Seventh Edition

ACCOUNTING INFORMATION SYSTEMS

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SEVENTH EDITION

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Prentice Hall
Upper Saddle River, New Jersey 07458

To Donna, Kendra, Andy, and Debbie
To Kathi and Beth Hopwood, and Pepe the rascal

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Library of Congress Cataloging-in-Publication Data

Bodnar, George H.
Accounting information systems / George H. Bodnar, William S. Hopwood.—7th ed.
p. cm.
Includes index.
ISBN 0-13-750978-2
1. Accounting—Data processing. 2. Information storage and retrieval systems—Accounting. I. Hopwood, William S. II. Title.
HF5679.B59 1998
657'.0285—dc21 97-38248
CIP

Prentice-Hall International (UK) Limited, *London*
Prentice-Hall of Australia Pty. Limited, *Sydney*
Prentice-Hall Canada, Inc., *Toronto*
Prentice-Hall Hispanoamericana, S.A., *Mexico*
Prentice-Hall of India Private Limited, *New Delhi*
Prentice-Hall of Japan, Inc., *Tokyo*
Simon & Schuster Asia Pte. Ltd., *Singapore*
Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

Preface

The seventh edition of *Accounting Information Systems* is suitable for courses at either the undergraduate or graduate level. The text's emphasis on transaction cycles and internal controls makes it ideal for courses taken at the sophomore or junior level as preparation for the auditing course.

The seventh edition stresses information, communication, and networking technology applied within the context of transaction cycles and internal control structure. Transaction cycles are a conceptual approach to the study of accounting information systems. The first edition was the first text to emphasize a transaction cycle approach to the study of accounting information systems. Detailed material on business functions and internal control structure is central to the textbook's organization.

The viability of the transaction cycle approach is evident as one considers the enormous technological change that has occurred in information systems since the first edition was published in 1980. Although technical knowledge that was gained a decade ago has little current value, knowledge gained a decade ago concerning transaction cycles has increased in importance. An understanding of transaction cycles is fundamental to contemporary auditing, professional, and legal considerations relating to an organization's internal control structure. Each transaction cycle is subject to loss exposures. Management should develop detailed control objectives for each transaction cycle. Such control objectives provide a basis for analysis and audit of an organization's internal control structure as well as a basis for managing the loss exposures that are associated with an organization's dependence on information systems.

This book provides the most complete and comprehensive coverage of material relevant to transaction cycles. Transaction cycles are a specific subtopic on the Content Specification Outline for the auditing section of the Uniform CPA Examination. The text contains an extensive CPA examination problem set pertaining to transaction cycles and internal controls (both multiple-choice and essay questions), with complete answers and explanations in the *Instructor's Manual.*

This book also provides comprehensive coverage of contemporary information technology. Topics covered include communication and networking technology, EDI, EFT, paperless accounting systems, computer security, and disaster planning. The seventh edition provides revised and greatly expanded coverage of the Internet and electronic commerce. Many chapters have been updated to reflect recent technical and professional developments. Chapter 5 has been completely rewritten and reorganized to reflect the current professional definition of internal control.

OUTLINE OF THE TEXT

Each chapter contains the following instructional aids:

- Learning Objectives
- Glossary

- Ten-Question Chapter Quiz
- Review Problem

The chapters in Part I survey information technology, electronic commerce, transaction processing, transaction cycles, internal control, computer security, systems development, and reporting systems. Chapter 1 surveys the relationships between accounting and information technology and thus serves as a general introduction to the text. Chapter 2 provides detailed coverage of flowcharting and other systems documentation techniques. Chapter 3 provides a comprehensive survey of the Internet, electronic commerce, and information technology. Chapter 4 discusses the basic elements of accounting systems—journals, ledgers, charts of accounts, standard journal entries, coding systems, and records-retention requirements. Chapters 5 and 6 provide a foundation in internal controls and computer security. Principles of internal control are illustrated in Chapters 7 and 8 in terms of fundamental transaction-cycle application systems such as sales order and purchasing. Chapter 9 provides a one-chapter survey of the systems development life cycle and systems development technologies. Chapter 10 discusses accounting information systems and managerial decision making.

Part II covers contemporary information technology, with separate chapters on file processing and data management concepts (Chapter 11) and distributed information systems and electronic data interchange (Chapter 12).

Part III covers contemporary applications of information technology. Chapter 13 stresses control principles in computer-based application systems. Discussion includes paper-based batch and on-line systems, and also paperless processing systems. Chapter 14 discusses quick-response sales and manufacturing systems—state-of-the-art applications of information technology. Chapter 15 examines information technology from an EDP auditing viewpoint.

Part IV covers the systems development life cycle, with separate chapters on systems planning and analysis (Chapter 16), systems design (Chapter 17), and systems implementation, operation, and control (Chapter 18).

SUGGESTED TEACHING APPROACHES

There is no one "best" approach to teaching systems. Our text is designed to allow for any one of several approaches to be followed.

1. General coverage of information technology, transaction processing, internal controls, systems development, and reporting systems. Although the seventh edition contains 18 chapters, it is not necessary to cover all of them to deal adequately with the areas of internal controls, reporting systems, information technology, and systems development. Each of these areas is covered in a comprehensive survey chapter designed to act as stand-alone coverage for those not wishing to pursue a special emphasis. Instructors should assign Chapters 1 and 2 as a general introduction to all major topics in the book. After this, students can complete the five functional areas in five comprehensive survey chapters:

A. Chapter 3 provides a complete foundation in information technology. Topics include the Internet, electronic commerce, and hardware and software issues relating to personal computers, midrange computers, and mainframes, as well as communication networks.
B. Chapter 4 provides a summary of transaction processing and related technology.

C. Chapter 5 provides comprehensive coverage of internal controls.
D. Chapter 9 surveys the theory and practices relating to systems development.
E. Chapter 10 surveys reporting practices as they relate to accounting information systems.

Most instructors will probably want to cover Chapters 3, 4, and 5 because these chapters are essential for auditing. Many instructors will also want to cover systems development, and Chapter 9 will allow them to provide their students with a one-chapter survey of this important area. Still other instructors will want to cover reporting practices as they relate to accounting information systems. This material is covered in Chapter 10.

The additional chapters beyond the foundation chapters give the instructor considerable flexibility in providing concentrated coverage in a particular area. Various concentrations are discussed in the following sections.

2. An emphasis on internal control and flowcharting. The seventh edition provides considerable support for this approach. The instructor can cover internal control in great detail by covering Chapter 5. Many instructors might find that no additional coverage of controls is necessary beyond this point.

The instructor can then cover Chapter 6, which provides comprehensive treatment of computer and information security. There are also two chapters (7 and 8) that deal specifically with internal accounting controls for revenue, expenditure, production, and finance cycle application systems. These chapters contain extensive flowcharts and case materials. In addition, there is a rich set of CPA exam questions included in the problem materials.

3. An emphasis on systems development. Part IV provides a comprehensive treatment of systems development. However, the concepts of the life cycle, structured analysis, and even logical data flow diagrams are introduced in Chapters 1 and 2. Again, this allows the instructor great flexibility, because many will find the introductory material to provide adequate coverage of systems development. However, those desiring more in-depth coverage of the systems life cycle have the option of choosing this focus right from the beginning.

Chapter 9 provides a complete introduction to systems development and discusses all major phases of the life cycle, emphasizing structured development, modularity, and documentation. This chapter should be adequate for a comprehensive introduction to the topic.

Those who wish to cover the systems life cycle and systems development more thoroughly may want to include Chapters 16 through 18, which examine systems planning, analysis, design, implementation, operation, evaluation, control, and auditing. Some instructors may wish to cover only one or several of these topics.

All chapters relating to systems development and the life cycle include a wide variety of questions, problems, and cases.

4. An emphasis on information technology. Six chapters are devoted to computer-related technology and computer-based systems. Chapter 3 provides the basic foundation in information technology. Chapters 11 and 12 provide more advanced topics, including database systems and distributed information systems. Chapter 13 covers the fundamental procedures for transaction processing common to all automated systems. Chapter 14 deals with completely paperless accounting systems that rely on electronic data interchange, source data automa-

tion, and specialized networking technology. Chapter 15 deals with auditing computerized systems.

5. An emphasis on decision support and reporting. The introductory chapters treat the entire information system from the decision support view. Managers and other recipients of information are treated as more than just receivers of the system's output. They are integral components of the system itself. This is supported by Chapter 10, which provides a thorough coverage of reporting systems from the standpoint of decision support.

Part IV, relating to systems development, treats the user as the reason for the system's existence. Decision analytic techniques such as decision flow diagrams and input/output matrices are used extensively.

G. H. B.
W. S. H.

Contents

CHAPTER 1

Accounting Information Systems: An Overview

LEARNING OBJECTIVES

Careful study of this chapter will enable you to:

- Understand the related concepts of transaction cycles and internal control structure.
- Describe the organizational structure of the information system function in organizations.
- Discuss applications of information technology in organizations.
- Characterize the development of information systems.

ACCOUNTING INFORMATION SYSTEMS AND BUSINESS ORGANIZATIONS

Organizations depend on information systems in order to stay competitive. Information is just as much a resource as plant and equipment. Productivity, which is crucial to staying competitive, can be increased through better information systems. Accounting, as an information system, identifies, collects, processes, and communicates economic information about an entity to a wide variety of people. Information is useful data organized such that correct decisions can be based on it. A system is a collection of resources related such that certain objectives can be achieved.

An **accounting information system (AIS)** is a collection of resources, such as people and equipment, designed to transform financial and other data into information. This information is communicated to a wide variety of decision makers. Accounting information systems perform this transformation whether they are essentially manual systems or thoroughly computerized.

Information and Decisions

An organization is a collection of decision-making units that exist to pursue objectives. As a system, every organization accepts inputs and transforms them into outputs that take the form of products and services. A manufacturing firm transforms raw material, labor, and other scarce resource inputs into tangible items, such as furniture, that are subsequently sold in pursuit of the goal of profit. A university accepts a variety of inputs, such as faculty labor and student time, and