Accounting
Information Systems
A Business Process Approach

会计信息系统
商务过程方法

第 1 版

Frederick L. Jones
University of Massachusetts—Dartmouth
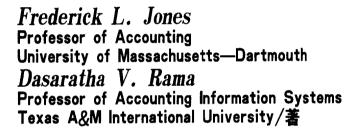*Dasaratha V. Rama*
Texas A&M International University/ 著

MBA

会计类

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·院长寄语·

　　北京大学光华管理学院秉承北大悠久的人文传统、深邃的学术思想和深厚的文化底蕴，经过多年努力，目前已经站在中国经济发展与企业管理研究的前列，以向社会提供具有国际水准的管理教育为己任，并致力于帮助国有企业、混合所有制企业和民营企业实现经营管理的现代化，以适应经济全球化趋势。

　　光华 MBA 项目旨在为那些有才华的学员提供国际水准的管理教育，为工商界培养熟悉现代管理理念、原理和技巧的高级经营管理人才，使我们的 MBA 项目成为企业发展致富之源，为学员创造迅速成长和充分发挥优势的条件和机会。

　　为了适应现代人才需求模式和建立中国的一流商学院，北京大学光华管理学院正在推出国际 MBA"双语双学位"培养方案；同时，为了配合北大 MBA 教育工作的展开，光华管理学院与北大出版社联合推出本套《当代全美 MBA 经典教材书系（英文影印版）》，并向国内各兄弟院校及工商界人士推荐本套丛书。相信我们这些尝试将会得到社会的支持。而社会对我们的支持，一定会使光华 MBA 项目越办越好，越办越有特色。

北京大学光华管理学院院长　厉以宁

出 版 者 序 言

2001年12月10日中国加入了世界贸易组织,从此,中国将进一步加大与世界各国的政治、经济、文化各方面的交流和合作,这一切都注定中国将在未来世界经济发展中书写重要的一笔。

然而,中国经济的发展正面临着前所未有的人才考验,在许多领域都面临着人才匮乏的现象,特别是了解国际贸易规则、能够适应国际竞争需要的国际管理人才,更是中国在未来国际竞争中所必需的人才。因此,制定和实施人才战略,培养并造就大批优秀人才,是我们在新一轮国际竞争中赢得主动的关键。

工商管理硕士(MBA),1910年首创于美国哈佛大学,随后MBA历经百年风雨不断完善,取得了令世人瞩目的成绩。如今,美国MBA教育已经为世界企业界所熟知,受到社会的广泛承认和高度评价。中国的MBA教育虽起步较晚,但在过去10年里,中国的MBA教育事业发展非常迅速,也取得了相当显著的成绩。现在国内已经有50多所高等院校可以授予MBA学位,为社会培养了3000多名MBA毕业生,并有在读学员2万多人。

目前,国内的MBA教育市场呈现一片繁荣景象,但繁荣的背后却隐藏着种种呕待解决的问题。其中很大一部分问题的成因是因为目前我国高校使用的教材内容陈旧,与国外名校的名牌教材差距较大,在教学内容、体系上也缺乏与一流大学的沟通。为适应经济全球化,国家教育管理部门曾要求各高校大力推广使用外语讲授公共课和专业课,特别是在我国加入WTO后急需的上百万人才中,对MBA人员的需求更是占1/3之多,所以,大力开展双语教学,适当引进和借鉴国外名牌大学的原版教材,是加快中国MBA教育步伐,使之走向国际化的一条捷径。

目前,国内市场上国外引进版教材也是新旧好坏参差不齐,这就需要读者进行仔细的甄别。对于国外原版教材的使用,在这里我们要提几点看法。国外每年出版的教材多达几万种,如果不了解国外的教材市场,不了解国外原版教材的品质就可能找不到真正适合教学和学习的好的教材。对于不太了解外版教材的国内读者来说,选择教材要把握以下几点,即:选择国外最新出版的书;选择名校、名作者的书;选择再版多次并且非常流行的书。综合以上几点来看,目前国内市场上真正出新、出好、出精的MBA教材还是不多的。基于以上认识,北京大学出版社推出了《当代全美MBA经典教材书系(英文影印版)》,本套丛书的筛选正是本着以上提到的几点原则,即:出新、出好、出精。经过北京大学及国内其他著名高校的知名学者的精心挑选,本套丛书汇集了美国管理学界各个学科领域专家的权威巨著,称得上是一套优中选精的丛书。本套丛书现在已经推出了MBA主干课程、会计专业、金融专业课程教程三个系列,共45个品种。以后,我们还将陆续推出更多专业的英文影印版书籍。

致谢

本套教材是我社与国外一流专业出版公司合作出版的,是从大量外版教材中选出的最优秀的一部分。在选书的过程中我们得到了很多专家学者的支持和帮助,可以说每一本书都经过处于教学一线的专家、学者们的精心审定,本套英文影印版教材的顺利出版离不开他们的无私帮助,在此,我们对审读并对本套图书提出过宝贵意见的老师们表示衷心的感谢,他们是(按拼音排序):

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本套丛书的顺利出版还得到了培生教育集团(Pearson Education)北京代表处、汤姆森学习出版集团(Thomson Learning)北京代表处的大力支持，在此对他们也表示真诚的感谢。

出版声明

本套丛书是对国外原版教材的直接影印，由于各个国家政治、经济、文化背景的不同，原作者所持观点还请广大读者在阅读过程中加以分析和鉴别。我们希望本套丛书的出版能够促进中外文化交流，加快国内经济管理专业教学的发展，为中国经济走向世界做出一份贡献。

我们欢迎所有关心中国 MBA 教育的专家学者对我们的工作进行指导，欢迎每一位读者给我们提出宝贵的意见和建议。

北京大学出版社政经法编辑部
2003 年 1 月

关 于 本 书

内容简介

本书使用商务过程方法将 AIS 论题组合在一起,为会计系统和控制提供了一个坚实的概念基础。在本书中,作者强调了内容和账户的关系以及他们作为设计师、使用者和信息系统评估者的角色。本书提供了大量的解决问题的辅助方法,帮助学生培养收集证据和分析交易循环与会计信息系统的能力,培养鉴别风险和控制的能力,培养使用会计方法的能力,培养设计和评估会计信息系统的能力。一些重要的案例被贯穿使用在全书的每一个章节使它们成为一个整体。本书的末尾还有一个全面的综合的案例帮助学生把书中的概念和工具贯穿为一体。教学中的着重点数据库的设计和会计方法、数据库的设计工程也包含在本书中。书后还有附录帮助学生学习怎么将相关的数据库(管理系统入门)应用到会计信息系统中去。

作者简介

Frederick L. Jones 是 University of Massachusetts 的会计学教授。他从 University of Maryland 获得工商管理硕士学位,从 Boston University 获得工商管理博士学位。他的研究兴趣有信息系统、审计和财务会计。他在会计和公共政策杂志、会计学文献上发表过多篇文章。Jones 博士是注册会计师,在内部审计和公共会计方面有很多经验。他是美国会计协会、美国注册会计师协会成员。

Dasaratha V. Rama 是 Texas A&M International University 会计学和信息系统教授。她曾经是 Bentley College 和 University of Massachusetts 的教员。她从 University of Iowa 获得博士学位,从 Indian Institute of Technology 获得电子工程工科学士学位。她的研究兴趣有会计信息系统和数据库管理系统。Rama 博士是美国会计协会教育部的主管,担任教育部的网站管理员,同时也是一家慈善基金赞助的研究学者。

主要特色

独特的商务过程方法:本书概述了商务中,例如销售、市场和生产中所需要的信息,而不是通过商业软件来剪裁信息流。

双重学习目标:每一章开头都以所涉及概念的总括开头,然后叙述学生将要学习的技能。双重目标为"必须理解"的概念和能够掌握的程序,牢牢地盯住这两个目标有助于学生将概念和技能紧密地结合起来。

逐步地解释步骤程序:步骤程序的描述被分解成简单易懂的步骤来帮助学生得到所需要的系统。

在例子中使用 UML(统一的模式语言):本书使用统一的模式语言来证明商务处理如此简

单,无论使用哪种商务系统,学生都能理解和分析处理过程。

复杂的功能透视:本书明确地从使用者、设计者和会计信息系统的评估者三方面讨论了内容和账户的关系。

连续使用 ELERBE 公司作为案例:ELERBE 公司是一个生产电子中间材料的公司,该公司通过大学院校的书店来进行销售。在每一章,学生都能通过将概念知识立即运用到商务实践中去来检验他们对概念知识的理解程度。

着重于问题的解决方法:每一章都有一个文本框来鉴别需要处理的会计信息问题。解决答案在每一章的末尾,方便学生在理解概念的时候得到即时的反馈。

与其他章节的关联:在每一章的末尾都有与其他章节的关联之处,帮助学生看到自己所学的本章内容如何与将来要学的其他章节相联系。

来自 Great Plains 中心的屏幕图像:全书使用了来自 Great Plains 中心的屏幕图像来做解释。

每章末尾的阅读材料:每章都包括问题、练习、难题、案例和数据库问题,数据库问题的设计使学生能立即将本章中所学的概念应用到实践中去。

网址

http://jones.swcollege.com

简要目录

教辅产品

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PREFACE

GOALS

The purpose of this text is to help students develop a strong conceptual foundation in accounting information systems (AIS) that can serve as a basis for lifelong learning. We envision this text to be a flexible resource that can be adapted to meet the varying needs of different students, faculty, and institutions. The approach for this text has emerged from our extensive experience gained through teaching the accounting information systems course at multiple institutions. The major goals of our text are to:

- Provide a strong conceptual foundation in accounting systems and control.
- Enable students to use this foundation in developing and evaluating accounting applications and in problem solving.
- Present information in a way that facilitates student learning.

While every textbook seeks to enhance students' knowledge, we articulate this goal explicitly since it drives key decisions about the inclusion, sequencing, and level of detail of topical coverage. The accounting information systems course typically covers diverse topics, including transaction cycles, accounting applications, systems documentation, systems development, risks, and internal control. Unlike many other courses, there is considerable variation in AIS courses at various educational institutions and in textbooks. As authors, we had numerous choices for selecting and organizing material in this book. Ultimately, our decision was guided by approaches that we have found effective in helping students learn and apply AIS concepts.

Our **event identification guidelines** introduced in Chapter 2 are a prime example of content developed to enhance student learning. The ability to visualize a complex business process in terms of events helps students learn and integrate the material provided in subsequent chapters. Given that many students have limited exposure in earlier courses to AIS topics, we have strived to introduce and develop topics gradually and to make the presentation clear and concise.

KEY FEATURES

Our extensive experience teaching numerous students, responding to their questions, observing their problem-solving efforts, and identifying ways to enhance their learning have given us insight into what pedagogy is most helpful in teaching AIS. Based on that experience, we included many elements to aid your students. Major features of our book include:

Conceptual Focus. Given the rapid pace of technological change, it is impossible to address all possible topics of potential relevance to an accounting information systems course. Rather, we approach this text from a lifelong learning perspective and seek to provide students a strong conceptual foundation in AIS so they are equipped to adapt to changes in technology and the practice environment.

Support for Active Learning. Information systems topics are quite different from other accounting topics that are governed by rules, measurement, and reporting issues. Information systems materials are often conceptual and abstract. To help students stay focused and involved, we (1) define terms clearly, (2) develop concepts and techniques gradually, (3) provide detailed examples to help students master new concepts, (4) provide short problems at many points in the chapter, and (5) offer numerous problem-solving aids. We use the following techniques to engage the student in the learning process and to facilitate the development of problem-solving skills:

- Case illustrations that continue throughout the chapter.
- Focus on Problem Solving boxes.
- Problem-solving aids.

Case illustrations that continue throughout the chapter. We use a core set of short cases and apply new concepts to these cases as the chapter progresses. This drives home the relevancy of the material and provides students with "experience" in the topic. The cases segue into subsequent chapters to help the student appreciate the connection of one chapter to the next. Though we use a wide variety of cases in the body of the chapter and the homework assignments, there are five core cases that we use across multiple chapters. They include manufacturing, retailing, and service industries:

1. ELERBE, Inc., a publisher of electronic books
2. Angelo's Diner
3. Westport Indoor Tennis Club
4. H & J Tax Preparation Service
5. Fairhaven Convenience Store

Focus on Problem Solving boxes. These are problems or questions inserted at various points in the text, usually directly following discussion of an important concept. Students are asked to carry out the requirements in the problem-solving boxes before moving on to the next topic in the chapter. Solutions to these questions and problems are provided at the end of the chapter so that students have access to immediate feedback. An example of a problem-solving box appears below. An average of ten problem-solving boxes appear per chapter. Some of them are short (such as the example below), while others are fairly detailed.

Focus on Problem Solving 9.j

Access to Purchase Order Information

Which users should be permitted to access the Purchase Order records? What type of access (read or write) should be given to each user? Why?

The solution to this Focus on Problem Solving box appears on page 469. Check your answer and make sure you understand this solution before reading further.

Problem-Solving Aids. We provide several models/techniques that students can use to understand, remember, and apply the important concepts discussed in the chapter. Key problem-solving tasks for which such models/techniques have been developed are listed below. This list is included on the inside front cover of this text for easy reference.

Problem-solving Task	Models/Techniques	Where Introduced
Modeling a business process	Techniques for identifying events within a business process	Exhibit 2.3, p. 24
Documenting a business process	Guidelines for preparing UML Overview Activity Diagrams and Detailed Activity Diagrams	Exhibit 3.2, p. 73 Exhibit 3.5, p. 90
Assessing risks in a business process	Guidelines for identifying execution risks, recording risks and update risks in the revenue cycle and acquisition cycles	Exhibit 4.3, pp. 127–128 Exhibit 4.7, p. 135 Exhibit 4.9, p. 140
Analyzing and designing internal controls	Types of control activities based on SAS 94	Exhibit 4.10, pp. 146–147
Designing and documenting the organization of data in an application	Guidelines for preparing a UML class diagram	Exhibit 5.2, pp. 206–207
Interpreting and designing reports	Models of report types—event reports, status reports, and reference listings	Figure 6.17, pp. 281–282 Figure 6.18, pp. 282–283
Using and designing input forms	Models of alternative layouts for forms	Figure 7.4, p. 317
Documenting user interaction with systems	Guidelines for preparing Use Case Diagrams	Figure 7.5, p. 317 Figure 7.6, p. 318 Figure 7.7, p. 322
Understanding the organization of accounting applications	Standard components of an AIS application menu	Exhibit 8.1, pp. 377–378

Continuity and Integration. A unique feature of this text is the continuity and integration of topics ranging from AIS documentation, data design, internal control, and accounting applications. Many other AIS texts treat the AIS course as a survey course with topics treated independently. We achieve continuity and integration in the following ways:

- **Emphasis on business process and events throughout the text.** As the title of the text suggests, we emphasize business processes in our discussion of accounting information systems. The purpose of an AIS is to provide information to support and control the underlying business process. Because understanding a process is not always easy, we provide students with a method for identification of events in a process. Throughout the text, risks and controls (Chapter 4), AIS design (Chapters 5–7), and accounting software are examined in the context of the events they support.
- **Consistent use of the problem-solving aids across chapters.** In addition to event identification techniques, other problem-solving aids are introduced in

one chapter and then revisited in subsequent chapters. For example, the risks and controls introduced in Chapter 4 are used in developing well controlled input forms, which are discussed in Chapter 7. The forms in Chapter 7 and the report designs in Chapter 6 are used to understand the forms and reports in Chapters 9–11, which are devoted to understanding and evaluating application software for revenue cycle and acquisition cycle processes. The activity diagrams introduced in Chapter 3 are used to document internal controls in Chapter 4 and to describe accounting systems in Chapters 9–11.

- As noted earlier, we utilize a **core set of cases** that are carried through from chapter to chapter in worked-out examples, problem-solving boxes, and end-of-chapter problems. We find that using the same set of situations over an extended period promotes a deeper understanding of AIS concepts and helps students integrate various topics.

Flexible Coverage

Since the design of the AIS course may vary across institutions, it is important that faculty be able to adapt a text for use in different settings. Three such ways an instructor can use this text are listed below. Each approach relies on the first four chapters as a foundation. All students should benefit from these chapters, which focus on identifying events in business processes, documenting those processes, and understanding risks and internal control. Suggestions for each of the three approaches are provided in the Instructor's Resource Manual (IRM).

- *Approach I: Emphasis on Business Process, Using Accounting Applications, and Information Technology.* An instructor can focus on transaction cycles, use of AIS applications, risks and internal control, and information technology. Under this approach, only parts of the chapters with a developer focus (Chapters 5–7) are used. Instructors selecting this approach may wish to include a project that requires the use of accounting software. In most chapters, short assignments are available concerning the use or review of accounting software.
- *Approach II: Emphasis on Business Process and the Design and Use of Accounting Applications.* This approach differs from the other approaches because of the emphasis on the design of accounting systems. Under this approach, instructors focus on Chapters 1–8 and use one or more of the chapters on transaction cycles (9, 10, and 11) for integration and wrap-up. Instructors using this approach may want to assign the database design project that is available. A database project can easily be tied to Chapters 1–7. Assignments involving design are available at the end of each chapter. A detailed design project will be available as a supplement. In this assignment, students learn how to use a relational database package (MS Access) in building AIS applications.
- *Approach III: Broad-Based Approach.* Instructors may choose to cover all 14 chapters in full. This approach would provide a more thorough knowledge base. However, depending on the level of the class and the number of classroom hours per week, it may be difficult to build in an extensive database or accounting software project under this approach.

Relevant Content

The material in the text is consistent with the recommendation and pronouncements of accounting organizations, as described here.

- The International Federation of Accountants (IFAC), in *Guideline No. 11, Information Technology in the Accounting Curriculum*, identifies the IT education requirements for students planning to enter the accounting profession. The AICPA strongly endorses the recommendations in the guideline. Out of the 30 topics recommended, we devote special attention to eight topics: application software, data organization and access, transaction processing, control objectives, risk assessments, control activities, system design techniques, and evaluation methods. We also cover six other recommended topics: electronic data transfer, system life cycle, management of system development, evaluation objectives, strategic considerations in IT development, and communicating results of evaluations.
- The AICPA and IFAC stress the importance of internal control. In Guideline No. 11, the IFAC comments that "Of particular importance to all professional accountants, regardless of their specific domain of professional activity, is the issue of internal control. Because this topic is of central importance to all professional accountants, it must be given particular emphasis." We have a comprehensive discussion of risks and controls in Chapter 4 and then continue the discussion about internal controls in virtually every subsequent chapter.
- In Chapter 4, we take advantage of the framework provided by SAS No. 94, *The Effect of Information Technology on the Auditor's Consideration of Internal Control in a Financial Statement Audit* released in 2001. We use the framework to classify and identify internal controls and use that model in many of the subsequent chapters.

The following is a brief explanation of the four parts of this text and our approach to various topics:

I. Accounting Information Systems: Concepts and Tools

As the name suggests, this is a key section that builds a conceptual foundation for studying AIS. Some unique features of this section include:

- Chapter 2 presents our event identification guidelines. We noted earlier that event identification is the key connecting thread that unifies our discussion of diverse topics.
- Chapter 3 explains a standard modeling approach (UML activity diagram) used to link the various elements of a business process described in Chapter 2. Without such linking, students find it difficult to relate various topics. In our experience, many students struggle with bridging their understanding of functional models of a business process (e.g., as represented in a systems flowchart or a set of data flow diagrams) to the *data* models of a business process. Our guidelines for developing the UML activity diagram (Chapter 3) and a data model (UML class diagram in Chapter 5) are both articulated in terms of the same underlying events, and thus clarify the relationships between these models.

- SAS No. 94 has been used to provide a strong conceptual foundation for thinking about internal control in Chapter 4. Our discussion addresses internal control objectives and components (risk assessment, control activities, and information and communication) in SAS No. 94.

II. UNDERSTANDING AND DEVELOPING ACCOUNTING SYSTEMS

This part builds on the basic concepts developed in Section I to help students understand and design various components of an AIS application (data, queries, forms, and reports). Key features of this part include:

- Chapter 5 presents detailed guidelines to help students handle a complex problem-solving task (building a data model). These guidelines are expressed in terms of the basic concepts in Chapter 2 (events, transaction, and master tables), thus presenting an integrated picture of business process modeling, internal control, and data modeling.
- This integrated presentation is continued in Chapter 6 when form design is explained in terms of underlying tables and events.
- We consider our presentation of reports in Chapter 7 to be unique. Rather than presenting generic guidelines for report design, we help students visualize the content of typical AIS reports in terms of events and related entities (e.g., Inventory, Customer, Salesperson). We organize reports into eight categories. Chapters 8–11 provide additional insight into the preparation and use of these different types of reports.

III. TRANSACTION CYCLES AND ACCOUNTING APPLICATIONS

Unlike Part II, which focuses on developing accounting applications, Part III focuses on the *use of* accounting applications. Unique features of this part include:

- Chapter 8 explains the organization of a typical accounting application menu in terms of concepts from Chapter 2 (events, transaction, and master tables). Another form of integration is seen in our discussion of various types of processing (real-time, batch). We consider how real-time and batch processing differ in terms of data input, the effect on transaction and master tables, and on event and status reports.
- We believe that the conceptual framework, and especially the connections between topics covered in earlier sections, has paid off in Chapters 9–11. A typical acquisition or revenue process is presented at the beginning of each chapter. The events in this process are used to connect our discussion of AIS applications, risks, and internal control.

IV. MANAGING INFORMATION TECHNOLOGY AND SYSTEMS DEVELOPMENT

We view the topics in Part IV as advanced topics. We believe that an introduction to these topics is important and will help students better understand the

nature of accountants' roles as users, designers, and evaluators of accounting systems. Through this section, we hope to expand students understanding of business process, AIS applications, risks, and controls in the area of information technologies, managing and controlling the use of these technologies, and systems development.

- A unique feature of Chapter 12 is our examination of IT topics in relation to business strategy. Rather than including pieces of information about emerging technologies throughout the book, we have made an attempt to introduce various technologies in relation to business strategy.
- Chapter 13 builds on Chapter 12 and discusses issues in managing the IT environment.
- Chapter 14 focuses on systems development methodology. One unique feature is that our discussion of systems development is also tied to business strategy and IT environment. A second feature of this chapter is the detailed guidelines that we provide for problem solving, interviewing, and report writing. We hope these guidelines will be useful to students engaged in experiential learning projects.

SUPPLEMENTS

This text is accompanied by several supplements that build upon the pedagogical features just described. These include an instructor's resource manual, a solutions manual, a database case, PowerPoint Slides, and a Web site. Some key features of the supplements are described below.

Instructor's Resource Manual

The instructor's manual for this text has been designed to help instructors take advantage of its pedagogical features. We believe that every instructor will eventually develop an approach to using the text that is consistent with his or her teaching style and the needs of his or her students. However, the teaching ideas in the instructor's manual can serve as a starting point.

Solutions Manual

The solutions manual provides solutions to all end-of-chapter problems. We also provide a solution for the Comprehensive Case.

Lawson Software: Using MS Access to Develop an AIS Application

This case illustrates how a relational database (MS Access) can be used to implement an AIS. Students learn how to work with tables and various types of forms and reports. The use of this supplement can provide some experience in using a relational database. At the same time, key concepts in Chapters 5, 6, and 7 can be reinforced through the use of this case.

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