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# 管理信息 系统

Management  
Information  
Systems

第 8 版

Raymond McLeod, Jr.  
George Schell 著



北京大学出版社  
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Prentice  
Hall

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Raymond McLeod, Jr. / 著  
*University of Texas at Austin*

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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(英文原版)》,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

陈以寿

## 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、文化各方面的交流与合作,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亟待解决的问题。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。

北京大学出版社推出的《当代全美MBA经典教材书系(英文原版)》弥补了国内MBA教材市场的缺憾,给国内MBA教材市场注入了一股新鲜的血液。全套丛书共由22本书组成,覆盖了北京大学MBA的全部主修课程,包括:经济学、管理学、营销学、战略管理、管理信息系统、运作管理、人力资源管理、商务沟通、国际金融、金融管理、决策分析、货币银行学、会计学等。另外在十几门主课的基础上又增加了几门高级选修课程,包括:国际会计学、组织行为学、投资学、商务学、财务报表解析、管理会计、管理沟通、商业伦理学、企业家精神等。

本套丛书的筛选大体上本着以上所提到的几点原则,即,(1)出“新”。克服以往教材知识陈旧、落后的弊端,大部分教材的出版年限都选择在2002年,与国外原版书同步出版。(2)出“好”。本套丛书收入了美国哈佛大学、斯坦福大学、麻省理工学院等著名院校所采用的教材,如:《管理学》、《营销管理》、《管理信息系统》、《管理人力资源》、《财务会计》、《管理会计》、《面向管理的数量分析》等;本套丛书收入著名学术界宗师包括斯蒂芬·罗宾斯(《管理学基础》)、菲利

普·科特勒(《营销管理架构》)、查尔斯·亨格瑞(《财务会计》)、威廉·鲍莫尔(《经济学:理论、方针和政策》)等人的学术巨著。(3)出“精”。大多数教材都是再版多次,经过不断的修改和完善而成的,如:再版5次的《卓越的商务沟通》、《现代投资理论》、《商业伦理:概念和案例》等;再版6次的《货币、银行和金融市场经济学》、《商务学》、《财务报表解析》等;再版7次的《面向管理的数量分析》等;再版8次的《经济学:理论、方针和政策》、《财务会计》、《管理信息系统》等;甚至还有再版12次的《金融管理与政策》、《管理会计》。本丛书中每一本书的选择都依据该书旧的版本,或作者过去同类书籍的销售情况,选择居于该领域销售排行榜首位的教材。

本套《当代全美 MBA 经典教材书系(英文原版)》集合了美国经济学界和管理学界各个学科领域专家的权威巨著,该丛书经过北京大学光华管理学院及其他著名高校的知名学者的精心选编,包括了大量精深的理论指导和丰富的教学案例,真正称得上是一套优中选精的丛书。

## 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,北京大学出版社英文影印版教材的顺利出版离不开他们的无私帮助,在此,我们将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:

北京大学光华管理学院:符国群、李东、梁钧平、陆正飞、王建国、王其文、杨岳全、于鸿君、张国  
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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、汤姆森学习集团(Thomson Learning)北京代表处的大力支持,对他们的付出我们也非常感谢。

## 教辅材料说明

教材,顾名思义教学之材料,它和普通的书籍有一个很大的区别,就是必须以“方便教授教学”为主。所以,好的教材更需有完备的教学辅助材料相匹配,且每一本教材都要有教辅材料,只有配备了齐全的辅助材料才能称其为完整的教材。北京大学出版社的《当代全美 MBA 经典教材书系(英文原版)》系我社获全球最大的教育出版集团,美国培生教育集团(Pearson Education Group)独家授权之英文影印版本。Pearson Education 旗下的国际知名教育图书出版公司 Prentice Hall/Addison Wesley/Longman,以其高品质的经济类出版物,已成为全美乃至全球高校采用率最高的教材,享誉全球教育界、工商界。我社在选择此套教材的过程中,尽量选择教辅材料齐全的教材,这些教辅材料包括:教学指导用书、教学提纲、测试题、解答题、课堂演示文稿等,以书、幻灯片(Powerpoint Mesentation)、Disk、CD、CD-ROM 等形式出现。我社特获权独家复制以上材料,并向采用该书的教师免费赠送。同时,这些材料还可通过访问培生教育集团相关站点:<http://www.prenhall.com>、<http://www.pearsoned.com>、<http://www.aw.com> 或国内站点:<http://www.digishop.com.cn> 免费下载。

欲获得相关教辅材料的教师烦请填写后面的《教辅资料支持表》,以确保此教辅材料仅为教师获得。

## 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  
数字经实公司  
2002 年 1 月



## 内 容 简 介

《管理信息系统》第8版,共分为:信息系统的作用;系统方法论;计算机作为解决问题的工具;基于计算机的信息系统;组织内部的信息系统等五个部分。

本书条理清晰,叙述明确,强调了组织内管理者扮演的角色。本教材还强调了计算机信息系统的发展对于一个组织的客观目标和战略规划的支持,侧重于阐释系统概念(第六章中介绍)、系统方法的思想,并使之贯穿全书始终。

本书特色为:利用系统生命周期方法论(第七章),向学生介绍了基本的解决问题的方法,并将该方法贯穿全书始终;提供专业站点,包括互动式学习指导、练习、论坛、聊天室、最新的科技月刊等,为学生提供在线学习指导;大量经过更新及修正的内容,为学生提供更新的方法(第十八章)。

**适用性:**适用于研究生和高年级本科生管理信息系统课程,还可作为各企业、公司管理人员的培训教材和参考书。

**畅销性:**本书作者 Raymond McLeod 具有丰富的管理信息系统知识,他的该类教材被世界各地包括美国哈佛大学在内的学生广泛使用,与其他同类书相比,他的书是最受欢迎的。

## 作者简介

**Raymond McLeod** 于 1957 年在 Texas Christian 大学获得 MBA 学位,随后,他进入 IBM 公司参与计算机销售人员的培训项目。在那里,他从对 IBM 一无所知到了解并成为公司的一个非常成功的销售人员。他在 IBM 工作了 8 个年头,了解了计算机及其他,如:保险业、制造业等领域的知识。

在 20 世纪 60 年代末期,当别人还在犹豫着自己该怎样做才算为社会做贡献时,Ray 已经决定从事教育事业,并在丹佛的州首府大学(Metropolitan State College in Denver)谋得教师一职。他在教学期间获得了科罗拉多大学的营销学博士学位,并于 1973 年回到 TCU 任营销学和管理信息系统教授,1980 年他来到 Texas A & M 并专门致力于管理信息系统的研究。

在 Raymond McLeod 过去 30 多年的教授生涯中,他的管理信息系统类教材被世界各地的学生广泛地使用,在这一点上,他的书是最受欢迎的。能够和世界各地的学生分享他在计算机领域的经验,Raymond McLeod 感到非常的幸运。

Raymond McLeod 在取得卓越的课堂教学成就的同时,还从事商务系统中计算机应用研究的指导工作。他所从事的项目,绝大多数都为他的管理信息系统教材的编写提供了信息,如:管理者信息系统、营销信息系统、人力资源信息系统等部分。反映他研究成果的文章被发表在《加利福尼亚管理视点》、《ACM 沟通》、《管理信息系统季刊》等著名期刊杂志上。另外,他还担任《管理信息系统》、《信息技术管理》和《信息资源管理》等报纸杂志的评论编辑。

***To Elizabeth***  
***—Ray McLeod***

***To Wilke J. Schell and Norma F. Schell***  
***—George***

# Preface

A textbook consists of two key ingredients—the selection of topics and their organization. These ingredients have always received top priority in *Management Information Systems*; but because of the dynamic nature of the computer field, the task becomes more difficult with successive editions. Each year there are numerous new topics, and decisions must be made concerning where to put them and what old topics, if any, to discard.

Although these can be tough decisions, two situations make the job easier. First, there are many more sources of material today than there were in the past. When the first edition of *Management Information Systems* was published in 1979, one good reference on a topic was considered a gold mine. Fortunately, that situation has changed. Today there are many excellent sources for each topic, making it possible to provide complete descriptions from several points of view.

The second situation that simplifies the job of writing an MIS text is the fact that the underlying theory does not change that much. The theory provides the framework for the technology and is relatively stable. So, when someone writes a new edition, it is not like starting out with a clean slate, wondering what the first word should be.

*Management Information Systems* has always enjoyed a strong brand loyalty among the instructors who adopt and use it. The main reason is that students like it. In their course evaluations, students consistently give the text a good rating, their comments indicating that they like the logical organization and the clear descriptions. Supporting these two features is the strong theoretical base.

- **Logical Textbook Organization** You will find this eighth edition well organized, with the topics flowing logically within each part and each chapter. Terms are not used in a chapter without first defining them.
- **Thorough Explanations** This edition upholds its tradition of complete coverage of each topic that is introduced. Emphasis has never been on the number of topics covered but, rather, on the number covered well.
- **Solid Theoretical Base** The framework for the text consists of approximately 400 illustrations in the form of schematic diagrams, or models. Some of the models were created over the years by experts in the field, and their contributions are acknowledged. Most, however, are unique to this text. The diagrams provide a road map, making it easier to learn the material so that students can apply it in their careers.

These three features—good organization, thorough explanations, and a solid theoretical base—give students an advantage in learning about the complex and changing field of business computing.

## A Management Orientation

Like the previous editions, the eighth edition views computer use through the eyes of the manager. The management orientation has always seemed appropriate, but the case is even stronger today with so many managers personally using their computers to produce information.

When students later become managers, they will have many opportunities to apply the text material. Perhaps, however, they are primarily interested in computers and want to become computer specialists. As systems analysts, network specialists, or database administrators, they will apply the material as they work with managers in developing managerial systems. Of course, before long they may become managers themselves in the information systems area. So, regardless of the position of the computer specialist in the organization, he or she will benefit from seeing problems from management's point of view. This text will give students that perspective.

### **New to This Edition**

**WEBSITE SUPPORT** The Prentice Hall Companion Website for the Eighth Edition features new projects, two for each chapter of the text, within the Interactive Study Guide. The student side of the site provides the projects and instructions for completing them. The instructor side of the site contains the projects, the project answers, and materials for helping students having difficulty with the projects.

These new Companion Website projects are designed to reinforce concepts presented in the chapter. Students also derive skills in the use of technology as they solve the projects. Project exercises incorporate spreadsheets, database queries and reports, word processing, and web page development into their design. The book's Internet address is:

**<http://www.prenhall.com/mcleod>**

**NEW AND UPDATED CHAPTERS** This edition includes one completely new chapter—Chapter 15, Enterprise Information Systems. The textbook has always given strong attention to such organizational information systems as executive information systems and marketing information systems, and that emphasis is continued. Chapter 15 serves to address business computing from an organization-wide perspective—an approach that is currently receiving much attention on a global scale.

In addition to this new chapter, many substantive changes have been made to other chapters. Part Three, which covers computer technology, has been completely rewritten. Chapter 8, Fundamentals of Computer Processing, has been updated with current hardware and software examples. Chapter 9, The Database and Database Management System, and Chapter 10, Data Communications, have also been completely revised.

All of these changes serve to keep the text up-to-date in areas of technology and methodology.

### **Boxed Inserts**

All chapters contain a boxed insert entitled "Highlights in MIS" that relates the chapter material to the use of information technology in business and industrial organizations. In essence, these inserts describe how firms have been both successful and unsuccessful in applying the principles of information management.

### **Examples of Applying the Systems Approach**

Chapter 6 describes the basic problem-solving methodology—the systems approach. From that point on, each chapter includes a section called "Applying the Systems Approach," which discusses how this approach can be applied to the chapter material. These sections continue the systems focus long after the fundamentals are presented early in the text.

### **Updated Appendixes**

In addition to the chapters, there are five appendixes. Two deal with the tools of systems development—data and process modeling. These topics are of most interest to information specialists but can have value to users engaged in end-user computing.

Data modeling is accomplished by using entity-relationship diagrams and data dictionaries to document the firm's data. Process modeling is accomplished by using data flow diagrams and structured English.

Three additional appendixes deal with organizational information systems—manufacturing information systems, financial information systems, and human resources information systems. These three appendixes complete the coverage of computer use by the major business areas.

### **Modular Organization of the Chapters**

The text is divided into six parts.

*Part One: The Computer as an Organizational Information System* Part One consists of five chapters and provides the course foundation. Regardless of the course approach, Chapters 1, 2,

and 3—Introduction to the Computer-Based Information System, Using Information Technology for Competitive Advantage, and Using Information Technology to Engage in Electronic Commerce—should always be covered first. They capture the essence of contemporary computer use in business.

The next two chapters—chapter 4, Computer Use in an International Marketplace; and chapter 5, Ethical Implications of Information Technology—should be included in the course foundation when the text is used in an introduction to computing course required of all business majors.

**Part Two: Systems Methodologies** With the foundation laid, the instructor can take the remaining parts in any order, depending on the emphasis desired. Part Two consists of two chapters: chapter 6, Systems Concepts; and chapter 7, System Life Cycle Methodologies. Chapter 6 explains business operations in systems terms and provides the framework for understanding how managers and information specialists solve problems. Chapter 7 describes the frameworks that have been devised to guide users and information specialists in the process of systems development. This part is included in a course where the instructor recognizes the value of a solid theoretical foundation. Such an approach would be especially appropriate when the course is required of all information systems majors.

**Part Three: The Computer as a Problem-Solving Tool** Part Three is appropriate when the course is to include computing technology. The instructor selects such an approach when the students' previous exposure to computing has been limited primarily to personal computers and prewritten software and when students need a broader foundation in technology. Chapters 8, 9, and 10—Fundamentals of Computer Processing, The Database and Database Management System, and Data Communications—provide this needed foundation.

**Part Four: The Computer-Based Information System** This part contains four chapters, each describing a major business computing application area. All of the areas are collectively called the computer-based information system, or CBIS. The CBIS subsystems are covered by chapters 11 through 14—The Accounting Information System, The Management Information System, Decision Support Systems, and The Virtual Office. The chapter on decision support systems also includes coverage of knowledge-based systems. Part Four should be included in every course approach because it provides an overview of all of the ways that the computer is being used to solve business problems.

**Part Five: Organizational Information Systems** This part expands on the management information system chapter to describe how the MIS concept has been applied to subsets of the organization. Chapter 15, Enterprise Information Systems, provides a corporate-wide umbrella for computer applications; Chapter 16, Executive Information Systems, explains computer use at the top organizational level. The other chapters explain computer use in two major functional areas: chapter 17, Marketing Information Systems; and Chapter 18, Information Resources Information Systems.

Chapter 18 is the concluding chapter of the text and describes the responsibilities of the chief information officer (CIO) in relation to such topics as management of a global information network, information security, and information quality. This chapter prepares students majoring in information systems for management responsibility, which will begin just a few years after graduation in the form of project leadership.

This concluding part of the text, Part Five, on organizational information systems has always been one of the instructors' and students' favorites, and some or all of the chapters can be included depending on the desired emphasis.

Realistically, the text includes more material than can be covered in a single semester. This is especially true when the course includes some type of experiential activity, such as a term project or solution of case problems. The underlying philosophy of the text has always been one of allowing the instructor to "pick and choose." The instructor can assemble the ingredients to achieve just the right course emphasis.

### **Proven Chapter Pedagogy**

Each chapter begins with Learning Objectives and an Introduction, and ends with Key Terms, Key Concepts, Questions, Topics for Discussion, Problems (when appropriate), and one or two

Case Problems. The concepts and discussion topics focus attention on the important chapter elements. The questions and problems test knowledge and allow students to apply the material in a creative way.

### **Strong Ties to the Literature**

Footnotes throughout the text, combined with an end-of-book bibliography arranged by chapter, tie the material to the rich MIS literature. Many references are "classics" that have withstood the test of time. Other references shed light on applications that are just now emerging. Therefore, what is given is not only a look at the field today but an appreciation for how this point was reached, and an idea of what is to come.

### **A Complete Package**

A complete set of materials is available that will assist students and instructors in accomplishing course objectives.

#### **Materials to Help the Student**

- **Companion Website:** [www.prenhall.com/mcleod](http://www.prenhall.com/mcleod) The Eighth Edition Website features a comprehensive Interactive Study Guide for students and a password protected download area for instructors. The Interactive Study Guide includes new chapter projects, multiple choice and true/false questions, monthly technology updates, and downloadable PowerPoint Presentations.
- **Internet Links** Throughout the text are Website addresses where related material can be obtained from the World Wide Web. These Web locations provide valuable information that, when used with the text material, provide a complete, up-to-date coverage of business computing.
- **Pricing Model** The pricing model is a mathematical model that allows the student to make a set of major decisions and see the effect on a firm's profitability. The model gives first-hand experience in using the computer as a decision support system.

#### **Materials to Help the Instructor**

- **PowerPoint Presentations** Color visual aids, in Microsoft PowerPoint, make it easy for the instructor to supplement classroom lectures and discussions with professional graphics. The visuals include bulleted items that provide a lecture outline, plus key figures and tables from the text. The PowerPoint Presentations are available from the text Website at [www.prenhall.com/mcleod](http://www.prenhall.com/mcleod).
- **Instructor's Manual (IM) and Test Item File (TIF)** This edition features the IM and TIF all under one cover. Written by the authors, the IM includes suggestions for designing the course and presenting the material. Each chapter is supported by answers to end-of-chapter questions and problems, and suggestions concerning the discussion topics and cases. The IM also includes suggestions for integrating the appendix material and experiential activities into the course. The test bank, also written by the authors, consists of true-false and multiple-choice questions, plus a 10-point miniquiz for each chapter. ISBN 013-019736-X.
- **Prentice Hall Test Manager** The computer version of the test bank includes the same questions as the paperback version of the test bank. The Prentice Hall Test Manager runs in Windows and enables the instructor to select questions and create customized exams. ISBN 013-019737-8
- **PH MIS Video Series** A videocassette covering various topics in MIS is available free to adopters of this textbook. This video contains custom clips created exclusively for Prentice Hall and features the following companies: Andersen Consulting, Land's End, Lotus Development Corporation, Oracle Corporation, and The Pillsbury Company. ISBN 013-027199-3
- **Companion Website:** [www.prenhall.com/mcleod](http://www.prenhall.com/mcleod) The password protected Instructor's area contains the Instructor's Manual and additional teaching resources.

This complete set of materials provides both students and instructors with a variety of options in terms of course support.

### Acknowledgments

**A TEAM EFFORT** Throughout the text the authors frequently use the term "we." The authors are not always referring to themselves but also to many people who have made valuable contributions. Playing key roles have been the people at Prentice Hall, among them David Alexander, Senior Acquisitions Editor; Michael Reynolds, Production Editor; Sondra Greenfield, Managing Editor-Production; Paul Smolenski, Manufacturing Supervisor; Lisa Babin, Manufacturing Buyer; Lori Cerreto, Associate Editor; Kris King, Senior Marketing Manager; Nancy Welcher, Media Project Manager; Erika Rusnak, Editorial Assistant.

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