

AIS Fundamentals

1. Role and Purpose of Accounting Information Systems
2. Transaction Processing in the AIS
3. Internal Controls
4. Management Concepts
5. Information Systems Concepts

The ideas in these chapters are fundamental to the study of accounting information systems, regardless of approach or philosophy. They define the nature of accounting information systems, review the accounting cycle, and provide a firm foundation in internal controls. They also begin developing the idea that accounting information systems (AIS) is a multidisciplinary field by examining relevant concepts from both management and information systems. While these chapters present the topics at a basic level, the material is reinforced and applied in various contexts throughout the rest of the text.

Chapter One

Role and Purpose of Accounting Information Systems

AIS in the Business World

Starbucks

If you're like the students in my accounting information systems courses, you've probably purchased coffee and snacks at a local Starbucks. Starbucks is a vast worldwide operation; according to the corporate Web site (www.starbucks.com), it has more than 18,000 stores in 62 countries. Its stock is publicly traded under the symbol SBUX.

Through the Web site, prospective owners can apply to open a licensed Starbucks store. Menus include everything from traditional coffee to more exotic offerings like iced cinnamon dolce latte; various holidays have their own special offerings, too.

To create value for its stakeholders, a typical Starbucks retail store would engage in activities like:

1. Purchasing capital equipment.
2. Buying inventory.
3. Making beverages on demand.
4. Selling those beverages to customers.
5. Paying employees.
6. Reporting financial results to the corporate office.

To accomplish those activities, Starbucks needs an accounting information system.

The purpose of this text is to help you understand how companies like Starbucks account for their various transactions—not just the debits and credits, but the documents, tools, and controls they use that ultimately produce general-purpose financial statements and other reports. Each chapter opens with a short vignette like this one, followed by some discussion questions to stimulate your thinking.

Discussion Questions

1. What are the essential elements of an accounting information system?
2. How do examples of those elements change for different businesses?
3. Does the presence or absence of computers and other forms of information technology determine whether or not a business has an accounting information system?

We'll explore various kinds of audits and their relationship to the AIS in Chapter 17.

You'll often hear the phrase "single, correct, deterministic responses" throughout this text—that's another way of saying there is "one right answer."

You'll find a paragraph like this one at the beginning of every chapter in the book. The enumerated items are often referred to as "learning objectives" or "expected student outcomes."

Welcome to the study of accounting information systems (AIS)! AIS is a critically important area of study for future accountants. It ties together what accounting students often see as separate, unrelated areas of accounting: financial, managerial, tax, and governmental. Additionally, AIS brings in considerations from management, finance, and information systems. Finally, a deep, fundamental comprehension of accounting information systems is a great help in the study of auditing.

Many accounting students are drawn to the discipline because of its perceived objectivity; they like solving problems that have "right answers." And your prior study of accounting may have focused on such problems. But, in practice, such problems are few and far between. And even when they exist, you won't be able to look up the right answer in a textbook or solutions manual. Problems and issues in accounting information systems seldom have single, correct, deterministic responses. So, to get you ready to confront and respond to those kinds of problems in practice, I'm including many of them in this textbook. One of this book's main purposes is to help you develop professional judgment and confidence in your ability to analyze **unstructured problems**.

Examples of structured questions with deterministic responses include the following: How much cash is in the bank at a given point in time? What are the three parts of a balance sheet? Unstructured, nondeterministic questions, on the other hand, require critical thinking. They include questions like this: What documentation tool should I use to design an AIS and/or to describe a business process? What internal controls should be implemented for a business process?

When you've finished studying this chapter, and completing the activities at its conclusion, you should be able to:

1. Define "accounting information systems."
2. Discuss why AIS is an important area of study for future accountants.
3. Compare and contrast AIS with other areas of study in accounting.
4. Explain the structure of most accounting information systems.
5. Locate and evaluate information sources on accounting information systems.
6. Describe the structure and content of the remainder of this text.

Different university accounting curricula place the AIS course differently. In some schools, AIS is the first course accounting majors take after the introductory sequence. In other programs, AIS is near the end of the required sequence. And you'll find some schools allow students discretion in the timing of AIS study. In my university, students study AIS early in their accounting education—within one or two terms of completing their introductory sequence. But this book can be used in any of the three frameworks mentioned above.

As you can probably tell already, I tend to write in a conversational tone—as if I'm talking to you. I've found students appreciate such an approach, and that it motivates them to read the text more systematically and regularly. If something in the text seems unclear, or could be stated differently to enhance your understanding, I encourage you to contact me with your thoughts. My e-mail is RLHurt@csupomona.edu. While I can't promise a response to every e-mail I receive, I can promise each one will receive serious consideration in any future edition of the text. You're also welcome to leave comments about the text on my AIS blog (www.bobhurtails.blogspot.com).

DEFINITION AND IMPORTANCE OF AIS

You've probably heard of the FASB by this time in your accounting education. It develops the rules we use to prepare financial statements. You can learn more about them at their Web site (www.fasb.org).

The test bank for this book includes some questions on the conceptual framework. If some of the terms in it are unfamiliar to you, you'll want to research them as part of studying the chapter. My AIS blog is a good place to start.

An **accounting information system** is a set of interrelated activities, documents, and technologies designed to collect data, process it, and report information to a diverse group of internal and external decision makers in organizations. AIS is an important area of study for future accountants for at least three reasons:

- Developing a strong accounting information system helps achieve some of the components of the FASB conceptual framework of accounting.
- Studying AIS helps students develop many of the core competencies suggested by the American Institute of Certified Public Accountants (AICPA).
- Acquiring knowledge about AIS helps students learn more about common business processes.

Let's take a closer look at each of the three reasons.

The Financial Accounting Standards Board (FASB) developed the **conceptual framework** in the late 1970s as a guide for the development of future accounting principles; the conceptual framework was revised and updated in 2010.

Detailed study of the conceptual framework often comprises the first part of intermediate accounting, so we won't go into great detail on it here. But, you can see a summary of it in Figure 1.1.

Reflection and Self-Assessment

1.1

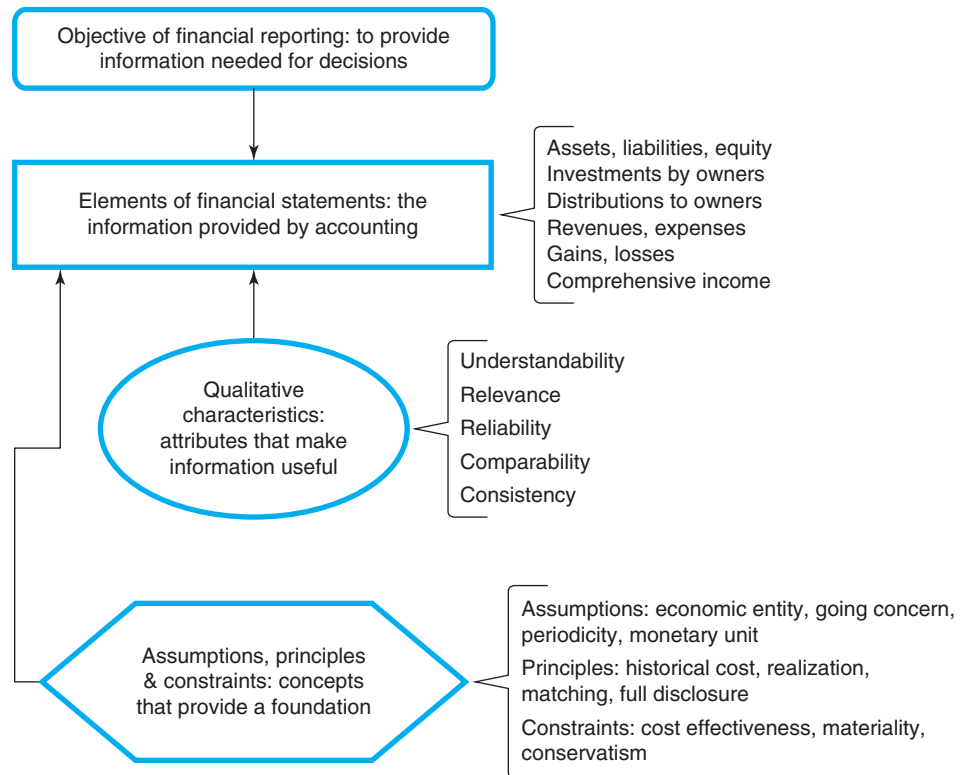
Which terms in the conceptual framework do you recognize from your previous accounting courses? Which

ones are unfamiliar? Do some research and define or give examples of at least three of the latter.

A well-designed accounting information system relates to the conceptual framework by

- *Capturing data on the elements of financial statements.* No matter what form they take or information technologies they use, accounting information systems document changes in the 10 elements of financial statements identified in the conceptual framework. Those elements are organized into four general-purpose financial statements: income statement, statement of shareholders' equity, balance sheet, and statement of cash flows.
- *Transforming those data into relevant and reliable information.* Well-designed accounting information systems can also gather data beyond the elements of financial statements. Items like sales by geographic area, customer characteristics and transaction histories, demand for inventory items, and vendor quality ratings can improve decision making by enhancing the elements of relevance: predictive value, feedback value, and timeliness. Additionally, internal controls in the accounting information system promote reliability (verifiability, neutrality, and representational faithfulness), as you'll see in later chapters.
- *Recognizing and adapting to the cost–benefit constraint.* Accounting information systems are all about choices and trade-offs: What data should I capture? What information technologies should I use to process them? What information should I report? Looking at the conceptual framework diagram in Figure 1.1, you'll see “cost-effectiveness” as one

FIGURE 1.1
FASB Conceptual Framework



of the constraints on accounting information. Cost-effectiveness reminds us that we can't design the world's perfect accounting information system. Even in the best organizations with the most effective systems, you'll find managers who want more data or different data, who question the system's integrity, and/or who want business processes to be structured differently. As a designer, implementer, and interpreter of accounting information systems, always keep in mind that the benefit of having data, processes, and information must outweigh the costs of obtaining or implementing them. Those costs and benefits might be economic, behavioral, psychological, or financial, but they should always be considered.

The AICPA (www.aicpa.org) has suggested a very comprehensive list of competencies most accounting professionals will need—whether those professionals are practicing in public accounting or some other area. The **AICPA core competencies** are divided into three broad groups; here are some that are particularly related to accounting information systems (AICPA, 2013):

- Broad business perspective competencies
 - *Strategic/critical thinking.* “Critical thinking encompasses the ability to link data, knowledge and insight together from various disciplines to provide information for decision making. Being in tune with the ‘big picture’ perspective is a necessary component for success.”
 - *Resource management.* “Individuals entering the accounting profession should be able to apply management and human resources development theories to human resource issues and organizational problems.”

- Functional competencies
 - *Risk analysis.* “The understanding of business risk . . . affects how business strategy is created and implemented.”
 - *Research.* “The individual preparing to enter the accounting profession needs to have strong research skills to access relevant guidance or other information, understand it, and apply it.”
- Personal competencies
 - *Problem solving and decision making.* “Accounting professionals are often asked to discern the true nature of a situation and then determine the principles and techniques needed to solve problems or make judgments. Thus, individuals entering the accounting profession should display effective problem solving and decision-making skills, good insight, and judgment, as well as innovative and creative thinking.”
 - *Communication.* “Accounting professionals are called upon to communicate financial and non-financial information so that it is understood by individuals with diverse capabilities and interests. Individuals entering the accounting profession should have the skills necessary to give and exchange information within a meaningful context and with appropriate delivery. They should have the ability to listen, deliver powerful presentations and produce examples of effective business writing.”

Finally, AIS study will also help you understand **business processes** from an accounting point of view; business processes are a very common way of organizing AIS courses. We’ll take an in-depth look at various business processes in Part Four of the text; for now, though, here’s a brief overview of a few:

- *Sales/collection process.* This process comprises activities from taking a customer’s order to collecting payment from the customer. It involves documents such as a remittance advice and customer invoice; common transactions include sales on account and collecting cash on account.
- *Acquisition/payment process.* This process can apply to just about any resource an organization needs, but is most commonly discussed in the context of inventory. In our later discussions of the acquisition/payment process, you’ll learn about documents like purchase orders and receiving reports. Common transactions include purchasing inventory on account and paying vendor invoices.
- *Conversion process.* When an organization manufactures a product, it has a conversion process. You may recall from previous study that product costs come in three groups: direct material, direct labor, and overhead. In the conversion process, organizations combine these three resources to create a finished product; they then sell that product through their sales/collection process.
- *Financing process.* Virtually no organization can obtain all the cash it needs to operate simply by selling goods and services; most periodically need to acquire external financing in the form of debt (such as bonds payable) and equity (such as capital stock). The financing process deals with that aspect of the company.
- *Human resources process.* The human resource process encompasses activities such as hiring new employees, evaluating employee performance, paying employees, and managing their separation from the company. This process is heavily regulated by federal and state law.

I hope this section has demonstrated to you that AIS is an important area of study, worthy of your best attention and effort. Next, let’s think about the structure of a “typical” accounting information system.

AIS STRUCTURE

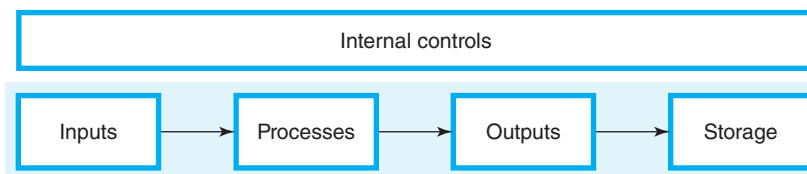
I often refer to “organizations” rather than “companies” or “businesses.” That’s because every organization needs an AIS, but not all organizations are “businesses.”

An accounting information system is a set of interrelated activities, documents, and technologies designed to collect data, process them, and report information to a diverse group of internal and external decision makers in organizations. Most accounting information systems comprise five parts, as shown in Figure 1.2.

Each part of the **AIS structure** plays a vital role in its overall efficiency and effectiveness. And each part is filled with the kinds of design choices and cost–benefit trade-offs mentioned earlier. Consider the questions below to illustrate them:

1. *Inputs.* Inputs to an AIS might include documents such as sales invoices and purchase orders. Accountants would also need to ask questions like these to design and/or audit the system:
 - a. What kinds of source documents will system users need?
 - b. Should the source documents be paper-based, electronic, or both?
 - c. How many copies of each source document will be required?
 - d. What information should the documents contain?
2. *Processes.* Processing tools can include computers and satellites; however, please keep in mind that an AIS does not necessarily have to use information technology (IT). In smaller organizations, accounting tasks may still be completed with paper and pen. Here are some questions you might ask about processing tools:
 - a. Which processing tools should the AIS use?
 - b. Should the tools be manual, computer-based, or both?
 - c. If computer-based tools are used in the AIS, which software and hardware packages should be implemented?
3. *Outputs.* System outputs for most organizations would include the general-purpose financial statements as well as internal reports such as variance analyses. Other considerations include:
 - a. Beyond the general-purpose financial statements, what other reports will managers and system users need?
 - b. How should the AIS be designed to facilitate their production?
4. *Storage.* Data in an accounting information system could be stored in paper form, electronically, or a mix of both. If the data are stored electronically, they are often broken down into three broad file types. Master files typically contain data about “things,” such as inventory, customers, and vendors. Transaction files usually focus on “activities,” such as earning revenue and incurring expenses. Junction files link other files together, as you’ll see later in the text. Relevant questions about storage include:
 - a. How should data be stored? On paper? Electronically? Both?
 - b. Where should data be stored? Locally? Remotely? Both?
 - c. How long should data be stored?
 - d. Under what conditions can/should data be destroyed?

FIGURE 1.2
Generic AIS
Structure



5. *Internal controls.* We'll explore internal controls in much greater depth later in the text. Most organizations employ internal controls such as daily backup of data and separation of duties (custody, authority, and recordkeeping) to maintain control over specific assets. Other questions might be:

- a. What controls are necessary to promote information integrity in the AIS?
- b. What behavioral effects are the controls likely to have?
- c. Are the controls cost-effective?

The preceding questions don't have clear-cut, easy, simplistic answers. They do have "common" or "usual" answers, and that's part of what you'll learn throughout this course. But the rest of what you'll learn may be even more important. You'll learn how to make choices and judgments within the context of accounting information systems—choices and judgments that may not be perfect but that you'll be able to explain, along with their costs and benefits. Additionally, you'll be able to critique and evaluate the choices made by others. At first blush, that kind of thinking may seem daunting. Try to set aside your anxiety so you can think critically. Recognize that even seasoned professionals have to discuss and debate ideas to solve problems.

Reflection and Self-Assessment

1.2

How do you feel about starting a course that doesn't have clear-cut, easy, simplistic answers? What study

tools and techniques could you use to develop your ability to respond to open-ended questions?

So, to move you forward toward that goal, let's examine places (other than this book) where you can find information about AIS, as well as some guidelines for evaluating that information.

AIS INFORMATION SOURCES AND INFORMATION LITERACY CONCEPTS

If you're like some of my students, you may have heard about information literacy in a philosophy or English class. So, you may be wondering why we're talking about it in AIS. Here's the connection: Accounting information systems is a rapidly changing field; with the possible exception of forensic accounting and fraud examination, it may be the newest field of study for accounting students. And, to a greater degree than with other areas of accounting, practitioners and professors alike take different approaches to it. So, throughout the course, you'll often be called upon to do research as part of answering questions/responding to problems/preparing projects.

When your professor assigns a research or current article project, where is the first place you look? If you're like most accounting students, you answered, "the Internet." And, since AIS is such a "hot topic" in today's business world, you're bound to find tons of information on it there. But you're probably not surprised to learn that not all information on the Internet is valid, trustworthy, or reliable. In other words, you can't necessarily believe everything you read on the Internet. You should evaluate information critically for yourself, rather than believe everything you read on the Internet.

According to [Dictionary.com](https://www.dictionary.com), "validity" refers to something that is well grounded or something that is binding.

Although validity doesn't appear formally in the conceptual framework, it is definitely implied—particularly by the qualitative characteristics of accounting information.

Society is full of urban legends that may or may not be true. For example, some people believe the Earth is flat. Others believe that the first U.S. landing on the moon was nothing more than a hoax. Choose one of those

urban legends or some other you prefer. Find an information source that attempts to assess its validity, and comment on the believability of the source.

Depending on the kinds of assignments your instructor gives you this term, you may find yourself doing a lot of research for this class. The point of this section of the chapter is to give you tools to evaluate the information you find during your research—to think about it critically, rather than assuming it’s all “true” on its face.

If you’d like to learn more about information competence in general and assess the degree to which you have it, I encourage you to visit the American Association of School Librarians’ Web site on the topic: www.ala.org/ala/aasl/aaslproftools/informationpower/informationliteracy.htm.

Your university library probably has numerous materials on information literacy as well; most librarians are well versed in the topic and eager to share their knowledge with students.

You’ll also find a lot of resources about this important topic at www.calstate.edu/LS/Tutorials.shtml.

Evaluating information reliability, whether on the Internet or from other sources, comes under the broad heading of “information literacy” or “information competence.” For ease of discussion, I’ll use the term **information competence** (IC) here, but you’re likely to hear both terms in conversation about this topic. IC is much, much broader than the evaluation of information reliability, but we’ll limit our discussion here to that aspect of it. According to the California State University’s Work Group on Information Competence (Curzon, 1995), it is “the ability to find, evaluate, use, and communicate information in all of its various formats.”

Why is information competence important in the study of accounting information systems? AIS is full of emerging concepts, ideas, and issues. Answers to the problems you’ll confront in this class are not always found in textbooks but may require significant research. Evaluating the validity of sources you encounter in that research is a critical skill for reaching reliable conclusions and finding genuinely valuable information.

Many sources can assist you in evaluating information, but I’ve found the checklist developed by the University of Maryland’s University College (UMUC) to be especially helpful. You can find the checklist at <http://umuc.edu/library/guides/evaluate.html>. The UMUC site presents five evaluation criteria, each with several specific questions you can use in your research. The five criteria are:

1. **Authority.** Can you tell who created the information? The purpose of its creation? Can you contact the author or creating organization, or otherwise establish their credentials? For example, authors published in *Strategic Finance* (the monthly publication of the Institute of Management Accountants) are required to provide background and contact information as part of their articles. Reading that information carefully can help you make decisions about authority as you evaluate information for AIS course projects.
2. **Accuracy.** Does the site/article/source tell you where the information came from? Does it contain any obvious errors of fact or misleading graphs, charts, or statistics? Consider, for instance, information presented in a graph. Differences can be exaggerated simply by changing the graph’s scaling. Consider Figure 1.3 as an illustration of this point. Notice how the differences appear more pronounced in graph (a) than in graph (b), although the only difference between the two graphs is the scaling on the vertical axis.
3. **Objectivity.** Does the information contain advertising? Is it available freely? By this time in your accounting education, you have probably heard of the Sarbanes-Oxley Act of 2002. We’ll explore the details of SOX later in the text, but consider www.soxlaw.com in terms of this information criterion. Figure 1.4 gives you a partial screen shot of the Web site. Although I’ve found the information there to be objective and valuable in learning about SOX, notice the “Contact Us” link on the left side. Clicking that link reveals the name of the consulting firm that compiled the information, offering its services to help companies comply with SOX.
4. **Currency.** Can you tell when the source was created/written? When was the last time it was updated? Does the page contain any “dead links”? Earlier in this chapter, I introduced you to the AICPA core competency framework. In researching this chapter, I came

FIGURE 1.3
Data Displays

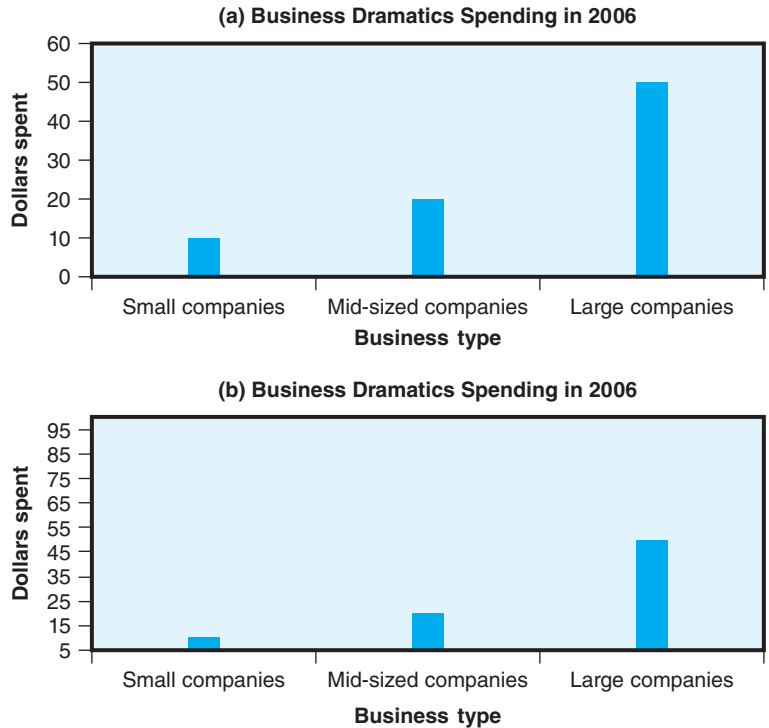
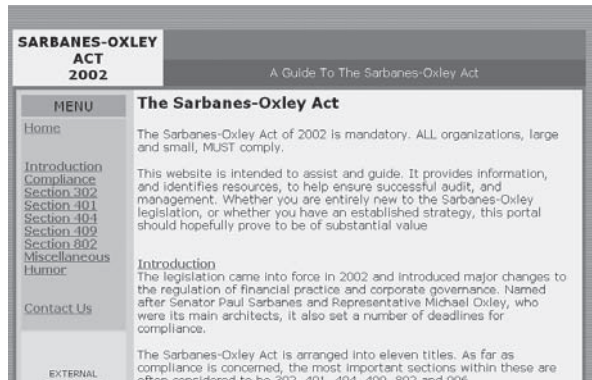


FIGURE 1.4
Sarbanes-Oxley
Information Web
Site, www.soxlaw.com



across a *Journal of Accountancy* article written by Paula Thomas in October 2000 that discussed the framework. Is that article current enough to be valuable as an information source? Probably so, as the competencies identified there are still as important today as they were when they were first developed. On the other hand, a discussion of the FASB conceptual framework dated that same month is likely not current enough; the framework was revised in 2010.

5. *Coverage.* Is the source still under construction? Does it cover the subject with sufficient depth? In some sense, all Web sites are always “under construction.” In most cases, they have to be updated periodically to stay current and relevant. But if a page is perpetually “under construction,” you should consider whether it would be a valuable, trusted source for research and problem solving.

I encourage you to point your Web browser to the University of Maryland Web site and see the full list of questions and other guidelines there; as a reminder, you'll find it at <http://umuc.edu/library/guides/evaluate.html>.

Reflection and Self-Assessment

1.4

Use your university's library to find an article reasonably related to accounting. Evaluate the article based

on the five criteria listed previously, or some other set your instructor prefers.

Again: how is the information you just read related to your study of accounting information systems? It's related in at least two important ways: (a) it gives you some guidance about the kinds of information you may need to consult in doing research and responding to problems throughout the text and (b) it gives you a set of criteria you can use to evaluate that information, rather than treating all information you find as the full and absolute "truth."

CRITICAL THINKING

By this time in your university education, you've probably heard at least one professor talk about the need to "think critically." But what exactly does that mean? Dictionary.com defines critical thinking as "the mental process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information to reach an answer or conclusion." And the Critical Thinking Community (www.criticalthinking.org) says that someone who thinks critically does five things:

- Raises vital questions and problems, formulating them clearly and precisely.
- Gathers and assesses relevant information, using abstract ideas to interpret it effectively.
- Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards.
- Thinks open-mindedly [*sic*] within alternative systems of thought, recognizing and assessing, as needs be, their assumptions, implications, and practical consequences.
- Communicates effectively with others in figuring out solutions to complex problems.

Every area of accounting requires critical thinking; every day, accountants make judgments and respond to questions that may have more than one acceptable answer. Throughout this book, I'll often ask you to think critically so you can develop the skills you'll need to succeed in our profession; recall that critical thinking is one of the broad business perspective competencies identified in the AICPA core competency framework. To help you toward that goal, each chapter in the text will contain a section like this one. I hope that studying them will help you develop your critical-thinking skills.

For this chapter, I'd like to focus on the "statement evaluation" exercises you'll find throughout the text. In each of them, I'll give you 10 statements; your job will be to determine if each one is (a) always true, (b) sometimes true, or (c) never true. For those that are "sometimes true," you'll need to provide an explanation; your instructor may include similar exercises on quizzes and exams.

Consider the following statements, which talk about the role of computers in accounting information systems:

1. Computers can be an important processing tool in the AIS.
2. Computers are always an important processing tool in the AIS.
3. Computers are important processing tools in the AIS.

At first blush, without thinking critically, all three statements may seem alike to you—but they're not. Each statement has a unique phrase that differentiates it from the others: “can be,” “are always,” and “are.”

The first statement (Computers can be an important processing tool in the AIS) is always true. When you see the phrase “can be,” think of it as meaning “have the potential to be.” It's always true that computers have the potential to be an important processing tool—even though they are not used in every AIS.

The second statement (Computers are always an important processing tool in the AIS) is never true. The phrase “are always” means that there are no exceptions. Here's a parallel example: People with blonde hair always have blue eyes. While it's true that people with blonde hair often have blue eyes, the two don't always go together; some people with blonde hair, for example, have green eyes. Similarly, some accounting information systems employ computers as processing tools—but some don't. So it is never true that computers are always an important processing tool in the AIS.

The third statement (Computers are important processing tools in the AIS) is sometimes true. In other words, in some accounting information systems, computers are important processing tools; but in other systems, they are not.

Take a look at the statement evaluation exercise at the end of this chapter. Statement (a) (Data in an accounting information system are stored electronically, such as on a disk) is sometimes true. Statement (b) (“Truth” is one of the qualitative characteristics identified by the FASB conceptual framework) is never true.

I often tell my students that accounting really isn't about numbers at all; it's really about the use of language. And becoming a critical thinker means, in part, that you're able to use language accurately and precisely. The statement evaluation exercise at the end of each chapter will be challenging for you at first, I'm sure. But, as you practice thinking critically, the exercise will make more sense. If you ever find yourself “stumped” by one of those statements, don't hesitate to drop me an e-mail (RLHurt@csupomona.edu) and let me know; I'll do my best to clarify and point you in the right direction.

TEXT STRUCTURE AND CONTENT

This book is structured into five parts:

AIS fundamentals. In this section, we'll look at topics that form the foundation of most AIS courses. Here in Chapter 1, we examined the basic nature of accounting information systems; we also looked at information literacy and critical thinking. Chapter 2 reviews the accounting cycle and talks about how human judgment and information technology are involved in its activities. Chapter 3 introduces you to internal control. The last two chapters in Part One emphasize the multidisciplinary nature of AIS. Chapter 4 looks at three important management-related topics and their relationship to AIS: enterprise risk management, business process management, and behavioral issues. Chapter 5 introduces you to a similar set of ideas related to information systems: the systems development life cycle, the capability maturity

model, and software selection. The topics from all five chapters reappear later in the text, where they are applied in various contexts.

Documentation techniques. Whether you're designing a completely new accounting information system, making changes to an existing system, or auditing a system, documentation techniques are important. In these three chapters, we'll look at three common ways accountants create models of accounting information systems: flowcharts (Chapter 6), data flow diagrams (Chapter 7), and REA models (Chapter 8). In Chapters 7 and 8, we'll also explore database design. Later chapters on business processes will give you the chance to apply the skills you acquire in systems documentation in more specific contexts.

Information technology in the AIS. The three chapters in the third part of the book look at ways various forms of information technology are used in accounting. Chapter 9 discusses the eXtensible Business Reporting Language (XBRL). XBRL is used to tag accounting-related data so it can be interpreted by a wide variety of software and hardware combinations. In Chapter 10, we'll take a look at e-business and enterprise resource planning systems. Chapter 11 provides an overview of an area my students find especially interesting: computer crime and IT security.

Business processes. The chapters in this part of the book take a look at various business processes that cut across organizations: sales/collection (Chapter 12), acquisition/payment (Chapter 13), and other business processes (Chapter 14). We'll take many of the ideas from previous sections and apply them within the context of those business processes: internal control, systems documentation, the SDLC, risk management, business process management, behavioral issues, and information technology.

Other topics in AIS. I've included three chapters in the last part of the text: decision-making models and knowledge management (Chapter 15), professionalism, ethics, and career planning (Chapter 16), and auditing and evaluating the AIS (Chapter 17). I've included these topics, which are not often part of other AIS texts, for several reasons: (a) they are areas my own students have been interested in, (b) they provide an opportunity to apply some fundamental topics (internal control, database design, and information technology) in new areas, (c) they connect accounting with other areas of business (such as management), and (d) they connect AIS with other areas of accounting (such as auditing).

Earlier in this chapter, I referenced my accounting information systems blog. You'll find it at bobhurtai.blogspot.com. In addition to providing another way for us to communicate, you'll also find more detailed discussion of the topics from the text (such as critical thinking), comprehensive case studies, and a host of other materials. As always, I encourage you to communicate with me, either on your own or through your professor, about aspects of the book that are working well for you and those that could use some improvement.

Summary

Each chapter in the text ends with a brief summary of its major points, structured in terms of the learning objectives at the beginning of the chapter.

1. *Define "accounting information systems."* An accounting information system (AIS) is a collection of interrelated parts, some of which may incorporate information technology. Its purpose is to collect data, process it into information, and report the information so it can be used by internal and external decision makers.
2. *Discuss why AIS is an important area of study for future accountants.* AIS is important for at least three reasons: (a) a well-designed AIS helps fulfill many of the ideas advanced

by the FASB conceptual framework of accounting, (b) studying AIS helps you develop some of the competencies identified in the AICPA core competency framework, and (c) AIS provides important insights into common business processes, including their steps, documents, transactions, and internal controls. In summary, AIS is important because it cuts across traditional functional lines in accounting. It provides the “big picture” and allows students to develop their critical-thinking and problem-solving skills.

3. *Compare and contrast AIS with other areas of study in accounting.* AIS is like other areas of accounting in that it includes consideration of financial statements and internal reports. It is different, though, from other parts of accounting. AIS typically includes more open-ended problems that do not have deterministic responses. It also cuts across traditional accounting subdivisions (financial, managerial, and the like) and incorporates material from disciplines outside accounting (such as management and information systems).
4. *Explain the structure of most accounting information systems.* Most AIS incorporate five main parts. Inputs are used to collect data and get them into the system; they include source documents such as checks and invoices. Processing tools transform the data into information; processing tools can be manual or automated. Outputs provide some of the information decision makers need in organizations. Typical outputs of an AIS include the general-purpose financial statements. Internal controls are the policies and procedures established in an AIS to promote information integrity and safeguard assets. And storage refers to the methods for keeping data secure and available.
5. *Locate and evaluate information sources on accounting information systems.* Information on AIS can be found in both traditional and online sources. All information, regardless of source, should be evaluated for validity. One useful checklist for information evaluation is provided by the University of Maryland: authority, accuracy, objectivity, currency, and coverage. The ability to find, evaluate, and use information appropriately is often referred to as information competence.
6. *Describe the structure and content of the remainder of this text.* The text is structured into five main parts: (a) AIS fundamentals, (b) systems documentation techniques, (c) information technology in the AIS, (d) business processes, and (e) other topics in AIS.

So, as you can see, you’re in for a fascinating, highly relevant, diverse study this term in your AIS course. I hope you’ll approach your study with enthusiasm and commitment, knowing that what you learn this term will serve you very well in your career as a professional accountant.

Key Terms

These terms are defined in the glossary at the end of the text, as well as in the chapter.

accounting information system, 4	AIS structure, 7	information competence, 9
AICPA core competency framework, 5	business processes, 6	unstructured problems, 3
	FASB conceptual framework, 4	

Chapter References

- AICPA. 2013. *Core Competency Framework and Educational Competency Assessment*. <http://www.aicpa.org/interestareas/accountingeducation/resources/pages/corecompetency.aspx> (December 7, 2013).
- Curzon, S. 1995. *Information Competence in the CSU*. www.calstate.edu/LS/Archive/info_comp_report.shtml (May 25, 2005).

End-of-Chapter Activities

1. *Reading review questions.* These questions will help you assess your understanding of the text readings. If you've studied the chapter thoroughly, you should be able to answer them without reference to the text itself. Although these questions appear first, you may find them easier to answer after completing the rest of the end-of-chapter assignments. I urge you to answer them in your own words, rather than with quotations from the text itself.
 - a. What is an accounting information system?
 - b. Explain three reasons AIS is an important area of study for future accountants.
 - c. List and discuss the five parts of a generic accounting information system.
 - d. Identify five broad criteria you can use to evaluate information on the Internet and in other sources.
 - e. In a manner specified by your instructor (e.g., individually or with a group, as a written paper or as an oral presentation), prepare an original response to one or more of the questions for this chapter's "AIS in the Business World."
2. *Multiple choice review questions.* You'll find five questions like these in every chapter. They're "low-context" multiple choice questions, which means you should be able to answer them based on a careful reading of the text. You'll find the answers to these questions at the end of the book.
 1. Which of the following is not essential to the definition of an accounting information system?
 - a. Software
 - b. Documents
 - c. Decision makers
 - d. Financial data
 2. The FASB conceptual framework links accounting information systems with what other area of accounting?
 - a. Taxation
 - b. Auditing
 - c. Cost accounting
 - d. Financial accounting
 3. Most accounting information systems comprise _____ parts.
 - a. Two
 - b. Four
 - c. Five
 - d. Some other number
 4. Terms like "master file" and "transaction file" are most commonly associated with which generic element of the AIS?
 - a. Inputs
 - b. Storage
 - c. Outputs
 - d. Internal controls
 5. All of the following are assumptions in the FASB Conceptual Framework except:
 - a. full disclosure
 - b. monetary unit
 - c. periodicity
 - d. going concern

3. *Reading review problem.* Richie’s Diner is a 1950s style restaurant chain with locations throughout southern California; you can learn more about them at www.richiesdiner.com/. Richie’s has a fairly standard process for serving food that goes something like this:

1. Seat customers.
2. Give each customer a menu.
3. Take the customer’s drink order.
4. Take the customer’s food order.
5. Prepare the food.
6. Deliver the food to the table.
7. Present the bill at the end of the meal.
8. Collect payment.

Servers record drink and food orders on paper; the kitchen uses those orders to prepare the food. Servers use copies of the orders to prepare the bill. Customers are supposed to pay at the cash register, but many give their credit card or cash to the server for processing.

- a. Consider the five business processes described in the chapter. Which one best applies to the activities described? Why?
- b. Does Richie’s need an accounting information system? Why or why not?
- c. If you were an accountant for Richie’s, how might you demonstrate the AICPA core competencies discussed in the chapter in your interaction with management?
- d. Suggest one example of each generic AIS element within the context of Richie’s. The generic elements are input, process, output, storage, and internal control.
- e. Do a Google search on “operating a successful restaurant.” Pick one of the articles it produces and evaluate it using the UMUC criteria.

4. *Making choices and exercising judgment.* As you read in the chapter, AIS is all about making choices and evaluating their costs and benefits. These questions and exercises are designed to help you develop those skills. When I give exercises like these to my own students, they frequently say, “So does this mean there’s no right or wrong answer?” You may be thinking the same thing, so I’ll tell you what I tell them: The point isn’t whether your answer is “right” or “wrong,” or even if such answers exist. The point here is for you to make choices and create answers you can defend in the face of other alternatives.

- a. RKH Company is a small consulting service based just outside Los Angeles. It has two partners, Sebastian and Viola, and average monthly sales revenue of \$25,000. At any one time, Sebastian and Viola have up to three consulting engagements running simultaneously. Monthly expenses include office rent, supplies, utilities, professional magazine subscriptions, and automobile expenses. What form(s) of information technology, if any, should Sebastian and Viola use in their accounting information system? Explain the costs and benefits of your recommendation.
- b. Do a Google search for characteristics of good information. Compare and contrast one of the sources you find to the UMUC criteria discussed in the chapter. “Compare” means identify and describe similarities, while “contrast” means identify and describe differences.

5. *Field exercises.* These exercises will require you to go out “into the field” to interview an accountant, observe a business process, do library research, or collect other kinds of data. Your instructor may ask you to complete one or more field exercises with a group of students; they also could be used as the basis for a major course writing assignment or presentation.

- a. Interview an accountant or other financial professionals in an organization of your choice. Ask what information technologies (if any) are used in the accounting information system and about the costs and benefits of their use. If time permits, also ask for examples of internal controls in the organization. Don’t forget to write a thank-you note or e-mail after your interview.

- b. Visit a movie theater, retail store, fast-food outlet, or other business organizations near your home or campus. Carefully observe the process of making sales and collecting payments. What processes and tools does the organization use to keep its cash safe?
 - c. Point your Web browser to the site for the AICPA core competency framework. In addition to the six core competencies discussed in the chapter, what other competencies does it identify?
 - d. Talk to one of your university's librarians about information competence/information literacy. Find out, from a librarian's perspective, why it's important. Identify two resources available on your campus to help you learn more about information competence.
- 6. Information competence.** Look up the following references online or in your school's library. Using the criteria and specific questions from the UMUC Web site referenced in the chapter, evaluate and discuss the quality of each reference. (*Note:* To do a thorough evaluation of these references, you *must* get the list of questions from the UMUC Web site. You won't be able to rely on my summary in the chapter to do your best work.)
- "Xelltec Reports Laptop Security Microchip." *Wireless News*, 25 February 2011.
- Bollinger, M. "Implementing Internal Controls." *Strategic Finance*, January 2011.
- Cascone, J., et al. "Equipped to Sustain." *Internal Auditor*, December 2010.
- Johansmeyer, T. "Top 4 Small Business Accounting Software for 2008." *CPA Magazine*, November 2008.
- Weisman, A., and M. Brodsky. "Fighting Fraud with Both Fists." *The CPA Journal*, January 2011.
- 7. Terminology.** Each chapter in the book includes a problem like this one; beyond helping you master each chapter's vocabulary, you may encounter similar problems on your class exams and on accounting professional exams (like the CPA exam). Please match each item on the left with the most appropriate item on the right; each item on the right will be used only once, and each item on the left has only one best answer.
- | | |
|--|--|
| 1. Activities, documents, and technologies | a. The generic AIS element associated with master/transaction/junction files |
| 2. AICPA core competency framework | b. The ability to find, evaluate, use, and communicate information |
| 3. Balance sheet | c. One way to organize the study of AIS |
| 4. Business processes | d. One of the four general-purpose financial statements |
| 5. Comprehensive income | e. Interrelated parts of an accounting information system |
| 6. Criteria for evaluating information | f. Authority, accuracy, objectivity, currency, and coverage |
| 7. Critical thinking | g. An element of financial statements in the FASB conceptual framework |
| 8. Information literacy | h. A structure that explains skills needed by accounting professionals |
| 9. Internal control | i. A generic AIS element that helps an organization control its assets |
| 10. Storage | j. A broad business perspective competency |
- 8. Multiple choice questions (high context).** The multiple choice questions presented in Question 2 are "low context." You should be able to answer them simply by a careful reading of the chapter. These questions, on the other hand, are "high context." They will require critical thinking and reasoning on your part.
1. Which of the following is an example of an internal control in the accounting information system?
 - a. Bank reconciliation
 - b. Sales order
 - c. Balance sheet
 - d. Steps in the accounting cycle

2. Which of the following provides the best example of “materiality” as the term is used in the FASB conceptual framework?
 - a. Preparing an operating budget
 - b. Expensing the cost of a wastebasket
 - c. Reporting investments at their fair market value
 - d. Providing information for decisions
 3. All of the following are facts about accounting information systems except:
 - a. They should all involve some form of internal control.
 - b. They always incorporate information technology.
 - c. They usually provide general-purpose financial statements as outputs.
 - d. They can involve three types of storage files.
 4. Which of the following best pairs a generic element of the AIS with a specific example of that element?
 - a. Input, balance sheet
 - b. Internal control, general ledger software
 - c. Internal control, balance sheet
 - d. Input, general ledger software
 5. Which of the following statements shows the strongest level of information competence?
 - a. Never using Wikipedia to do research
 - b. Consulting the AICPA Web site for information on fraud examination
 - c. Investigating an author’s professional background
 - d. Using only scholarly information as the basis for a paper
- 9. Statement evaluation.** As you learned in the chapter, designing and implementing accounting information systems requires judgment and critical thinking. Each chapter will include an exercise like this one to help you develop those skills. Several statements related to the material in the chapter are listed below; your job is to explain whether each statement is (i) always true, (ii) sometimes true, or (iii) never true. If you answer (ii), explain when the statement is true.
- a. Data in an accounting information system are stored electronically, such as on a disk.
 - b. “Truth” is one of the qualitative characteristics identified by the FASB conceptual framework.
 - c. The FASB conceptual framework identifies ten elements of financial statements.
 - d. Information you find on the Internet is reliable.
 - e. Cost-effectiveness is an important criterion in the design of accounting information systems.
 - f. A Web site that is “under construction” may have a problem with adequate coverage according to the UMUC information criteria.
 - g. Both internal and external parties can use information provided by the accounting information system.
 - h. Most companies have two different accounting information systems: one for internal use and one for external use.
 - i. In an AIS, source documents are paper-based.
 - j. Problems and questions in accounting information systems are open-ended; they do not have “right” or “wrong” answers.
- 10. Excel application.** Every chapter in this edition has an Excel application problem; I’ve included them based on feedback from other AIS faculty and my own approach to teaching AIS. As you complete each problem, ensure that your spreadsheet is logically laid out and that the information it presents is clear and understandable.

The accounting information system of RRP Corporation revealed the following account balances at the end of December 2013; each account has a normal balance.

Accounts payable	\$ 5,300
Accounts receivable	6,100
Accumulated depreciation—equipment	5,800
Additional paid-in capital	6,300
Cash	7,700
Common stock	6,600
Cost of goods sold	4,600
Deferred service revenue	800
Depreciation expense	700
Equipment	9,100
Inventory	8,000
Land	9,300
Notes payable	6,400
Retained earnings	15,860
Sales	6,810
Sales discounts	470
Supplies	200
Treasury stock	1,700
Wages expense	6,000

- a. Use Excel to prepare a trial balance in good form based on the balances provided. (Check figure: \$53,870.)
 - b. Use appropriate Excel formulas to determine:
 - i. The average balance of all accounts with a debit balance
 - ii. The average balance of all accounts with a credit balance
 - iii. The largest and smallest balances of all accounts with a debit balance
 - iv. The largest and smallest balances of all accounts with a credit balance
- 11. Conceptual framework of accounting.** A well-designed accounting information system can help an organization's financial reporting fulfill many parts of the conceptual framework of accounting. Please complete each statement below with an appropriate word/phrase from the conceptual framework.
- a. All changes in equity during a period other than investments by and distributions to owners are called ____.
 - b. Although a wastebasket is expected to last for three years, it is treated as an expense in the AIS because of the ____ constraint.
 - c. An ____, such as cash, is something that has probable future economic value to an organization.
 - d. Because of the ____ assumption, the accounting records of a business are kept separate from the accounting records of its owners.
 - e. Certain short-term investments in securities are reported at their fair market value, thus demonstrating the qualitative characteristic of ____.
 - f. Collectively, qualities that make information helpful in decision making are called ____.
 - g. Outflows or uses of assets during a period from delivering goods, such as cost of goods sold, are ____.
 - h. Regardless of changes in market value, land is reported at its historical cost, an application of the qualitative characteristic of ____.
 - i. The ____ of financial reporting is to provide information needed for decisions.
 - j. The ____ principle is the main justification for depreciating assets like equipment.