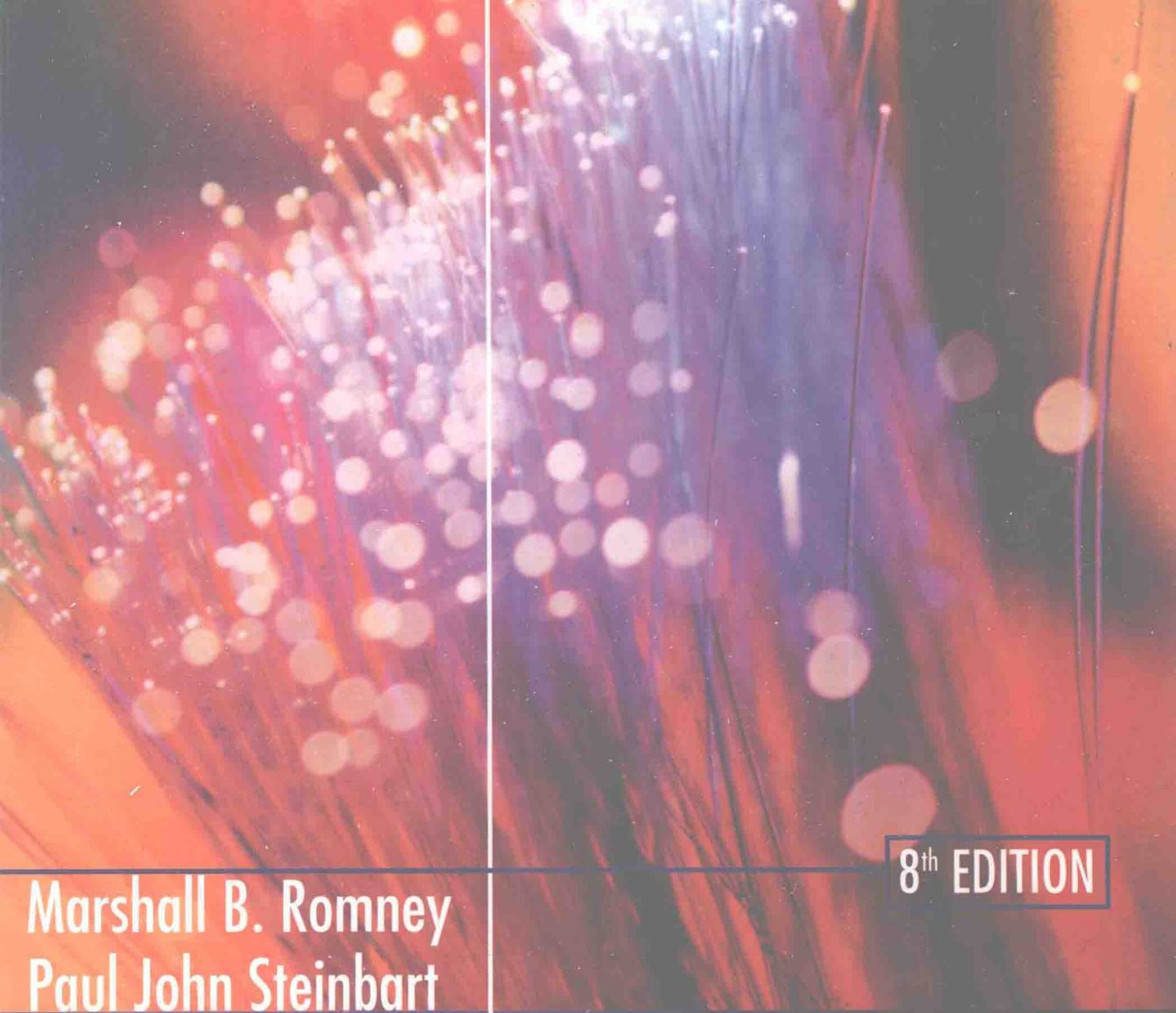

8th EDITION

Marshall B. Romney
Paul John Steinbart

ACCOUNTING INFORMATION SYSTEMS

ACCOUNTING INFORMATION SYSTEMS

EIGHTH EDITION

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To

Our Wives and Families

for Their Support and Encouragement

PREFACE

Today, professional accountants work in an exciting and complex environment that is constantly changing. Progress in information technology is occurring at an ever-increasing rate. Business organizations are changing their methods of operation and their management structures to meet the demands of an increasingly competitive environment. The economic and legal environment that accountants work in is also changing in unpredictable ways. All of these changes require that today's accounting students be better prepared than ever before to enter the challenging world of the accounting profession.

A central feature of accounting in today's business world is the interaction of accounting professionals with computer-based information systems. As primary users of information systems in organizations, accountants must participate in their design and understand their operation. Accounting managers must measure and evaluate the performance of information systems. Internal and external auditors must assess the quality of information processing and evaluate the accuracy of information input and output. The major share of the work of accounting consultants is in the design, implementation, and evaluation of information systems.

The eighth edition of *Accounting Information Systems* provides students with the knowledge and skills they need to pursue successful careers in accounting. The text reflects how information technology (IT) is altering the nature of accounting. Specifically, we discuss how such developments as the Internet, electronic commerce, EDI, data bases, and artificial intelligence are fundamentally transforming the way organizations conduct their business activities. We also explain how these IT developments are changing the way that businesses account for the results of those activities.

In addition to technology-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 just 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. For example, each cycle chapter uses data modeling to illustrate how accounting information systems can effectively integrate internally generated financial and nonfinancial data about organizational activities with other, externally generated data (e.g., customer credit ratings and satisfaction).

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As with the first seven editions, this book is written to help students acquire the understanding and knowledge of accounting information systems that they must have to succeed in their chosen field. Today's accounting students will become tomorrow's users, auditors, and managers of computer-based information systems. To be successful in pursuing an accounting career, students must possess a basic knowledge of computer-based information systems and their role in performing the accounting function in contemporary business organizations. Graduating students must understand the following key concepts:

- The business activities performed in the five major business cycles as well as the flow of accounting data and information in those systems
- The collection and processing of data about those business activities
- The use of the latest information technology (IT) developments to improve the efficiency and effectiveness of business activities
- The development, implementation, and maintenance of accounting information systems (AIS)
- Internal control objectives and the effects of IT on these objectives
- Fundamental concepts of data base technology and its effect on AIS
- The design of an AIS to provide the information needed to make key decisions in each business cycle
- The tools of AIS work, such as data flow diagrams and flowcharting

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 course in data processing that covers a computer language or a software package is helpful. The book can also be used as the main text in graduate or advanced undergraduate courses in management information systems.

MAJOR CHANGES IN THE EIGHTH EDITION

The eighth edition of the book has been reorganized. The 21 chapters in the seventh edition were divided into five major sections or parts. The 19 chapters of the eighth edition are divided into four major parts. A number of reviewers have asked that the application (cycle) chapters be presented earlier in the text. Accordingly, we have moved the chapters on systems development to the end of the text and moved the other parts forward in the book. Therefore, Part One is Conceptual Foundations and consists of Chapters 1 through 7. Part Two is now Control and Audit and consists of Chapters 8 through 11. Part Three, AIS Applications, consists of Chapters 12 through 16. Finally, Part Four is Systems Development and consists of Chapters 17 through 19. The chapters on development can now be taught from the perspective of the students already having studied the applications that are to be developed.

The three-chapter Part Two of the Seventh Edition, "The Technology of Accounting Information Systems," no longer exists. The chapter on Personal Information Systems was deleted and the material was spread throughout the

book as appropriate. The review of computer hardware and software is now an appendix to Chapter 4. The material in the chapter on data communication systems is now in the new chapter on electronic commerce, Chapter 7.

A significant effort was expended in this edition to make the book shorter and even easier for students to read and use. The whole text was reexamined with a view to tightening the exposition and presenting every concept in as clear and straightforward a manner as possible.

Another way we shortened the book's length was to move the five comprehensive cases to our new web site. Each case contains a list of requirements that correspond to specific chapters. This organization allows the instructor to tailor the case requirements to his or her choice of course objectives and topical coverage.

NEW FEATURES

Companion web site. A web site provides additional information and support to users of our text. Please feel free to visit the web site at http://www.prenhall.com/romney.

Increased coverage of business strategy. The concept of the value chain classifies information technology as a support activity. This means that investments in information technology are not an end in themselves, but must be linked to an organization's strategy and strategic position. Chapter 1 has been rewritten to discuss basic strategies and the strategic positions that firms can pursue. This material is placed in the first chapter so that students immediately begin to think about how information technology can be used to help organizations achieve their goals.

Improved coverage of data bases and data modeling. Accountants are increasingly becoming involved in data base design. The discussion of relational data bases in Chapter 5 has been improved by using ACCESS to illustrate the concepts and by moving the SQL material to the chapter appendix. Chapter 6 has been revised to more clearly explain the REA approach to data modeling. Many more examples are provided. Additional homework problems designed to help students progressively hone their data modeling skills are also included.

Enhanced coverage of e-commerce. Chapter 7 has been revised to focus on e-commerce. Topics covered include FEDI and control issues. The discussion of information technology concepts about networking and data communications has been rewritten to focus on how IT supports and enables e-commerce.

Continued focus on transaction cycles from a business process perspective. Chapters 12 through 15 cover the revenue, expenditure, production, and human resource business processes. In-depth coverage of how those processes are executed is combined with a thorough discussion of control issues. Improved REA diagrams illustrate how data about these processes can

be stored in integrated data bases. Chapter 16 discusses both traditional general ledger systems and also enterprise resource planning (ERP) systems. Additional measurement topics that are part of the "New Finance," such as the balanced scorecard, are also covered.

Updated coverage of computer fraud and security. The chapter on computer fraud was updated to include the new techniques that perpetrators are using to defraud companies. Many of these involve the Internet and other electronic commerce applications. Many examples of recent frauds have been included to illustrate the fraud techniques.

Improved presentation of the systems development process. The three chapters on systems development have been reorganized to provide a more logical flow to the information. Chapter 17 provides an overview of the development process and discusses systems analysis concepts, concluding with a definition of user needs. Chapter 18 discusses the many options an organization has for acquiring or developing an AIS to meet those needs (e.g., purchasing software, writing software, end-user developed software, and outsourcing) or speeding up or improving the development process (business process reengineering, prototyping, and computer-assisted software engineering). Chapter 19 concludes with a discussion of how to design, implement, operate, and maintain a system to meet user needs.

CONTINUING FEATURES

Each chapter begins with an integrative case, based on one of four fictional companies, that introduces the chapter's key concepts and topics. This case is integrated throughout the chapter, and a description of how the issues are resolved is provided in the summary and case conclusion.

We continue to include one to four focus boxes in each chapter. The focus boxes are summaries of articles describing how specific companies are using the latest IT developments to improve their AIS. Numerous real-world examples, featuring both large and small companies in a variety of industries, have also been added to each chapter to highlight and reinforce key concepts.

Each chapter continues to have at least two end-of-chapter cases. One is a stand-alone case. The other is the AnyCompany case, which provides students with the opportunity to apply their knowledge to the specific problems and challenges faced by a business in their local area. The AnyCompany case also gives students the chance to practice their written and oral communication skills in a realistic setting. The requirements for each AnyCompany case are tailored to the topics offered in its chapter. These suggested requirements are too extensive to permit assignment of multiple AnyCompany cases in one semester. Instead, we encourage instructors to select the case(s) with requirements that most closely match their course objectives. Alternatively, instructors can choose selected requirements from several chapters to create a customized term project that reflects the topics they stress in their course.

The end-of-chapter material is designed to help students develop and test their knowledge. It includes both new and revised discussion questions, problems, and cases that integrate material from various parts of the chapter. 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. In addition, each chapter includes a short multiple-choice quiz, with answers provided at the end of the chapter. Students can use the quiz to test their understanding of the main topics in the chapter.

The text contains hundreds of figures, diagrams, flowcharts, and tables that illustrate the concepts taught in the chapters. At the end of the book is an extensive bibliography, organized by chapter. This list contains references to the real-world examples used in each chapter and provides students with a starting point for further research on topics of interest.

Finally, the comprehensive glossary at the back of the book has been extensively revised.

AN OVERVIEW OF THE EIGHTH EDITION

Part One: Conceptual Foundations of Accounting Information Systems

Part One consists of seven 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. It also discusses basic strategies and the strategic positions that firms can pursue, so that students can understand how information technology can be used to help organizations achieve their goals.

Chapter 2 provides an overview of AIS topics, illustrated in the context of a simple manual system. This information helps students to understand what an accounting information system does; as they read the remainder of the book, they see how advances in information technology affect the manner in which those functions are performed. This coverage is especially useful if the curriculum has been changed so that the AIS course is now the first class accounting majors take after Principles.

Chapter 3 covers systems development and documentation techniques, focusing on data flow diagrams and flowcharts.

Chapter 4 discusses transaction processing in automated systems, presenting basic information processing and data storage concepts. An appendix to Chapter 4 reviews hardware and software concepts for any students that did not learn this material in another course.

Chapter 5 introduces students to data bases, with a particular emphasis on the relational data model and query languages.

Chapter 6 discusses data modeling and the design of a data base AIS. This chapter illustrates how the data base technology covered in Chapter 5 can be used to design an AIS that more fully meets the information needs of managers. Chapter 6 also demonstrates how traditional financial statements and managerial reports can be derived from a data base AIS.

Chapter 7 discusses the role of electronic commerce in today's business organizations. The chapter also discusses telecommunications concepts and applications as well as the Internet and the World Wide Web.

Part Two: Control and Audit of Accounting Information Systems

Part Two consists of four chapters. Chapter 8 provides a conceptual overview of controls and control theory. The material was written to reflect the terminology used in the COSO report.

Chapter 9 discusses the many specific computer controls used in business organizations.

Chapter 10 focuses on computer fraud and security, explaining how and why fraud occurs and the methods for preventing and detecting it.

Chapter 11 reviews principles and techniques for audit evaluation of internal control in computer-based AIS and introduces the topic of computer-assisted auditing.

Part Three: Accounting Information Systems Applications

Part Three consists of five chapters, each of which focuses on one of the business cycles. Chapter 12 covers the revenue cycle, including sales, billing, accounts receivable, and cash receipts.

Chapter 13 covers the expenditure cycle, including purchases, receiving, accounts payable, and cash disbursements.

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 discusses the human resources management (HRM)/payroll cycle and explores the ways in which these two systems can be integrated.

Chapter 16 focuses on the general ledger and reporting activities in an organization.

All five chapters have been written to reflect the three basic functions performed by the AIS: (1) efficient transaction processing, (2) provision of adequate internal controls to safeguard assets (including data), and (3) preparation of information useful for effective decision making. Both batch and on-line processing systems are presented. A data model for each cycle is described, as are the effects of data bases on the design and functioning of an AIS. The role of information technology in providing a competitive advantage is stressed and numerous real-world examples are incorporated throughout these five chapters.

Part Four: The Systems Development Process

As explained previously, the material in Part Four has been reorganized into three chapters. Chapter 17 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 18 discusses the various development strategies used to obtain a new AIS.

Chapter 19 covers the remaining stages of the systems development life cycle (design, implementation, and operation) and emphasizes the interrelationships among the phases.

Many real-world examples are included in all three of these chapters to enable students to understand the accountant's role in the systems development process.

Instructional Supplements

Our objective in preparing this textbook has been to simplify the teaching of AIS by enabling instructors to concentrate on classroom presentation and discussion, rather than on locating, assembling, and distributing teaching materials. As further support, a number of supplementary materials, listed below, are also available free of charge to adopters of the text.

Solutions Manual prepared by authors

Instructors Manual/Test Item File (TIF) by Ashutosh Deshmukh, Pennsylvania State University at Erie

PH Custom Text Manager for Windows computerized test item file

PowerPoint Presentation by Olga Quintana, University of Miami

Companion Web Site/On-line Study Guide by Scott Summers, Brigham Young University

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We are grateful for permission received from four professional accounting organizations to use problems and unofficial solutions from their past professional examinations in this book. Thanks are extended to the American Institute of Certified Public Accountants for use of the CPA Examination materials, to the Institute of Certified Management Accountants for use of CMA Examination materials, to the Institute of Internal Auditors for use of CIA examination materials, and to the Society of Management Accountants of Canada for use of SMAC Examination materials.

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

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Marshall B. Romney
Provo, Utah
Paul John Steinbart
Tempe, Arizona

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