Contents

Preface

To the Student

The twelfth edition of *Accounting Information Systems* is designed to prepare you for a successful accounting career in public practice, industry, or government. All of you will be users of accounting information systems (AIS). As such, you should participate in the design of those systems. Doing so effectively, however, requires that you have a sound understanding of how they work. In addition to being users, some of you will become managers. Others will become internal and external auditors, and some of you will become consultants. All of these roles require you to understand how accounting information systems work so that you can measure their cost-effectiveness, assess their reliability and the reliability of the information produced, or lead the redesign and implementation of new and better systems. Mastering the material presented in this text will give you the foundational knowledge you need in order to excel at all those tasks.

This text discusses important new information technology (IT) developments, such as virtualization, cloud computing, the use of RFID tags to track inventory, and the adoption of XBRL for financial reporting, because such developments affect business processes and often cause organizations to redesign their accounting systems to take advantage of new capabilities. The focus, however, is not on IT for the sake of IT, but on how IT affects business processes and controls. Indeed, new IT developments not only bring new capabilities, but also often create new threats and affect the overall level of risk. This text will help you understand these issues so that you can properly determine how to modify accounting systems controls to effectively address those new threats and accurately assess the adequacy of controls in those redesigned systems. We also discuss the effect of recent regulatory developments, most notably the Sarbanes–Oxley Act and the upcoming switch from GAAP to IFRS, on the design and operation of accounting systems.

In addition to technology- and regulatory-driven changes, companies are responding to the increasingly competitive business environment by reexamining every internal activity in an effort to reap the most value at the least cost. As a result, accountants are being asked to do more than simply report the results of past activities. They must take a more proactive role in both providing and interpreting financial and nonfinancial information about the organization's activities. Therefore, throughout this text we discuss how accountants can improve the design and functioning of the accounting information system (AIS) so that it truly adds value to the organization.

Key Learning Objectives

When you finish reading this text, you should understand the following key concepts:

- The basic activities performed in the major business cycles
- What data need to be collected to enable managers to plan, evaluate, and control the business activities in which an organization engages
- How IT developments can improve the efficiency and effectiveness of business processes
- How to design an AIS to provide the information needed to make key decisions in each business cycle

- The risk of fraud and the motives and techniques used to perpetrate fraud
- The COSO and COSO-ERM models for internal control and risk management, as well as the specific controls used to achieve those objectives
- The Control Objectives for Information and Related Technology (COBIT) framework for the effective governance and control of information systems and how IT affects the implementation of internal controls
- The AICPA's Trust Services framework for ensuring systems reliability by developing procedures to protect the confidentiality of proprietary information, maintain the privacy of personal information collected from customers, assure the availability of information resources, and provide for information processing integrity
- Fundamentals of computer information security
- Goals, objectives, and methods for auditing information systems
- Fundamental concepts of database technology and data modeling and their effect on an AIS
- The tools for documenting AIS work, such as REA diagrams, data flow diagrams, and flowcharting
- The basic steps in the system development process to design and improve an AIS

Features to Facilitate Learning

To help you understand these concepts, the text includes the following features:

1. **Each chapter begins with an integrated case that introduces that chapter's key concepts and topics and identifies several key issues or problems that you should be able to solve after mastering the material presented in that chapter.** The case is referenced throughout the chapter, and the chapter summary presents solutions to the problems and issues raised in the case.
2. **Focus boxes and real-world examples** help you understand how companies are using the latest IT developments to improve their AIS.
3. **Hands-on Excel exercises in many chapters** help you hone your computer skills. Many of these exercises are based on "how-to" tutorials that appeared in recent issues of the *Journal of Accountancy*.
4. **Numerous problems in every chapter** provide additional opportunities for you to demonstrate your mastery of key concepts. Many problems were developed from reports in current periodicals. Other problems were selected from the various professional examinations, including the CPA, CMA, CIA, and SMAC exams.
5. **Cases in each chapter** require more extensive exploration of specific topics.
6. **Chapter quizzes** at the end of each chapter enable you to self-assess your understanding of the material. We also provide detailed explanations about the correct answer to each quiz question.
7. **Extensive use of graphics** enhance your understanding. The text contains hundreds of figures, diagrams, flowcharts, and tables that illustrate the concepts taught in the chapters.
8. **A comprehensive glossary** located at the back of the book makes it easy to look up the definition of the various technical terms used in the text.
9. **Extensive online support** is available at Pearson Education's content-rich, text-supported Web site, at www.pearsonglobaleditions.com/romney.

Content and Organization

This text is divided into five parts, each focused on a major theme.

Part I: Conceptual Foundations of Accounting Information Systems

Part I consists of four chapters that present the underlying concepts fundamental to an understanding of AIS. Chapter 1 introduces basic terminology and discusses how an AIS can add value

to an organization. Chapter 2 provides an overview of basic business processes. It introduces transaction processing in automated systems, presenting basic information processing and data storage concepts. You will see the wide range of data that must be collected by the AIS. This information helps you to understand what an AIS does; as you read the remainder of the book, you will see how advances in IT affect the manner in which those functions are performed. Chapter 3 covers two of the most important tools and techniques used to understand, evaluate, design, and document information systems: data flow diagrams and flowcharts. Chapter 4 introduces the topic of databases, with a particular emphasis on the relational data model and creating queries in Microsoft Access.

Part II: Control and Audit of Accounting Information Systems

The seven chapters in Part II focus on threats to the reliability of AIS and applicable controls for addressing and mitigating the risks associated with those threats. Chapter 5 discusses fraud and explains how and why it occurs. Chapter 6 continues the discussion of fraud, focusing specifically on computer fraud. Chapter 7 uses the COSO framework, including the expanded enterprise risk management (COSO-ERM) model, to discuss the basic concepts of internal control. Chapters 8–10 use both COBIT and the AICPA's Trust Services frameworks to discuss effective governance and control of information systems. Chapter 8 introduces the fundamental concepts of defense-in-depth and the time-based approach to security. The chapter provides a broad survey of a variety of security topics, including access controls, firewalls, encryption, and incident detection and response. Chapter 9 discusses the many specific computer controls used in business organizations to achieve the objectives of ensuring privacy and confidentiality, and it includes a detailed explanation of encryption. Chapter 10 addresses the controls necessary to achieve the objectives of accurate processing of information and ensuring that information is available to managers whenever and wherever they need it. Chapter 11 describes principles and techniques for the audit and evaluation of internal control in a computer-based AIS and introduces the topic of computer-assisted auditing.

Part III: Accounting Information Systems Applications

Part III focuses on how a company's AIS provides critical support for its fundamental business processes. Most large and many medium-sized organizations use enterprise resource planning (ERP) systems to collect, process, and store data about their business processes, as well as to provide information reports designed to enable managers and external parties to assess the organization's efficiency and effectiveness. To make it easier to understand how an ERP system functions, Part III consists of five chapters, each focusing on a particular business process. Chapter 12 covers the revenue cycle, describing all the activities involved in taking customer orders, fulfilling those orders, and collecting cash. Chapter 13 covers the expenditure cycle, describing all the activities involved in ordering, receiving, and paying for merchandise, supplies, and services. Chapter 14 covers the production cycle, with a special focus on the implications of recent cost accounting developments, such as activity-based costing, for the design of the production cycle information system. Chapter 15 covers the human resources management/payroll cycle, focusing primarily on the activities involved in processing payroll. Chapter 16 covers the general ledger and reporting activities in an organization, discussing topics such as XBRL, the balanced scorecard, the switch from GAAP to IFRS, and the proper design of graphs to support managerial decision making. Each of these five chapters explains the three basic functions performed by the AIS: efficient transaction processing, provision of adequate internal controls to safeguard assets (including data), and preparation of information useful for effective decision making.

Part IV: The REA Data Model

Part IV consists of three chapters that focus on the REA data model, which provides a conceptual tool for designing and understanding the database underlying an AIS. Chapter 17 introduces the REA data model and explains how it can be used to design an AIS database. The chapter focuses on modeling the revenue and expenditure cycles. It also demonstrates how the REA model can be used to develop an AIS that not only can generate traditional financial statements and reports but also can more fully meet the information needs of management. Chapter 18 explains how to implement an REA data model in a relational database system and shows how to

query a relational database in order to produce various financial statements and management reports. Chapter 19 explains how to develop REA data models of the production, HR/payroll, and financing cycles. It also discusses a number of advanced modeling issues, such as the acquisition and sale of intangible products and services and rental transactions.

Part V: The Systems Development Process

Part V consists of three chapters that cover various aspects of the systems development process. Chapter 20 introduces the systems development life cycle and discusses the introductory steps of this process (systems analysis, feasibility, and planning). Particular emphasis is placed on the behavioral ramifications of change. Chapter 21 discusses an organization's many options for acquiring or developing an AIS (e.g., purchasing software, writing software, end-user–developed software, and outsourcing) and for speeding up or improving the development process (business process reengineering, prototyping, and computer-assisted software engineering). Chapter 22 covers the remaining stages of the systems development life cycle (conceptual design, physical design, implementation, and operation and maintenance) and emphasizes the interrelationships among the phases.

To the Instructor

This book is intended for use in a one-semester course in accounting information systems at the undergraduate or graduate level. Introductory financial and managerial accounting courses are suggested prerequisites, and an introductory information systems course that covers a computer language or software package is helpful. The book can also be used as the main text in graduate or advanced undergraduate management information systems courses. Indeed, the topics covered in this text provide information systems students with a solid understanding of transaction processing systems that they can then build on as they pursue more in-depth study of specific topics such as databases, data warehouses and data mining, networks, systems analysis and design, computer security, and information system controls.

Enhancements to the Twelfth Edition

The twelfth edition has been extensively revised and rewritten to incorporate recent developments while retaining the features that have made prior editions easy to use. Every chapter has been updated to include current examples of important concepts. Specific changes include the following:

1. More extensive coverage of both fraud and computer fraud, replacing the one chapter in the eleventh edition that covered both topics with two chapters in this new edition.
2. More detailed discussion of internal control frameworks: COSO, COSO-ERM, and COBIT.
3. Updated discussion of information security countermeasures, including the security and control implications associated with virtualization and cloud computing.
4. Additional Excel exercises, based on *Journal of Accountancy* articles, to help students develop the skills used by practitioners.
5. Many new end-of-chapter discussion questions and problems.

Supplemental Resources

As with prior editions, our objective in preparing this twelfth edition has been to simplify the teaching of AIS by enabling you to concentrate on classroom presentation and discussion, rather than on locating, assembling, and distributing teaching materials. To assist you in this process, the following supplementary materials are available to adopters of the text:

- *Solutions Manual* prepared by Marshall Romney at Brigham Young University and Paul John Steinbart at Arizona State University.
- *Instructors Manual/PowerPoint Presentations* prepared by Steven Hornik at the University of Central Florida.
- *PowerPoint Presentations* prepared by Steven Hornik at the University of Central Florida. The twelfth edition includes an entirely new set of PowerPoint slides that makes extensive use of high-quality graphics to illustrate key concepts. The slides do not merely consist of

bullet points taken verbatim from the text, but instead are designed to help students notice and understand important relationships among concepts. The large number of slides provides instructors a great deal of flexibility in choosing which topics they wish to emphasize in class.

- *Test Item File* prepared by Debra Cosgrove at the University of Nebraska–Lincoln.
- *TestGen testing software,* a computerized test item file.

In addition, you can access these supplements from the protected instructor area of www.pearsonglobaleditions.com/romney.

We recognize that you may also wish to use specific software packages when teaching the AIS course. Contact your local rep to learn about bundling options with software packages such as Peachtree or other texts such as *Comprehensive Assurance & Systems Tool: Assurance Practice Set*, 2nd ed.; *Comprehensive Assurance & Systems Tool: Manual AIS Practice Set*, 2nd ed.; *Comprehensive Assurance & Systems Tool: Computerized AIS Practice Set*, 2nd ed., all written by Laura R. Ingraham of San Jose State University and J. Gregory Jenkins, at Virginia Polytechnic Institute and State University.

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Of course, any errors in this book remain our responsibility. We welcome your comments and suggestions for further improvement.

Finally, we want to thank our wives and families for their love, support, and encouragement. We also want to thank God for giving us the ability to start and complete this book.

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