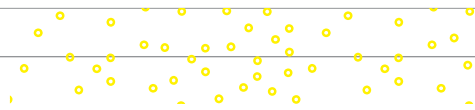


Paige Baltzan

BUSINESS DRIVEN Information Systems

Seventh Edition

Mc
Graw
Hill



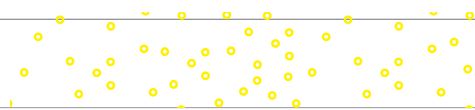
Paige Baltzan

Daniels College of Business, University of Denver

Business Driven Information Systems

SEVENTH EDITION

**Mc
Graw
Hill**





BUSINESS DRIVEN INFORMATION SYSTEMS, SEVENTH EDITION

Published by McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121. Copyright © 2021 by McGraw-Hill Education. All rights reserved. Printed in the United States of America. Previous editions © 2019, 2016, and 2014. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written consent of McGraw-Hill Education, including, but not limited to, in any network or other electronic storage or transmission, or broadcast for distance learning.

Some ancillaries, including electronic and print components, may not be available to customers outside the United States.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 KVO 24 23 22 21 20

ISBN 978-1-260-26248-3 (bound edition)
 MHID 1-260-26248-0 (bound edition)
 ISBN 978-1-260-73665-6 (loose-leaf edition)
 MHID 1-260-73665-2 (loose-leaf edition)

Portfolio Manager: *Brian Sylvester*
 Product Developer: *David Ploskonka*
 Content Project Managers: *Melissa M Leick, Bruce Gin, Karen Jozefowicz*
 Buyer: *Susan K. Culbertson*
 Design: *Egzon Shaqiri*
 Content Licensing Specialist: *Ann Marie Jannette*
 Cover Image: *Ceremco van Goch/Shutterstock*
 Compositor: *SPi Global*

All credits appearing on page or at the end of the book are considered to be an extension of the copyright page.

Library of Congress Cataloging-in-Publication Data

Names: Baltzan, Paige, author.
 Title: Business driven information systems / Paige Baltzan.
 Description: Seventh Edition. | Dubuque: McGraw-Hill, 2020. | Revised edition of the author's Business driven information systems, [2019]
 Identifiers: LCCN 2019041922 | ISBN 9781260262483 (hardcover)
 Subjects: LCSH: Information technology—Management. | Industrial management—Data processing.
 Classification: LCC HD30.2 .B357 2020 | DDC 658.4/038011—dc23
 LC record available at <https://lccn.loc.gov/2019041922>

The Internet addresses listed in the text were accurate at the time of publication. The inclusion of a website does not indicate an endorsement by the authors or McGraw-Hill Education, and McGraw-Hill Education does not guarantee the accuracy of the information presented at these sites.

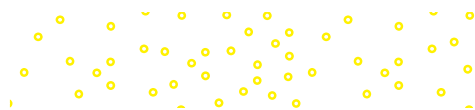
mheducation.com/highered

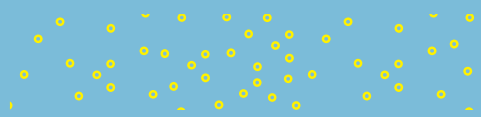
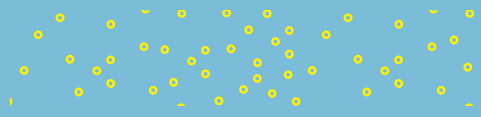


DEDICATION

To Hannah, Sophie, and Lou:
What do you always remember?
That I Love You! That I'm Proud of You!

Paige





BRIEF CONTENTS

MODULE 1

Business Driven MIS

- Chapter 1 Management Information Systems: Business Driven MIS
- Chapter 2 Decisions and Processes: Value Driven Business
- Chapter 3 Ebusiness: Electronic Business Value
- Chapter 4 Ethics and Information Security: MIS Business Concerns

MODULE 2

Technical Foundations of MIS

- Chapter 5 Infrastructures: Sustainable Technologies
- Chapter 6 Data: Business Intelligence
- Chapter 7 Networks: Mobile Business

MODULE 3

Enterprise MIS

- Chapter 8 Enterprise Applications: Business Communications
- Chapter 9 Systems Development and Project Management:
Corporate Responsibility

APPENDIX

- Appendix A Hardware and Software Basics
- Appendix B Networks and Telecommunications
- Appendix C Designing Databases
- Appendix D Emerging Trends and Technologies
- Appendix E Connectivity: The Business Value of a Networked World

Apply Your Knowledge

Glossary

Notes

Index

CONTENTS

module 1

Business Driven MIS 1

CHAPTER 1

Management Information Systems: Business Driven MIS 2

opening case study: The Fourth Industrial Revolution: The Backdoor to Reengineering Reality 3

Section 1.1 Business Driven MIS 5

COMPETING IN THE INFORMATION AGE 5

- Data 7
- Information 10
- Business Intelligence 11
- Knowledge 14

THE CHALLENGE OF DEPARTMENTAL COMPANIES AND THE MIS SOLUTION 15

- The MIS Solution 17
- Systems Thinking 18
- MIS Department Roles and Responsibilities 20

Section 1.2 Business Strategy 23

IDENTIFYING COMPETITIVE ADVANTAGES 23

SWOT ANALYSIS: UNDERSTANDING BUSINESS STRATEGIES 25

THE FIVE FORCES MODEL—EVALUATING

INDUSTRY ATTRACTIVENESS 27

- Buyer Power 27
- Supplier Power 28
- Threat of Substitute Products or Services 28
- Threat of New Entrants 29
- Rivalry among Existing Competitors 29
- Analyzing the Airline Industry 30

THE THREE GENERIC STRATEGIES—CHOOSING

A BUSINESS FOCUS 31

VALUE CHAIN ANALYSIS—EXECUTING

BUSINESS STRATEGIES 32

Learning Outcome Review 36

Key Terms 37

Review Questions 38

Closing Case One 38

Closing Case Two 39

Critical Business Thinking 41

Apply Your Knowledge Business Projects 44

AYK Application Projects 48

CHAPTER 2

Decisions and Processes: Value Driven Business 49

opening case study: The Future of Work 50

Section 2.1 Decision Support Systems 52

MAKING ORGANIZATIONAL BUSINESS DECISIONS 52

- The Decision-Making Process 53
- Decision-Making Essentials 53

MEASURING ORGANIZATIONAL BUSINESS DECISIONS 55

- Efficiency and Effectiveness Metrics 58

USING MIS TO MAKE BUSINESS DECISIONS 60

- Operational Support Systems 60
- Managerial Support Systems 62
- Strategic Support Systems 63

USING AI TO MAKE BUSINESS DECISIONS 66

- Machine Learning 69
- Neural Networks 71
- Virtual Reality 72

Section 2.2 Business Processes 74

MANAGING BUSINESS PROCESSES 74

- Business Process Modeling 76

USING MIS TO IMPROVE BUSINESS PROCESSES 79

- Operational Business Processes—Automation 80
- Managerial Business Processes—Streamlining 83
- Strategic Business Processes—Reengineering 84

DATA MINING 87

- Data Mining Process Model 89
- Data Mining Analysis Techniques 89
- Data Mining Modeling Techniques for Predictions 93

Learning Outcome Review 94

Key Terms 96

Review Questions 97

Closing Case One 97

Closing Case Two 98

Critical Business Thinking 100

Apply Your Knowledge Business Projects 102

AYK Application Projects 106

CHAPTER 3**Ebusiness: Electronic Business Value 107****opening case study: The Warby Parker Way 108****Section 3.1 Web 1.0: Ebusiness 109****DISRUPTIVE TECHNOLOGY 109**

- Disruptive versus Sustaining Technology 109
- The Internet and World Wide Web—The Ultimate Business Disruptors 110

WEB 1.0: THE CATALYST FOR EBUSINESS 112

- Expanding Global Reach 112
- Opening New Markets 113
- Reducing Costs 113
- Improving Effectiveness 115

THE FOUR EBUSINESS MODELS 116

- Business-to-Business (B2B) 118
- Business-to-Consumer (B2C) 118
- Consumer-to-Business (C2B) 118
- Consumer-to-Consumer (C2C) 118
- Ebusiness Forms and Revenue-Generating Strategies 119
- Ebusiness Fraud 120

EBUSINESS TOOLS FOR CONNECTING AND COMMUNICATING 121

- Email 121
- Instant Messaging 122
- Podcasting 122
- Videoconferencing 123
- Web Conferencing 123
- Content Management Systems 123

Section 3.2 Web 2.0: Business 2.0 124**WEB 2.0: ADVANTAGES OF BUSINESS 2.0 124**

- Content Sharing through Open Sourcing 125
- User-Contributed Content 126
- Collaboration Inside the Organization 127
- Collaboration Outside the Organization 127

NETWORKING COMMUNITIES WITH BUSINESS 2.0 128

- Social Tagging 130

BUSINESS 2.0 TOOLS FOR COLLABORATING 131

- Blogs 131
- Wikis 132
- Mashups 133

WEB 3.0: DEFINING THE NEXT GENERATION OF ONLINE BUSINESS OPPORTUNITIES 134**Learning Outcome Review 135****Key Terms 137****Review Questions 138****Closing Case One 138****Closing Case Two 139****Critical Business Thinking 140****Apply Your Knowledge Business Projects 142****AYK Application Projects 144****CHAPTER 4****Ethics and Information Security: MIS Business Concerns 145****opening case study: Cambridge Analytica: Illegal Data Scraping 146****Section 4.1 Ethics 147****INFORMATION ETHICS 147**

- Information Does Not Have Ethics, People Do 149

DEVELOPING INFORMATION MANAGEMENT POLICIES 151

- Ethical Computer Use Policy 152
- Information Privacy Policy 152
- Acceptable Use Policy 153
- Email Privacy Policy 154
- Social Media Policy 155
- Workplace MIS Monitoring Policy 156

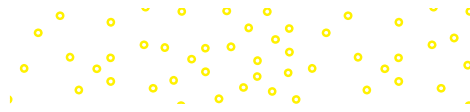
Section 4.2 Information Security 158**PROTECTING INTELLECTUAL ASSETS 158**

- Hackers: A Dangerous Threat to Business 161
- Viruses: A Dangerous Threat to Business 162

THE FIRST LINE OF DEFENSE—PEOPLE 163**THE SECOND LINE OF DEFENSE—TECHNOLOGY 164**

- People: Authentication and Authorization 165
- Data: Prevention and Resistance 168
- Attack: Detection and Response 170

Learning Outcome Review 171**Key Terms 172****Review Questions 173****Closing Case One 173****Closing Case Two 175****Critical Business Thinking 176****Apply Your Knowledge Business Projects 178****AYK Application Projects 181****module 2****Technical Foundations of MIS 182****CHAPTER 5****Infrastructures: Sustainable Technologies 183****opening case study: Envision 2030: 17 Goals to Transform the World for Persons with Disabilities 184****Section 5.1 MIS Infrastructures 186****THE BUSINESS BENEFITS OF A SOLID****MIS INFRASTRUCTURE 186**



SUPPORTING OPERATIONS: INFORMATION MIS INFRASTRUCTURE 187

- Backup and Recovery Plan 188
- Disaster Recovery Plan 189
- Business Continuity Plan 191

SUPPORTING CHANGE: AGILE MIS INFRASTRUCTURE 192

- Accessibility 193
- Availability 194
- Maintainability 195
- Portability 195
- Reliability 195
- Scalability 195
- Usability 197

Section 5.2 Building Sustainable MIS Infrastructures 197

MIS AND THE ENVIRONMENT 197

- Increased Electronic Waste 198
- Increased Energy Consumption 199
- Increased Carbon Emissions 199

SUPPORTING THE ENVIRONMENT: SUSTAINABLE MIS INFRASTRUCTURE 200

- Grid Computing 200
- Virtualized Computing 204
- Cloud Computing 208
- Public Cloud 213
- Private Cloud 213
- Community Cloud 213
- Hybrid Cloud 214

UTILITY COMPUTING 214

- Infrastructure as a Service (IaaS) 215
- Software as a Service (SaaS) 215
- Platform as a Service (PaaS) 216

Learning Outcome Review 216

Key Terms 218

Review Questions 218

Closing Case One 219

Closing Case Two 219

Critical Business Thinking 220

Apply Your Knowledge Business Projects 223

AYK Application Projects 226

CHAPTER 6

Data: Business Intelligence 227

opening case study: Bitcoin 228

Section 6.1 Data, Information, and Databases 229

DATA QUALITY 229

- Data Type: Transactional and Analytical 229
- Data Timeliness 230
- Data Quality 231
- Data Governance 234

STORING DATA USING A RELATIONAL DATABASE MANAGEMENT SYSTEM 234

- Storing Data Elements in Entities and Attributes 235
- Creating Relationships through Keys 236
- Coca-Cola Relational Database Example 237

USING A RELATIONAL DATABASE FOR BUSINESS ADVANTAGES 239

- Increased Flexibility 239
- Increased Scalability and Performance 239
- Reduced Data Redundancy 240
- Increased Data Integrity (Quality) 240
- Increased Data Security 240

Section 6.2 Data Warehouse and Blockchain 241

BUSINESS INTELLIGENCE 241

- The Problem: Data Rich, Information Poor 242
- The Solution: Data Aggregation 242

DATA WAREHOUSE 244

- Data Analysis 246
- Data Lake 247
- Data Cleansing or Scrubbing 248
- Data Visualization 250

BLOCKCHAIN: DISTRIBUTED COMPUTING 253

- How Blockchains Work 255
- Blockchain Advantages 257

Learning Outcome Review 259

Key Terms 260

Review Questions 260

Closing Case One 261

Closing Case Two 263

Critical Business Thinking 266

Apply Your Knowledge Business Projects 268

AYK Application Projects 271

CHAPTER 7

Networks: Mobile Business 272

opening case study: Disrupting the Taxi: Uber 273

Section 7.1 Connectivity: The Wireless World 275

OVERVIEW OF A CONNECTED WORLD 275

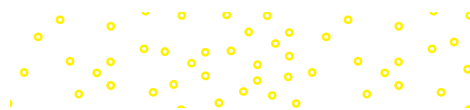
WIRELESS NETWORKS 276

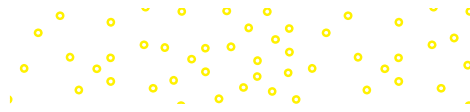
WIRELESS NETWORK CATEGORIES 278

- Personal Area Networks 278
- Wireless LANs 278
- Wireless MANs 280
- Wireless WAN—Cellular Communication System 280
- Wireless WAN—Satellite Communication System 283

PROTECTING WIRELESS NETWORKS 284

Section 7.2 Mobility: The Business Value of a Wireless World 286



**MOBILE ENTERPRISE MANAGEMENT 286**

- Mobile Device Management 287
- Mobile Application Management 288
- Mobile Information Management 290

BUSINESS APPLICATIONS OF WIRELESS TECHNOLOGIES 292

- Radio-Frequency Identification (RFID) 292
- Global Positioning System (GPS) 294
- Geographic Information System (GIS) 295

Learning Outcome Review 297**Key Terms 298****Review Questions 299****Closing Case One 299****Closing Case Two 300****Critical Business Thinking 301****Apply Your Knowledge Business Projects 302****AYK Application Projects 306**

- Customer Service and Operational CRM 336
- Analytical CRM 337

ENTERPRISE RESOURCE PLANNING 339

- The Evolution of ERP 343
- Core ERP Components 345
- Extended ERP Components 346
- Measuring ERP Success 347

ORGANIZATIONAL INTEGRATION WITH ERP 348

- On-Premise ERP 348
- Cloud ERP 349
- Hybrid ERP 352

Learning Outcome Review 354**Key Terms 355****Review Questions 356****Closing Case One 356****Closing Case Two 358****Critical Business Thinking 359****Apply Your Knowledge Business Projects 362****AYK Application Projects 366****module 3****Enterprise MIS 307****CHAPTER 8****Enterprise Applications: Business Communications 308****opening case study: Blockchain Disrupting the Supply Chain 309****Section 8.1 Supply Chain Management 311****BUILDING A CONNECTED CORPORATION****THROUGH INTEGRATIONS 311**

- Integration Tools 312

SUPPLY CHAIN MANAGEMENT 313

- Blockchain Revamping the Supply Chain 317

TECHNOLOGIES REINVENTING THE SUPPLY CHAIN 319

- 3D Printing Supports Procurement 321
- RFID Supports Logistics 323
- Drones Support Logistics 325
- Robotics Supports Materials Management 325

Section 8.2 Customer Relationship Management and Enterprise Resource Planning 327**CUSTOMER RELATIONSHIP MANAGEMENT 327**

- Evolution of CRM 329
- The Power of the Customer 331
- Measuring CRM Success 331

OPERATIONAL AND ANALYTICAL CRM 331

- Marketing and Operational CRM 333
- Sales and Operational CRM 334

CHAPTER 9**Systems Development and Project Management: Corporate Responsibility 367****opening case study: Let My People Go Surfing: The Education of a Reluctant Businessman 368****Section 9.1 Developing Enterprise Applications 370****THE SYSTEMS DEVELOPMENT LIFE CYCLE (SDLC) 370**

- Phase 1: Planning 370
- Phase 2: Analysis 372
- Phase 3: Design 374
- Phase 4: Development 375
- Phase 5: Testing 377
- Phase 6: Implementation 377
- Phase 7: Maintenance 378

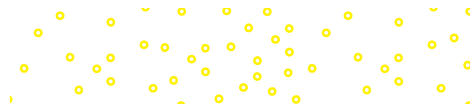
SOFTWARE DEVELOPMENT METHODOLOGY:**THE WATERFALL 380****AGILE SOFTWARE DEVELOPMENT****METHODOLOGIES 381**

- Rapid Application Development (RAD) Methodology 382
- Extreme Programming Methodology 382
- Rational Unified Process (RUP) Methodology 383
- Scrum Methodology 383

Section 9.2 Project Management 384**USING PROJECT MANAGEMENT TO DELIVER****SUCCESSFUL PROJECTS 384**

- Unclear or Missing Business Requirements 385
- Skipped Phases 385
- Changing Technology 386





The Cost of Finding Errors in the SDLC	386
Balance of the Triple Constraint	387
PRIMARY PROJECT PLANNING DIAGRAMS	388
OUTSOURCING PROJECTS	392
Outsourcing Benefits	394
Outsourcing Challenges	395
Learning Outcome Review	397
Key Terms	398
Review Questions	399
Closing Case One	399
Closing Case Two	401
Critical Business Thinking	402
Apply Your Knowledge Business Projects	404
AYK Application Projects	408

appendices

APPENDIX A

Hardware and Software Basics A.1

INTRODUCTION A.1

HARDWARE BASICS A.1

Central Processing Unit A.2

Primary Storage A.3

Secondary Storage A.5

Input Devices A.7

Output Devices A.8

Communication Devices A.9

COMPUTER CATEGORIES A.10

SOFTWARE BASICS A.10

System Software A.12

Application Software A.13

Distributing Application Software A.13

Key Terms A.14

Apply Your Knowledge A.14

APPENDIX B

Networks and Telecommunications B.1

INTRODUCTION B.1

NETWORK BASICS B.1

ARCHITECTURE B.3

Peer-to-Peer Networks B.3

Client/Server Networks B.4

TOPOLOGY B.5

PROTOCOLS B.6

Ethernet B.6

Transmission Control Protocol/Internet Protocol B.7

MEDIA B.8

Wire Media B.8

Wireless Media B.9

Key Terms B.10

Apply Your Knowledge B.10

APPENDIX C

Designing Databases C.1

INTRODUCTION C.1

THE RELATIONAL DATABASE MODEL C.1

Entities and Attributes C.2

Type of Attributes C.2

Business Rules C.3

DOCUMENTING ENTITY-RELATIONSHIP

DIAGRAMS C.3

Basic Entity Relationships C.4

Relationship Cardinality C.6

RELATIONAL DATA MODEL AND THE DATABASE C.7

From Entities to Tables C.7

Logically Relating Tables C.8

Key Terms C.9

Apply Your Knowledge C.9

APPENDIX D

Emerging Trends and Technologies D.1

INTRODUCTION D.1

TRENDS SHAPING OUR FUTURE D.2

The World's Population Will Double in the Next 40 Years D.2

People in Developed Countries Are Living Longer D.3

The Growth in Information Industries Is Creating a Knowledge-Dependent Global Society D.3

The Global Economy Is Becoming More

Integrated D.4

The Economy and Society Are Dominated by Technology D.4

Pace of Technological Innovation Is Increasing D.4

Time Is Becoming One of the World's Most Precious

Commodities D.5

TECHNOLOGIES SHAPING OUR FUTURE D.5

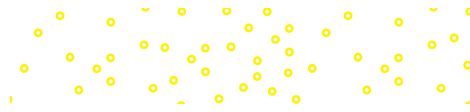
The Digital Mesh D.5

Smart Machines D.6

The New IT Reality D.6

Key Terms D.7

Apply Your Knowledge D.7



APPENDIX E
Connectivity: The Business Value of a Networked World E.1

OVERVIEW OF A CONNECTED WORLD E.1

- Network Categories E.1
- Network Providers E.2
- Network Access Technologies E.4
- Network Protocols E.6
- Network Convergence E.8

BENEFITS OF A CONNECTED WORLD E.10

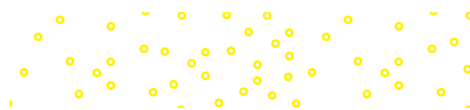
- Key Terms E.12
- Apply Your Knowledge E.12

Apply Your Knowledge AYK.1

Glossary G.1

Notes N.1

Index I.1





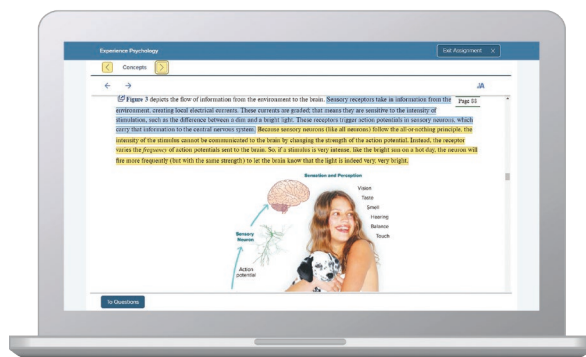
FOR INSTRUCTORS

You're in the driver's seat.

Want to build your own course? No problem. Prefer to use our turnkey, prebuilt course? Easy. Want to make changes throughout the semester? Sure. And you'll save time with Connect's auto-grading too.

65%

Less Time Grading



Laptop: McGraw-Hill; Woman/dog: George Doyle/Getty Images

They'll thank you for it.

Adaptive study resources like SmartBook® 2.0 help your students be better prepared in less time. You can transform your class time from dull definitions to dynamic debates. Find out more about the powerful personalized learning experience available in SmartBook 2.0 at www.mheducation.com/highered/connect/smartbook

Make it simple, make it affordable.



Connect makes it easy with seamless integration using any of the major Learning Management Systems—Blackboard®, Canvas, and D2L, among others—to let you organize your course in one convenient location. Give your students access to digital materials at a discount with our inclusive access program. Ask your McGraw-Hill representative for more information.

Padlock: Jobalou/Getty Images

Solutions for your challenges.



A product isn't a solution. Real solutions are affordable, reliable, and come with training and ongoing support when you need it and how you want it. Our Customer Experience Group can also help you troubleshoot tech problems—although Connect's 99% uptime means you might not need to call them. See for yourself at **status.mheducation.com**

Checkmark: Jobalou/Getty Images

SUPPORT ^{AT}
every step

FOR STUDENTS

Effective, efficient studying.

Connect helps you be more productive with your study time and get better grades using tools like SmartBook 2.0, which highlights key concepts and creates a personalized study plan. Connect sets you up for success, so you walk into class with confidence and walk out with better grades.

Study anytime, anywhere.

Download the free ReadAnywhere app and access your online eBook or SmartBook 2.0 assignments when it's convenient, even if you're offline. And since the app automatically syncs with your eBook and SmartBook 2.0 assignments in Connect, all of your work is available every time you open it. Find out more at www.mheducation.com/readanywhere

"I really liked this app—it made it easy to study when you don't have your textbook in front of you."

- Jordan Cunningham,
Eastern Washington University



Calendar: owattaphotos/Getty Images

No surprises.

The Connect Calendar and Reports tools keep you on track with the work you need to get done and your assignment scores. Life gets busy; Connect tools help you keep learning through it all.

Learning for everyone.

McGraw-Hill works directly with Accessibility Services Departments and faculty to meet the learning needs of all students. Please contact your Accessibility Services office and ask them to email accessibility@mheducation.com, or visit www.mheducation.com/about/accessibility for more information.

Top: Jenner Images/Getty Images, Left: Hero Images/Getty Images, Right: Hero Images/Getty Images



PREFACE

Business Driven Information Systems discusses various business initiatives first and how technology supports those initiatives second. The premise for this unique approach is that business initiatives should drive technology choices. Every discussion first addresses the business needs and then addresses the technology that supports those needs. This text provides the foundation that will enable students to achieve excellence in business, whether they major in operations management, manufacturing, sales, marketing, finance, human resources, accounting, or virtually any other business discipline. *Business Driven Information Systems* is designed to give students the ability to understand how information technology can be a point of strength for an organization.

Common business goals associated with information technology projects include reducing costs, improving productivity, improving customer satisfaction and loyalty, creating competitive advantages, streamlining supply chains, supporting global expansion, and so on. Achieving these results is not easy. Implementing a new accounting system or marketing plan is not likely to generate long-term growth or reduce costs across an entire organization. Businesses must undertake enterprisewide initiatives to achieve broad general business goals such as reducing costs. Information technology plays a critical role in deploying such initiatives by facilitating communication and increasing business intelligence. Any individual anticipating a successful career in business, whether it is in accounting, finance, human resources, or operations management, must understand the basics of information technology that can be found in this text.

We have found tremendous success teaching MIS courses by demonstrating the correlation between business and IT. Students who understand the tight correlation between business and IT understand the power of this course. Students learn 10 percent of what they read, 80 percent of what they personally experience, and 90 percent of what they teach others. The business driven approach brings the difficult and often intangible MIS concepts to the student's level and applies them using a hands-on approach to reinforce the concepts. Teaching MIS with a business driven focus helps:

- Add credibility to IT.
- Open students' eyes to IT opportunities.
- Attract majors.
- Engage students.

FORMAT, FEATURES, AND HIGHLIGHTS

Business Driven Information Systems is state of the art in its discussions, presents concepts in an easy-to-understand format, and allows students to be active participants in learning. The dynamic nature of information technology requires all students—more specifically, business students—to be aware of both current and emerging technologies. Students are facing complex subjects and need a clear, concise explanation to be able to understand and use the concepts throughout their careers. By engaging students with numerous case studies, exercises, projects, and questions that enforce concepts, *Business Driven Information Systems* creates a unique learning experience for both faculty and students.

- **Audience.** *Business Driven Information Systems* is designed for use in undergraduate or introductory MBA courses in management information systems, which are required in many business administration or management programs as part of the common body of knowledge for all business majors.
- **Logical Layout.** Students and faculty will find the text well organized, with the topics flowing logically from one chapter to the next. The definition of each term is provided before it is covered in the chapter, and an extensive glossary is included at the back of the text. Each chapter offers a comprehensive opening case study, learning outcomes, closing case studies, key terms, and critical business thinking questions.

- **Thorough Explanations.** Complete coverage is provided for each topic that is introduced. Explanations are written so that students can understand the ideas presented and relate them to other concepts.
- **Solid Theoretical Base.** The text relies on current theory and practice of information systems as they relate to the business environment. Current academic and professional journals cited throughout the text are found in the Notes at the end of the book—a road map for additional, pertinent readings that can be the basis for learning beyond the scope of the chapters or plug-ins.
- **Material to Encourage Discussion.** All chapters contain a diverse selection of case studies and individual and group problem-solving activities as they relate to the use of information technology in business. Two comprehensive cases at the end of each chapter reinforce content. These cases encourage students to consider what concepts have been presented and then apply those concepts to a situation they might find in an organization. Different people in an organization can view the same facts from different points of view, and the cases will force students to consider some of those views.
- **Flexibility in Teaching and Learning.** Although most textbooks that are text-only leave faculty on their own when it comes to choosing cases, *Business Driven Information Systems* goes much further. Several options are provided to faculty with case selections from a variety of sources, including *CIO*, *Harvard Business Journal*, *Wired*, *Forbes*, and *Time*, to name just a few. Therefore, faculty can use the text alone, the text and a complete selection of cases, or anything in between.
- **Integrative Themes.** Several integrative themes recur throughout the text, which adds integration to the material. Among these themes are value-added techniques and methodologies, ethics and social responsibility, globalization, and competitive advantage. Such topics are essential to gaining a full understanding of the strategies that a business must recognize, formulate, and in turn implement. In addition to addressing these in the chapter material, many illustrations are provided for their relevance to business practice.

WALKTHROUGH

Learning Outcomes

Learning Outcomes. These outcomes focus on what students should learn and be able to answer upon completion of the chapter.

section 3.1 | Web 1.0: Ebusiness

LEARNING OUTCOMES

- 3.1** Compare disruptive and sustaining technologies and explain how the Internet and WWW caused business disruption.
- 3.2** Describe ebusiness and its associated advantages.
- 3.3** Compare the four ebusiness models.
- 3.4** Describe the six ebusiness tools for connecting and communicating.

Chapter Opening Case Study

Chapter Opening Case Study. To enhance student interest, each chapter begins with an opening case study that highlights an organization that has been time-tested and value-proven in the business world. This feature serves to fortify concepts with relevant examples of outstanding companies. Discussion of the case is threaded throughout the chapter.



jgorzynik/Shutterstock



Ryan McVay/Getty Images

Taner Muhlis Karaguzel/
Shutterstock

SeventyFour/Shutterstock

opening case study

The Fourth Industrial Revolution: The Backdoor to Reengineering Reality

The fourth industrial revolution is here and is going to exponentially change how we live, work, and interact. The fourth industrial revolution is disrupting almost every industry globally and creating massive change at unprecedented speeds. Professor Klaus Schwab, founder and executive chair of the World Economic Forum's latest book, *The Fourth Industrial Revolution*, describes a world where physical, digital, and biological spheres merge. This revolution refers to how new technologies like artificial intelligence, autonomous vehicles, voice recognition, and the Internet of Things are blending our digital and physical worlds. You can expect to see changes in the ways individuals, businesses, and governments operate, ultimately leading to transformations similar to what we witnessed

Projects and Case Studies

Case Studies. This text is packed with 27 case studies illustrating how a variety of prominent organizations and businesses have successfully implemented many of this text's concepts. All cases are timely and promote critical thinking. Company profiles are especially appealing and relevant to your students, helping to stir classroom discussion and interest.

Apply Your Knowledge. At the end of each chapter, you will find several Apply Your Knowledge projects that challenge students to bring the skills they have learned from the chapter to real business problems. There are also 33 Apply Your Knowledge projects on the Connect site that accompanies this text. These projects ask students to use IT tools such as Excel, Access, and Dreamweaver to solve business problems. These projects help to develop the application and problem-solving skills of your students through challenging and creative business-driven scenarios.

APPLY YOUR KNOWLEDGE BUSINESS PROJECTS

PROJECT I Upward Managing Your Boss

Business leaders need to be comfortable with data, MIS, and analytics for the following (primary) reasons:

- The sheer magnitude of the dollars spent on MIS and analytics must be managed to ensure business value.
- Research has consistently shown that when top managers are active in supporting these initiatives, they realize a number of benefits, such as gaining a competitive advantage, streamlining business processes, and even transforming entire industries.
- When business leaders are not involved in these initiatives, systems fail, revenue is lost, and entire companies can even fail because of poorly managed systems.

How do companies get managers involved in MIS and analytics? One of the biggest positive factors is managers' personal experience with MIS and analytics along with education, including university classes such as this one. Once managers understand the positive benefits through experience and education, they are more likely to lead their companies in achieving business success.

Your boss does not understand the value of data, MIS, and analytics. In fact, he does not even believe data is required to run a business. Create a 3-minute persuasive presentation demonstrating the relationship between data, MIS, and analytics. Be sure to explain how data is collected from MIS systems and how it is transformed into information and business intelligence and how analytics can be applied to make better decision making. Be creative and have fun!

PROJECT II What Are You Waiting For? Start Your Own Business!

Not long ago, people would call college kids who started businesses quaint. Now they call them the boss. For almost a decade, *Inc.* magazine has been watching college start-ups and posting a list of the nation's top start-ups taking campuses by storm. Helped in part by low-cost technologies and an increased prevalence of entrepreneurship training at the university level, college students—and indeed those even younger—are making solid strides at founding companies. And they're not just launching local pizza shops and fashion boutiques. They are starting up businesses that could scale into much bigger companies and may already cater to a national audience.

End-of-Chapter Elements

Each chapter contains complete pedagogical support in the form of:

Key Terms. With page numbers referencing where they are discussed in the text.

KEY TERMS		
Algorithm 13	Chief technology officer (CTO) 22	Knowledge assets 14
Analytics 12	Chief user experience officer 22	Knowledge facilitator 15
Anomaly detection 13	Competitive advantage 23	Knowledge worker 14
Big data 7	Competitive intelligence 24	Loyalty program 28
Business analytics 12	Data 7	Machine-generated data 7
Business intelligence (BI) 11	Data democratization 18	Machine-generated unstructured data 9
Business process 32		Machine-to-machine
Business strategy 23		

Two Closing Case Studies. Reinforcing important concepts with prominent examples from businesses and organizations. Discussion questions follow each case study.

CLOSING CASE ONE
<p>Do You Trust Your Data?</p> <p>Data is the new oil. Data drives fact-based decisions. As a manager you are going to rely on data to drive your business decisions. Can you imagine making a critical business decision on bad data? Have you ever stopped to ask yourself if you trust your data? What will happen if you make a business decision on incorrect, inaccurate, or low-quality data? Obviously, chances are high you will make the wrong decision, and that is the primary risk when using data to drive your decisions. Here are a few examples of organizations that fell into the trap of making important decisions on incorrect data.</p>

Critical Business Thinking. The best way to learn MIS is to apply it to scenarios and real-world business dilemmas. These projects require students to apply critical thinking skills and chapter concepts to analyze the problems and make recommended business decisions.

CRITICAL BUSINESS THINKING
<p>1. Working for the Best</p> <p>Each year, <i>Fortune</i> magazine creates a list of the top 100 companies to work for. Find the most recent list. What types of data do you think <i>Fortune</i> analyzed to determine the company ranking? What issues could occur if the analysis of the data was inaccurate? What types of information can you gain by analyzing the list? Create five questions a student performing a job search could answer by analyzing this list.</p>

About the Plug-Ins

Located in the Connect product that accompanies this text, the overall goal of the plug-ins is to provide an alternative for faculty who find themselves in the situation of having to purchase an extra book to support Microsoft Office 2010, 2013, or 2016. The plug-ins presented here offer integration with the core chapters and provide critical knowledge using essential business applications, such as Microsoft Excel, Microsoft Access, Dreamweaver, and Microsoft Project. Each plug-in uses hands-on tutorials for comprehension and mastery.

Plug-In	Description
T1. Personal Productivity Using IT	<p>This plug-in covers a number of things to do to keep a personal computer running effectively and efficiently. The 12 topics covered in this plug-in are:</p> <ul style="list-style-type: none"> ■ Creating strong passwords. ■ Performing good file management. ■ Implementing effective backup and recovery strategies. ■ Using zip files. ■ Writing professional emails. ■ Stopping spam. ■ Preventing phishing. ■ Detecting spyware. ■ Threads to instant messaging. ■ Increasing PC performance. ■ Using antivirus software. ■ Installing a personal firewall.

End-of-Plug-In Elements

Each plug-in contains complete pedagogical support in the form of:

Plug-In Summary. Revisits the plug-in highlights in summary format.

Making Business Decisions. Small scenario-driven projects that help students focus individually on decision making as they relate to the topical elements in the chapters.

T2. Basic Skills Using Excel	<p>This plug-in introduces the basics of using Microsoft Excel, a spreadsheet program for data analysis, along with a few fancy features. The six topics covered in this plug-in are:</p> <ul style="list-style-type: none"> ■ Workbooks and worksheets. ■ Working with cells and cell data. ■ Printing worksheets. ■ Formatting worksheets. ■ Formulas. ■ Working with charts and graphics.
-------------------------------------	--

T4. Decision Making Using Excel	<p>This plug-in examines a few of the advanced business analysis tools used in Microsoft Excel that have the capability to identify patterns, trends, and rules, and create “what-if” models. The four topics covered in this plug-in are:</p> <ul style="list-style-type: none"> ■ IF ■ Goal Seek ■ Solver ■ Scenario Manager
--	--

Support and Supplemental Material

All of the supplemental material supporting *Business Driven Information Systems* was developed by the author to ensure that you receive accurate, high-quality, and in-depth content. Included is a complete set of materials that will assist students and faculty in accomplishing course objectives.

Test Bank. This computerized package allows instructors to custom design, save, and generate tests. The test program permits instructors to edit, add, or delete questions from the test banks; analyze test results; and organize a database of tests and students' results.

Instructor's Manual (IM). The IM, written by the author, includes suggestions for designing the course and presenting the material. Each chapter is supported by answers to end-of-chapter questions and problems and suggestions concerning the discussion topics and cases.

PowerPoint Presentations. A set of PowerPoint slides, created by the author, accompanies each chapter and features bulleted items that provide a lecture outline, plus key figures and tables from the text, and detailed teaching notes on each slide.

Image Library. Text figures and tables, as permission allows, are provided in a format by which they can be imported into PowerPoint for class lectures.

Project Files. The author has provided files for all projects that need further support, such as data files.

Assurance of Learning Ready

Many educational institutions today are focused on the notion of *assurance of learning*, an important element of some accreditation standards. *Business Driven Information Systems* is designed specifically to support your assurance of learning initiatives with a simple, yet powerful solution.

Each test bank question for *Business Driven Information Systems* maps to a specific chapter learning outcome/objective listed in the text. You can use our test bank software, EZ Test and EZ Test Online, or *Connect MIS* to query easily for learning outcomes/objectives that directly relate to the learning objectives for your course. You can then use the reporting features of EZ Test to aggregate student results in similar fashion, making the collection and presentation of assurance of learning data simple and easy.

AACSB Statement

The McGraw-Hill Companies is a proud corporate member of AACSB International. Understanding the importance and value of AACSB accreditation, *Business Driven Information Systems* recognizes the curricula guidelines detailed in the AACSB standards for business accreditation by connecting selected questions in the test bank to the six general knowledge and skill guidelines in the AACSB standards.

The statements contained in *Business Driven Information Systems* are provided only as a guide for the users of this textbook. The AACSB leaves content coverage and assessment within the purview of individual schools, the mission of the school, and the faculty. Although *Business Driven Information Systems* and the teaching package make no claim of any specific AACSB qualification or evaluation, within *Business Driven Information Systems* we have labeled selected questions according to the six general knowledge and skills areas.

McGraw-Hill Customer Care Contact Information

At McGraw-Hill, we understand that getting the most from new technology can be challenging. That's why our services don't stop after you purchase our products. You can email our product specialists 24 hours a day to get product training online. Or you can search our knowledge bank of Frequently Asked Questions on our support website. For Customer Support, call **800-331-5094** or visit **www.mhhe.com/support** where you can look for your question on our FAQ, or you can email a question directly to customer support. One of our technical support analysts will be able to assist you in a timely fashion.

Apply Your Knowledge

Business Driven Information Systems contains 33 projects that focus on student application of core concepts and tools. These projects can be found on the Connect site.

Project Number	Project Name	Project Type	Plug-In	Focus Area	Project Level	Skill Set	Page Number
1	Financial Destiny	Excel	T2	Personal Budget	Introductory	Formulas	AYK.3
2	Cash Flow	Excel	T2	Cash Flow	Introductory	Formulas	AYK.3
3	Technology Budget	Excel	T1, T2	Hardware and Software	Introductory	Formulas	AYK.3
4	Tracking Donations	Excel	T2	Employee Relationships	Introductory	Formulas	AYK.3
5	Convert Currency	Excel	T2	Global Commerce	Introductory	Formulas	AYK.4
6	Cost Comparison	Excel	T2	Total Cost of Ownership	Introductory	Formulas	AYK.4
7	Time Management	Excel or Project	T12	Project Management	Introductory	Gantt Charts	AYK.5
8	Maximize Profit	Excel	T2, T4	Strategic Analysis	Intermediate	Formulas or Solver	AYK.5
9	Security Analysis	Excel	T3	Filtering Data	Intermediate	Conditional Formatting, Autofilter, Subtotal	AYK.6
10	Gathering Data	Excel	T3	Data Analysis	Intermediate	Conditional Formatting	AYK.6
11	Scanner System	Excel	T2	Strategic Analysis	Intermediate	Formulas	AYK.7
12	Competitive Pricing	Excel	T2	Profit Maximization	Intermediate	Formulas	AYK.7
13	Adequate Acquisitions	Excel	T2	Break-Even Analysis	Intermediate	Formulas	AYK.7
14	Customer Relations	Excel	T3	CRM	Intermediate	PivotTable	AYK.8
15	Assessing the Value of Information	Excel	T3	Data Analysis	Intermediate	PivotTable	AYK.8
16	Growth, Trends, and Forecasts	Excel	T2, T3	Data Forecasting	Advanced	Average, Trend, Growth	AYK.9
17	Shipping Costs	Excel	T4	SCM	Advanced	Solver	AYK.10
18	Formatting Grades	Excel	T3	Data Analysis	Advanced	If, LookUp	AYK.11

(continued)

Project Number	Project Name	Project Type	Plug-In	Focus Area	Project Level	Skill Set	Page Number
19	Moving Dilemma	Excel	T2, T3	SCM	Advanced	Absolute vs. Relative Values	AYK.11
20	Operational Efficiencies	Excel	T3	SCM	Advanced	PivotTable	AYK.12
21	Too Much Information	Excel	T3	CRM	Advanced	PivotTable	AYK.12
22	Turnover Rates	Excel	T3	Data Mining	Advanced	PivotTable	AYK.13
23	Vital Information	Excel	T3	Data Mining	Advanced	PivotTable	AYK.13
24	Breaking Even	Excel	T4	Business Analysis	Advanced	Goal Seek	AYK.14
25	Profit Scenario	Excel	T4	Sales Analysis	Advanced	Scenario Manager	AYK.14
26	Electronic Résumés	HTML	T9, T10, T11	Electronic Personal Marketing	Introductory	Structural Tags	AYK.14
27	Gathering Feedback	Dreamweaver	T9, T10, T11	Data Collection	Intermediate	Organization of Information	AYK.15
28	Daily Invoice	Access	T5, T6, T7, T8	Business Analysis	Introductory	Entities, Relationships, and Databases	AYK.15
29	Billing Data	Access	T5, T6, T7, T8	Business Intelligence	Introductory	Entities, Relationships, and Databases	AYK.17
30	Inventory Data	Access	T5, T6, T7, T8	SCM	Intermediate	Entities, Relationships, and Databases	AYK.18
31	Call Center	Access	T5, T6, T7, T8	CRM	Intermediate	Entities, Relationships, and Databases	AYK.19
32	Sales Pipeline	Access	T5, T6, T7, T8	Business Intelligence	Advanced	Entities, Relationships, and Databases	AYK.20
33	Online Classified Ads	Access	T5, T6, T7, T8	Ecommerce	Advanced	Entities, Relationships, and Databases	AYK.20



SIMnet[®]

SIMnet Online is McGraw-Hill's leading solution for learning Microsoft Office skills and beyond! SIMnet is our online training and assessment solution for Microsoft Office skills, computing concepts, Internet Explorer, and Windows content. With no downloads for installation and completely online (requires Adobe Flash Player), SIMnet is accessible for today's students through multiple browsers and is easy to use for all. Its consistent user interface and functionality will help save you time and help you be more successful in your course.


Moreover, SIMnet offers you lifelong learning. Our codes never expire and the online program is designed with Self-Study and SIMsearch features to help you immediately learn isolated Microsoft Office skills on demand. It's more than a resource; it's a tool you can use throughout your entire time at your higher education institution.

Finally, you will see powerful, measurable results with SIMnet Online. See results immediately in the student gradebook and generate custom training lessons after an exam to help you determine exactly which content areas you still need to study.

SIMnet Online is your solution for mastering Microsoft Office skills!

SIMnet: Keep IT SIMple!

To learn more, visit www.simnetkeepitsimple.com




Easy to Use!
SIMnet is McGraw-Hill's leading solution for training and assessment of Microsoft Office skills and beyond! Completely online with no downloads for installation (besides requiring Adobe Flash Player), SIMnet is accessible for today's students through multiple browsers and is easy to use for all! Now, SIMnet offers SIMbook and allows students to go MOBILE for their student learning! Available with videos and interactive "Guide Me" pages to allow students to study MS Office skills on any device! Its consistent, clean user interface and functionality will help save you time and help students be more successful in their course.

Life-Long Learning!
SIMnet offers lifelong learning! SIMnet is designed with self-study and SIMsearch features to help students immediately learn isolated Microsoft Office skills on demand. Students can utilize SIMsearch and Self-Study to learn skills both in and beyond the course. It's more than a resource; it's a tool they can use throughout their entire time at your institution!

Measureable Results!
SIMnet provides powerful, measureable results for you and your students! See results immediately in our various reports and customizable gradebook. Students can also see measurable results by generating a custom training lesson after an exam to help determine exactly which content areas they still need to study! Lastly, instructors can utilize the dashboard to see detailed results of student activity, assignment completion and more! SIMnet Online is your solution for helping students master today's Microsoft Office Skills!

SIMnet for Office 2013 ... Keep IT SIMple!

Follow our CIT team on Twitter! @mhheCITeam  McGraw-Hill CIT
 To learn more, visit www.simnetkeepitsimple.com and also contact your McGraw-Hill representative.



Craft your teaching resources to match the way you teach! With McGraw-Hill Create, www.mcgrawhillcreate.com, you can easily rearrange chapters, combine material from other content sources, and quickly upload content you have written, like your course syllabus or teaching notes. Find the content you need in Create by searching through thousands of leading McGraw-Hill textbooks. Arrange your book to fit your teaching style. Create even allows you to personalize your book's appearance by selecting the cover and adding your name, school, and course information. Order a Create book and you'll receive a complimentary print review copy in 3–5 business days or a complimentary electronic review copy (eComp) via email in about one hour. Go to www.mcgrawhillcreate.com today and register. Experience how McGraw-Hill Create empowers you to teach *your students your way*.

ACKNOWLEDGMENTS

Working on the seventh edition of *Business Driven Information Systems* has been an involved undertaking, and there are many people whom I want to heartily thank for their hard work, enthusiasm, and dedication.

This text was produced with the help of a number of people at McGraw-Hill, including Brand Manager Brian Sylvester and Product Developer David Ploskonka.

In addition, I would like to thank Susan Gouijnstook (Managing Director) for her support and dedication to the success of this text.

Finally, I offer my sincerest gratitude and deepest appreciation to the valuable reviewers whose feedback was instrumental in successfully compiling this text. I could not have done this without you!

Stephen Adams
Lakeland Community College

Adeyemi A. Adekoya
Virginia State University—Petersburg

Joni Adkins
Northwest Missouri State University

Chad Anderson
University of Nevada—Reno

Anne Arendt
Utah Valley University

Laura Atkins
James Madison University

William Ayen
University of Colorado

David Bahn
Metropolitan State University—St. Paul

Nick Ball
Brigham Young University—Provo

Patrick Bateman
Youngstown State University

Terry Begley
Creighton University

Craig Beytien
University of Colorado—Boulder

Sudip Bhattacharjee
University of Connecticut

Meral Binbasioglu
Hofstra University

Joseph Blankenship
Fairmont State College

Beverly Bohn
Park University

Brenda Bradford
Missouri Baptist University

Casey Cegielski
Auburn University—Auburn

Amita Chin
Virginia Commonwealth University

Steve Clements
Eastern Oregon University

Cynthia Corritore
Creighton University

Dan Creed
Normandale Community College

Don Danner
San Francisco State University

Sasha Dekleva
DePaul University

Robert Denker
Baruch College

Hongwei Du
California State University, East Bay

Kevin Duffy
Wright State University—Dayton

Annette Easton
San Diego State University

Barry Floyd
California Polytechnic State University

Valerie Frear
Daytona State College

Laura Frost
Walsh College

Don Gaber
University of Wisconsin—Eau Claire

Biswadip Ghosh
Metropolitan State College of Denver

Richard Glass
Bryant University

Lakshmi Goel
University of North Florida

Mark Goudreau
Johnson & Wales University

Katie Gray
The University of Texas at Austin

Gary Hackbarth
Northern Kentucky University

Shu Han
Yeshiva University

Peter Haried
University of Wisconsin—La Crosse

Rosie Hauck
Illinois State University

Jun He
University of Michigan—Dearborn

James Henson
California State University—Fresno

Terri Holly
Indian River State College

Scott Hunsinger
Appalachian State University

Ted Hurewitz
Rutgers University

Yan Jin
Elizabeth City State University

Brian Jones
Tennessee Technological University

- | | | |
|--|--|---|
| Robert Judge
San Diego State University | Bill Neumann
University of Arizona | Vijay Shah
West Virginia University—Parkersburg |
| B. Kahn
Suffolk University | Richard Newmark
University of Northern Colorado | Vivek Shah
Texas State University |
| Virginia Kleist
West Virginia University | Kathleen Noce
Pennsylvania State University—Erie | Jollean Sinclair
Arkansas State University |
| Meagan Knoll
Grand Valley State University | Gisele Olney
University of Nebraska—Omaha | Changsoo Sohn
St. Cloud State University |
| Rick Kraas
Kalamazoo Valley Community College | Kevin Parker
Idaho State University—Pocatello | Toni Somers
Wayne State University |
| Chetan Kumar
California State University—San Marcos | Neeraj Parolia
Towson University | Denise Sullivan
Westchester Community College |
| Guolin Lai
University of Louisiana—Lafayette | Gang Peng
Youngstown State University | Yi Sun
California State University—San Marcos |
| Jose Lepervanche
Florida State College—Jacksonville | Julie Pettus
Missouri State University | Mike Tarn
Western Michigan University |
| Norman Lewis
Wayne State University | Craig Piercy
University of Georgia | Mark Thouin
The University of Texas at Dallas |
| Mary Lind
North Carolina A&T State University | Clint Pires
Hamline University | Lise Urbaczewski
University of Michigan—Dearborn |
| Steve Loy
Eastern Kentucky University | Jennifer Pitts
Columbus State University | Hong Wang
North Carolina A&T State University |
| Joan Lumpkin
Wright State University—Dayton | Carol Pollard
Appalachian State University | Barbara Warner
University of South Florida |
| Linda Lynam
University of Central Missouri | Lara Preiser-Houy
California State Polytechnic
University—Pomona | Connie Washburn
Georgia Perimeter College |
| Nicole Lytle-Kosola
California State University—San
Bernardino | John Quigley
East Tennessee State University | Bruce White
Quinnipiac University |
| Garth MacKenzie
University of Maryland University
College | Muhammad Razi
Western Michigan University | Raymond Whitney
University of Maryland University
College |
| Michael Martel
Ohio University—Athens | Lisa Rich
Athens State University | Rosemary Wild
California Polytechnic State University |
| Dana McCann
Central Michigan University | Russell Robbins
University of Pittsburgh | Marie Wright
Western Connecticut State University |
| David McCue
University of Maryland | Fred Rodammer
Michigan State University | Yajiong Xue
East Carolina University |
| Lynn McKell
Brigham Young University | Steve Ross
Western Washington University | Ali Yayla
Binghamton University |
| Patricia McQuaid
California Polytechnic State
University | Mark Schmidt
St. Cloud State University | Grace Zhang
Midwestern State University |
| Fiona Nah
University of Nebraska—Lincoln | Dana Schwieger
Southeast Missouri State University | Lin Zhao
Purdue University—Calumet |
| Eric Nathan
University of Houston Downtown | Darrell Searcy
Palm Beach Community College | Jeanne Zucker
East Tennessee State University |
| | Jay Shah
Texas State University | |

ABOUT THE AUTHOR

Paige Baltzan

Paige Baltzan teaches in the Department of Business Information and Analytics at the Daniels College of Business at the University of Denver. She holds a BSBA specializing in accounting/MIS from Bowling Green State University and an MBA specializing in MIS from the University of Denver. She is a coauthor of several books, including *Business Driven Technology*, *Essentials of Business Driven Information Systems*, and *I-Series*, and a contributor to *Management Information Systems for the Information Age*.

Before joining the Daniels College faculty in 1999, Paige spent several years working for a large telecommunications company and an international consulting firm, where she participated in client engagements in the United States as well as South America and Europe.