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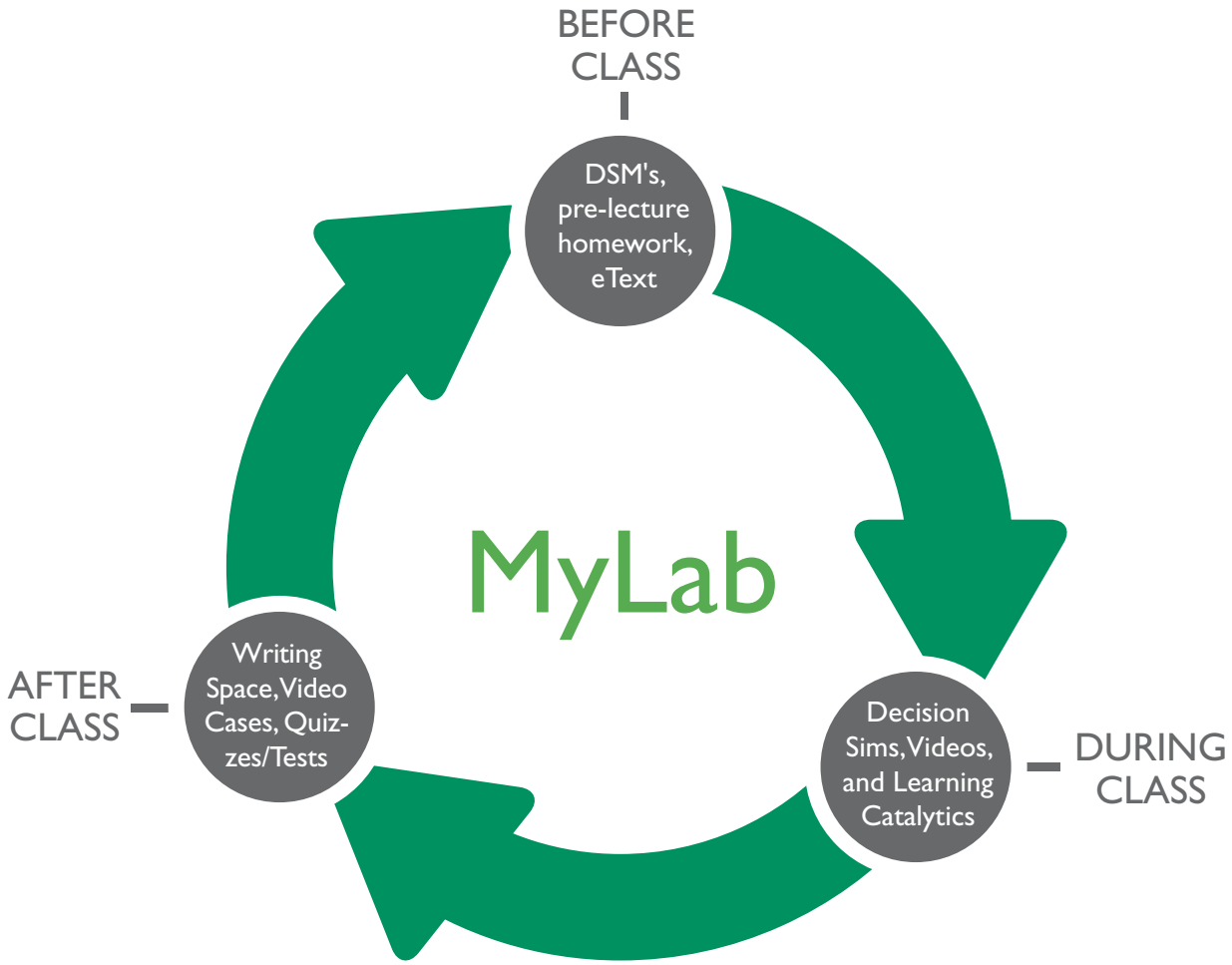

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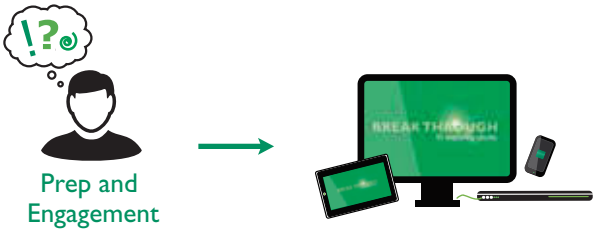

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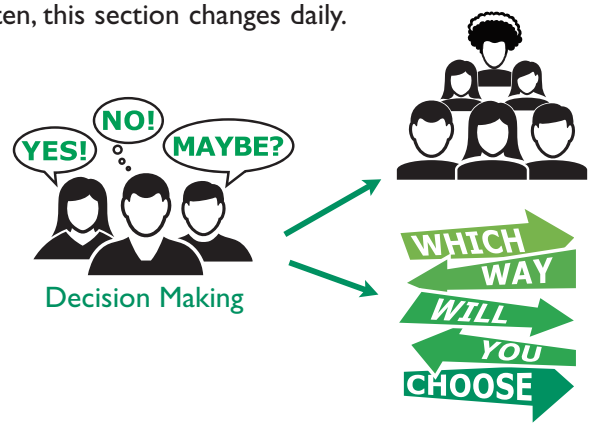

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Management Information Systems

MANAGING THE DIGITAL FIRM

FOURTEENTH EDITION

GLOBAL EDITION

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The Laudons have two daughters, Erica and Elisabeth, to whom this book is dedicated.

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Meet the New Mobile Workers
UPS Competes Globally with Information Technology
Mashaweer: Online Personal Services in the Gulf

Chapter 2: Global E-Business and Collaboration

Social Business at BASF
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Is Social Business Working Out?
Modernization of NTUC Income

Chapter 3: Information Systems, Organizations, and Strategy

Grupo Modelo: Competing On Processes
Automakers Become Software Companies
Identifying Market Niches in the Age of Big Data
Can This Bookstore Be Saved?

Chapter 4: Ethical and Social Issues in Information Systems

Content Pirates Sail the Web
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Chapter 5: IT Infrastructure and Emerging Technologies

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Is It Time for Cloud Computing?
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Chapter 6: Foundations of Business Intelligence: Databases and Information Management

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Chapter 7: Telecommunications, the Internet and Wireless Technology

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Chapter 15: Managing Global Systems

L'Oréal's Global Makeover
E-Commerce Russian-Style
South Korea's Restricted Internet
Unilever's Push Toward Unified Global Systems

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Preface

We wrote this book for business school students who wanted an in-depth look at how today's business firms use information technologies and systems to achieve corporate objectives. Information systems are one of the major tools available to business managers for achieving operational excellence, developing new products and services, improving decision making, and achieving competitive advantage. Students will find here the most up-to-date and comprehensive overview of information systems used by business firms today. After reading this book, we expect students will be able to participate in, and even lead, management discussions of information systems for their firms.

When interviewing potential employees, business firms often look for new hires who know how to use information systems and technologies for achieving bottom-line business results. Regardless of whether you are an accounting, finance, management, operations management, marketing, or information systems major, the knowledge and information you find in this book will be valuable throughout your business career.

What's New in This Edition

CURRENCY

The 14th edition features all new opening, closing and Interactive Session cases. The text, figures, tables, and cases have been updated through October 2014 with the latest sources from industry and MIS research.

NEW FEATURES

- Assisted-graded Writing Questions at the end of each chapter with prebuilt grading rubrics and computerized essay scoring help instructors prepare, deliver, and grade writing assignments.
- New Video Cases collection: 39 video cases (2 or more per chapter) and 18 additional instructional videos covering key concepts and experiences in the MIS world.
- Learning Tracks: 47 Learning Tracks for additional coverage of selected topics.
- Video Cases and Chapter Cases are listed at the beginning of each chapter.

NEW TOPICS

- **Social, Mobile, Local:** New e-commerce content in Chapter 10 describing how social tools, mobile technology, and location-based services are transforming marketing and advertising.

- **Big Data:** Chapter 6 on Databases and Information Management updated to provide in-depth coverage of Big Data and new data management technologies, including Hadoop, in-memory computing, non-relational databases, and analytic platforms.
- **Cloud Computing:** Updated coverage of cloud computing in Chapter 5 (IT Infrastructure), with more detail on types of cloud services, private and public clouds, hybrid clouds, managing cloud services, and a new Interactive Session on using cloud services. Cloud computing also covered in Chapter 6 (databases in the cloud); Chapter 8 (cloud security); Chapter 9 (cloud-based CRM and ERP); Chapter 10 (e-commerce); and Chapter 13 (cloud-based systems development).
- **Social Business:** Extensive coverage of social business, introduced in Chapter 2 and discussed in throughout the text. Detailed discussions of enterprise (internal corporate) social networking as well as social networking in e-commerce.
- Consumerization of IT and BYOD
- Internet of Things
- Visual Web
- Location analytics
- Location-based services (geosocial, geoadvertising, geoinformation services)
- Building an e-commerce presence
- Wearable computers
- Mobile application development, mobile and native apps
- Operational intelligence
- Expanded coverage of business analytics including big data analytics
- Software-defined networking
- 3-D printing
- Quantum computing
- Two-factor authentication
- Ransomware
- Chief data officer
- MOOCs

What's New in MIS?

Plenty. In fact, there's a whole new world of doing business using new technologies for managing and organizing. What makes the MIS field the most exciting area of study in schools of business is the continuous change in technology, management, and business processes. (Chapter 1 describes these changes in more detail.)

IT Innovations. A continuing stream of information technology innovations is transforming the traditional business world. Examples include the emergence of cloud computing, the growth of a mobile digital business platform based on smartphones and tablet computers, and not least, the use of social networks by managers to achieve business objectives. Most of these changes have occurred in the last few years. These innovations enabling entrepreneurs and innovative

traditional firms to create new products and services, develop new business models, and transform the day-to-day conduct of business. In the process, some old businesses, even industries, are being destroyed while new businesses are springing up.

New Business Models. For instance, the emergence of online video stores like Netflix for streaming, and Apple iTunes for downloading, has forever changed how premium video is distributed, and even created. Netflix in 2013 attracted 30 million subscribers to its DVD rental and streaming movie business. Netflix now accounts for 90 percent of streaming premium movies and TV shows, and consumes an estimated 33 percent of Internet bandwidth in the United States. Netflix has moved into premium TV show production with House of Cards, and Arrested Development, challenging cable networks like HBO, and potentially disrupting the cable channels dominance of TV show production. Apple's iTunes now accounts for 67 percent of movie and TV show downloads and has struck deals with major Hollywood studios for recent movies and TV shows. A growing trickle of viewers are unplugging from cable and using only the Internet for entertainment.

E-commerce Expanding. E-commerce will generate an estimated $470 billion in revenues in 2014, and is estimated to grow to nearly $700 billion in 2018. Amazon's revenues grew 21 percent to $74 billion in 2013, despite a slowly expanding economy growing at 2 percent annually, while offline retail grew by only 5 percent. E-commerce is changing how firms design, produce and deliver their products and services. E-commerce has reinvented itself again, disrupting the traditional marketing and advertising industry and putting major media and content firms in jeopardy. Facebook and other social networking sites such as YouTube, Twitter, and Tumblr, exemplify the new face of e-commerce in the 21st Century. They sell services. When we think of e-commerce we tend to think of a selling physical products. While this iconic vision of e-commerce is still very powerful and the fastest growing form of retail in the U.S., growing up alongside is a whole new value stream based on selling services, not goods. It's a services model of e-commerce. Growth in social commerce is spurred by powerful growth of the mobile platform: 60 percent of Facebook's users access the service from mobile phones and tablets. Information systems and technologies are the foundation of this new services-based e-commerce.

Management Changes. Likewise, the management of business firms has changed: With new mobile smartphones, high-speed wireless Wi-Fi networks, and wireless laptop computers, remote salespeople on the road are only seconds away from their managers' questions and oversight. Managers on the move are in direct, continuous contact with their employees. The growth of enterprise-wide information systems with extraordinarily rich data means that managers no longer operate in a fog of confusion, but instead have online, nearly instant, access to the really important information they need for accurate and timely decisions. In addition to their public uses on the Web, wikis and blogs are becoming important corporate tools for communication, collaboration, and information sharing.

Changes in Firms and Organizations: Compared to industrial organizations of the previous century, new fast-growing 21st Century business firms put less emphasis on hierarchy and structure, and more emphasis on employees taking on multiple roles and tasks. They put greater emphasis on competency and skills rather than position in the hierarchy. They emphasize higher speed and more accurate decision making based on data and analysis. They are more aware of

changes in technology, consumer attitudes, and culture. They use social media to enter into conversations with consumers, and demonstrate a greater willingness to listen to consumers, in part because they have no choice. They show better understanding of the importance of information technology in creating and managing business firms and other organizations. To the extent organizations and business firms demonstrate these characteristics, they are 21st Century digital firms.

The 14th Edition: The Comprehensive Solution for the MIS Curriculum

Since its inception, this text has helped to define the MIS course around the globe. This edition continues to be authoritative, but is also more customizable, flexible, and geared to meeting the needs of different colleges, universities, and individual instructors. Many of its learning tools are now available in digital form. This book is now part of a complete learning package that includes the core text, Video Case Package, and Learning Tracks.

The core text consists of 15 chapters with hands-on projects covering the most essential topics in MIS. An important part of the core text is the Video Case Study and Instructional Video Package: 39 video case studies (2-3 per chapter) plus 18 instructional videos that illustrate business uses of information systems, explain new technologies, and explore concepts. Videos are keyed to the topics of each chapter.

In addition, for students and instructors who want to go deeper into selected topics, there are 47 online Learning Tracks that cover a variety of MIS topics in greater depth.

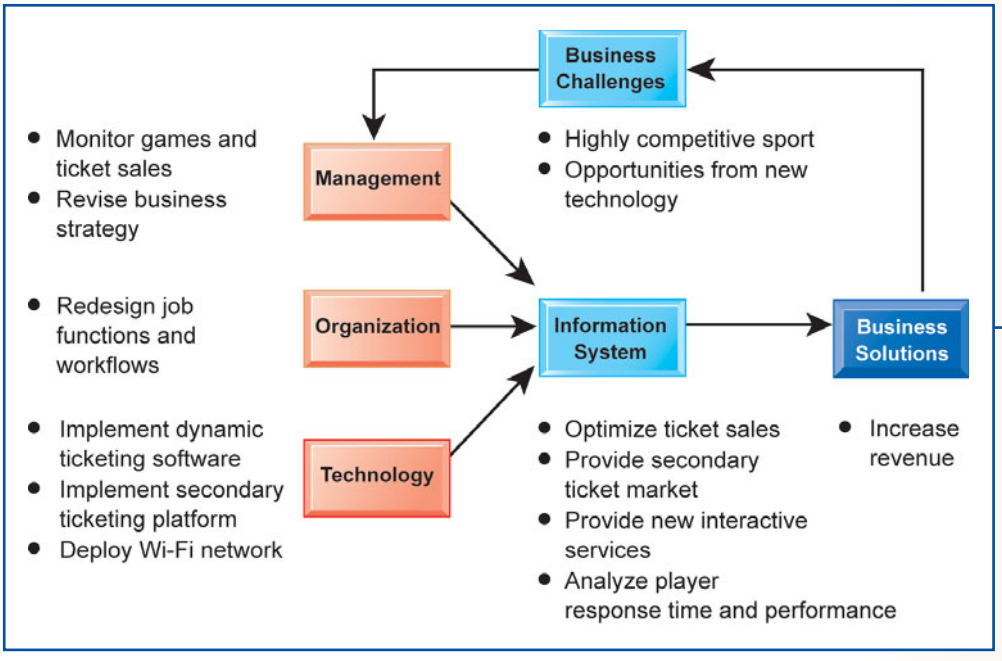
THE CORE TEXT

The core text provides an overview of fundamental MIS concepts using an integrated framework for describing and analyzing information systems. This framework shows information systems composed of people, organization, and technology elements and is reinforced in student projects and case studies.

Chapter Organization

Each chapter contains the following elements:

- A Chapter Outline based on Learning Objectives
- Lists of all the Case Studies and Video Cases for each chapter
- A chapter-opening case describing a real-world organization to establish the theme and importance of the chapter
- A diagram analyzing the opening case in terms of the management, organization, and technology model used throughout the text
- Two Interactive Sessions with Case Study Questions
- A Review Summary keyed to the Student Learning Objectives
- A list of Key Terms that students can use to review concepts
- Review questions for students to test their comprehension of chapter material
- Discussion questions raised by the broader themes of the chapter.



A diagram accompanying each chapter-opening case graphically illustrates how management, organization, and technology elements work together to create an information system solution to the business challenges discussed in the case.

- A series of Hands-on MIS Projects consisting of two Management Decision Problems, a hands-on application software project, and a project to develop Internet skills
- A Collaboration and Teamwork Project to develop teamwork and presentation skills, with options for using open source collaboration tools
- A chapter-ending case study for students to apply chapter concepts
- Two assisted-graded writing questions with prebuilt grading rubrics
- Chapter references

KEY FEATURES

We have enhanced the text to make it more interactive, leading-edge, and appealing to both students and instructors. The features and learning tools are described in the following sections:

Business-Driven with Real-World Business Cases and Examples

The text helps students see the direct connection between information systems and business performance. It describes the main business objectives driving the use of information systems and technologies in corporations all over the world: operational excellence; new products and services; customer and supplier intimacy; improved decision making; competitive advantage; and survival. In-text examples and case studies show students how specific companies use information systems to achieve these objectives.

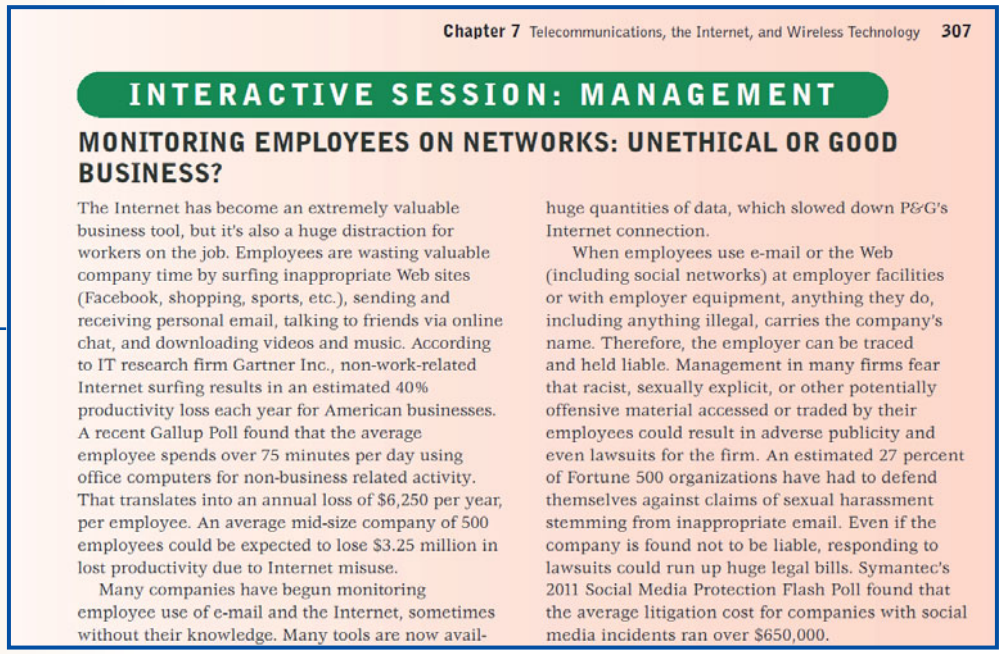
We use only current (2014) examples from business and public organizations throughout the text to illustrate the important concepts in each chapter. All the case studies describe companies or organizations that are familiar to students, such as Facebook, Walmart, Google, Target, Home Depot, Toyota, and Lego.

Interactivity

There's no better way to learn about MIS than by doing MIS! We provide different kinds of hands-on projects where students can work with real-world business scenarios and data, and learn firsthand what MIS is all about. These projects heighten student involvement in this exciting subject.

- **Online Video Case Package.** Students can watch short videos online, either in-class or at home or work, and then apply the concepts of the book to the analysis of the video. Every chapter contains at least two business video cases that explain how business firms and managers are using information systems, describe new management practices, and explore concepts discussed in the chapter. Each video case consists of a video about a real-world company, a background text case, and case study questions. These video cases enhance students' understanding of MIS topics and the relevance of MIS to the business world. In addition, there are 18 Instructional Videos that describe developments and concepts in MIS keyed to respective chapters.
- **Interactive Sessions.** Two short cases in each chapter have been redesigned as Interactive Sessions to be used in the classroom (or on Internet discussion boards) to stimulate student interest and active learning. Each case concludes with case study questions. The case study questions provide topics for class discussion, Internet discussion, or written assignments.

Each chapter contains two Interactive Sessions on Management, Organizations, or Technology using real-world companies to illustrate chapter concepts and issues.



Chapter 7 Telecommunications, the Internet, and Wireless Technology 307

INTERACTIVE SESSION: MANAGEMENT

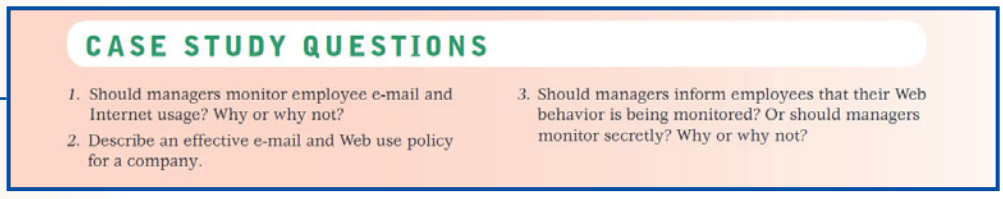
MONITORING EMPLOYEES ON NETWORKS: UNETHICAL OR GOOD BUSINESS?

The Internet has become an extremely valuable business tool, but it's also a huge distraction for workers on the job. Employees are wasting valuable company time by surfing inappropriate Web sites (Facebook, shopping, sports, etc.), sending and receiving personal email, talking to friends via online chat, and downloading videos and music. According to IT research firm Gartner Inc., non-work-related Internet surfing results in an estimated 40% productivity loss each year for American businesses. A recent Gallup Poll found that the average employee spends over 75 minutes per day using office computers for non-business related activity. That translates into an annual loss of $6,250 per year, per employee. An average mid-size company of 500 employees could be expected to lose $3.25 million in lost productivity due to Internet misuse.

Many companies have begun monitoring employee use of e-mail and the Internet, sometimes without their knowledge. Many tools are now available to monitor employee Internet activity, including hardware and software that records every Web site employees visit, every chat room they enter, every instant message they send, and every e-mail they write, as well as how much time they spend on the Internet. Some firms use software that prevents employees from accessing specific Web sites, such as competitors' sites, sites displaying sexually explicit material, or sites that consume huge quantities of data, which slowed down P&G's Internet connection.

When employees use e-mail or the Web (including social networks) at employer facilities or with employer equipment, anything they do, including anything illegal, carries the company's name. Therefore, the employer can be traced and held liable. Management in many firms fear that racist, sexually explicit, or other potentially offensive material accessed or traded by their employees could result in adverse publicity and even lawsuits for the firm. An estimated 27 percent of Fortune 500 organizations have had to defend themselves against claims of sexual harassment stemming from inappropriate email. Even if the company is found not to be liable, responding to lawsuits could run up huge legal bills. Symantec's 2011 Social Media Protection Flash Poll found that the average litigation cost for companies with social media incidents ran over $650,000.

Case Study Questions encourage students to apply chapter concepts to real-world companies in class discussions, student presentations, or writing assignments.



CASE STUDY QUESTIONS

1. Should managers monitor employee e-mail and Internet usage? Why or why not?
2. Describe an effective e-mail and Web use policy for a company.
3. Should managers inform employees that their Web behavior is being monitored? Or should managers monitor secretly? Why or why not?

- **Hands-on MIS Projects.** Every chapter concludes with a Hands-on MIS Projects section containing three types of projects: two Management Decision Problems, a hands-on application software exercise using Microsoft Excel, Access, or Web page and blog creation tools, and a project that develops Internet business skills. A Dirt Bikes USA running case provides additional hands-on projects for each chapter.
- **Collaboration and Teamwork Projects.** Each chapter features a collaborative project that encourages students working in teams to use Google Drive, Google Docs, or other open-source collaboration tools. The first team project in Chapter 1 asks students to build a collaborative Google site.

Management Decision Problems

12-7 Dealerships for Subaru and other automobile manufacturers keep records of the mileage of cars they sell and service. Mileage data are used to remind customers of when they need to schedule service appointments, but they are used for other purposes as well. What kinds of decisions does this piece of data support at the local level and at the corporate level? What would happen if this piece of data were erroneous, for example, showing mileage of 130,000 instead of 30,000? How would it affect decision making? Assess its business impact.

12-8 Applebee's is the largest casual dining chain in the world, with over 1,800 locations throughout the U.S. and also in 20 other countries. The menu features beef, chicken, and pork items, as well as burgers, pasta, and seafood. Applebee's CEO wants to make the restaurant more profitable by developing menus that are tastier and contain more items that customers want and are willing to pay for despite rising costs for gasoline and agricultural products. How might business intelligence help management implement this strategy? What pieces of data would Applebee's need to collect? What kinds of reports would be useful to help management make decisions on how to improve menus and profitability?

Two real-world business scenarios per chapter provide opportunities for students to apply chapter concepts and practice management decision making.

Store & Region Sales Database

ll	Store N	Sales Regior	Item N	Item Descriptic	Unit Pric	Units Sol	Week Ending	Click to Add
1	1	South	2005	17" Monitor	$229.00	28	10/27/2014	
2	1	South	2005	17" Monitor	$229.00	30	11/24/2014	
3	1	South	2005	17" Monitor	$229.00	9	12/29/2014	
4	1	South	3006	101 Keyboard	$19.95	30	10/27/2014	
5	1	South	3006	101 Keyboard	$19.95	35	11/24/2014	
6	1	South	3006	101 Keyboard	$19.95	39	12/29/2014	
7	1	South	6050	PC Mouse	$8.95	28	10/27/2014	
8	1	South	6050	PC Mouse	$8.95	3	11/24/2014	
9	1	South	6050	PC Mouse	$8.95	38	12/29/2014	
10	1	South	8500	Desktop CPU	$849.95	25	10/27/2014	
11	1	South	8500	Desktop CPU	$849.95	27	11/24/2014	
12	1	South	8500	Desktop CPU	$849.95	33	12/29/2014	
13	2	South	2005	17" Monitor	$229.00	8	10/27/2014	
14	2	South	2005	17" Monitor	$229.00	8	11/24/2014	
15	2	South	2005	17" Monitor	$229.00	10	12/29/2014	
16	2	South	3006	101 Keyboard	$19.95	8	10/27/2014	

Record: 1 of 96 No Filter Search

Students practice using software in real-world settings for achieving operational excellence and enhancing decision making.

Improving Decision Making: Using Web Tools to Configure and Price an Automobile

Software skills: Internet-based software
Business skills: Researching product information and pricing

3-11 In this exercise, you will use software at car Web sites to find product information about a car of your choice and use that information to make an important purchase decision. You will also evaluate two of these sites as selling tools.

You are interested in purchasing a new Ford Escape (or some other car of your choice). Go to the Web site of CarsDirect (www.carsdirect.com) and begin your investigation. Locate the Ford Escape. Research the various Escape models, choose one you prefer in terms of price, features, and safety ratings. Locate and read at least two reviews. Surf the Web site of the manufacturer, in this case Ford (www.ford.com). Compare the information available on Ford's Web site with that of CarsDirect for the Ford Escape. Try to locate the lowest price for the car you want in a local dealer's inventory. Suggest improvements for CarsDirect.com and Ford.com.

Each chapter features a project to develop Internet skills for accessing information, conducting research, and performing online calculations and analysis.