your perspective. You can also use special search engine utilities such as Yahoo! People Search (people.yahoo.com) to find the phone numbers and addresses of people all over the world. You might want to try and see if you can find yourself.

From an organizational perspective, businesses need information about you to provide the best possible products and services. The more a business knows about you, the more it can tailor its offerings to you. In many ways, this is good. We all want personalized service. But, in a way, it could also be bad. Just how much of your personal information do you want businesses to know? Consider these examples.

MITCHELLS OF WESTPORT

Mitchells is an upscale old-fashioned clothing retailer that's exploiting technology and information to create one-to-one customer service. With a database of more than 50,000 customers and ten years of transaction data, Mitchells can sift through information to better serve its customers. As CEO Jack Mitchell explains, "What that means in real terms is that we can look at historical preferences of our customers, and, for instance, see if a customer who used to buy American suits likes a more contemporary European look in his clothing."

Mitchells even tracks information on its high-revenue customers such as the company they work for, their position, birthdays, anniversaries, and kids' name and ages. Mitchells uses this type of information to constantly communicate with its customers and create a very real one-to-one relationship.

ACXIOM CORP.

Most people have never heard of Acxiom Corp., but it is most certainly aware that you exist, even to the extent that it may know your height and weight. Acxiom specializes in providing information to organizations that want to market products and services. Since the mid-1980s, Acxiom has been gathering information and building a special file called InfoBase. InfoBase contains some or all of the following facts on over 200 million people: home ownership, age, estimated income, cars owned, occupation, buying habits, types of credit cards used, children, and even height and weight.

For a fee, you can buy any or all of this information from Acxiom on any customer demographic (perhaps just the people who live in your neighbourhood). And Acxiom does sell this information to other organizations. For example, Allstate Corp. buys information concerning insurance applicants' credit reports, driving records, claims histories, and family relationships (just in case you have a relative who likes to speed) from Acxiom.

In today's world, information is big business, and the use of it is definitely enabled by information technology. Perhaps the real question isn't "How much information is too much?" but rather "Who has access to that information and for what purposes are they using it?"

These are the sorts of questions you'll face throughout the rest of your life. And you'll do so from two perspectives. The first is a personal one. How much of your information do you want others to be able to access? If you fill out sweepstakes entries on the Internet or even a warranty card for a new product you've recently purchased, you are giving up a great deal of privacy.

The second perspective deals with how you'll use information in the business world. Will you check on your potential customers by using the Internet to see if and when they've purchased a home? Is that legal? Certainly. Is it ethical? That depends on you—ethics, after all, are a matter of personal interpretation.¹⁴

Questions

1. What is the role of information technology at Acxiom? Could it still maintain and provide such a wealth of information without using IT? Acxiom's InfoBase holds 350 terabytes of information. How much information is that? How many double-spaced pages of text would it take to hold all that information?
2. How has Mitchells used information and information technology to enable organizational transformation? Consider how Mitchells operated before it gathered and kept such a wealth of information and how it operates now in the information age.
3. Acxiom and Mitchells have two entirely different sets of business goals—Acxiom uses information to sell as a product (or commodity if you wish) to other businesses, while Mitchells uses information to better serve individual consumers. For each, discuss the flows of information relative to upward, downward, horizontally, and outward.
4. What are the ethical and legal issues relating to the fact that Acxiom may know your height and weight and is certainly willing to sell that information to the highest bidder? Can Acxiom legally own that information and sell it to any and every organization?
5. From where do you think Acxiom gathers its information? Could it establish a partnership with other organizations such as Mitchells and buy personal information? How do you feel about this?
6. Many people dream of having a close personal relationship with a clothing retailer such as Mitchells. You simply walk in and the salesperson seems to know everything about you (and remembers you well). However, Mitchells communicates extensively with its customers by e-mail. Would you ever get tired of receiving e-mails that solicit your business? How many of those e-mails do you receive now on a weekly basis? What steps can you take to avoid them?
7. Overall, what's your view of the information age in which we live? Are we better off because we have access to a wealth of information, including personal information? Should organizations such as Acxiom and Mitchells exploit their information for all its worth? Should they consider your feelings?

Key Terms and Concepts

- application software, 20
- artificial intelligence (AI), 24
- banner ad, 27
- central processing unit (CPU), 20
- culture, 28
- customer-integrated system (CIS), 23
- data, 9
- decentralized computing, 20
- digital economy, 8
- electronic commerce, 6
- electronic data interchange (EDI), 27
- ethics, 16
- executive information system (EIS), 24
- external information, 13
- global economy, 8
- group document database, 25
- groupware, 25
- hacker, 17
- hardware, 18
- information, 9
- information age, 4
- information granularity, 13
- information technology (IT), 18
- information-literate knowledge worker, 15
- input device, 18
- internal information, 13
- interorganizational system (IOS), 27
- intranet, 11
- knowledge worker, 4
- m-commerce, 7
- management information systems (MIS), 4
- neural network, 24
- objective information, 13
- online analytical processing (OLAP), 23
- online transaction processing (OLTP), 23
- operating system software, 20
- operational management, 12
- output device, 18
- RAM (random access memory), 20
- shared information, 21
- software, 18
- storage device, 18
- strategic management, 12
- subjective information, 13
- system software, 20
- tactical management, 12
- technology-literate knowledge worker, 14
- telecommunications device, 18
- telecommuting, 6
- transaction processing system (TPS), 23
- transnational firm, 8
- utility software, 20
- virtual workplace, 6
- workgroup support system (WSS), 25

Short-Answer Questions

1. How does a knowledge worker differ from other types of workers?
2. What is management information systems (MIS)?
3. What is electronic commerce?
4. How are telecommuting and the virtual workplace related?
5. How is today's economy wants-based?
6. What will follow the information age?
7. What is the relationship between data and information?
8. What are the personal dimensions of information?
9. What are the three levels of management in an organization?
10. What is information granularity? How does it differ according to the levels of an organization?
11. What is the difference between internal and external information?
12. What are the two basic categories of information technology (IT)?
13. What are the six categories of information technology (IT) hardware?
14. How are decentralized computing and shared information related to each other?
15. What are the six roles and goals of information technology?

Assignments and Exercises

1. **SURVEYING THE GLOBAL ECONOMY.** Visit a local store in your area that sells clothing and perform a small survey. Pick up ten different pieces of clothing (shoes, shirts, pants, belts, etc.) and note the country in which they were made. Do your results support or contradict our assertion that we now live in a global economy? Why?
2. **FINDING TRUST IN TRUSTe.** TRUSTe (www.truste.org) is an organization on the Web that has created specific guidelines for the use of your private information by Web sites to whom you offer it. If a site adheres to all of TRUSTe's guidelines, that site can then display the TRUSTe logo. That way you know you're private information is protected. TRUSTe has four main guidelines or principles that Web sites displaying its logo must follow. Connect to TRUSTe. What are the four guidelines? Are any or all of these guidelines important to you as an individual? If so, which one or ones and why? Should the government require that all Web sites follow these guidelines or a similar set? Why or why not?
3. **REPORTING ON INTERNET STATISTICS BY BUSINESS SECTOR.** NUA (www.nua.com) claims to be the world's leading resource for Internet statistics and trends. Connect to NUA and choose one of the business sectors located along the left side of the page. Pick a specific article discussing that particular business sector and prepare a short report for class. Which business sector did you choose? What was the focus of the article you chose? Did some of the statistics surprise you? Considering that you might be interested in working in a business sector on which NUA tracks Internet statistics, would you find NUA's site useful in preparing to go into that business sector? Why or why not?
4. **LEARNING ABOUT AN MIS MAJOR.** Using your school's catalogue of majors and courses (or the catalogue of another school), briefly outline what classes you would have to take to major in management information systems (MIS). Do any of the courses mention specific technology tools such as Java or Oracle? If so, which technology tools are listed? Now, do some searching on the Internet for salaries in the MIS field. What did you find? Does this particular major appeal to you? Why or why not?
5. **REVIEWING THE 100 BEST COMPANIES TO WORK FOR.** Every year *Fortune* magazine devotes an issue to the top 100 best companies to work for. Find the most recent issue of *Fortune* that does this. First, develop a

numerical summary that describes the 100 companies in terms of their respective industries. Which industries are the most dominant? Pick one of the dominant industries (preferably one in which you would like to work) and choose a specific highlighted company. Prepare a short class presentation on why that company is among the 100 best to work for.

6. REDEFINING BUSINESS OPERATIONS THROUGH IT INNOVATION. Many businesses are building customer-integrated systems (CISs) as a way of redefining their operations through the use of information technology. We discussed several in this chapter, with the most notable and obvious example probably being that of banks offering ATMs. Identify how each of the eight types of businesses below are using technology to offer customer-integrated systems. As you describe a CIS for each type, be sure to include what advantages you receive as a customer. Also, describe how you would have to interface with each type of business if it did not offer a CIS.

- Airlines
- Grocery stores
- Phone companies
- Hotels
- Fuel stations
- Utility companies
- Cable TV providers
- Universities and colleges

Discussion Questions

1. Knowledge workers dominate today's business environment. However, many industries still need workers who do not fall into the category of knowledge workers. What industries still need skilled workers? Can you see a time when these jobs will be replaced by knowledge workers? Can you envision circumstances that would actually cause our economy to do an "about face" and begin needing more skilled workers than knowledge workers?
2. Consider today's economic environment—we have characterized it as the e.economy, the "now" economy, the global economy, and the arriving digital economy. For each of these characterizations, identify why it's an effect causing the remaining three. That is, how is the "e" causing the "now," global, and arriving digital economies, how is the "now" economy causing the "e," global, and arriving digital economies, etc.
3. The three key resources in management information systems (MIS) are information, information technology, and people. Which of these three resources is the most important? Why? The least important? Why?
4. Telecommuting, like all things, has a good and a bad side. What are some of the disadvantages or pitfalls of telecommuting? How can these be avoided?
5. As an information-literate knowledge worker for a local distributor of imported foods and spices, you've been asked to prepare a customer mailing list that will be sold to international cuisine restaurants in your area. If you do so, will you be acting ethically? If you don't consider the proposal ethical, what if your boss threatens to fire you if you don't prepare the list? Do you believe you would have any legal recourse if you didn't prepare the list and were subsequently fired?
6. How is your school helping you prepare to take advantage of information technology? What courses have you taken that included teaching you how to use technology? What software packages were taught? To best prepare to enter the job market, how can you determine what software you need to learn?
7. Consider the ATM system now in place worldwide. How does it address your personal dimen-

sions of time, location, and form? Besides just tracking what transactions you've completed using an ATM, what other information might your bank want to know and use concerning your use of the system?

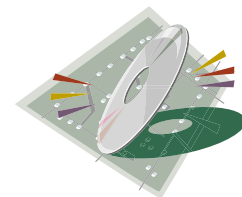
8. Information granularity changes according to the level of an organization. Consider your school, the classes it offers, and the number of students who register in those classes. What sort of information exhibiting coarse granularity would people at the highest levels of your school want to know? What sort of information exhibiting fine granularity would people at the lower levels of your school want to know? As a consumer (student), do you need fine or coarse information? Or perhaps both?
9. In addition to using neural networks to monitor credit card fraud, the same companies also use neural networks to determine whether you are a credit risk. By feeding in thousands of credit card applications, the neural network develops a pattern of who is and isn't creditworthy. Basically, the neural network compares your credit application to past ones and makes a recommendation. How do you feel about that? Should you be given or denied a credit card on the basis of what others have done (or failed to do)? Why or why not?
10. Many schools use groupware to offer distance learning classes. Instead of going to class, you communicate with your instructors and classmates via technology. Would you like to take distance learning classes? What are the advantages? Can you learn as much without going to class and personally interacting with your instructor and classmates? What might be some of the disadvantages of distance learning? Is there a happy medium? How about going to school for only one class session per week and then attending the other virtually via technology? Good or bad idea?
11. We often say that hardware is the *physical* interface with a technology system while software is the *intellectual* interface. How is your hardware your physical interface with your computer? How is your software your intellectual interface with your computer? Do you see technology progressing to the point where we may no longer distinguish between hardware and software and thus no longer perceive differing physical and intellectual interfaces?

REAL HOT Electronic Commerce

Using the Internet as a Tool to Find a Job

Electronic commerce is a great new business horizon. And it's not "just around the corner" any more. Electronic commerce is already here and businesses all over the world are taking advantage of it. Today, information technology can help you land a job. You can use your knowledge of IT and IT itself to help you find potential employers, place your résumé in their hands, locate summer internships, and learn the art of selling yourself during the interview and negotiation process. How? By simply cruising the Internet and using online job database and service providers as well as accessing information about how to prepare for an interview (among other things).

Are you taking advantage of the Internet to find a job? If you're not, we'd like to help you by introducing you to just a few of the thousands of Web sites that can help you find a job. In this section, we've included a number of Web sites related to finding a job through the Internet. On the Web site that supports this text (www.mcgrawhill.ca/college/haag), select "Electronic Commerce Projects." Here, we've provided direct



Real HOT Links

links to all these Web sites as well as many, many more. These are a great starting point for completing this Real HOT section. We would also encourage you to search the Internet for others.

JOB DATABASES

There are—quite literally—thousands of sites that provide you with databases of job postings. Some are better than others. Some focus on specific industries; others offer postings only for executive managers. For the best review of job Web sites, connect to two different places. The first is The 100 Top Network (www.100.com, choose “Career”). The second is the Career Resource Homepage at www.careerresource.net. This site provides the most comprehensive list of the available job Web sites such as Monster.ca. There, you’ll find a list of over 1000 job Web sites.

Think for a moment about the job you want. What would be its title? In which industry do you want to work? In what part of the country do you want to live? What special skills do you possess? (For example, if you’re looking for an accounting job, you may be specializing in auditing.) Is there a specific organization for which you would like to work?

Connect to a couple of different databases, search for your job, and answer the following questions for each database.

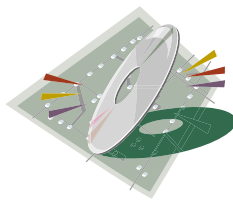
- A. What is the date of last update?
- B. Are career opportunities abroad listed as a separate category or are they integrated with domestic jobs?
- C. Can you search for a specific organization?
- D. Can you search by geographic location? If so, how? By province? By city? By postal code?
- E. Does the site provide direct links to e-mail addresses for those organizations posting jobs?
- F. Can you apply for a position online? If so, how do you send your résumé?
- G. Can you search by a specific industry?

CREATING AND POSTING AN ELECTRONIC RÉSUMÉ

Most, if not all, job databases focus on two groups—employers and employees. As a potential employee, you search to find jobs that meet your qualifications and desires. Likewise, employers search job databases that contain résumés so they can find people (like you) who meet their qualifications and desires. In this instance, you need to build an electronic résumé (an *e-résumé* or *e-portfolio*, which we discuss in Skills Module 4 on the CD-ROM accompanying this text) and leave it at the various job database sites as you perform your searches. That way, organizations performing searches can find you.

Almost all the job database sites we’ve listed give you the ability to create and post an electronic résumé. Visit two new job database sites (different from those you visited to find a job). In each, go through the process of creating an e-résumé, posting it, and making some sort of modification to it. As you do, answer the following questions for each of the sites.

- A. Do you have to register as a user to build an e-résumé?
- B. Once a potential employer performs a search that matches your e-résumé, how can that employer contact you?



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E-Portfolio



- C. What valuable tips for building a good e-résumé are available?
- D. Once you build your e-résumé, can you use it to perform a job search?
- E. When you modify your e-résumé, can you update your existing e-résumé or must you delete the old one and create a new one?
- F. How many key terms concerning your qualifications can you include in your e-résumé?
- G. For what time frame does your e-résumé stay active?

SEARCHING NEWSPAPERS THE NEW-FASHIONED WAY

One of today's most popular ways to find a job is to search the classified sections of newspapers. Every Sunday (if your library is open) and Monday you can visit your local library and find a gathering of people searching through the classified sections of the *National Post*, *Globe and Mail*, and *Halifax Chronicle Herald* in hopes of finding a job. Most of these people are attempting to find a job in a specific geographic location. For example, a person looking in the *Halifax Chronicle Herald* is probably most interested in finding a job in Nova Scotia or the Maritimes.

And as you might well guess, newspapers are not to be left off the Internet bandwagon. Today you can find hundreds of online editions of daily newspapers. And the majority of these provide their classified sections in some sort of searchable electronic format. Pick several newspapers, perform an online search for a job that interests you at each newspaper, and answer the following questions.

- A. Can you search by location/city?
- B. Can you search back issues or only the most recent issue?
- C. Does the newspaper provide direct links to Web sites or provide some other profile information for those organizations posting jobs?

- D. Does the newspaper provide direct links to e-mail addresses for those organizations posting jobs?
- E. Is the newspaper affiliated with any of the major job database providers? If so, which one(s)?

LOCATING THAT ALL-IMPORTANT INTERNSHIP

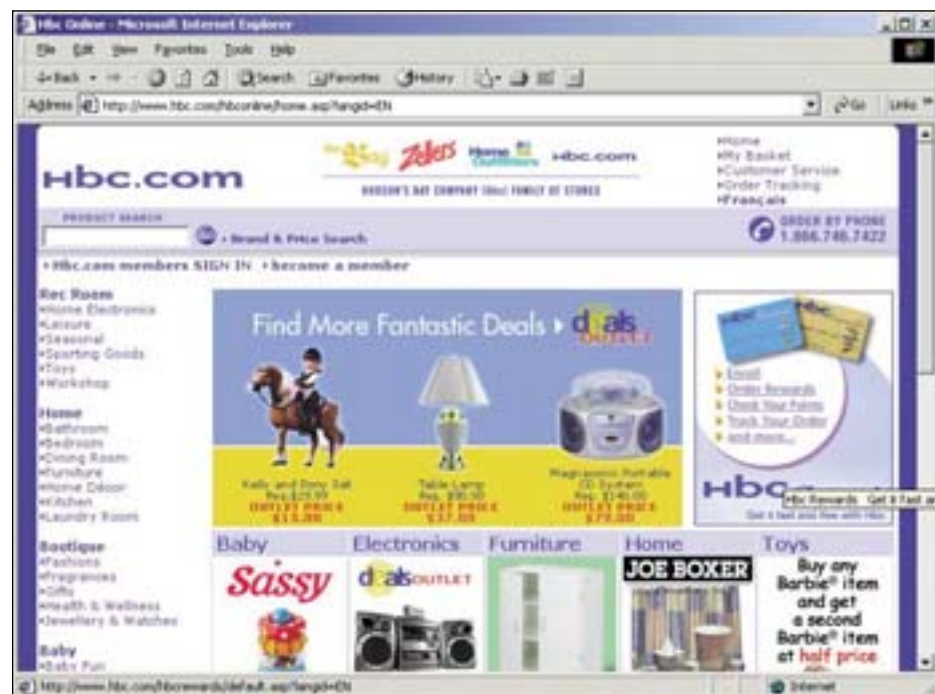
Have you ever noticed that a large number of jobs require experience? That being the case, how does someone gain such experience through a job when experience is required to get the job? As it turns out, that's always been a perplexing dilemma for many students, and one way to solve it is by obtaining an internship. Internships provide you with valuable knowledge about your field, pay you for your work, and offer you that valuable "experience" you need to move up in your career.

On the Online Learning Centre (www.mcgrawhill.ca/college/haag), we've provided you with a number of Web sites that offer internship possibilities. Visit a few of them. Did you find any internships in line with your career? What about pay—did you find both paying and nonpaying internships? How did these internship sites compare to the more traditional job database sites you looked at earlier? Why do you think this is true?

INTERVIEWING AND NEGOTIATING

The Internet is a vast repository of information—no doubt more information than you'll ever need in your entire life. During the job search process however, the Internet can offer you very valuable specific information. In the area of interviewing and negotiating, for example, the Internet contains over 5000 sites devoted to interviewing skills, negotiating tips, and the like.

Interviewing and negotiating are just as important as searching for a job. Once you line up that first important interview, you can still not land the job if you're not properly prepared. If you do receive a job offer, you may be surprised to know that you can



negotiate such things as moving expenses, signing bonuses, and allowances for technology in your home.

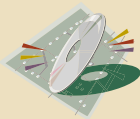
We've provided Web sites for you that address the interviewing and negotiating skills you need in today's marketplace. Review some of these sites (and any others that you may find). Then, develop a list of dos and don'ts for the interview and a list of tips to increase your effectiveness during negotiation. Once you've developed these two lists, prepare a short class presentation.

GOING RIGHT TO THE SOURCE— THE ORGANIZATION YOU WANT

Today, many organizations are posting open positions on their own Web sites. Their idea is simple: if you like an organization enough to visit its Web site, you just might want to work there. For example, if you connect to The Bay at www.hbc.com and buy clothes online, you might consider working there if the opportunity is right.

Choose several organizations that you'd be interested in working for. For each, connect to its Web site, look for job opportunities, and answer the following questions:

- A. Are you able to find job opportunities?
- B. How difficult is it to find the job opportunities?
- C. Are positions grouped or categorized by type?
- D. Is a discussion of career paths included?
- E. How do you obtain an application form?
- F. Are there international opportunities available? Do the job descriptions include a list of qualifications?
- G. Are there direct links to e-mail addresses for further questions?



Go to the Online Learning Centre at www.mcgrawhill.ca/college/haag for quizzes, extra content, a searchable glossary, and more! Click on "Electronic Commerce Projects" for links to hundreds of Web sites.

Go to the text CD-ROM for data files, extra content, and Skills Modules on Microsoft Excel, Microsoft Access, HTML, and e-portfolios.