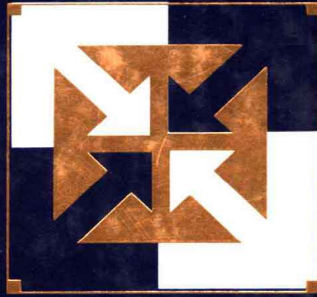


J. L. Boockholdt



F O U R T H E D I T I O N

ACCOUNTING
INFORMATION
SYSTEMS

FOURTH EDITION

ACCOUNTING INFORMATION SYSTEMS

TRANSACTION PROCESSING AND CONTROLS

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PREFACE

To the Student

Today, an accounting graduate who lacks an understanding of computers begins a career with a major handicap. Computer-based accounting systems have taken over the routine processes of summarizing and processing accounting information. Accountants now function as the designers, controllers, managers, and users of these systems. Your chances of career success are greater if you understand how to function in these capacities.

Why Study This Text

This text is intended to help you gain the knowledge you need. It is the result of many years' experience both in practical accounting and in university-level teaching. Much of the material is not covered in other courses in your business curriculum, so you should master it now.

Previous students' responses to this material have been favorable. They consistently say that "this is what we need to know about how accounting is done in the real world." By the end of this course, you will understand the relevance of an accounting information systems course to your own career.

Objectives of the Text

This text does not simply repeat material covered in courses in management, computer science, or management information systems. It identifies the distinct information systems knowledge required by accountants, and incorporates accurate, *understandable, thoroughly tested material that addresses those specific needs*. It recognizes how you, as an accounting graduate, will use your systems knowledge.

Accounting Information Systems prepares you for three types of accounting careers. As a *management accountant*, you will use information systems and will participate in project teams that develop them. As an *auditor*, you will evaluate accounting system controls and examine system outputs. As a *consultant*, you will design and implement new accounting systems. In each career, you work

with systems using both older technologies and those implementing newer, state-of-the-art methods. Perhaps you do not yet know which direction your accounting career path will follow. With this text, your AIS course will prepare you for any of them.

To the Instructor

As an instructor in accounting information systems, you have a difficult job. You must structure your AIS course in an environment characterized by:

- *Changing technology.* The methods for implementing accounting procedures change yearly. And unlike your colleagues teaching tax, financial accounting, or auditing, you have no authoritative organization to inform you of these changes.
- *Changing students.* The students you meet each term are more computer literate than those you taught in the previous one. More knowledgeable students means you cannot afford to rely on teaching materials that soon become obsolete.
- *Inaccurate perceptions.* Many students feel that AIS is not a “real” accounting course but merely another course in management, MIS, or computer science. You must establish the relevance of your AIS course to their career goals.

The fourth edition of *Accounting Information Systems: Transaction Processing and Controls* is written with these problems in mind. It emphasizes systems as an accounting discipline and yet minimizes the opportunity for technological obsolescence.

Using the Text

This text is intended for both undergraduate and graduate AIS classes. It assumes the students have taken one-term introductory-level courses in accounting and in computers. If you teach an undergraduate AIS course, you will probably omit some of the chapters. In a graduate class, you can proceed at a more rapid pace and may want to cover the entire book. In either case, you can adapt its contents to the needs of your students.

Key Features

The fourth edition retains the features that contributed to the popularity of the preceding ones. These include:

Accounting Emphasis Throughout. The book begins by providing a systems perspective on some traditional accounting topics. The technical chapters use accounting applications as examples. The chapters on system development emphasize the role of auditors and accountants.

Modular Organization. The text is adaptable to the needs of your institution, yet it is not so fragmented that planning your course becomes difficult. The suggested sequence of chapters on page x will help you in preparing a syllabus that reflects your personal preferences regarding course content.

Exercises and Real-World Cases. Each chapter contains a variety of questions, exercises, and cases. These are sequenced by difficulty, and incorporate many questions from past professional exams. Each chapter ends with one or more real-world cases illustrating the major concepts presented in the chapter.

Technological Completeness. Because accountants work with both old and new systems, accounting students must learn older technologies as well as state-of-the-art processing methods. This text shows how accounting transactions are processed using manual, batch processing, and on-line real-time systems. Your students will have the background to understand any system they see in practice.

Improvements in the fourth edition include:

Updated Technology. This edition contains added material on the accounting implications of recent technological changes. These include client-server computing and in-depth explanation of electronic data interchange.

Expanded End-of-Chapter Materials. The breadth and variety of exercises and cases were distinguishing features of the previous editions. This edition includes additional real-world cases that describe computer-integrated manufacturing, client-server computing, electronic data interchange, reengineering, and bar coding. It contains additional continuing cases that each cover two or more chapters. The *Your Company Case* allows students to design and develop a simple system for a company of their choice.

Updated Discussion of System Design. This edition uses CASE tools as illustrations, and discusses rapid application development, user interface design, and object-oriented methodologies. It also introduces data base design methods, enabling you to teach your AIS course from this approach.

Updated Discussion of Internal Control. The internal control chapter covers the material from the perspective of the report of the Committee of Sponsoring Organizations (COSO). Since this will become the perspective adopted by auditing standards, the text will prepare your students for future professional exams. An appendix to this discussion illustrates the cost-benefit analysis of internal controls.

Improved Writing Style and Pedagogy. This edition incorporates many comments from adopters and reviewers of the previous ones. Their suggestions make the text easier for your students to read and for you to use.

Organization

The text contains five major parts. Incorporating selected chapters from each part allows you to adapt the text to your specific needs. A suggested chapter sequence diagram on the next page shows you how to do this.

Accounting and Systems Concepts. Chapters 1 and 2 provide a systems perspective on financial and managerial accounting. These chapters establish to your students that they are in an accounting course—one that is relevant to their career objectives. You may, if you wish, skip these chapters and begin with Chapter 3, “Systems Concepts and Accounting.” If you teach an accounting

Suggested Sequence of Chapters

Chapter Number	Chapter Topic	Suggestions
1 ↓	Accounting Model	Cover Chapters 1–2 for a systems perspective on financial and managerial accounting.
2 ↓	Managerial Accounting Systems	
3 ↓		
4 ↓	Systems Concepts	You may begin with Chapter 3 and cover Chapter 16 here.
5 → 6 → ↓	Systems Tools	Cover the tools you will use in your class.
7 ↓	System Development Methodologies	Cover Chapters 6–8 for a system development emphasis.
8 ← ↓		
9 ← 10 → 11 → ↓	Computer Hardware and Software	
12 → ↓	Data Storage and Processing	A summary of material from other courses. Cover Chapters 11 and/or 12 for a technical emphasis.
13 ← 14 ← ↓	Internal Control Structure	Chapters 13–14 contain basic knowledge for all accountants.
15 ↓	System Controls	
→ → ↓		
16 ↓	Data Security and Integrity	Cover Chapter 15 for a control emphasis.
17 ↓		
18 ↓		
19 ← ↓		Cover Chapters 17–20 to emphasize transaction cycles.
20 ← 19 ← ↓	Transaction Cycles	

software package in your course, you may wish to cover Chapter 16, “Accounting Transaction Cycles,” immediately after Chapter 3. This provides your students with a theoretical basis for understanding what the package does. In Chapter 4, “Systems Tools,” you can cover only those techniques that are important for your students. *Developing Accounting Systems.* Chapter 5 provides an overview of system development and can be covered either early or late in the school term. Chapters 6 through 8 emphasize system design and describe the development process in detail. Early coverage of this material allows you to assign a major project, such as the *Your Company Project*, to your students. If you wish, you may omit Chapters 6 through 8 without loss of continuity.

Technology of Accounting Systems. Chapter 9 reviews basic material on hardware and software, and discusses state-of-the-art topics such as expert systems, electronic data interchange, fourth-generation languages, and computer networks. Chapter 10

contains an overview of data storage and processing methods that is basic to much of the later material. Chapters 11 and 12 cover these topics in more detail; either chapter can be omitted without loss of continuity. Chapter 11 describes traditional data file systems. Chapter 12 covers data base management systems, explains data modeling, and describes the use of entity-relationship diagrams.

Controls. Chapter 13, "Internal Control Structure," describes the subject from the viewpoint of the COSO report and of future AICPA pronouncements. Its appendix illustrates the cost-benefit analysis of internal controls. Chapter 14 provides detailed coverage of controls in computerized systems. Data security and integrity are the focus of Chapter 15, which discusses the fraud triangle, the impact of advanced technologies, and uses computer-related crimes to illustrate the results of security weaknesses. This chapter also describes how auditors evaluate security and integrity—allowing you to cover relevant topics from EDP auditing without assuming that your students have prior auditing knowledge.

Processing Accounting Transactions. Chapter 16 provides an overview of transaction cycles. The remaining chapters, 17 through 20, contain in-depth coverage of transaction processing systems, organized by cycle. Late coverage of this material ensures that by the time you get to these chapters, your students know enough about technology and controls to understand how the systems work. These chapters also provide a thorough introduction to the auditing course, which many students subsequently take.

Supplements

The *Instructor's Lecture Guide* contains a *lecture outline* for each chapter. You can make transparencies from them to use in your lectures. The guide also contains a *transparency master* for all illustrations referred to in the lecture outlines.

Also in the *Instructor's Lecture Guide* is an excellent test bank prepared by Professor David Murphy of Oklahoma State University. It contains an expanded selection of multiple-choice and true/false questions and problems. You may obtain it from Irwin in diskette form by requesting their Computest 4 feature. Computest 4 is the most recent version of Irwin's test-generation software. It includes advanced features such as allowing the instructor to add and edit questions on-line, save and reload tests, create up to 99 versions of each test, attach graphics to questions, import and export ASCII files, and select questions based on type, level of difficulty, or keyword. The program allows password protection of saved tests and question databases, and is networkable.

Those instructors without access to a microcomputer, or who prefer not to use one to create tests, can use Irwin's Teletest service. The service provides a toll-free number for instructors to call in a test request. Tests and answer keys are printed on a laser printer according to the specifications provided. Requests are completed the same day they are called in and shipped by first-class mail. Computest 4 and Teletest are provided exclusively by Irwin to make your teaching job easier.

The *Solutions Manual* is complete and incorporates the suggested solutions to professional exam questions. It is organized so that you can easily remove the solution to an individual exercise or case.

Acknowledgments

Permission has been received from the Institute of Certified Management Accountants of the Institute of Management Accountants to use questions and unofficial answers from past CMA examinations. We are also indebted to the American Institute of Certified Public Accountants and the Institute of Internal Auditors for allowing us to adapt and use material from past CPA and CIA examinations.

Many students made innumerable suggestions and criticisms that greatly improved the book. Thanks are due to Bill Hart for his suggestions concerning some of the technical descriptions. Probably the most appreciation is due to the reviewers who critiqued both editions of the book. Each of you, as you read the text, can identify your personal contributions to it. The reviewers were:

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Thanks very, very much to each of you.

Jim Boockholdt

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