# The Approach

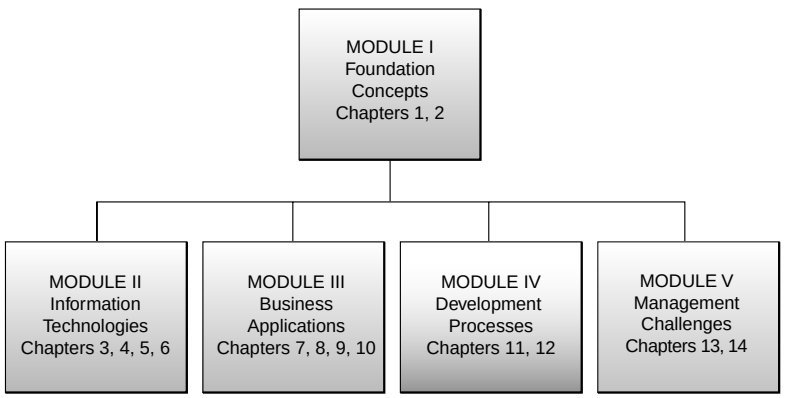
## A Business and Managerial Perspective

The Ninth Edition is designed for business students who are or who will soon become business professionals in the fast-changing business world of today. The goal of this text is to help business students learn how to use and manage information technologies to revitalize business processes, improve business decision making, and gain competitive advantage. Thus, it places a major emphasis on up-to-date coverage of the essential role of Internet technologies in providing a platform for business, commerce, and collaboration processes among all business stakeholders in today's networked enterprises and global markets. This is the business and managerial perspective that this text brings to the study of information systems. Of course, as in all O'Brien and Marakas texts, this edition:

- Loads the text with **Real World Cases,** in-depth examples **(Blue Boxes),** and opportunities to learn about real people and companies in the business world **(Real World Activities, Case Study Questions, Discussion Questions,** and **Analysis Exercises)**.
- Organizes the text around a simple **Five-Area Information Systems Framework** that emphasizes the IS knowledge a business professional needs to know.
- Places a **major emphasis on the strategic role of information technology** in providing business professionals with tools and resources for managing business operations, supporting decision making, enabling enterprise collaboration, and gaining competitive advantage.

## Modular Structure of the Text

The text is organized into modules that reflect the five major areas of the framework for information systems knowledge. Each chapter is then organized into two or more distinct sections to provide the best possible conceptual organization of the text and each chapter. This organization increases instructor flexibility in assigning course material because it structures the text into modular levels (that is, modules, chapters, and sections) while reducing the number of chapters that need to be covered.



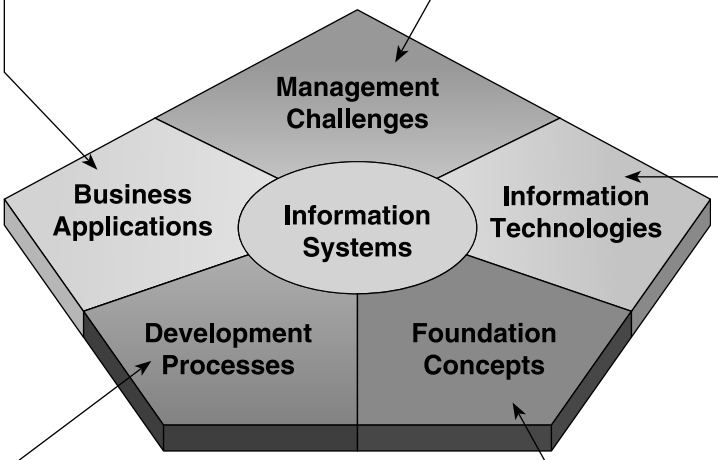
# An Information Systems Framework

## Business Applications

How businesses use the Internet and other information technologies to support their business processes, e-business and e-commerce initiatives, and business decision making (Chapters 7, 8, 9, and 10).

## Management Challenges

The challenges of business/IT technologies and strategies, including security and ethical challenges and global IT management (Chapters 13 and 14).




## Information Technologies

Includes major concepts, developments, and managerial issues involved in computer hardware, software, telecommunications networks, data resource management technologies, and other technologies (Chapters 3, 4, 5, and 6).

## Foundation Concepts

Fundamental business information systems concepts, including trends, components, and roles of information systems (Chapter 1) and competitive advantage concepts and applications (Chapter 2). Selective coverage of relevant behavioral, managerial, and technical concepts.

## Development Processes

Developing and implementing business/IT strategies and systems using several strategic planning and application development approaches (Chapters 11 and 12).

# Real World Examples

## Real World Cases

Each chapter provides four Real World Cases—in-depth examples that illustrate how prominent businesses and organizations have attempted to implement the theoretical concepts students have just learned.



REAL WORLD CASE 1

### Starbucks and Others: The Future of Public Wi-Fi

Public Wi-Fi hot spots have been popular for about eight years. During that time, companies providing the service have been groping about, trying to figure out how to monetize it. The dominant model to date has been just to charge for it. Pay us $20 a month, and you can log in at any of our many locations. Recently, however, a kind of tipping point has been reached; now, instead of being rented for a fee, Wi-Fi will increasingly be given away to motivate customers to buy other goods and services. Now Wi-Fi is just like the free toaster that banks used to hand out for opening a new account.

Starbucks is leading a transition from Wi-Fi-for-money to Wi-Fi as a lure to get people to spend money on other things. It probably has to do with the strong competition Starbucks is facing for the morning breakfast crowd from the likes of McDonald's, which is also being more aggressive with Wi-Fi access.

The Starbucks offer may be a stroke of genius. Starbucks and AT&T will give you two hours of free Wi-Fi per day, but only if you use a Starbucks card. If you want more than two hours, you can pay $19.99 per month, which also entitles you to unlimited Wi-Fi offered by AT&T at some 70,000 hot spots in 89 countries. Starbucks not only trumps other sellers of sugar and caffeine by offering free Wi-Fi, but it also pushes its lucrative Starbucks card and provides an upgrade path for people eager to hand over money in exchange for unlimited access.

Starbucks cards benefit Starbucks in three ways. First, people with Starbucks cards in their pockets are probably more likely to choose Starbucks when there are other nearby alternatives. Second, by getting millions of customers to pay in advance, Starbucks gets more cash upfront (rather than waiting until people actually get their coffee). Last and best is that cards get lost, stolen, or forgotten. When that happens, Starbucks gets to keep the money without supplying anything.

Like many indie cafes, Seattle's Bauhaus Books and Coffee has long relied on free Wi-Fi to help bring in customers. "In the evenings, the whole bar along the window will be lined with people using their computers," says Grace Heinze, a 13-year manager at Bauhaus, located between downtown Seattle and the trendy neighborhood of Capitol Hill. Bauhaus has thrived despite all of the Starbucks shops that have popped up around it: 15 within half a mile and 38 within one mile.

So is Heinze worried that the fiercely artsy cafe, named for the 1920's German art movement and replete with memorabilia, might lose customers to Starbucks now that it is dumping its high Wi-Fi rate in favor of two free hours of Wi-Fi a day to any customer? Not really.

"People come here because they like our atmosphere and because they like our coffee," Heinze said. "We're not feeling very uptight about this." Wi-Fi hot spots began to emerge around the beginning of the millennium. Propelled by the fast-growing popularity of laptops, Wi-Fi-enabled coffee shops quickly supplanted the older-style cybercafes, which relied on the expensive purchase and upkeep of PCs.

Still, until several years ago, many cafes were granting access to their Wi-Fi hot spots through codes given only to paying customers, according to Jack Kelley, president of Seattle regional chain Caffe Ladro. There was the fear "that if public Wi-Fi was free, you'd fill your place up with 'campers,'" Kelley said, referring to

**FIGURE 6.1**

**Public wireless access may be at a crossroad with recent moves towards free and advertising-based provision of this service.**

*Source:* Getty Images.

# Real Life Lessons

## Use Your Brain

Traditional case study questions promote and provide opportunity for critical thinking and classroom discussion.



simple as paying 10 per day when you are abroad." Not knowing how high the bill will be after a business trip is not acceptable for professional users. Coverage will also have to improve.

Source: Adapted from Eric Lai, "Indie Coffeehouses Tell Starbucks: Bring on Your Free Wi-Fi," *Computerworld*, February 14, 2008; Mikael Ricknäs, "Ericsson Predicts Demise of Wi-Fi Hotspots," *Computerworld*, March 10, 2008; and Mike Elgan, "Wi-Fi Wants to Be Free," *Computerworld*, February 15, 2008.

### CASE STUDY QUESTIONS

1. Do you agree with the plans by Starbucks to offer time-limited free Wi-Fi to customers? Do you think free Wi-Fi would be enough to instill that kind of loyalty? Based on the experiences of the other coffee houses reported above, do you think free access was a critical factor in developing a loyal customer base?
2. Part of the reason for Starbucks's move had to do with increased competition from chains like McDonald's for the morning breakfast crowd. Do you think that free wireless access by such a competitor would have moved a significant portion of Starbucks's customers away? Why or why not?
3. The case notes some companies that offer free Wi-Fi in exchange for viewing advertisements or answering questions for market research studies. Would you be willing to do so in order to get free wireless access, say, at an airport? Would your answer change if you were using a corporate laptop versus your own, because of security concerns?

### REAL WORLD ACTIVITIES

1. Johan Bergendahl of Ericsson believes the demise of Wi-Fi is rather imminent and that mobile broadband will replace hot spots for wireless access. Search the Internet for current commercial offerings of mobile broadband and compare their features with Wi-Fi hotspots. Which one would you choose? Which factors would affect your decision?
2. Go online and look at different companies in one of the industries mentioned in the case, noting which companies offer free wireless access and which ones do not. Break into small groups and brainstorm potential explanations for these differences. Do you see any patterns in the type of companies that charge for access versus those that offer it for free?

## Use Your Hands

The Real World Activities section offers possibilities for hands-on exploration and learning.

the formula, *N* refers to the number of *nodes* (points of connection) on the network. If only a few nodes exist on a network, the number of possible connections is quite small. Using the formula, we see that three nodes result in only six possible connections. A network of 10 nodes results in a somewhat larger number—90 connections. It's when a large number of nodes are connected that the possible number of connections grows to significant proportions. A network with 100 nodes has 9,900 possible connections, and a network with 1,000 nodes has 999,000 possible connections. This type of mathematical growth is called *exponential.* This term just means that the growth in number of connections is many times greater than the number of nodes. Adding only one more node to a network makes the number of connections grow many times greater. Think of the effect of adding a new entry and exit ramp on a highway system that connects 30,000 cities and towns. How many more connections does that one new ramp create?

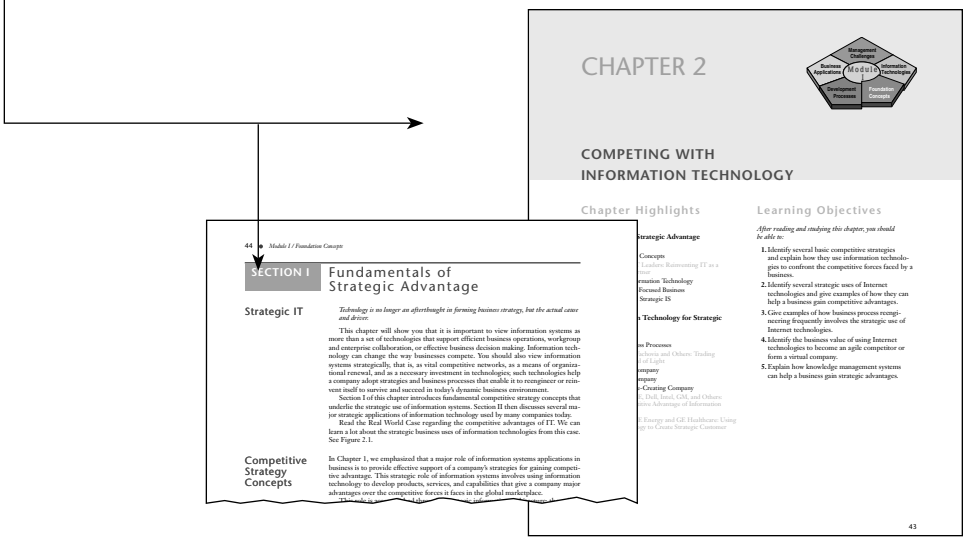
#### Metcalfe's Law

Robert Metcalfe founded 3Com Corp. and designed the Ethernet protocol for computer networks. He used his understanding of the concept of networks to express the exponential growth in terms of potential business value. **Metcalfe's law** states that *the usefulness, or utility, of a network equals the square of the*

# Strategy, Ethics . . .

## Competitive Advantage

Chapter 2 focuses on the use of IT as a way to surpass your competitor's performance.



CHAPTER 2

COMPETING WITH INFORMATION TECHNOLOGY

Chapter Highlights

Learning Objectives

*After reading and studying this chapter, you should be able to:*

1. Identify several basic competitive strategies and explain how they use information technologies to confront the competitive forces faced by a business.
2. Identify several strategic uses of Internet technologies and give examples of how they can help a business gain competitive advantages.
3. Give examples of how business process reengineering frequently involves the strategic use of Internet technologies.
4. Identify the business value of using Internet technologies to become an agile competitor or form a virtual company.
5. Explain how knowledge management systems can help a business gain strategic advantages.

44 • *Module I / Foundation Concepts*

SECTION I Fundamentals of Strategic Advantage

**Strategic IT**

*Technology is no longer an afterthought in forming business strategy, but the actual cause and driver.*

This chapter will show you that it is important to view information systems as more than a set of technologies that support efficient business operations, workgroup and enterprise collaboration, or effective business decision making. Information technology can change the way businesses compete. You should also view information systems strategically, that is, as vital competitive networks, as a means of organizational renewal, and as a necessary investment in technologies; such technologies help a company adopt strategies and business processes that enable it to reengineer or reinvent itself to survive and succeed in today's dynamic business environment.

Section I of this chapter introduces fundamental competitive strategy concepts that underlie the strategic use of information systems. Section II then discusses several major strategic applications of information technology used by many companies today.

Read the Real World Case regarding the competitive advantages of IT. We can learn a lot about the strategic business uses of information technologies from this case. See Figure 2.1.

**Competitive Strategy Concepts**

In Chapter 1, we emphasized that a major role of information systems applications in business is to provide effective support of a company's strategies for gaining competitive advantage. This strategic role of information systems involves using information technology to develop products, services, and capabilities that give a company major advantages over the competitive forces it faces in the global marketplace.

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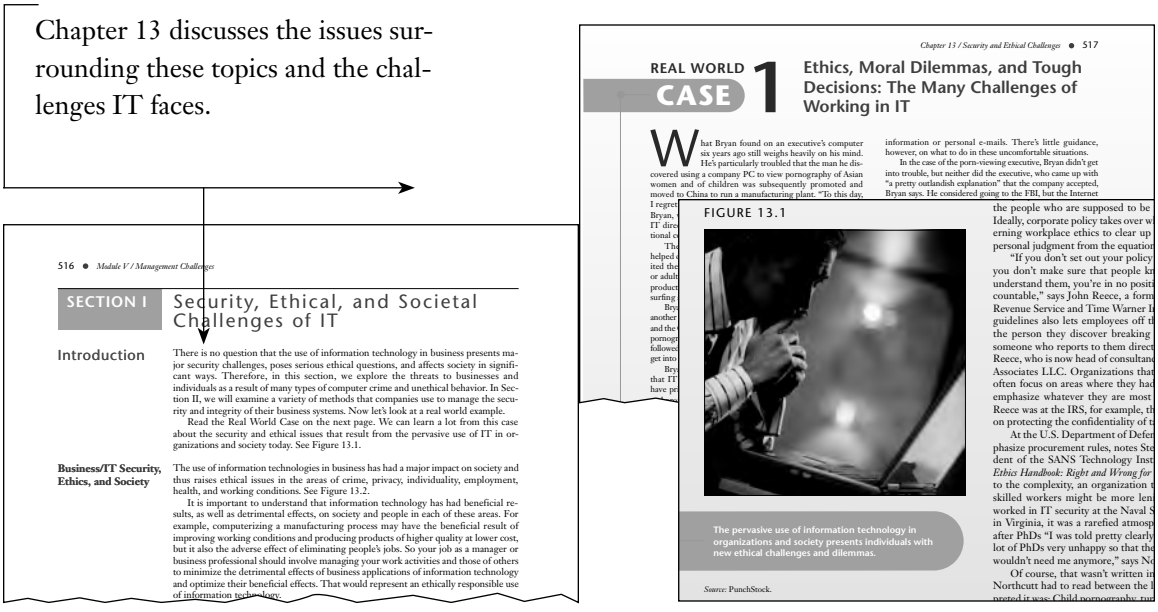
## Ethics & Security

Chapter 13 discusses the issues surrounding these topics and the challenges IT faces.



516 • *Module V / Management Challenges*

SECTION I Security, Ethical, and Societal Challenges of IT

**Introduction**

There is no question that the use of information technology in business presents major security challenges, poses serious ethical questions, and affects society in significant ways. Therefore, in this section, we explore the threats to businesses and individuals as a result of many types of computer crime and unethical behavior. In Section II, we will examine a variety of methods that companies use to manage the security and integrity of their business systems. Now let's look at a real world example.

Read the Real World Case on the next page. We can learn a lot from this case about the security and ethical issues that result from the pervasive use of IT in organizations and society today. See Figure 13.1.

**Business/IT Security, Ethics, and Society**

The use of information technologies in business has had a major impact on society and thus raises ethical issues in the areas of crime, privacy, individuality, employment, health, and working conditions. See Figure 13.2.

It is important to understand that information technology has had beneficial results, as well as detrimental effects, on society and people in each of these areas. For example, computerizing a manufacturing process may have the beneficial result of improving working conditions and producing products of higher quality at lower cost, but it also the adverse effect of eliminating people's jobs. So your job as a manager or business professional should involve managing your work activities and those of others to minimize the detrimental effects of business applications of information technology and optimize their beneficial effects. That would represent an ethically responsible use of information technology.

*Chapter 13 / Security and Ethical Challenges* • 517

REAL WORLD CASE 1 Ethics, Moral Dilemmas, and Tough Decisions: The Many Challenges of Working in IT

What Bryan found on an executive's computer six years ago still weighs heavily on his mind. He's particularly troubled that the man he discovered using a company PC to view pornography of Asian women and of children was subsequently promoted and moved to China to run a manufacturing plant. "To this day, I regret

information or personal e-mails. There's little guidance, however, on what to do in these uncomfortable situations.

In the case of the porn-viewing executive, Bryan didn't get into trouble, but neither did the executive, who came up with "a pretty outlandish explanation" that the company accepted, Bryan says. He considered going to the FBI, but the Internet

the people who are supposed to be

FIGURE 13.1



The pervasive use of information technology in organizations and society presents individuals with new ethical challenges and dilemmas.

*Source:* PunchStock.

# . . . and Beyond

## Go Global with IT

This text closes with Chapter 14, an in-depth look at IT across borders.



SECTION II Managing Global IT

**The International Dimension**

*Whether they are in Berlin or Bombay, Kuala Lumpur or Kansas, San Francisco or Seoul, companies around the globe are developing new models to operate competitively in a digital economy. These models are structured, yet agile; global, yet local; and they concentrate on maximizing the risk-adjusted returns from both knowledge and technology assets.*

International dimensions have become a vital part of managing a business enterprise in the inter-networked global economies and markets of today. Whether you become a manager in a large corporation or the owner of a small business, you will be affected by international business developments and deal in some way with people, products, or services whose origin is not your home country.

Read the Real World Case on the next page. We can learn a lot about approaches to sucessfully develop and roll out worldwide system implementations from this case. See Figure 14.11.

**Global IT Management**

Figure 14.12 illustrates the major dimensions of the job of managing global information technology that we cover in this section. Notice that all global IT activities must be adjusted to take into account the cultural, political, and geoeconomic challenges that exist in the international business community. Developing appropriate business and IT strategies for the global marketplace should be the first step in global information technology management. Once that is done, end users and IS managers can move on to developing the portfolio of business applications needed to support business/IT strategies; the hardware, software, and Internet-based technology platforms to support those applications; the data resource management methods to provide necessary databases; and finally the systems development projects that will produce the global information systems required.

**Global Teams: It's Still a Small World**

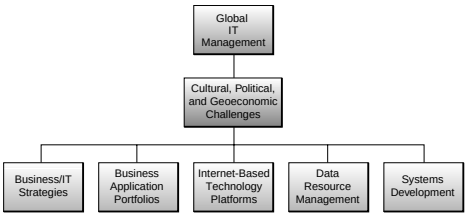
We seem to have reached a point where virtually every CIO is a global CIO—a leader whose sphere of influence (and headaches) spans continents. The global CIO's most common challenge, according to CIO Executive Council members, is managing global virtual teams. In an ideal world, HR policies across the global IT team should be consistent, fair, and responsive. Titles and reporting structures (if not compensation) should be equalized.

The council's European members, representing Royal Dutch Shell, Galderma, Olympus, and others, commissioned a globalization playbook that collects and codifies best practices in this and other globalization challenges.

**Obtain local HR expertise.** Companies must have a local HR person in each country to deal with local laws. "Hiring, firing, and training obligations must be managed very differently in each location, and you need someone with local expertise on the laws and processes," says Michael Pilkington, former CIO of Euroclear, the Brussels-based provider of domestic and cross-border settlement for bond, equity, and fund transactions.

**Create job grade consistency across regions.** Euroclear is moving toward a job evaluation methodology that organizes job types into vertical categories, such as managing people/process, product development, business support, and project management. This provides a basis for comparing and managing roles and people across locations. Grade level is not the same thing as a title; people's titles are much more subject to local conventions.

FIGURE 14.12
The major dimensions of global e-business technology management




## Expand Your Knowledge

In-depth examples of how corporations apply IS concepts and theories.



**PayPal Inc.: Cyber Crime on the Internet**

At PayPal Inc. (www.paypal.com), an online payment processing company that is now a subsidiary of eBay, security specialists noticed one day that there were too many Hudsens and Stivensons opening accounts with the company. John Kothanek, PayPal's lead fraud investigator (and a former military intelligence officer), discovered that batches of 40 or more accounts were being opened by 10 names and then were used to buy high-value computer goods in auctions on eBay.com. PayPal froze the funds used to pay for the eBay goods (all to be shipped to an address in Russia) and started an investigation. Then one of PayPal's merchants reported that it had been redirected to a mock site called PayPal.

Kothanek's team set up sniffer software, which catches packet traffic, at the mock site. The software showed that operators of the mock site were using it to capture PayPal user log-ins and passwords. Investigators also used the sniffer to log the perpetrators' own IP address, which they then used to search against PayPal's database. It turned out that all of the accounts under scrutiny were opened by the same Internet address.

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**Corporate PC Criteria**

What do you look for in a new PC system? A big, bright screen? Zippy new processor? Capacious hard drive? Acres of RAM? Sorry, none of these is a top concern for corporate PC buyers. Numerous studies have shown that the price of a new computer is only a small part of the total cost of ownership (TCO). Support, maintenance, and other intangibles contribute far more heavily to the sum. Let's take a look at three top criteria.

**Solid Performance at a Reasonable Price.** Corporate buyers know that their users probably aren't mapping the human genome or plotting trajectories to Saturn. They're doing word processing, order entry, sales contact management, and other essential business tasks. They need a solid, competent machine at a reasonable price, not the latest whizbang.

Many organizations are adopting a laptop, rather than desktop, strategy. Using this approach, the employee uses his or her laptop while in the office and out in the field. With the proliferation of wireless Internet access, this strategy allows employees to take the desktop with them wherever they may be—at their desk, in a conference room, at a meeting offsite, or in a hotel room in another country.

One outcome of this strategy is the development and acquisition of more power-

**Goes to . . . Penguins and 2,000 Blade Servers**

capacity requirements for creating the Oscar-winning animated film *Happy Feet*. The 108-minute computer-generated animated feature, which recently won an Academy Award, was put together by digital production company The Animal Logic Group.

"We needed huge numbers of processors in a form factor and price level that would work for our business," says Xavier Desdoigts, director of technical operations. "We had to render 140,000 frames, and each frame could take many hours to render. The photorealistic look of the movie made our computational requirements soar to new heights."

For example, Mumble, the main character in the movie, had up to 6 million feathers. "There were six shots in the movie that had more than 400,000 penguins in them," Desdoigts explained. This added up to over 17 million CPU hours used throughout the last nine months of *Happy Feet* production. "We were initially concerned about our ability to build and manage a processing capacity of that scale."

Animal Logic and IBM built a rendering server farm using BladeCenter HS20 blade servers, each with two Intel Xeon servers. Rendering was completed in October 2006, and the film was released the following month in the United States. Management tools to deploy and control the servers while in production included an open-source package for administering computing clusters. For Animal Logic, the biggest sign of success from an IT perspective was that the entire server farm was managed by a single person.

"We have to make sure we choose solutions that aren't overly complex to set up or manage, so our focus can stay on realizing the creative visions of our clients," Desdoigts said. *Happy Feet* quickly became one of the Australian film industry's greatest box-office successes, taking the No. 1 spot in the United States for three con-

## Expand Your Horizons

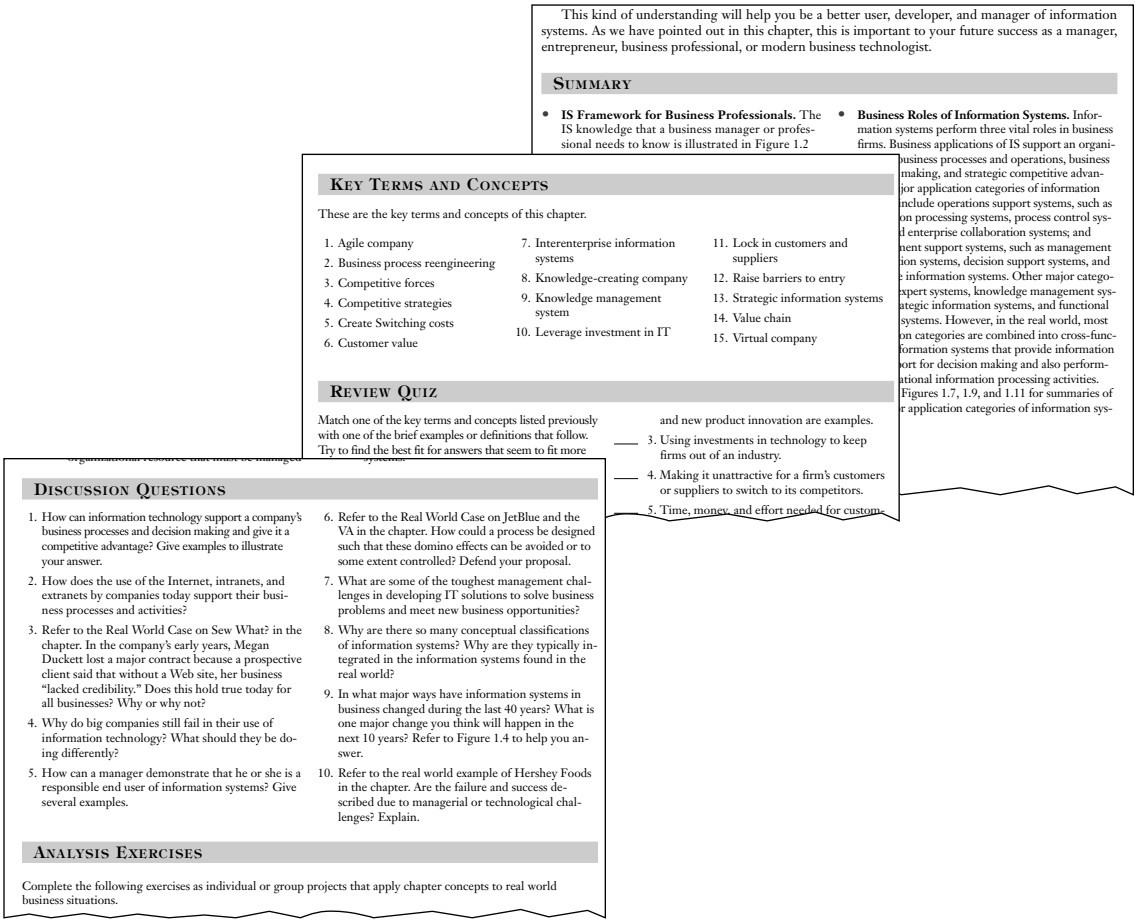
Globe icons indicate examples with an international focus so that your knowledge makes you truly worldly.

# What's New?

The Ninth Edition includes significant changes to the Eighth Edition's content that update and improve its coverage, many of them suggested by an extensive faculty review process. Highlights of key changes for this edition include the following:

- Real World Cases provide current, relevant, and in-depth examples of IS theory applications. A combination of *Case Study Questions* and *Real World Activities* allows you to engage students on a variety of levels.
- More new Real World Cases: More than two-thirds of the cases are new to the Ninth Edition. These up-to-date cases provide students with in-depth business examples of the successes and challenges companies are experiencing in implementing the information technology concepts covered in each chapter. Cases have also been included to give Indian perspective to the subject.
- Real world examples have been added from the Indian Industry.
- Improved Analysis Exercises at the end of each chapter allow you to cover in class or assign as homework a wide variety of interesting projects that promote analysis and critical thinking.
- Application Exercises added at the end of each chapter to offer real experience from manager's perspective.
- Chapter 1: *Foundations of Information Systems in Business* provides a discussion of the relationship between general systems theory and information systems. An expanded discussion on IT/IS careers has been added to Section I.
- Chapter 2: *Competing with Information Technology* has an expanded discussion of Porter's five force model of competition and provides added clarification of support versus primary processes and a more in-depth explanation of differentiation versus innovation.
- Chapter 3: *Computer Hardware* includes significant discussions of the history of computing and updated coverage of Moore's law. It also provides increased and updated coverage of information appliances, Grid computing, and voice recognition, as well as RFID technology and privacy challenges.
- Chapter 4: *Computer Software* provides additional information about OpenOffice Suite and XML.
- Chapter 5: *Data Resource Management* expands the discussion on records and primary keys.
- Chapter 6: *Telecommunications and Networks* now includes discussions of technologies such as Bluetooth and VoIP. Significant discussion of the difference between analog and digital technologies, as well as treatment of the last-mile problem, has also been added.
- Chapter 10: *Decision Support Systems* has added coverage of CAPTCHA tests to prevent machine intervention in online environments. It also includes expanded coverage of OLAP and the modern use of expert system engines.
- Chapter 11: *Developing Business/IT Strategies* provides more in-depth coverage of SWOT analysis and balanced scorecard approach.
- Chapter 12: *Developing Business/IT Solutions* includes an expanded discussion of logical versus physical models.
- Chapter 13: *Security and Ethical Challenges* expands coverage of security and ethics to include the latest developments: opt-in versus opt-out privacy legislation, HIPPA and Patriot Act compliance challenges, adware and spyware, and cyber law.
- Chapter 14: *Enterprise and Global Management of Information Technology* provides expanded in-depth coverage of COBIT and IT governance structures in organizations.

# Student Support



This kind of understanding will help you be a better user, developer, and manager of information systems. As we have pointed out in this chapter, this is important to your future success as a manager, entrepreneur, business professional, or modern business technologist.

**SUMMARY**

- **IS Framework for Business Professionals.** The IS knowledge that a business manager or professional needs to know is illustrated in Figure 1.2
- **Business Roles of Information Systems.** Information systems perform three vital roles in business firms. Business applications of IS support an organi- business processes and operations, business making, and strategic competitive advan- jor application categories of information include operations support systems, such as on processing systems, process control sys- d enterprise collaboration systems; and nent support systems, such as management ion systems, decision support systems, and information systems. Other major catego- expert systems, knowledge management sys- ategic information systems, and functional systems. However, in the real world, most on categories are combined into cross-func- formation systems that provide information ort for decision making and also perform- ational information processing activities. Figures 1.7, 1.9, and 1.11 for summaries of r application categories of information sys-

**KEY TERMS AND CONCEPTS**

These are the key terms and concepts of this chapter.

1. Agile company
2. Business process reengineering
3. Competitive forces
4. Competitive strategies
5. Create Switching costs
6. Customer value
7. Interenterprise information systems
8. Knowledge-creating company
9. Knowledge management system
10. Leverage investment in IT
11. Lock in customers and suppliers
12. Raise barriers to entry
13. Strategic information systems
14. Value chain
15. Virtual company

**REVIEW QUIZ**

Match one of the key terms and concepts listed previously with one of the brief examples or definitions that follow. Try to find the best fit for answers that seem to fit more

and new product innovation are examples.

___ 3. Using investments in technology to keep firms out of an industry.

___ 4. Making it unattractive for a firm's customers or suppliers to switch to its competitors.

___ 5. Time, money, and effort needed for custom-

**DISCUSSION QUESTIONS**

1. How can information technology support a company's business processes and decision making and give it a competitive advantage? Give examples to illustrate your answer.
2. How does the use of the Internet, intranets, and extranets by companies today support their business processes and activities?
3. Refer to the Real World Case on Sew What? in the chapter. In the company's early years, Megan Duckett lost a major contract because a prospective client said that without a Web site, her business "lacked credibility." Does this hold true today for all businesses? Why or why not?
4. Why do big companies still fail in their use of information technology? What should they be doing differently?
5. How can a manager demonstrate that he or she is a responsible end user of information systems? Give several examples.
6. Refer to the Real World Case on JetBlue and the VA in the chapter. How could a process be designed such that these domino effects can be avoided or to some extent controlled? Defend your proposal.
7. What are some of the toughest management challenges in developing IT solutions to solve business problems and meet new business opportunities?
8. Why are there so many conceptual classifications of information systems? Why are they typically integrated in the information systems found in the real world?
9. In what major ways have information systems in business changed during the last 40 years? What is one major change you think will happen in the next 10 years? Refer to Figure 1.4 to help you answer.
10. Refer to the real world example of Hershey Foods in the chapter. Are the failure and success described due to managerial or technological challenges? Explain.

**ANALYSIS EXERCISES**

Complete the following exercises as individual or group projects that apply chapter concepts to real world business situations.

Each chapter contains *complete pedagogical support* in the form of:

- **Summary.** Revisiting key chapter concepts in a bullet-point summary.
- **Key Terms and Concepts.** Using page numbers to reference where terms are discussed in the text.
- **Review Quiz.** Providing a self-assessment for your students. Great for review before an important exam.
- **Discussion Questions.** Whether assigned as homework or used for in-class discussion, these complex questions will help your students develop critical thinking skills.
- **Analysis Exercises.** Each innovative scenario presents a business problem and asks students to use and test their IS knowledge through analytical, Web-based, spreadsheet, and/or database skills.
- Real world cases added from the Indian and International Perspective
- **Closing Case Studies.** Reinforcing important concepts with prominent examples from businesses and organizations. Discussion questions follow each case study.

# Acknowledgments

The Ninth Edition represents an ongoing effort to improve and adapt this text to meet the needs of students and instructors. For this revision, we received the guidance of more than 60 reviewers over the course of several months of review work. We thank all of them for their insight and advice.

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## Acknowledging the Real World of Business

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