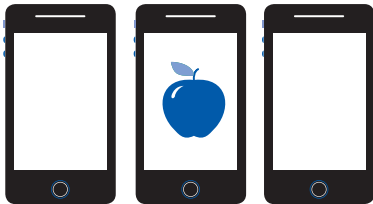


- **Dynamic Study Modules** help students study chapter topics and the language of MIS on their own by continuously assessing their knowledge application and performance in real time. These are available as graded assignments prior to class, and are accessible on smartphones, tablets, and computers.



- **Learning Catalytics™** is a student response tool that helps you generate class discussion, customize your lecture, and promote peer-to-peer learning based on real-time analytics. Learning Catalytics uses students' smartphones, tablets, or laptops to engage them in more interactive tasks.

- The **Gradebook** offers an easy way for you and your students to see their performance in your course.

Item Analysis lets you quickly see trends by analyzing details like the number of students who answered correctly/incorrectly, time on task, and more.

And because it's correlated with the AACSB Standards, you can track students' progress toward outcomes that the organization has deemed important in preparing students to be leaders.



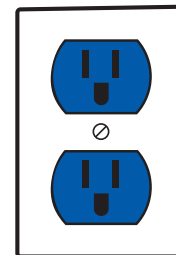
- **Pearson eText** enhances learning — both in and out of the classroom. Students can take notes, highlight, and bookmark important content, or engage with interactive lecture and example videos that bring learning to life anytime, anywhere via MyLab or the app.



- **Accessibility (ADA)**—Pearson is working toward WCAG 2.0 Level AA and Section 508 standards, as expressed in the **Pearson Guidelines for Accessible Educational Web Media**. Moreover, our products support customers in meeting their obligation to comply with the Americans with Disabilities Act (ADA) by providing access to learning technology programs for users with disabilities.

Please email our Accessibility Team at disability.support@pearson.com for the most up-to-date information.

- With **LMS Integration**, you can link your MyLab course from Blackboard Learn™, Brightspace® by D2L®, Canvas™, or Moodle®.



<http://www.pearsonmylabandmastering.com>

Integrating Business with Technology

By completing the projects in this text, students will be able to demonstrate business knowledge, application software proficiency, and Internet skills. These projects can be used by instructors as learning assessment tools and by students as demonstrations of business, software, and problem-solving skills to future employers. Here are some of the skills and competencies students using this text will be able to demonstrate:

Business Application skills: Use of both business and software skills in real-world business applications. Demonstrates both business knowledge and proficiency in spreadsheet, database, and Web page/blog creation tools.

Internet skills: Ability to use Internet tools to access information, conduct research, or perform online calculations and analysis.

Analytical, writing and presentation skills: Ability to research a specific topic, analyze a problem, think creatively, suggest a solution, and prepare a clear written or oral presentation of the solution, working either individually or with others in a group.

* **Dirt Bikes Running Case in MyLabMIS**

Business Application Skills

Business Skills	Software Skills	Chapter
Finance and Accounting		
Financial statement analysis	Spreadsheet charts	Chapter 2*
	Spreadsheet formulas	Chapter 10
	Spreadsheet downloading and formatting	
Pricing hardware and software	Spreadsheet formulas	Chapter 5
Technology rent vs. buy decision	Spreadsheet formulas	Chapter 5*
Total Cost of Ownership (TCO) Analysis		
Analyzing telecommunications services and costs	Spreadsheet formulas	Chapter 7
Risk assessment	Spreadsheet charts and formulas	Chapter 8
Human Resources		
Employee training and skills tracking	Database design	Chapter 12*
	Database querying and reporting	
Manufacturing and Production		
Analyzing supplier performance and pricing	Spreadsheet date functions	Chapter 2
	Data filtering	
	Database functions	
Inventory management	Importing data into a database	Chapter 6
	Database querying and reporting	
Bill of materials cost sensitivity analysis	Spreadsheet data tables	Chapter 11*
	Spreadsheet formulas	
Sales and Marketing		
Sales trend analysis	Database querying and reporting	Chapter 1
Customer reservation system	Database querying and reporting	Chapter 3
Customer sales analysis	Database design	
Marketing decisions	Spreadsheet pivot tables	Chapter 11
Customer profiling	Database design	Chapter 6*
	Database querying and reporting	

Customer service analysis	Database design	Chapter 9
	Database querying and reporting	
Sales lead and customer analysis	Database design	Chapter 12
	Database querying and reporting	
Blog creation and design	Blog creation tool	Chapter 4

Internet Skills

Using online software tools for job hunting and career development	Chapter 1
Using online interactive mapping software to plan efficient transportation routes	Chapter 2
Researching product information	Chapter 3
Evaluating Web sites for auto sales	
Analyzing Web browser privacy protection	Chapter 4
Researching travel costs using online travel sites	Chapter 5
Searching online databases for products and services	Chapter 6
Using Web search engines for business research	Chapter 7
Researching and evaluating business outsourcing services	Chapter 8
Researching and evaluating supply chain management services	Chapter 9
Evaluating e-commerce hosting services	Chapter 10
Using shopping bots to compare product price, features, and availability	Chapter 11
Analyzing Web site design	Chapter 12

Analytical, Writing, and Presentation Skills*

Business Problem	Chapter
Management analysis of a business	Chapter 1
Value chain and competitive forces analysis	Chapter 3
Business strategy formulation	
Formulating a corporate privacy policy	Chapter 4
Employee productivity analysis	Chapter 7
Disaster recovery planning	Chapter 8
Locating and evaluating suppliers	Chapter 9
Developing an e-commerce strategy	Chapter 10



Thirteenth Edition

Essentials of Management Information Systems

Kenneth C. Laudon

New York University

Jane P. Laudon

Azimuth Information Systems



330 Hudson Street, NY NY 10013

Vice President, IT & Careers: Andrew Gilfillan
Senior Portfolio Manager: Samantha Lewis
Managing Producer: Laura Burgess
Associate Content Producer: Stephany Harrington
Portfolio Management Assistant: Madeline Houpt
Director of Product Marketing: Brad Parkins
Product Marketing Manager: Heather Taylor
Product Marketing Assistant: Jesika Bethea
Field Marketing Manager: Molly Schmidt
Field Marketing Assistant: Kelli Fisher
Cover Image: RedlineVector/Shutterstock; bluebay/Shutterstock

Vice President, Product Model Management: Jason Fournier
Senior Product Model Manager: Eric Hakanson
Lead, Production and Digital Studio: Heather Darby
Digital Studio Course Producer: Jaimie Noy
Program Monitor: SPi Global
Full-Service Project Management and Composition: Katie Ostler, Cenveo® Publisher Services
Printer/Binder: LSC Communications
Cover Printer: Phoenix
Text Font: 10.5/12.5 Times NR MT Pro

Microsoft and/or its respective suppliers make no representations about the suitability of the information contained in the documents and related graphics published as part of the services for any purpose. All such documents and related graphics are provided “as is” without warranty of any kind. Microsoft and/or its respective suppliers hereby disclaim all warranties and conditions with regard to this information, including all warranties and conditions of merchantability, whether express, implied or statutory, fitness for a particular purpose, title and non-infringement. In no event shall Microsoft and/or its respective suppliers be liable for any special, indirect or consequential damages or any damages whatsoever resulting from loss of use, data or profits, whether in an action of contract, negligence or other tortious action, arising out of or in connection with the use or performance of information available from the services.

The documents and related graphics contained herein could include technical inaccuracies or typographical errors. Changes are periodically added to the information herein. Microsoft and/or its respective suppliers may make improvements and/or changes in the product(s) and/or the program(s) described herein at any time. Partial screen shots may be viewed in full within the software version specified.

Microsoft® and Windows® are registered trademarks of the Microsoft Corporation in the U.S.A. and other countries. This book is not sponsored or endorsed by or affiliated with the Microsoft Corporation.

Copyright © 2019, 2017, 2015 by Pearson Education, Inc. or its affiliates. All Rights Reserved. Manufactured in the United States of America. This publication is protected by copyright, and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise. For information regarding permissions, request forms, and the appropriate contacts within the Pearson Education Global Rights and Permissions department, please visit www.pearsoned.com/permissions/.

Acknowledgments of third-party content appear on the appropriate page within the text.

PEARSON, ALWAYS LEARNING, and MYLAB MIST™ are exclusive trademarks owned by Pearson Education, Inc. or its affiliates in the U.S. and/or other countries.

Unless otherwise indicated herein, any third-party trademarks that may appear in this work are the property of their respective owners, and any references to third-party trademarks, logos, or other trade dress are for demonstrative or descriptive purposes only.

Such references are not intended to imply any sponsorship, endorsement, authorization, or promotion of Pearson’s products by the owners of such marks, or any relationship between the owner and Pearson Education, Inc. or its affiliates, authors, licensees, or distributors.

Library of Congress Cataloging-in-Publication Data

On file with the library of Congress.



ISBN 10: 0-13-480275-6
ISBN 13: 978-0-13-480275-6

About the Authors



Kenneth C. Laudon is a Professor of Information Systems at New York University's Stern School of Business. He holds a B.A. in Economics from Stanford and a Ph.D. from Columbia University. He has authored twelve books dealing with electronic commerce, information systems, organizations, and society. Professor Laudon has also written over forty articles concerned with the social, organizational, and management impacts of information systems, privacy, ethics, and multimedia technology.

Professor Laudon's current research is on the planning and management of large-scale information systems and multimedia information technology. He has received grants from the National Science Foundation to study the evolution of national information systems at the Social Security Administration, the IRS, and the FBI. Ken's research focuses on enterprise system implementation, computer-related organizational and occupational changes in large organizations, changes in management ideology, changes in public policy, and understanding productivity change in the knowledge sector.

Ken Laudon has testified as an expert before the United States Congress. He has been a researcher and consultant to the Office of Technology Assessment (United States Congress), Department of Homeland Security, and to the Office of the President, several executive branch agencies, and Congressional Committees. Professor Laudon also acts as an in-house educator for several consulting firms and as a consultant on systems planning and strategy to several Fortune 500 firms.

At NYU's Stern School of Business, Ken Laudon teaches courses on Managing the Digital Firm, Information Technology and Corporate Strategy, Professional Responsibility (Ethics), and Electronic Commerce and Digital Markets. Ken Laudon's hobby is sailing.

Jane Price Laudon is a management consultant in the information systems area and the author of seven books. Her special interests include systems analysis, data management, MIS auditing, software evaluation, and teaching business professionals how to design and use information systems.

Jane received her Ph.D. from Columbia University, her M.A. from Harvard University, and her B.A. from Barnard College. She has taught at Columbia University and the New York University Stern School of Business. She maintains a lifelong interest in languages and civilizations of Asia.

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

Brief Contents

PREFACE xviii

I Information Systems in the Digital Age I

- 1** Business Information Systems in Your Career 2
- 2** Global E-business and Collaboration 40
- 3** Achieving Competitive Advantage with Information Systems 78
- 4** Ethical and Social Issues in Information Systems 114

II Information Technology Infrastructure 153

- 5** IT Infrastructure: Hardware and Software 154
- 6** Foundations of Business Intelligence: Databases and Information Management 194
- 7** Telecommunications, the Internet, and Wireless Technology 230
- 8** Securing Information Systems 272

III Key System Applications for the Digital Age 313

- 9** Achieving Operational Excellence and Customer Intimacy: Enterprise Applications 314
- 10** E-commerce: Digital Markets, Digital Goods 348
- 11** Improving Decision Making and Managing Knowledge 392

IV Building and Managing Systems 433

- 12** Building Information Systems and Managing Projects 434

GLOSSARY 475

INDEXES 490

Complete Contents

PREFACE XVIII

I Information Systems in the Digital Age I

I Business Information Systems in Your Career 2

Chapter-Opening Case:

The Grocery Store of the Future: Look at Kroger 3

- 1-1 Why are information systems so essential for running and managing a business today? 5
How Information Systems are Transforming Business 5 • What's New in Management Information Systems? 6 • Globalization Challenges and Opportunities: A Flattened World 8

Interactive Session: People

Can You Run Your Company with Your iPhone? 9

Business Drivers of Information Systems 11

- 1-2 What exactly is an information system? How does it work? What are its people, organizational, and technology components? 13
What is an Information System? 13 • It isn't Simply Technology: The Role of People and Organizations 15 • Dimensions of Information Systems 16

Interactive Session: Technology

UPS Competes Globally with Information Technology 19

- 1-3 How will a four-step method for business problem solving help you solve information system-related problems? 20
The Problem-Solving Approach 21 • A Model of the Problem-Solving Process 21 • The Role of Critical Thinking in Problem Solving 23 • The Connections Among Business Objectives, Problems, and Solutions 24
- 1-4 What information systems skills and knowledge are essential for business careers? 25
How Information Systems will Affect Business Careers 25 • Information Systems and Business Careers: Wrap-Up 28 • How This Book Prepares You for the Future 28
- 1-5 How will MIS help my career? 30
The Company 30 • Position Description 30 • Job Requirements 30 • Interview Questions 30 • Author Tips 30



Review Summary 31 • Key Terms 32 • Review Questions 32 • Discussion Questions 32 • Hands-On MIS Projects 33
Management Decision Problems 33 • Improving Decision Making:

Using Databases to Analyze Sales Trends 33 • Improving Decision Making: Using The Internet to Locate Jobs Requiring Information Systems Knowledge 34

Collaboration and Teamwork Project 34

2 Business Problem-Solving Case

Did Information Systems Cause Deutsche Bank to Stumble? 35

2 Global E-business and Collaboration 40

Chapter-Opening Case:

Enterprise Social Networking Helps Sanofi Pasteur Innovate and Improve Quality 41

- 2-1 What major features of a business are important for understanding the role of information systems? 42
Organizing a Business: Basic Business Functions 43 • Business Processes 44 • Managing a Business and Firm Hierarchies 46 • The Business Environment 47 • The Role of Information Systems in a Business 48
- 2-2 How do systems serve different management groups in a business, and how do systems that link the enterprise improve organizational performance? 48
Systems for Different Management Groups 48 • Systems for Linking the Enterprise 53

Interactive Session: People

Data Changes How NFL Teams Play the Game and How Fans See It 54

E-Business, E-Commerce, and E-Government 57

- 2-3 Why are systems for collaboration and social business so important, and what technologies do they use? 57
What is Collaboration? 57 • What is Social Business? 59 • Business Benefits of Collaboration and Social Business 59 • Building a Collaborative Culture and Business Processes 61 • Tools and Technologies for Collaboration and Social Business 61

Interactive Session: Technology

Cisco IX5000: What State-of-the-Art Telepresence Can Do for Collaboration 63

- 2-4 What is the role of the information systems function in a business? 66
The Information Systems Department 67 • Information Systems Services 68
- 2-5 How will MIS help my career? 68
The Company 68 • Position Description 69 • Job Requirements 69 • Interview Questions 69 • Author Tips 69



Review Summary 70 • Key Terms 71 • Review Questions 71 • Discussion Questions 72 • Hands-On MIS Projects 72
Management Decision Problems 72 • *Improving Decision*

Making: Use a Spreadsheet to Select Suppliers 72 • *Achieving Operational Excellence: Using Internet Software to Plan Efficient Transportation Routes* 73

Collaboration and Teamwork Project 73

Business Problem-Solving Case

Social Business: Full Speed Ahead or Proceed with Caution? 74

3 Achieving Competitive Advantage with Information Systems 78

Chapter-Opening Case:

Verizon or AT&T: Which Company Has the Best Digital Strategy? 79

3-1 How do Porter's competitive forces model, the value chain model, synergies, core competencies, and network-based strategies help companies use information systems for competitive advantage? 80

Porter's Competitive Forces Model 81 • *Information System Strategies For Dealing With Competitive Forces* 82

Interactive Session: People

Digital Technology Helps Crayola Brighten Its Brand 85

The Internet's Impact on Competitive Advantage 87 • *The Business Value Chain Model* 88 • *Synergies, Core Competencies, and Network-Based Strategies* 90 • *Disruptive Technologies: Riding the Wave* 93

3-2 How do information systems help businesses compete globally? 94

The Internet and Globalization 95 • *Global Business and System Strategies* 95 • *Global System Configuration* 96

3-3 How do information systems help businesses compete using quality and design? 96

What is Quality? 97 • *How Information Systems Improve Quality* 97

3-4 What is the role of business process management (BPM) in enhancing competitiveness? 99

What is Business Process Management? 99

Interactive Session: Organizations

Carter's Redesigns Its Business Processes 102

3-5 How will MIS help my career? 103

The Company 104 • *Position Description* 104 • *Job Requirements* 104 • *Interview Questions* 104 • *Author Tips* 104

Review Summary 105 • Key Terms 106 • Review Questions 106 • Discussion Questions 107 • Hands-On MIS Projects 107



Management Decision Problems 107 • *Improving Decision Making: Using a Database to Clarify Business Strategy* 108 • *Improving Decision Making: Using Web Tools To Configure And Price An Automobile* 108

Collaboration and Teamwork Project 109

Business Problem-Solving Case

Walmart Versus Amazon and the Future of Retail 110

4 Ethical and Social Issues in Information Systems 114

Chapter-Opening Case:

The Dark Side of Big Data 115

4-1 What ethical, social, and political issues are raised by information systems? 117

A Model for Thinking About Ethical, Social, and Political Issues 118 • *Five Moral Dimensions of the Information Age* 119 • *Key Technology Trends That Raise Ethical Issues* 120

4-2 What specific principles for conduct can be used to guide ethical decisions? 122

Basic Concepts: Responsibility, Accountability, and Liability 122 • *Ethical Analysis* 123 • *Candidate Ethical Principles* 123 • *Professional Codes of Conduct* 124 • *Some Real-World Ethical Dilemmas* 124

4-3 Why do contemporary information systems technology and the Internet pose challenges to the protection of individual privacy and intellectual property? 125

Information Rights: Privacy and Freedom in the Internet Age 125 • *Property Rights: Intellectual Property* 131

4-4 How have information systems affected laws for establishing accountability and liability and the quality of everyday life? 134

Computer-Related Liability Problems 134 • *System Quality: Data Quality and System Errors* 135 • *Quality of Life: Equity, Access, and Boundaries* 136

Interactive Session: Technology

Volkswagen Pollutes Its Reputation with Software to Evade Emissions Testing 140

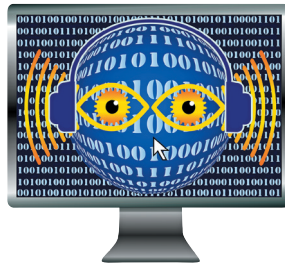
Interactive Session: People

Will Automation Kill Jobs? 142

Health Risks: RSI, CVS, and Cognitive Decline 143

4-5 How will MIS help my career? 144

The Company 144 • *Position Description* 144 • *Job Requirements* 145 • *Interview Questions* 145 • *Author Tips* 145



Review Summary 145 • Key Terms 146 • Review Questions 146 • Discussion Questions 147 • Hands-On MIS Projects 147

Management Decision Problems 147 • Achieving Operational Excellence: Creating a Simple Blog 148 • Improving Decision

Making: Analyzing Web Browser Privacy 148

Collaboration and Teamwork Project 148

Business Problem-Solving Case

Facebook Privacy: Your Life for Sale 149

II Information Technology Infrastructure 153

5 IT Infrastructure: Hardware and Software 154

Chapter-Opening Case:

Peroxychem's Cloud Computing Formula for Success 155

5-1 What are the components of IT infrastructure? 156

IT Infrastructure Components 157

5-2 What are the major computer hardware, data storage, input, and output technologies used in business and the major hardware trends? 159

Types of Computers 159 • Storage, Input, and Output Technology 161 • Contemporary Hardware Trends 161

Interactive Session: Technology

Wearable Computers Change How We Work 163

Interactive Session: Organizations

Computing Takes Off in the Cloud 168

5-3 What are the major types of computer software used in business and the major software trends? 171

Operating System Software 172 • Application Software and Desktop Productivity Tools 173 • HTML and HTML5 176 • Web Services 176 • Software Trends 177

5-4 What are the principal issues in managing hardware and software technology? 179

Capacity Planning and Scalability 179 • Total Cost of Ownership (TCO) of Technology Assets 180 • Using Technology Service Providers 180 • Managing Mobile Platforms 182 • Managing Software Localization for Global Business 182

5-5 How will MIS help my career? 183

The Company 183 • Position Description 183 • Job Requirements 183 • Interview Questions 183 • Author Tips 184

Review Summary 184 • Key Terms 185 • Review Questions 186 • Discussion Questions 186 • Hands-On MIS Projects 187

Management Decision

Problems 187 • Improving Decision Making: Using a Spreadsheet to Evaluate Hardware and Software Options 187 • Improving Decision Making: Using Web Research to Budget For a Sales Conference 188

Collaboration and Teamwork Project 188

Business Problem-Solving Case

Is BYOD Good for Business? 189



6 Foundations of Business Intelligence: Databases and Information Management 194

Chapter-Opening Case:

Data Management Helps the Charlotte Hornets Learn More About Their Fans 195

6-1 What is a database, and how does a relational database organize data? 197

Entities and Attributes 197 • Organizing Data in a Relational Database 197 • Establishing Relationships 200

6-2 What are the principles of a database management system? 203

Operations of a Relational DBMS 203 • Capabilities of Database Management Systems 204 • Non-Relational Databases and Databases in the Cloud 207

6-3 What are the principal tools and technologies for accessing information from databases to improve business performance and decision making? 208

The Challenge of Big Data 208 • Business Intelligence Technology Infrastructure 209

Interactive Session: Technology

Kraft Heinz Finds a New Recipe for Analyzing Its Data 211

Analytical Tools: Relationships, Patterns, Trends 212 • Databases and the Web 215

6-4 Why are information policy, data administration, and data quality assurance essential for managing the firm's data resources? 217

Establishing an Information Policy 217 • Ensuring Data Quality 217

6-5 How will MIS help my career? 218

The Company 218 • Position Description 218

Interactive Session: Organizations

Keurig Green Mountain Improves Its Data Management 219

Job Requirements 220 • Interview Questions 220 • Author Tips 220



Review Summary 221 • Key Terms 222 • Review Questions 222 • Discussion Questions 223 • Hands-On MIS Projects 223

Management Decision

Problems 223 • Achieving Operational Excellence: Building a Relational Database for Inventory Management 224 • Improving Decision Making: Searching Online Databases for Overseas Business Resources 224

Collaboration and Teamwork Project 225

Business Problem-Solving Case

How Reliable Is Big Data? 226

7 Telecommunications, the Internet, and Wireless Technology 230

Chapter-Opening Case:

RFID Helps Macy's Pursue an Omnichannel Strategy 231

- 7-1 What are the principal components of telecommunications networks and key networking technologies? 232
Networking and Communication Trends 232 • What Is a Computer Network? 233 • Key Digital Networking Technologies 235
- 7-2 What are the different types of networks? 237
Signals: Digital Versus Analog 238 • Types of Networks 238 • Transmission Media and Transmission Speed 239
- 7-3 How do the Internet and Internet technology work, and how do they support communication and e-business? 240
What Is the Internet? 240 • Internet Addressing and Architecture 241

Interactive Session: Organizations

Net Neutrality: The Battle Continues 243

Internet Services and Communication Tools 245

Interactive Session: People

Monitoring Employees on Networks: Unethical or Good Business? 248

The Web 249

- 7-4 What are the principal technologies and standards for wireless networking, communication, and Internet access? 256
Cellular Systems 256 • Wireless Computer Networks and Internet Access 257 • RFID and Wireless Sensor Networks 259
- 7-5 How will MIS help my career? 261
The Company 261 • Position Description 261 • Job Requirements 262 • Interview Questions 262 • Author Tips 262

xii

Review Summary 262 • Key Terms 264 • Review Questions 264 • Discussion Questions 265 • Hands-On MIS Projects 265

Management Decision

Problems 265 • Improving Decision Making: Using Spreadsheet Software to Evaluate Wireless Services 266 • Achieving Operational Excellence: Using Web Search Engines for Business Research 266

Collaboration and Teamwork Project 266

Business Problem Solving Case

Google, Apple, and Facebook Battle for Your Internet Experience 267

8 Securing Information Systems 272

Chapter-Opening Case:

Hackers Target the U.S. Presidential Election: What Happened? 273

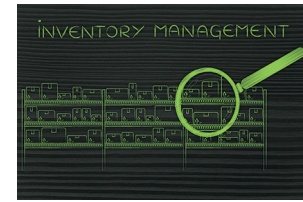
- 8-1 Why are information systems vulnerable to destruction, error, and abuse? 275
Why Systems Are Vulnerable 275 • Malicious Software: Viruses, Worms, Trojan Horses, and Spyware 277 • Hackers and Computer Crime 279

Interactive Session: Technology

WannaCry and the SWIFT System Hacking Attacks: Theft on a Worldwide Scale 280

Internal Threats: Employees 285 • Software Vulnerability 286

- 8-2 What is the business value of security and control? 286
Legal and Regulatory Requirements for Electronic Records Management 287 • Electronic Evidence and Computer Forensics 288
- 8-3 What are the components of an organizational framework for security and control? 288
Information Systems Controls 289 • Risk Assessment 290 • Security Policy 290 • Disaster Recovery Planning and Business Continuity Planning 291 • The Role of Auditing 292
- 8-4 What are the most important tools and technologies for safeguarding information resources? 292
Identity Management and Authentication 292 • Firewalls, Intrusion Detection Systems, and Antivirus Software 294 • Securing Wireless Networks 296 • Encryption and Public Key Infrastructure 296 • Securing Transactions with Blockchain 298 • Ensuring System Availability 298 • Security Issues for Cloud Computing and the Mobile Digital Platform 299 • Ensuring Software Quality 300



Interactive Session: Organizations

How Secure Is BYOD? 301

- 8-5 How will MIS help my career? 302
*The Company 302 • Position Description 303 •
Job Requirements 303 • Interview Questions 303 •
Author Tips 303*



Review Summary 303 •
Key Terms 304 • Review
Questions 305 • Discussion
Questions 306 • Hands-On
MIS Projects 306

*Management Decision Problems
306 • Improving Decision*

*Making: Using Spreadsheet Software to Perform a
Security Risk Assessment 307 • Improving Decision
Making: Evaluating Security Outsourcing Services 307*

Collaboration and Teamwork Project 307

Case Study

U.S. Office of Personnel Management Data Breach: No Routine Hack 308

III Key System Applications for the Digital Age 313

9 Achieving Operational Excellence and Customer Intimacy: Enterprise Applications 314

Chapter-Opening Case:

Skullcandy Rocks with ERP in the Cloud 315

- 9-1 How do enterprise systems help businesses
achieve operational excellence? 317
*What Are Enterprise Systems? 317 • Enterprise
Software 318 • Business Value of Enterprise
Systems 319*
- 9-2 How do supply chain management systems
coordinate planning, production, and logistics
with suppliers? 320
*The Supply Chain 320 • Information Systems and Supply
Chain Management 322 • Supply Chain Management
Software 322 • Global Supply Chains and the Internet 324*

Interactive Session: Technology

Logistics and Transportation Management at LG Electronics 326

*Business Value of Supply Chain Management
Systems 327*

- 9-3 How do customer relationship management
systems help firms achieve customer
intimacy? 328
*What Is Customer Relationship Management? 328 •
Customer Relationship Management Software 328 •
Operational and Analytical CRM 332 • Business Value of
Customer Relationship Management Systems 332*

Interactive Session: Organizations

Kenya Airways Flies High with Customer Relationship Management 333

- 9-4 What are the challenges that enterprise
applications pose, and how are enterprise
applications taking advantage of new
technologies? 334
*Enterprise Application Challenges 334 • Next-Generation
Enterprise Applications 335*
- 9-5 How will MIS help my career? 337
*The Company 337 • Position Description 337 •
Job Requirements 337 • Interview Questions 337 •
Author Tips 338*

Review Summary 338 •

Key Terms 339 • Review
Questions 339 • Discussion
Questions 340 • Hands-On
MIS Projects 340

*Management Decision
Problems 340 • Improving Decision Making: Using
Database Software to Manage Customer Service
Requests 341 • Achieving Operational Excellence:
Evaluating Supply Chain Management Services 341*

Collaboration and Teamwork Project 342

Business Problem Solving Case

How Supply Chain Management Problems Killed Target Canada 343

10 E-commerce: Digital Markets, Digital Goods 348

Chapter-Opening Case:

YouTube Transforms the Media Landscape 349

- 10-1 What are the unique features of e-commerce,
digital markets, and digital goods? 351
*E-commerce Today 351 • The New E-commerce: Social,
Mobile, Local 354 • Why E-commerce Is Different 354 •
Key Concepts in E-commerce: Digital Markets and
Digital Goods in a Global Marketplace 357*
- 10-2 What are the principal e-commerce business
and revenue models? 360
*Types of E-commerce 360 • E-commerce Business
Models 361*

Interactive Session: Organizations

Uber: Digital Disruptor 364

E-commerce Revenue Models 365

- 10-3 How has e-commerce transformed
marketing? 367
*Behavioral Targeting 367 • Social E-Commerce and
Social Network Marketing 371*

Interactive Session: People

“Socializing” with Customers 373



- 10-4 How has e-commerce affected business-to-business transactions? 374
Electronic Data Interchange (EDI) 375 • New Ways of B2B Buying and Selling 375
- 10-5 What is the role of m-commerce in business, and what are the most important m-commerce applications? 377
Location-Based Services and Applications 378 • Other Mobile Commerce Services 379
- 10-6 What issues must be addressed when building an e-commerce presence? 379
Develop an E-commerce Presence Map 379 • Develop a Timeline: Milestones 380
- 10-7 How will MIS help my career? 381
The Company 381 • Job Description 381 • Job Requirements 381 • Interview Questions 381 • Author Tips 382



Review Summary 382 • Key Terms 383 • Review Questions 384 • Discussion Questions 384 • Hands-On MIS Projects 384
Management Decision Problems 384 • Improving Decision

Making: Using Spreadsheet Software to Analyze a Dot-com Business 385 • Achieving Operational Excellence: Evaluating E-commerce Hosting Services 385

Collaboration and Teamwork Project 386

Business Problem-Solving Case **A Nasty Ending for Nasty Gal 387**

II Improving Decision Making and Managing Knowledge 392

Chapter-Opening Case:

Can Big Data Analytics Help People Find Love? 393

- 11-1 What are the different types of decisions, and how does the decision-making process work? 395
Business Value of Improved Decision Making 395 • Types of Decisions 395 • The Decision-Making Process 397 • High-Velocity Automated Decision Making 398 • Quality of Decisions and Decision Making 398
- 11-2 How do business intelligence and business analytics support decision making? 399
What is Business Intelligence? 399 • The Business Intelligence Environment 399 • Business Intelligence and Analytics Capabilities 401 • Business Intelligence Users 404 • Group Decision-Support Systems 408
- 11-3 What are the business benefits of using artificial intelligence techniques in decision making and knowledge management? 408
Machine Learning 408

xiv

Interactive Session: Technology

Does IBM's Watson Have a Future in Business? 409

Neural Networks 410 • Genetic Algorithms 411 • Intelligent Agents 412 • Natural Language Processing, Computer Vision Systems, and Robotics 413

Interactive Session: People

Will Robots Replace People in Manufacturing? 414

Expert Systems 415

- 11-4 What types of systems are used for enterprise-wide knowledge management and knowledge work, and how do they provide value for businesses? 417
Enterprise-Wide Knowledge Management Systems 417 • Knowledge Work Systems 419
- 11-5 How will MIS help my career? 421
The Company 421 • Position Description 421 • Job Requirements 422 • Interview Questions 422 • Author Tips 422

Review Summary 422 • Key Terms 424 • Review Questions 424 • Discussion Questions 425 • Hands-On MIS Projects 425



Management Decision Problems 425 • Improving Decision Making: Using Pivot Tables to Analyze Sales Data 426 • Improving Decision Making: Using Intelligent Agents for Comparison Shopping 426

Collaboration and Teamwork Project 426

Business Problem-Solving Case

GE Bets on the Internet of Things and Big Data Analytics 427

IV Building and Managing Systems 433

12 Building Information Systems and Managing Projects 434

Chapter-Opening Case:

Girl Scout Cookie Sales Go Digital 435

- 12-1 What are the core problem-solving steps for developing new information systems? 436
Defining and Understanding the Problem 437 • Developing Alternative Solutions 439 • Evaluating and Choosing Solutions 439 • Implementing the Solution 440
- 12-2 What are the alternative methods for building information systems? 442
Traditional Systems Development Life Cycle 443 • Prototyping 443 • End-User Development 444 •

Application Software Packages, Software Services, and Outsourcing 445 • Mobile Application Development: Designing for a Multi-Screen World 447

Interactive Session: Technology

Developing Mobile Apps: What's Different 448

Rapid Application Development for E-Business 449

12-3 What are the principal methodologies for modeling and designing systems? 450

Structured Methodologies 450 • Object-Oriented Development 451 • Computer-Aided Software Engineering (CASE) 453

12-4 How should information systems projects be selected and managed? 453

Project Management Objectives 454 • Selecting Projects: Making the Business Case for a New System 454 • Managing Project Risk and System-Related Change 457

Interactive Session: Organizations

Snohomish County Public Utility District Implements a New Human Resources System 462

12-5 How will MIS help my career? 464

The Company 464 • Position Description 464 • Job Requirements 464 • Interview Questions 464 • Author Tips 465

Review Summary 465 • Key Terms 466 • Review Questions 467 • Discussion Questions 467 • Hands-On MIS Projects 468



Management Decision Problems 468 • Improving Decision Making: Using Database Software to Design a Customer System for Auto Sales 468 • Achieving Operational Excellence: Analyzing Website Design and Information Requirements 469

Collaboration and Teamwork Project 469

Business Problem-Solving Case

The Philly311 Project: The City of Brotherly Love Turns Problems into Opportunities 470

Glossary 475

Indexes 490

Business Cases and Interactive Sessions

Here are some of the business firms you will find described in the cases and Interactive Sessions of this book:

Chapter 1 Business Information Systems in Your Career

The Grocery Store of the Future: Look at Kroger
Can You Run Your Company with Your iPhone?
UPS Competes Globally with Information Technology
Did Information Systems Cause Deutsche Bank to Stumble?

Chapter 2 Global E-business and Collaboration

Enterprise Social Networking Helps Sanofi Pasteur Innovate and Improve Quality
Data Changes How NFL Teams Play the Game and How Fans See It
Cisco IX5000: What State-of-the-Art Telepresence Can Do for Collaboration
Social Business: Full Speed Ahead or Proceed with Caution?

Chapter 3 Achieving Competitive Advantage with Information Systems

Verizon or AT&T: Which Company Has the Best Digital Strategy?
Digital Technology Helps Crayola Brighten Its Brand
Carter's Redesigns Its Business Processes
Walmart Versus Amazon and the Future of Retail

Chapter 4 Ethical and Social Issues in Information Systems

The Dark Side of Big Data
Volkswagen Pollutes Its Reputation with Software to Evade Emissions Testing
Will Automation Kill Jobs?
Facebook Privacy: Your Life for Sale

Chapter 5 IT Infrastructure: Hardware and Software

PeroxyChem's Cloud Computing Formula for Success
Wearable Computers Change How We Work
Computing Takes Off in the Cloud
Is BYOD Good for Business?

Chapter 6 Foundations of Business Intelligence: Databases and Information Management

Data Management Helps the Charlotte Hornets Learn More About Their Fans
Kraft Heinz Finds a New Recipe for Analyzing Its Data
Keurig Green Mountain Improves Its Data Management
How Reliable Is Big Data?

Chapter 7 Telecommunications, the Internet, and Wireless Technology

RFID Helps Macy's Pursue an Omnichannel Strategy
Net Neutrality: The Battle Continues
Monitoring Employees on Networks: Unethical or Good Business?
Google, Apple, and Facebook Battle for Your Internet Experience

Chapter 8 Securing Information Systems

Hackers Target the U.S. Presidential Election: What Happened?
WannaCry and the SWIFT System Hacking Attacks: Theft on a Worldwide Scale
How Secure Is BYOD?
U.S. Office of Personnel Management Data Breach: No Routine Hack

Chapter 9 Achieving Operational Excellence and Customer Intimacy: Enterprise Applications

Skullcandy Rocks with ERP in the Cloud
Logistics and Transportation Management at LG Electronics
Kenya Airways Flies High with Customer Relationship Management
How Supply Chain Management Problems Killed Target Canada

Chapter 10 E-commerce: Digital Markets, Digital Goods

YouTube Transforms the Media Landscape
Uber: Digital Disruptor
“Socializing” with Customers
A Nasty Ending for Nasty Gal

Chapter 11 Improving Decision Making and Managing Knowledge

Can Big Data Analytics Help People Find Love?
Does IBM’s Watson Have a Future in Business?
Will Robots Replace People in Manufacturing?
GE Bets on the Internet of Things and Big Data Analytics

Chapter 12 Building Information Systems and Managing Projects

Girl Scout Cookie Sales Go Digital
Developing Mobile Apps: What’s Different
Snohomish County Public Utility District Implements a New Human Resources
System
The Philly311 Project: The City of Brotherly Love Turns Problems into Opportunities

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 13th edition features all new opening, closing, and Interactive Session cases. The text, figures, tables, and cases have been updated through September 2017 with the latest sources from industry and MIS research.

NEW FEATURES

- **New Career Opportunities** section in each chapter, identified by  shows students specifically how this book can help them find a job and build their careers. The last major section of each chapter presents a description of an entry-level job for a recent college graduate based on a real-world job description. The job requirements are related to the topics covered in that chapter. The job description shows the required educational background and skills, lists business-related questions that might arise during the job interview, and provides author tips for answering the questions and preparing for the interview.
- **New Conceptual Videos** collection includes 45 conceptual videos of 3 to 5 minutes in length. Ken Laudon walks students through three of the most important concepts in each chapter using a contemporary animation platform. Available only in the MyLabMIS digital edition
- **New Video Cases** collection: 28 video cases (two or more per chapter) and 10 additional instructional videos covering key concepts and experiences in the MIS world. The video cases illustrate how real-world corporations and managers are using information technology and systems. Video Cases are listed at the beginning of each chapter.
- **Learning Tracks:** 53 Learning Tracks in MyLabMIS for additional coverage of selected topics. This edition includes new Learning Tracks for case-based reasoning and fuzzy logic.

NEW TOPICS

- **Updated coverage of artificial intelligence (AI):** Chapter 11 has been rewritten to include new coverage of machine learning, natural language systems, computer vision systems, and robotics, reflecting the surging interest in business uses of AI and “intelligent” techniques.

- **Big Data and the Internet of Things:** In-depth coverage of big data, big data analytics, and the Internet of Things (IoT) in Chapters 1, 6, 7, and 11. Includes big data analytics, analyzing IoT data streams, Hadoop, in-memory computing, non-relational databases, data lakes, and analytic platforms.
- **Cloud Computing:** Updated and expanded 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 12 (cloud-based systems development).
- **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.
- **Social Business:** Expanded 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.
- Machine learning
- Natural language processing
- Computer vision systems
- Robotics
- Chatbots
- Blockchain
- Data lake
- Distributed database
- DevOps
- FinTech
- Near field communication (NFC)
- Native advertising
- Platforms
- Software-defined storage (SDS)

The 13th Edition: The Comprehensive Solution for the MIS Curriculum

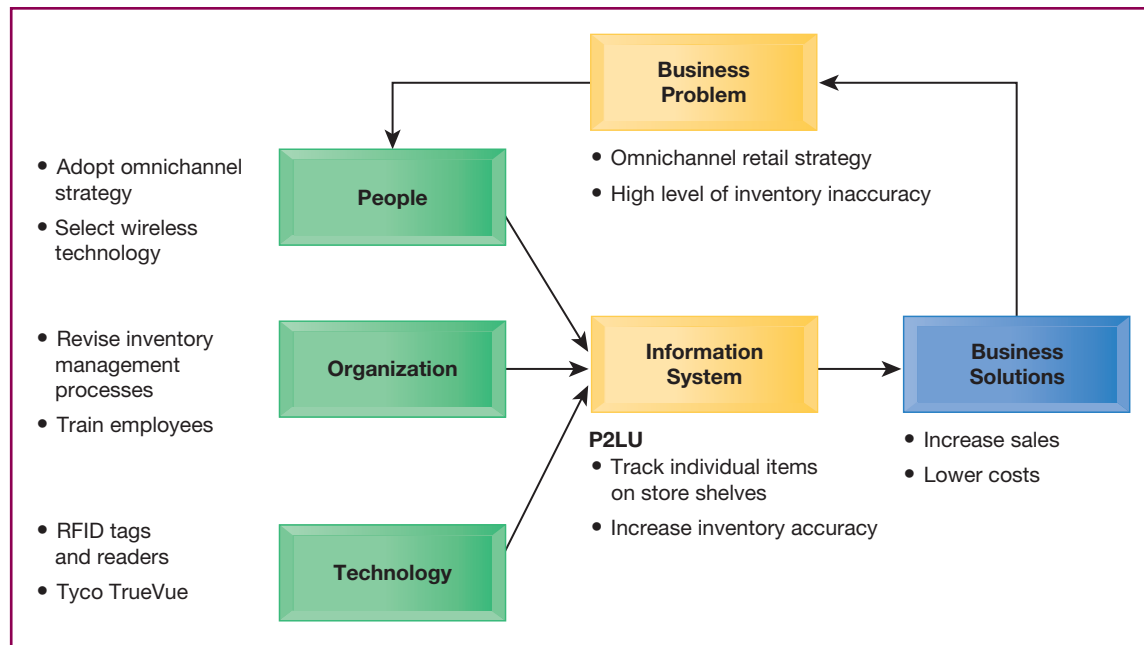
Since its inception, this text has helped to define the MIS course around the globe. This edition continues to be authoritative but is also more customizable, flexible, and geared to meeting the needs of different colleges, universities, and individual instructors. Many of its learning tools are now 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 12 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: 28 video case studies (two to three per chapter) plus 10 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 53 Learning Tracks in MyLabMIS 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.



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

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 people, organization, and technology model used throughout the text
- Two Interactive Sessions with Case Study Questions
- A Career Opportunities section showing students how to use the text for job hunting and career preparation
- 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 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 current (2017) 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 Uber, the NFL, Facebook, Crayola, Walmart, Amazon, Google, Macy's, and GE.

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 and explore concepts discussed in the chapter. Each video case consists of one or more videos 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 10 Instructional Videos that describe developments and concepts in MIS keyed to respective chapters.
- **Online Conceptual Videos [the digital edition only].** Forty-five video animations where the authors walk students through three concepts from each chapter.
- **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.
- **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 in MyLabMIS provides additional hands-on projects for each chapter.

INTERACTIVE SESSION: PEOPLE

"Socializing" with Customers

More than 2 billion people worldwide use social media, making it an obvious platform for companies seeking to engage consumers, amplify product messages, discover trends and influencers, build brand awareness, and take action on customer requests and recommendations. More than 30 million businesses have active Facebook brand pages, enabling users to interact with the brand through blogs, comment pages, contests, and offerings on the brand page. The "like" button gives users a chance to share with their social network their feelings about content and other objects they are viewing and websites they are visiting. With like buttons on many millions of websites, Facebook can track user behavior on other sites and then sell

social campaigns are designed to teach first-time homeowners or young renters about home improvement, the company is also hoping they will encourage consumers to think differently about the brand beyond its products and services. Management believes millennials who are becoming first-time homeowners want to know the deeper meaning of what a company is trying to stand for, not just the products and services it offers.

An estimated 90 percent of customers are influenced by online reviews, and nearly half of U.S. social media users actively seek customer service through social media. As a result, marketing is now placing much more emphasis on customer satisfaction and service. Social media monitoring

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

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. Assess the people, organization, and technology issues for using social media technology to engage with customers.
2. What are the advantages and disadvantages of using social media for advertising, brand building, market research, and customer service?
3. Give an example of a business decision in this case study that was facilitated by using social media to interact with customers.
4. Should all companies use social media technology for customer service and marketing? Why or why not? What kinds of companies are best suited to use these platforms?

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

Hands-On MIS Projects

MANAGEMENT DECISION PROBLEMS

The projects in this section give you hands-on experience in analyzing data quality problems, establishing companywide data standards, creating a database for inventory management, and using the web to search online databases for overseas business resources. Visit **MyLab MIS** to access this chapter's Hands-On MIS Projects.

6-8 Emerson Process Management, a global supplier of measurement, analytical, and monitoring instruments and services based in Austin, Texas, had a new data warehouse designed for analyzing customer activity to improve service and marketing. However, the data warehouse was full of inaccurate and redundant data. The data in the warehouse came from numerous transaction processing systems in Europe, Asia, and other locations around the world. The team that designed the warehouse had assumed that sales groups in all these areas would enter customer names and addresses the same way. In fact, companies in different countries were using multiple ways of entering quote, billing, shipping, and other data. Assess the potential business impact of these data quality problems. What decisions have to be made and steps taken to reach a solution?

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

I	Store	Sales Regic	Item I	Item Descripti	Unit Pri	Units So	Week Ending	Click to Add
1	1	South	2005	17" Monitor	\$229.00	28	10/27/2017	
2	1	South	2005	17" Monitor	\$229.00	30	11/24/2017	
3	1	South	2005	17" Monitor	\$229.00	9	12/29/2017	
4	1	South	3006	101 Keyboard	\$19.95	30	10/27/2017	
5	1	South	3006	101 Keyboard	\$19.95	35	11/24/2017	
6	1	South	3006	101 Keyboard	\$19.95	39	12/29/2017	
7	1	South	6050	PC Mouse	\$8.95	28	10/27/2017	
8	1	South	6050	PC Mouse	\$8.95	3	11/24/2017	
9	1	South	6050	PC Mouse	\$8.95	38	12/29/2017	
10	1	South	8500	Desktop CPU	\$849.95	25	10/27/2017	
11	1	South	8500	Desktop CPU	\$849.95	27	11/24/2017	
12	1	South	8500	Desktop CPU	\$849.95	33	12/29/2017	
13	2	South	2005	17" Monitor	\$229.00	8	10/27/2017	
14	2	South	2005	17" Monitor	\$229.00	8	11/24/2017	
15	2	South	2005	17" Monitor	\$229.00	10	12/29/2017	
16	2	South	3006	101 Keyboard	\$19.95	8	10/27/2017	
17	2	South	3006	101 Keyboard	\$19.95	8	11/24/2017	
18	2	South	3006	101 Keyboard	\$19.95	8	12/29/2017	
19	2	South	6050	PC Mouse	\$8.95	9	10/27/2017	
20	2	South	6050	PC Mouse	\$8.95	9	11/24/2017	
21	2	South	6050	PC Mouse	\$8.95	8	12/29/2017	
22	2	South	8500	Desktop CPU	\$849.95	18	10/27/2017	
23	2	South	8500	Desktop CPU	\$849.95	18	11/24/2017	
24	2	South	8500	Desktop CPU	\$849.95	20	12/29/2017	
25	3	South	2005	17" Monitor	\$229.00	38	10/27/2017	
26	3	South	2005	17" Monitor	\$229.00	30	11/24/2017	
27	3	South	2005	17" Monitor	\$229.00	2	12/29/2017	

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-II In this exercise, you will use software at car-selling websites 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 website 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 website of the manufacturer, in this case Ford (www.ford.com). Compare the information available on Ford's website 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.

- **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.

Career Opportunities and Resources

Every student who reads this text wants to know: How will this book help my career? Our new Career Opportunities feature shows you how to use this text as a tool for job-hunting and career-building. Job interviewers will typically ask about why you want the job, along with your ability to communicate, multitask, work in a team, show leadership, solve problems, and meet goals. These are general skills and behaviors you'll need to succeed in any job, and you should be prepared to provide examples from your course work and job experiences that demonstrate these skills. But there are also business knowledge and professional skills that employers will ask you about. Career Opportunities will show you how to use what you have learned in this text to demonstrate these skills.

The Career Opportunities section, identified by this icon  is the last major section of each chapter under the heading "How will MIS help my career?". There you will find a description of an entry-level job for a recent college graduate based on a real-world job description from major online job sites related to the topics covered in that chapter. The name of the company offering the job and its location have been changed. Each chapter's job posting describes the required educational background and specific job skills, and suggests some of the business-related questions that might arise during the job interview. The authors provide tips for answering the questions and preparing for the interview. Career Opportunities also show where students can find out more information about the technical and business knowledge required for the job in this text and on the web and social media.

Below are the job descriptions used in this edition based on postings from both large and small businesses. A few of these jobs call for an MIS major, others for MIS course work, but many postings are not that specific. Some require some previous internship or job experience, but many are entry level positions suitable for new college graduates, and some of these positions provide on-the-job training. However, all require knowledge of business information systems and applications and the ability to work in a digital environment.

Chapter	Career Opportunity Job Description
1 Business Information Systems in Your Career	Financial Client Support and Sales Assistant
2 Global E-business and Collaboration	Entry Level Sales Support Specialist
3 Achieving Competitive Advantage with Information Systems	Entry Level Business Development Representative
4 Ethical and Social Issues in Information Systems	Junior Privacy Analyst
5 IT Infrastructure: Hardware and Software	Entry Level IT Consultant
6 Foundations of Business Intelligence: Databases and Information Management	Entry Level Data Analyst
7 Telecommunications , the Internet, and Wireless Technology	Automotive Digital Advisor
8 Securing Information Systems	Entry Level Identity Access and Management Support Specialist
9 Achieving Operational Excellence and Customer Intimacy: Enterprise Applications	Manufacturing Management Trainee
10 E-Commerce: Digital Markets, Digital Goods	Junior E-Commerce Data Analyst
11 Improving Decision Making and Managing Knowledge	Entry Level Data Analyst
12 Building Information Systems and Managing Projects	Entry Level Junior Business Systems Analyst

Students can use Career Opportunities to shape their resumes and career plans as well as to prepare for interviews. For instructors, Career Opportunities are potential projects for student research and in-class discussion.

Along with Career Opportunities, we have provided in MyLabMIS additional Career Resources, including job-hunting guides and instructions on how to build a Digital Portfolio demonstrating the business knowledge, application software proficiency, and Internet skills acquired from using the text. The portfolio can be included in a resume or job application or used as a learning assessment tool for instructors.

Assessment and AACSB Assessment Guidelines

The Association to Advance Collegiate Schools of Business (AACSB) is a not-for-profit corporation of educational institutions, corporations, and other organizations that seeks to improve business education primarily by accrediting university business programs. As a part of its accreditation activities, the AACSB has developed an Assurance of Learning Program designed to ensure that schools do in fact teach students what they promise. Schools are required to state a clear mission, develop a coherent business program, identify student learning objectives, and then prove that students do in fact achieve the objectives.

We have attempted in this book to support AACSB efforts to encourage assessment-based education. The front papers of this edition identify student learning objectives and anticipated outcomes for our Hands-On MIS projects. The authors will provide custom advice on how to use this text in colleges with different missions and assessment needs. Please e-mail the authors or contact your local Pearson representative for contact information.

Customization and Flexibility: Learning Track Modules

Our Learning Tracks feature gives instructors the flexibility to provide in-depth coverage of the topics they choose. There are 53 Learning Tracks in MyLabMIS available to instructors and students. This supplementary content takes students

deeper into MIS topics, concepts, and debates and reviews basic technology concepts in hardware, software, database design, telecommunications, and other areas.

Author-Certified Test Bank and Supplements

- **Author-Certified Test Bank.** The authors have worked closely with skilled test item writers to ensure that higher-level cognitive skills are tested. Test bank multiple-choice questions include questions on content but also include many questions that require analysis, synthesis, and evaluation skills.
- **Annotated Slides.** The authors have prepared a comprehensive collection of 50 PowerPoint slides for each chapter to be used in your lectures. Many of these slides are the same as used by Ken Laudon in his MIS classes and executive education presentations. Each of the slides is annotated with teaching suggestions for asking students questions, developing in-class lists that illustrate key concepts, and recommending other firms as examples in addition to those provided in the text. The annotations are like an Instructor's Manual built into the slides and make it easier to teach the course effectively.

Student Learning-Focused

Student Learning Objectives are organized around a set of study questions to focus student attention. Each chapter concludes with a Review Summary and Review Questions organized around these study questions, and each major chapter section is based on a Learning Objective.

INSTRUCTOR RESOURCES

At the Instructor Resource Center, www.pearsonhighered.com/irc, instructors can easily register to gain access to a variety of instructor resources available with this text in downloadable format. If assistance is needed, our dedicated technical support team is ready to help with the media supplements that accompany this text. Visit support.pearson.com/getsupport for answers to frequently asked questions and user support.

The following supplements are available with this text:

- Instructor's Resource Manual
- Test Bank
- TestGen® Computerized Test Bank
- PowerPoint Presentation
- Image Library
- Lecture Notes

Video Cases and Instructional Videos

Instructors can download step-by-step instructions for accessing the video cases from the Instructor Resources Center. Video Cases and Instructional Videos are listed at the beginning of each chapter as well as in the Preface.

Learning Tracks Modules

There are 53 Learning Tracks in MyLabMIS providing additional coverage topics for students and instructors. See page xxvii for a list of the Learning Tracks available for this edition.

Video Cases and Instructional Videos

Chapter	Video
Chapter 1: Business Information Systems in Your Career	Business in the Cloud: Facebook, Google, and eBay Data Centers UPS Global Operations with the DIAD and Worldport Instructional Video: Tour IBM's Raleigh Data Center
Chapter 2: Global E-business and Collaboration	Walmart's Retail Link Supply Chain CEMEX: Becoming a Social Business Instructional Video: US Foodservice Grows Market with Oracle CRM on Demand
Chapter 3: Achieving Competitive Advantage with Information Systems,	GE Becomes a Digital Firm: The Emerging Industrial Internet National Basketball Association: Competing on Global Delivery with Akamai OS Streaming
Chapter 4: Ethical and Social Issues in Information Systems	What Net Neutrality Means for You Facebook and Google Privacy: What Privacy? The United States v. Terrorism: Data Mining for Terrorists and Innocents Instructional Video: Viktor Mayer Schönberger on the Right to Be Forgotten
Chapter 5: IT Infrastructure: Hardware and Software	Rockwell Automation Fuels the Oil and Gas Industry with the Internet of Things (IoT) ESPN.com: The Future of Sports Coverage in the Cloud Netflix: Building a Business in the Cloud
Chapter 6: Foundations of Business Intelligence: Databases and Information Management	Dubuque Uses Cloud Computing and Sensors to Build a Smarter City Brooks Brothers Closes in on Omnichannel Retail Maruti Suzuki Business Intelligence and Enterprise Databases
Chapter 7: Telecommunications, the Internet, and Wireless Technology	Telepresence Moves out of the Boardroom and into the Field Virtual Collaboration with IBM Sametime
Chapter 8: Securing Information Systems	Stuxnet and Cyberwarfare Cyberespionage: The Chinese Threat Instructional Video: Sony PlayStation Hacked; Data Stolen from 77 Million Users Instructional Video: Meet the Hackers: Anonymous Statement on Hacking SONY
Chapter 9: Achieving Operational Excellence and Customer Intimacy: Enterprise Applications	Life Time Fitness Gets in Shape with Salesforce CRM Evolution Homecare Manages Patients with Microsoft CRM Instructional Video: GSMS Protects Products and Patients by Serializing Every Bottle of Drugs
Chapter 10: E-commerce: Digital Markets, Digital Goods	Walmart Takes on Amazon: A Battle of IT and Management Systems Groupon: Deals Galore Etsy: A Marketplace and Community Instructional Video: Walmart's eCommerce Fulfillment Center Network Instructional Video: Behind the Scenes of an Amazon Warehouse
Chapter 11: Improving Decision Making and Managing Knowledge	How IBM's Watson Became a Jeopardy Champion Business Intelligence Helps the Cincinnati Zoo Work Smarter
Chapter 12: Building Information Systems and Managing Projects	IBM: Business Process Management in a SaaS Environment IBM Helps the City of Madrid with Real-Time BPM Software Instructional Video: What is PaaS? What is Predis? Instructional Video: BPM: Business Process Management Customer Story

Learning Tracks

Chapter	Learning Tracks
Chapter 1: Business Information Systems in Your Career	How Much Does IT Matter? The Changing Business Environment for IT The Business Information Value Chain The Mobile Digital Platform Occupational and Career Outlook for Information Systems Majors 2014–2020
Chapter 2: Global E-business and Collaboration	Systems From a Functional Perspective IT Enables Collaboration and Teamwork Challenges of Using Business Information Systems Organizing the Information Systems Function
Chapter 3: Achieving Competitive Advantage with Information Systems	Challenges of Using Information Systems for Competitive Advantage Primer on Business Process Design and Documentation Primer on Business Process Management
Chapter 4: Ethical and Social Issues in Information Systems	Developing a Corporate Code of Ethics for IT
Chapter 5: IT Infrastructure: Hardware and Software	How Computer Hardware and Software Work Service Level Agreements Cloud Computing The Open Source Software Initiative The Evolution of IT Infrastructure Technology Drivers of IT Infrastructure Fourth Generation Languages
Chapter 6: Foundations of Business Intelligence: Databases and Information Management	Database Design, Normalization, and Entity-Relationship Diagramming Introduction to SQL Hierarchical and Network Data Models
Chapter 7: Telecommunications, the Internet, and Wireless Technology	Broadband Network Services and Technologies Cellular System Generations Wireless Applications for Customer Relationship Management, Supply Chain Management, and Healthcare Introduction to Web 2.0 LAN Topologies
Chapter 8: Securing Information Systems	The Booming Job Market in IT Security The Sarbanes-Oxley Act Computer Forensics General and Application Controls for Information Systems Management Challenges of Security and Control Software Vulnerability and Reliability
Chapter 9: Achieving Operational Excellence and Customer Intimacy: Enterprise Applications	SAP Business Process Map Business Processes in Supply Chain Management and Supply Chain Metrics Best-Practice Business Processes in CRM Software
Chapter 10: E-commerce: Digital Markets, Digital Goods	E-Commerce Challenges: The Story of Online Groceries Build an E-commerce Business Plan Hot New Careers in E-Commerce E-commerce Payment Systems Building an E-commerce Web Site
Chapter 11: Improving Decision Making and Managing Knowledge	Building and Using Pivot Tables The Expert System Inference Engine Case-Based Reasoning Fuzzy Logic Challenges of Knowledge Management Systems
Chapter 12: Building Information Systems and Managing Projects	Capital Budgeting Methods for Information Systems Investments Enterprise Analysis: Business Systems Planning and Critical Success Factors Unified Modeling Language Information Technology Investments and Productivity

MyLabMIS

Available in MyLabMIS

- MIS Video Exercises – Videos illustrating MIS concepts, paired with brief quizzes
- MIS Decision Simulations – interactive exercises allowing students to play the role of a manager and make business decisions
- Auto-Graded writing exercises
- Assisted-Graded writing exercises – taken from the end of chapter, with a rubric provided
- Chapter Warm Ups, Chapter Quizzes – objective-based quizzing to test knowledge
- Discussion Questions – threaded discussion topics taken from the end of chapter
- Dynamic Study Modules – on the go adaptive quizzing, also available on a mobile phone
- Learning Catalytics – bring-your-own-device classroom response question banks of critical thinking and collaboration interactive quizzes
- Enhanced eText – an accessible, mobile-friendly eText with interactive elements, including Conceptual Animations, which walk students through key concepts in the chapter by making figures come to life
- Excel & Access Grader Projects – live in the application auto-graded Grader projects provided inside MyLabMIS to support classes covering Office tools

Acknowledgments

The production of any book involves valued contributions from a number of persons. We would like to thank all of our editors for encouragement, insight, and strong support for many years. We thank our editor Samantha McAfee Lewis and project manager Katrina Ostler for their role in managing the project.

Our special thanks go to our supplement authors for their work, including the following MyLabMIS content contributors: John Hupp, Columbus State University; Robert J. Mills, Utah State University; John P. Russo, Wentworth Institute of Technology; and Michael L. Smith, SUNY Oswego. We are indebted to Erica Laudon for her contributions to Career Opportunities and to Megan Miller for her help during production. We thank Diana R. Craig for her assistance with database and software topics.


Special thanks to colleagues at the Stern School of Business at New York University; to Professor Werner Schenk, Simon School of Business, University of Rochester; to Professor Mark Gillenson, Fogelman College of Business and Economics, University of Memphis; to Robert Kostrubanic, Indiana-Purdue University Fort Wayne; to Professor Lawrence Andrew of Western Illinois University; to Professor Detlef Schoder of the University of Cologne; to Professor Walter Brenner of the University of St. Gallen; to Professor Lutz Kolbe of the University of Gottingen; to Professor Donald Marchand of the International Institute for Management Development; and to Professor Daniel Botha of Stellenbosch University who provided additional suggestions for improvement. Thank you to Professor Ken Kraemer, University of California at Irvine, and Professor John King, University of Michigan, for more than a decade-long discussion of information systems and organizations. And a special remembrance and dedication to Professor Rob Kling, University of Indiana, for being our friend and colleague over so many years.

We also want to especially thank all our reviewers whose suggestions helped improve our texts. Reviewers for this edition include:

Brad Allen, Plymouth State University
Wanda Curtsinger, Texas A&M University
Dawit Demissie, University of Albany
Anne Formalarie, Plymouth State University
Bin Gu, University of Texas–Austin
Essia Hamouda, University of California–Riverside
Linda Lau, Longwood University
Kimberly L. Merritt, Oklahoma Christian University
James W. Miller, Dominican University
Fiona Nah, University of Nebraska–Lincoln
M. K. Raja, University of Texas Arlington
Thomas Schambach, Illinois State University
Shawn Weisfeld, Florida Institute of Technology

K.C.L.
J.P.L.





Essentials of Management Information Systems

