ACCOUNTING INFORMATION

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THIRD EDITION

ACCOUNTING AND INFORMATION SYSTEMS

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PREFACE

Accountants interact with information systems of business and governmental enterprises as users, evaluators, and designers. They **use** information systems when they retrieve information to prepare reports for managers and financial statements for external parties. They **evaluate** information systems when they review internal controls during audits. They **design** information systems when they devise charts of accounts or propose the addition of specific controls within transaction processing systems.

This textbook is primarily intended for advanced undergraduates or graduates who will soon be assuming the responsibilities of professional accountants. Most of these students are currently majoring in accounting, but some may be majoring in computer information systems or another business discipline and/or minoring in accounting. Presumably the students using this textbook will have completed courses in (1) elementary financial and managerial accounting and (2) fundamentals of computer hardware, software, and applications.

The purpose of this textbook is to provide students with a body of knowledge that includes

1. Broad awareness of the concepts of information systems, especially those pertaining to systems, information, managerial decision making, organizational structures, accounting models, and computer technology.
2. Familiarity with the basic components of information systems, such as inputs, outputs, processing procedures, files, and controls.
3. Introduction to a wide range of systems analysis and design techniques, with particular attention to systems flowcharts.
4. Understanding of the steps involved in comprehensive systems development, as

well as the ability to apply the appropriate techniques in conducting a reasonably complex systems development project.

In compiling the body of knowledge from which the aforementioned results should accrue, I have drawn heavily upon such authoritative sources as the 1986 *Report of the American Accounting Association Committee on Contemporary Approaches to Teaching Accounting Information Systems*. Since the discussion is reasonably comprehensive with respect to all topics, the entire contents cannot be absorbed during a single semester or quarter. Thus, certain topics may be omitted or skimmed, according to the individual instructor's inclinations. Alternatively, the textbook can serve as the primary source for a two-course sequence.

This third edition reflects several significant changes:

1. The major transaction cycles have been moved from study cases into five chapters. By placing this material in separate chapters and by inserting the chapters into the middle portion of the book (Part III), the transaction cycles are accorded the prominence that they merit.
2. Less emphasis is given to manual processing systems in favor of greater attention to computer-based systems of all sizes and architectures. For instance, the initial coverage of computer technology has been moved from Chapter 7 in the second edition to Chapter 5 in this edition.
3. The concepts related to control systems have been more fully and logically developed (in Chapter 6) prior to the discussion of specific controls (in Chapter 9 and the chapters involving transaction cycles).
4. The components of a computer-based information system are grouped into a series of chapters that immediately precede those pertaining to the transaction cycles. Thus, the components described (documents, screens, processing procedures, files, controls, reports) can be illustrated while the material is fresh in students' minds.
5. The specialized and more advanced topics, such as data base systems and communications networks, are grouped in Part IV. Each of these chapters represents a separate module that can be flexibly assigned at any point during the course.
6. The systems development chapters are grouped into still another part (Part V) following the transaction cycle chapters. These chapters may likewise be assigned as desired during the course.
7. The analysis and design chapters within the systems development sequence have been expanded to include structured techniques and user-developed applications.
8. Additional comprehensive cases have been included in Part VI for use as assigned term projects on system design. Most of these cases provide practice in developing transaction processing systems through the design phase of the systems development cycle. However, one of the cases provides practice in applying spreadsheet and data base packages on microcomputers.

Each chapter includes the following learning aids:

1. A brief introductory statement of objectives and a concluding summary.
2. A variety of figures and diagrams to clarify the concepts and techniques described.
3. Review questions, discussion questions, and one or two problems that review the important points covered in the chapter.
4. A range of problems, of varying difficulty, that can be assigned as homework or can be the basis of class discussions. Certain

of the problems, marked by the figure of a microcomputer, are suited for use in the application of a microcomputer-based software package.

5. A list of suggested readings.

Two major support systems are available to contribute to the learning experience:

1. A **Study Guide** (prepared by Severin Grabski of Michigan State University) contains clear summaries, glossaries, and exercises relating to covered topics in all of the chapters.
2. A **Laboratory Manual** (prepared by James P. Borden of Villanova University and W. Ken Harmon of Arizona State University) provides microcomputer-based assignment problems and cases that familiarize students with meaningful applications of electronic spreadsheets and data base management systems. Included are both a student workbook and a template disk.

An **Instructor's Manual** is also available from the publisher. It contains chapter outlines, suggested answers to discussion questions, solutions to assignment problems and comprehensive cases, a test bank of numerous multiple-choice questions, and figures from which to make transparencies.

I wish to acknowledge the very helpful suggestions made by reviewers James P. Borden of Villanova University, Robert Bromley of Central Michigan University, John S. Chandler of the University of Illinois, Severin Grabski of Michigan State University, Cynthia Heagy of the University of Houston, Donald Jones of the University of Utah, James Mandel of Rice University, and Gemma Welsch of De Paul University. In addition, numerous students have provided considerable assistance in the class testing of new problems and cases that appear in this edition. Furthermore, I appreciate the continuing assistance of my Wiley editor, Karen Hawkins, as well as the diligent craftsmanship of copy editor Judy Burke of Falletta Associates, Inc.

Four professional accounting groups have graciously permitted the use of problem materials from past professional examinations: the American Institute of Certified Public Accountants, the Institute of Management Accounting of the National Association of Accountants, the Institute of Internal Auditors, and the Society of Management Accountants of Canada.

In addition to my graditude to these organizations and individuals, I extend my thanks to my family for its support. Any errors and omissions (which I hope number fewer than in past editions) must, as always, rest on my doorstep.

Joseph W. Wilkinson
Tempe, Arizona

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Part I

BASIC CONCEPTS AND FUNDAMENTALS

Accounting and information systems rest on a foundation of varied concepts. The six chapters in this part set the stage for the study of information systems by surveying selected concepts in the areas of accounting, information, systems, communication, decision making, organizational structures, and controls.

Certain fundamental knowledge is also needed before we explore specific information systems. Since most present-day information systems are computerized, we look at basic aspects of computer technology. Since accounting information systems are greatly affected by controls, we examine internal control systems. In addition, we explore the two major purposes of accounting information systems: transaction processing and information processing.

CHAPTER OBJECTIVES

After studying this chapter, you should be able to do the following:

Define an information system.

Describe the characteristics that are common to all information systems.

Enumerate the several tasks or activities performed by all information systems.

Survey the major phases that make up an information-system development cycle.

Describe the nature and scope of accounting information systems.

Identify the roles of accountants and their relationships to information systems.

Chapter 1

OVERVIEW OF INFORMATION SYSTEMS AND ACCOUNTING

Information is a vital commodity to all enterprises. How is it generated and provided to various users, such as managers, customers, and creditors? How do accountants help to provide and evaluate information, as well as make effective use of information? Questions such as these are discussed in this and the remaining chapters of this textbook.

What Is an Information System?

In order to understand what an information system is, we need to define the terms *information* and *system*.

Information

The "product" of the information system is generated information. Information should be distinguished from data. **Data** are raw facts, figures, and even symbols. Together they comprise the inputs to an information system. In contrast, **information** consists of data that have been transformed and made more valuable by processing. Ideally, information is knowledge that is meaningful and useful for achieving objectives. Figure 1-1 shows the relationship of data to information.

System

A **system** is an integrated framework that has one or more objectives. It coordi-