

CHAPTER 1

Information Systems in Business Today

LEARNING OBJECTIVES

After reading this chapter, you will be able to answer the following questions:

1. How are information systems transforming business, and what is their relationship to globalization?
2. Why are information systems so essential for running and managing a business today?
3. What exactly is an information system? How does it work? What are its management, organization, and technology components?
4. What are complementary assets? Why are complementary assets essential for ensuring that information systems provide genuine value for an organization?
5. What academic disciplines are used to study information systems? How does each contribute to an understanding of information systems? What is the sociotechnical systems perspective?

Teaching Suggestions

You are probably meeting in the first class session to introduce yourself, the course, and to meet the students. After going over any requirements you may have for the course, try to give an overview of the course.

The opening case, “The Canadian Wheat Board: A Little More Than Numbers” illustrates the challenges and benefits of implementing information systems. The case shows why information systems are so essential today. The CWB is a business as well as a cooperative, and farmers need to have their products priced appropriately in order to stay in business. The chapter-opening diagram calls attention to important points raised by this case and this chapter.

To price properly and quickly, the Board chose to modernize their pricing software and rely on more advanced in-house information technology to provide its pricing models. The new system had to integrate with Excel and be available on desktop computers, and it had to be easy to learn. This was only one part of the advances in information

technology and information systems that the CWB chose to make. They completely revised their supply chain management processes and made information available over the Web and mobile devices to farmer-members. It is also important to note that these technologies changed the way the CWB runs its operations. These changes had to be carefully planned to make sure they enhanced service, efficiency, and profitability.

You should discuss the advantages of the system and why it was important to have the system integrated with Excel. What are some reasons why the system could be developed and implemented so quickly? What are some future concerns around acceptance of the system and continued use of the system?

At this time, you could also start to discuss the data and information used by the system, and ask students to define these terms as well as inputs and outputs, processes, and software.

Section 1.1, “The Role of Information Systems in Business Today,”

gives students a feel for the importance of information systems in business today and how they have transformed businesses on the world stage. A good discussion of the six important business objectives outlined in this section allows the instructor and students to discuss why businesses have become so dependent on information systems today and the importance of these systems for the survival of a firm. Stress to students that information systems are not a luxury. In most businesses they are the core to survival. This would be a good time to ask students to discuss how their own schools are using information systems to enhance their product offering.

Table 1-1 is a great way to introduce students to much of the new IT jargon that has developed over the last several years. Most of the technologies will be discussed in future chapters. Ask students how much hands-on experience they’ve had with some of the new business tools as either an employee or a customer.

Globalization is affecting virtually every country in the world. The most striking evidence of this trend is the increasing presence of cell phones in the very small villages of Africa. As technology becomes more pervasive and, in some cases easier to use, globalization will continue its steady march. China, Singapore, and Russia are good examples of how globalization has flattened the world. They have become major exporters to other countries, especially industrialized and advanced countries like Canada, the U.S. and many European countries. Emerging countries, like Poland, the Ukraine, and Ireland, are excellent examples of increasing globalization.

Ask students to provide examples of truly digital firms (Cisco Systems and Dell Computers) as opposed to those businesses (local mom-and-pop stores or a local doctor’s office) that still perform many business processes outside of integrated information systems.

Review the six strategic business objectives: operational excellence; new products, services, and business models; customer and supplier intimacy; improved decision

making; competitive advantage; and survival. The rest of the text will continually refer back to these six objectives as reasons why firms should incorporate and integrate business processes with information systems.

WINDOW ON MANAGEMENT: RUNNING THE BUSINESS FROM THE PALM OF YOUR HAND

Case Study Questions

- 1. What kinds of applications are described here? What business functions do they support? How do they improve operational efficiency and decision making?**

Email, messaging, social networking, and salesforce management are described in this case study. The applications support business functions including collaboration, location-based services, and communications with colleagues. These applications improve operational efficiency and decision making by allowing people to communicate from wherever they are. They are no longer tethered to one place or one machine. They can receive information and data instantaneously, which allows them to make better, faster decisions.

- 2. Identify the problems that businesses in this case study solved by using mobile digital devices.**

Jackson Kayak's CEO, Eric Jackson monitors industry trends in the field and meets directly with dealers and customers to maintain a strong customer focus. He uses an iPhone and iPad to run his entire 120-person company from afar. His iPad gives him instant access to his company so he can analyze customer data, refresh Web site content, or approve new designs. He has calendars, email, contact management, and the ability to create and edit documents, spreadsheets, and presentations all on his mobile handheld device. His employees and managers use their mobile devices to compare manufacturing equipment side-by-side with images of replacement parts.

GE's employees use iPhone and iPad apps that help them find patterns and trends in large volumes of data that may help alert them to problems before they become serious enough to affect customers or suppliers. Monitoring apps let managers zoom in from a global map to a specific transformer and read key performance indicators at any time. Employees access email, contacts, documents, and electronic presentations using their mobile devices.

Ceridan's app allows customers for whom Ceridan handles payroll to allow previewing and approving payroll data on mobile devices. The PowerPay app ensures a secure login and data security as the data are not stored on the mobile device.

Dow Corning managers analyze real-time data from core corporate systems including sales figures, trends, and projections, using mobile handheld devices. "In 15 seconds I

can get a sense of whether there's a financial performance issue I need to get involved with," said Executive Vice President and Chief Financial Officer Don Sheets.

Sunbelt Rentals combined multiple systems and databases into a single package for its sales teams. Rather than accessing several different computer systems for information, sales agents receive combined information from corporate point-of-sale systems, inventory control and management systems, and enterprise systems, for a truly integrated view of business functions.

3. What kinds of businesses are most likely to benefit from equipping their employees with mobile digital devices such as iPhones, iPads, and BlackBerrys?

Any business with a need to communicate with customers, suppliers, and business colleagues can benefit from equipping employees with mobile digital devices.

Student answers will vary as they relate their own experiences and knowledge of using mobile digital devices. Try to encourage the students' creativity and imagination with this question. Here are a few examples:

Insurance companies: Claims adjusters or agents writing new policies or updating old ones, can take pictures of property as-is or that's been damaged, update data on the condition of a property, and document property damage for claims processing.

Real estate agents: Can take pictures of homes for sale and send to prospective buyers, send information to other agents or prospective buyers and sellers, answer questions and complete documents related to buying and selling property.

Winemakers: Can receive up-to-date weather forecasts, track crop information via GPS coordinates, store and access data on crop varieties for later analysis, track employee productivity during harvest time, take pictures of crops to include in a database, and communicate with suppliers and customers.

4. One company deploying iPhones has said, "The iPhone is not a game changer, it's an industry changer. It changes the way that you can interact with your customers and with your suppliers." Discuss the implications of this statement.

First and foremost, those that effectively and efficiently deploy mobile digital device technology gain a huge competitive advantage over those who do not use the technology to stay in constant touch with customers and suppliers. Sales and Marketing can take a hit by not having access to information that can close business deals faster and more efficiently. Costs can increase without the ability to contact suppliers and track product shipments, especially for those companies who use just-in-time supply chains.

Section 1.2, "Perspectives on Information Systems"

gives students the facts and definitions that underpin information systems and allow students to knowledgeably discuss information systems. Students do not need the

knowledge of a technical person, but they do need to understand the role of information technology and how it must support the organization's business strategy. They must also understand how information technology can be used to help transform a business. Note that the chapter's definitions and terms help prepare students to discuss information systems as an intricate part of business systems. Encourage students to see that technology is subordinate to the organization and its purposes.

This is also a good place to reinforce the differences between information systems literacy and computer literacy. When asked to describe company information systems, students often depict information systems in terms of technology. It is important to stress that information systems are more than just technology, and that they have management, organization, and technology dimensions. Figure 1-5 and the diagram at the beginning of the chapter (page 4) can be used to illustrate this point.

Ask students why some companies can achieve much better results using information systems while others cannot. That will help them understand the concept of complementary assets and show that there is much more to building a digital firm than simply buying the latest, greatest hardware and software. It will also help them understand the delicate relationship between technology, management, and organizations assets.

WINDOW ON TECHNOLOGY: UPS COMPETES GLOBALLY WITH INFORMATION TECHNOLOGY

Case Study Questions

1. What are the inputs, processing, and outputs of UPS's package tracking system?

Inputs: The inputs include package information, customer signature, pickup, delivery, time-card data, current location (while en route), and billing and customer clearance documentation.

Processing: The data are transmitted to a central computer and stored for retrieval. Data are also reorganized so that it can be tracked by customer account, date, driver, and other criteria.

Outputs: The outputs include pickup and delivery times, location while en route, and package recipient. The outputs also include various reports, such as all packages for a specific account or a specific driver or route, as well as summary reports for management.

2. What technologies are used by UPS? How are these technologies related to UPS's business strategy?

Technologies include handheld computers (DIADs), barcode-scanning systems, wired and wireless communications networks, desktop computers, UPS's central computer (large mainframe computers), and storage technology for the package delivery data.

UPS also uses telecommunication technologies for transmitting data through pagers and cellular phone networks. The company uses in-house software for tracking packages, calculating fees, maintaining customer accounts and managing logistics, as well as software to access the World Wide Web.

UPS has used the same strategy for over 90 years. Its strategy is to provide the “best service and lowest rates.” One of the most visible aspects of technology is the customer’s ability to track his/her package via the UPS Web site. However, technology also enables data to seamlessly flow throughout UPS and helps streamline the workflow at UPS. Thus, the technology described in the scenario enables UPS to be more competitive, efficient, and profitable. The result is an information system solution to the business challenge of providing a high level of service with low prices in the face of mounting competition.

3. What strategic business objectives do UPS's information systems address?

- **Operational excellence:** UPS has maintained leadership in small-package delivery services despite stiff competition from FedEx, Canada Post, the U.S. Postal System by investing heavily in advanced information technology.
- **New products, services, and business models:** In June 2009 UPS launched a new Web-based Post Sales Order Management System (OMS) that manages global service orders and inventory for critical parts fulfillment. The system enables high-tech electronics, aerospace, medical equipment, and other companies anywhere in the world that ship critical parts to quickly assess their critical parts inventory, determine the most optimal routing strategy to meet customer needs, place orders online, and track parts from the warehouse to the end user.
- **Customer and supplier intimacy:** Customers can download and print their own labels using special software provided by UPS or by accessing the UPS Web site. UPS spends more than \$1 billion each year to maintain a high level of customer service while keeping costs low and streamlining its overall operations.
- **Improved decision making:** Special software creates the most efficient delivery route for each driver that considers traffic, weather conditions, and the location of each stop. UPS estimates its delivery trucks save 28 million miles and burn 3 million fewer gallons of fuel each year as a result of using this technology. To further increase cost savings and safety, drivers are trained to use "340 Methods" developed by industrial engineers to optimize the performance of every task from lifting and loading boxes to selecting a package from a shelf in the truck.
- **Competitive advantage:** UPS is leveraging its decades of expertise managing its own global delivery network to manage logistics and supply chain activities for other companies. Its Supply Chain Solutions division provides a complete bundle of standardized services to subscribing companies at a fraction of what it would cost to build their own systems and infrastructure.

4. What would happen if UPS's information systems were not available?

Arguably, UPS might not be able to compete effectively without technology. If the technology were not available, then UPS would, as it has through most of its history,

attempt to provide that information to its customers, but at higher prices. From the customers' perspective, these technologies provide value because they help customers complete their tasks more efficiently. Customers view UPS's technology as value-added services as opposed to increasing the cost of sending packages.

Section 1.3, "Contemporary Approaches to Information Systems".

Too often, information systems are thought to be all about hardware and software. Issues that focus on human behavioural aspects of information systems are overlooked or minimized. That can lead to disaster. Figure 1-9, (Page 28) may help you explain contemporary approaches to information systems.

After contrasting the technical and behavioural approaches, you should stress to your students that the sociotechnical approach does not ignore the technical, but considers it as a part of the organization.

Review Summary

- 1. How are information systems transforming business and what is their relationship to globalization?**
- 2. Why are information systems so essential for running and managing a business today?**
- 3. What exactly is an information system? How does it work? What are its management, organization and technology components?**
- 4. What are complementary assets? Why are complementary assets essential for ensuring that information systems provide genuine value for an organization?**
- 5. What academic disciplines are used to study information systems? How does each contribute to an understanding of information systems? What is a sociotechnical systems perspective?**

Key Terms

The following alphabetical list identifies the key terms discussed in this chapter.

The page number for each key term is provided.

Business functions 15
Business model 11
Business processes 19

Complementary assets 21
Computer hardware 16
Computer literacy 15
Computer software 17
Culture 16
Data 13
Data management technology 17

Data workers	15	systems (MIS)	15
Digital firm,	9	Middle management	15
Extranets	17	Network	17
Feedback	13	Networking and telecommunications	
Information	13	technology	17
Information system	12	Operational management	15
Information systems literacy	15	Organizational and management	
Information technology (IT)	12	capital	21
Information technology (IT)		Output	13
infrastructure	19	Processing	13
Input	13	Production or service	
Internet	17	workers	15
Intranets	17	Senior management	15
Knowledge workers	15	Sociotechnical view	24
Management information		World Wide Web	17

Review Questions

1. How are information systems transforming business and what is their relationship to globalization?

Describe how information systems have changed the way businesses operate and their products and services.

Wireless communications, including computers and mobile hand-held computing devices, are keeping managers, employees, customers, suppliers, and business partners connected in every way possible. Email, online conferencing, the Web, and the Internet, are providing new and diverse lines of communication for all businesses, large and small. Through increased communication channels and decreased costs of the communications, customers are demanding more of businesses in terms of service and product, at lower costs. E-commerce is changing the way businesses must attract and respond to customers.

Identify three major new information system trends.

Three information system trends that are influencing the way businesses interact with employees, customers, suppliers, and business partners include emerging mobile digital platforms, growth of online software-as-a-service, and the growth of cloud computing.

Table 1-1 outlines new MIS changes and their impact on business. The table is organized by the three dimensions of information systems: technology, management, and organizations.

Describe the characteristics of a digital firm.

- Significant business relationships with customers, suppliers, and employees are digitally enabled and mediated.
- Core business processes are accomplished through digital networks spanning the entire organization or linking multiple organizations.
- Key corporate assets – intellectual property, core competencies, and financial and human assets – are managed through digital means.
- They sense and respond to their environments far more rapidly than traditional firms.
- They offer extraordinary opportunities for more flexible global organization and management, practicing time-shifting and space-shifting.

Describe the challenges and opportunities of globalization in a “flattened” world.

Customers no longer need to rely on local businesses for products and services. They can shop 24/7 for virtually anything and have it delivered to their door or desktop. Companies can operate 24/7 from any geographic location around the world. Jobs can just as easily move across the state or across the ocean. Employees must continually develop high-level skills through education and on-the-job experience that cannot be outsourced. Business must avoid markets for goods and services that can be produced offshore much cheaper. The emergence of the Internet into a full-blown international communications system has drastically reduced the costs of operating and transacting business on a global scale.

2. Why are information systems so essential for running and managing a business today?

List and describe six reasons why information systems are so important for business today.

Six reasons why information systems are so important for business today include:

1. Operational excellence
2. New products, services, and business models
3. Customer and supplier intimacy
4. Improved decision making
5. Competitive advantage
6. Survival

Information systems are the foundation for conducting business today. In many industries, survival and even existence without extensive use of IT is inconceivable, and IT plays a critical role in increasing productivity. Although information technology has become more of a commodity, when coupled with complementary changes in organization and management, it can provide the foundation for new products, services, and ways of conducting business that provide firms with a strategic advantage.

3. What exactly is an information system? How does it work? What are its management, organization and technology components?

Define an information system and describe the activities it performs.

An information system is a set of interrelated components that work together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization. In addition to supporting decision making, information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products.

List and describe the organizational, management, and technology dimensions of information systems.

- i. Organization: The organization dimension of information systems involves issues such as the organization's hierarchy, functional specialties, business processes, culture, and political interest groups.
- ii. Management: The management dimension of information systems involves setting organizational strategies, allocating human and financial resources, creating new products and services and re-creating the organization if necessary.
- iii. Technology: The technology dimension consists of computer hardware, software, data management technology, and networking/telecommunications technology.

Distinguish between data and information and between information systems literacy and computer literacy.

- iv. Data are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can understand and use.
- v. Information is data that has been shaped into a form that is meaningful and useful to human beings.
- vi. Information systems literacy is a broad-based understanding of information systems. It includes a behavioural as well as a technical approach to studying information systems.
- vii. In contrast, computer literacy focuses primarily on knowledge of information technology. It is limited to understanding how computer hardware and software works.

Explain how the Internet and the World Wide Web are related to the other technology components of information systems.

The Internet and World Wide Web have had a tremendous impact on the role information systems play in organizations. These two tools are responsible for the increased connectivity and collaboration within and outside the organization. The Internet, World Wide Web, and other technologies have led to the redesign and reshaping of organizations. They have helped transform the organization's structure, scope of operations, reporting and control mechanisms, work practices, work flows, and products and services.

4. What are complementary assets? Why are complementary assets essential for ensuring that information systems provide genuine value for an organization?

Define complementary assets and describe their relationship to information technology.

Complementary assets are those assets required to derive value from a primary investment. Firms must rely on supportive values, structures, and behaviour patterns to obtain a greater value from their IT investments. Value must be added through complementary assets such as new business processes, management behaviour, organizational culture, and training.

Describe the complementary social, managerial, and organizational assets required to optimize returns from information technology investments.

Table 1-3 lists the complementary social, managerial, and organization assets required to optimize returns from information technology investments. Here are a few of them:

Organizational assets:

- Supportive culture that values efficiency and effectiveness
- Appropriate business model
- Efficient business processes
- Decentralized authority

Managerial assets:

- Strong senior management support for technology investment and change
- Incentives for management innovation
- Teamwork and collaborative work environments

Social assets:

- The Internet and telecommunications infrastructure
- IT-enriched educational programs raising labour force computer literacy
- Standards (both government and private sector)

5. What academic disciplines are used to study information systems? How does each contribute to an understanding of information systems? What is a sociotechnical systems perspective?

List and describe each discipline that contributes to a technical approach to information systems.

A technical approach to information systems emphasizes mathematically-based models to study information systems and the physical technology and formal capabilities of information systems. Students should know the differences between computer science (theories of computability, computation methods, and data storage and access methods),

management science (development of models for decision making and managerial practice), and operations research (mathematical techniques for optimizing organizational parameters such as transportation, inventory control and transaction costs).

List and describe each discipline that contributes to a behavioural approach to information systems.

A behavioural approach to information systems focuses on questions such as strategic business integration, behavioural problems of systems utilization, system design and implementation, social and organizational impacts of information systems, political impacts of information systems, and individual responses to information systems. Solutions to problems created by information technology are primarily changes in attitudes, management, organizational policy, and behaviour.

Describe the sociotechnical perspective on information systems.

A sociotechnical perspective combines the technical approach and behaviour approach to achieve optimal organizational performance. Technology must be changed and designed to fit organizational and individual needs and not the other way around. Organizations and individuals must also change through training, learning, and allowing technology to operate and prosper.

Discussion Questions

1. Information systems are too important to be left to computer specialists. Do you agree? Why or why not?

Although student answers will vary, this is a good place to reiterate that information systems are more than just technology. Information systems development and usage involves organization, management, and technology dimensions. It is important to understand who will use the information systems and how the information systems will be used to facilitate decision making and control within the organization. Computer specialists understand the technology and definitely play an important role within the development and maintenance of information systems. Computer specialists have an in-depth technology background, but may not be well versed in the business or its operations. This is why computer specialists should function as part of a team, and this team should have the hybrid strength of many different skills and personalities. The team should definitely understand the business, the business requirements, and the goals for the information systems.

2. If you were setting up an extranet for the Canadian Wheat Board, what management, organization, and technology issues might you encounter?

Management: Typical problems include:

- i. Lack of employee training

- ii. Difficulties of evaluating performance
- iii. Legal and regulatory compliance
- iv. Work environment
- v. Lack of employee support and participation
- vi. Poor or indecisive management

Organization: Typical problems include:

- vii. Outdated/poor business processes (usually inherited from the past)
- viii. Unsupportive culture and attitudes
 - ix. Political in-fighting
 - x. Turbulent business environment/changes in the organization's surrounding environment
- xi. Complexity of task
- xii. Inadequate resources
- xiii. Getting farmer's onside

Technology: Typical problems include:

- xiv. Insufficient or aging hardware
- xv. Outdated software
- xvi. Providing farmer's the tools to interact with the extranet
- xvii. Inadequate database capacity
- xviii. Insufficient telecommunications capacity
- xix. Incompatibility of old systems with new technology
- xx. Rapid technological change

3. What are some of the organizational, managerial, and social complementary assets that help make UPS's information systems so successful?

Table 1-3 provides a list of complementary social, managerial, and organizational assets required to optimize returns from information technology investments.

Organizational assets:

- Supportive organizational culture that values efficiency and effectiveness
- Appropriate business model
- Efficient business processes
- Decentralized authority
- Distributed decision-making rights
- Strong IS development team

Managerial assets:

- Strong senior management support for technology investment and change
- Incentives for management innovation
- Teamwork and collaborative work environments
- Training programs to enhance management decision skills
- Management culture that values flexibility and knowledge-based decision making.

Social assets:

- The Internet and telecommunications infrastructure
- IT-enriched educational programs raising labour force computer literacy
- Standards (both government and private sector)
- Laws and regulations creating fair, stable market environments
- Technology and service firms in adjacent markets to assist implementation

Hands-On MIS Projects

This section gives students an opportunity to analyze real world information systems needs and requirements. It provides several exercises you can use to determine if students are grasping the material in the chapter.

Management Decision Problems

- 1. Snyder's of Hanover:** The financial department uses spreadsheets and manual processes for much of its data gathering and reporting. Assess the impact of this situation on business performance and management decision making.
 - Data entry errors from repetitive entry
 - No information available on-demand
 - Late reporting of critical decision-making information
 - Time consuming
- 2. Dollar General Corporation:** Wants to keep costs as low as possible so it does not use an automated method for keeping track of inventory at each store. The Dollar Store operates deep discount stores in Canada offering housewares, cleaning supplies, clothing, health and beauty aids, and packaged food, with many items selling for \$1. Its business model calls for keeping costs as low as possible. Although the company uses information systems (such as a point-of-sale system to track sales at the register), it deploys them very sparingly to keep expenditures to a minimum. The company has no automated method for keeping track of inventory at each store. Managers know approximately how many cases of a particular product the store is supposed to receive when a delivery truck arrives, but the stores lack technology for scanning the cases or verifying the item count inside the cases. Merchandise losses from theft or other mishaps have been rising and now represent more than 3 percent of total sales. What decisions have to be made before investing in an information system solution?
 - Determine business problems – mismanagement of inventory, too little or too much inventory, no ability to track inventory.
 - Lack of information system to manage inventory is actually increasing costs rather than decreasing them.
 - What is the exact problem the company wants to solve – reduce costs.

Improving Decision Making: Using Databases to Analyze Sales Trends:

Software skills: Database querying and reporting

Business skills: Sales Trend Analysis

This exercise helps students understand how they can use database software to produce valuable information from raw data. The solutions can be created using the query wizard and report wizard capabilities of Microsoft Access. Students can, of course, create more sophisticated reports if they wish, but most information can be obtained from simple query and reporting functions. The main challenge is to get students to ask the right questions about the information.

- Which products should be restocked?
- Which stores and sales regions would benefit from a promotional campaign and additional marketing?
- When (what time of year) should products be offered at full price, and when should discounts be used?

Improving Decision Making: Using the Internet to Locate Jobs Requiring Information Systems Knowledge

Software skills: Internet-based software

Business skills: Job searching

In addition to having students research jobs in their chosen career field, it may be quite interesting to have them research jobs in other career fields so they can see that virtually every job and/or career requires information systems skills.

CASE STUDY: ARE ELECTRONIC MEDICAL RECORDS A CURE FOR HEALTH CARE?

1. Identify and describe the problem in this case.

The majority of medical records are currently paper-based, making these records very difficult to access and share. Inefficiencies in medical record keeping are one reason why health care costs in the United States are the highest in the world. Health care costs in Canada are increasing. Because administrative costs and medical recordkeeping account for almost 13 percent of health care spending, improving those processes can lead to saving billions of dollars every year.

2. What management, organization, and technology factors are responsible for the difficulties in building electronic medical record systems? Explain your answer.

Management: Physicians, hospitals, and insurers must meet federal mandates for implementing electronic medical records or suffer penalties. Only a small amount of

money is available from the federal government for upfront costs associated with the implementation. The expenditure of overhauling recordkeeping systems represents a significant increase in the short-term budgets and workloads of health care providers.

Organization: Many smaller practices are finding it difficult to afford the costs and time commitment to upgrade their recordkeeping systems. Patient privacy concerns, data quality issues, and resistance from health care workers are other difficulties that must be addressed.

Technology: It's unclear whether or not the many different types of systems being developed and implemented will be compatible with one another, jeopardizing the goal of a national system where all health care providers can share information.

3. What is the business, political, and social impact of not digitizing medical records (for individual physicians, hospitals, insurers, patients, and provincial governments)?

Individual physicians: In the U.S, the federal government plans to assess penalties on practices that fail to comply with the new electronic recordkeeping standards. Medicare and Medicaid reimbursements will slowly be reduced by 1 percent per year until 2018, with further, more stringent penalties coming beyond that.

Hospitals: Health care spending figures are inflated by inefficiency, errors, and fraud.

Insurers: Processing insurance claims from patients, hospitals, and physicians will continue to be a slow, cumbersome process fraught with errors and fraud. Insurers will continue to spend too much money on claims processing—money that could be used to pay actual medical costs.

Patients: Medical information cannot be shared among physicians and hospitals easily and quickly. That impacts overall medical care and attention and can potentially be life-threatening. Patients will spend more money on medical care just to cover administrative costs rather than on the care itself.

Provincial Governments: A perception of a potential conflict of interest for insurance companies involved in the creation of health record systems exists, which

may make it more difficult to fully deploy EMR systems. While health care in Canada is technically paid for by provincial governments, many people are covered by supplemental health insurance.

4. What are business and social benefits of digitizing medical recordkeeping?

Business benefits: An electronic medical record system contains all of a person's vital medical data, including personal information, a full medical history, test results, diagnoses, treatments, prescription medications, and the effect of those treatments. A

physician would be able to immediately and directly access needed information from the EMR without having to pore through paper files. If the record holder went to the hospital, the records and results of any tests performed at that point would be immediately available online. Many experts believe that electronic records will reduce medical errors and improve care, create less paperwork, and provide quicker service, all of which will lead to dramatic savings in the future.

Electronic systems hold the promise of immediate processing or “real-time claims adjudication,” just like when you pay using a credit card, because claim data would be sent immediately and diagnostic and procedure code information are automatically entered.

Social benefits: If the Veterans Affairs electronic medical record system is an example, patients stand to gain a great deal from the implementation of new record systems. The quality and thoroughness of medical care is higher and the in-home monitoring process improves medical care and the lives of VA patients. More patients receive necessary periodic treatments under the VA system. Patients also report that the process of being treated at the VA is effortless compared to paper-based providers.

5. Are electronic medical record systems a good solution to the problem of rising health care costs in the United States? Explain your answer.

If done correctly, EMR systems can help control rising health care costs. However, many obstacles stand in the way of fully deploying systems that are compatible and inexpensive enough for doctors and hospitals to retrofit their current systems. Also, no nationwide software standards for organizing and exchanging medical information have been put in place.