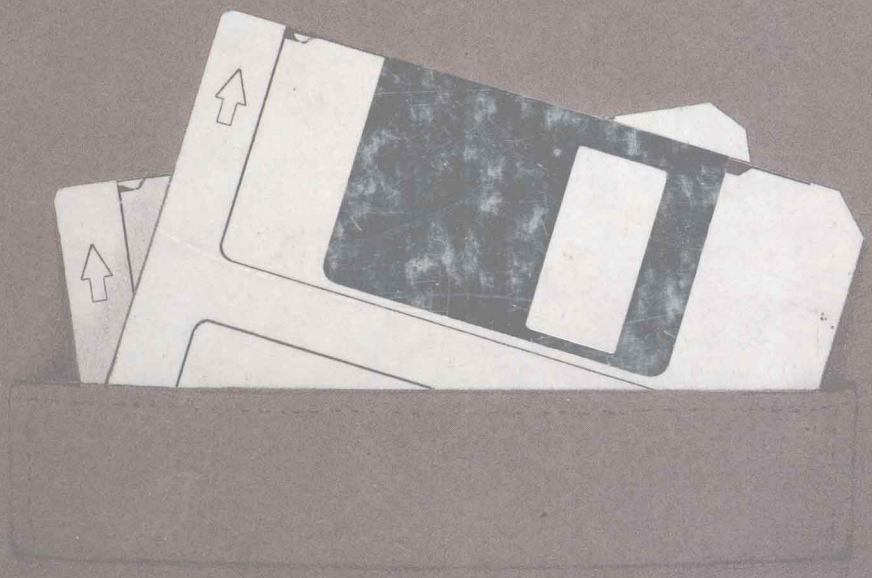
MANAGEMENT INFORMATION SYSTEMS

DAVID KROENKE



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This book is dedicated to my children,
Chris and Cara

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Preface

To the Student

If you could spend less time studying and yet double your learning, would you do so? If you could halve your time studying for an exam, yet score the same, or study the same amount of time, yet add a letter grade to your score, would you do so?

Of course you would. In all of these cases, you would be increasing the return on time you invest. All of these suppositions offer an increase in *productivity.*

We begin with the concept of productivity because it is one of the major themes underlying this text. While studying this text, you will learn how information systems are used to increase productivity. First you will learn how information systems improve the productivity of individuals; then you will learn how such systems increase the productivity of groups of individuals, or *workgroups.* Finally, you will learn how information systems increase the productivity of activities that span entire organizations.

To get the most from this book, you probably need to let go of several preconceptions. For one, this text is not about computer programming, nor is it about computers—at least not as a single, primary focus. And while you may learn how to use some personal computer programs, such as spreadsheet or personal database programs, these are not, by a long way, the most important aspects of this text.

At this point, you are probably wondering, then what *is* this book about? Simply stated, it is about the use of information systems in organizations. Now, the term *information system* does, generally, include a computer. But a computer is only one of the five essential components. As you will learn, there are four other components (programs, data, human procedures, and people) that are equally important.

The goal of this text is to teach you how information systems composed of these five components can help individuals, workgroups, and organizations achieve greater productivity. This goal is far more important than learning which keys to press to run a personal computer program.

This goal is also more difficult to achieve. Learning how to run a spreadsheet program is a skill that can be readily taught. Learning how to assess a business situation, determine what type of information system is needed, and instigate the development of such a system is more difficult. Such activity is less a skill and more of an art. You will find, however, that the time you invest in learning this art will pay you great dividends in your professional career.

As a final remark, this course is one of the most difficult to teach in the business curriculum. In teaching this course, your professor must ask you to broaden your perspective from a narrow focus on computers and computer technology to a wider focus on business organizations and activities and the role of information systems in facilitating business activities. This will at times be difficult for you to do unless you have had some prior professional business experience. The concepts may seem remote, foggy, and ill defined. Do not give up if this occurs. Part of what you need to learn is how to deal with such situations; they commonly occur in everyday business life.

In short, to obtain the most from this text and course, remove your focus from the computer keyboard and place it instead on learning how to instigate and use information systems as an individual, with a workgroup, and as part of a larger organization. Best of luck!

To the Professor

The MIS course is a critically important course. For many business students, this course offers the only chance to learn how to use information systems to improve their professional productivity. It's our only chance to teach them what systems can do, what problems can be solved, what systems are made of, what roles users have in bringing systems into existence, and how systems impact organizations and vice versa. It's also our only chance to teach them that a personal computer is *not* an information system!

Furthermore, this course holds the opportunity of teaching important fundamentals such as problem analysis, business decision making, critical thinking, conceptual modeling, and so forth. It offers a chance of engaging the students' minds around realistic business problems instead of focusing on the syntax of this language or the keystrokes of that product. In short, it offers a chance to educate minds rather than merely teach skills.

Unfortunately, the MIS course can also be incredibly difficult to teach. The course content tends to be obscure, and almost every lecture threatens

to turn to mush. Students become restive. They expect a computer course. The lectures tend to be one long description after another, sometimes boring student and teacher alike. Facing the threat of an imminent, hostile student uprising, many of us have run for the safe harbor of more and more microcomputer projects. And every time, we vow never to teach this course again!

Yet we do.

I think it is possible to achieve success in this class. It requires careful planning on our part, and a variety of different pedagogical methods. Before addressing these, however, first consider the audience, the course goals, and then two of the major challenges in teaching this class.

The Audience

This text addresses the needs of future business professionals of all functional areas. As discussed in Chapter 1, we labor under the potential misconception that MIS concerns only managers. MIS is broader than this. It concerns the development and use of information systems throughout organizations, by all types of business professionals. Thus, this text is intended not only for future managers but also for future professionals in accounting, finance, sales and marketing, production and manufacturing, and information systems. As indicated by the American Assembly of Collegiate Schools of Business (AACSB), all of these people need a course that addresses the role of information systems for business professionals and organizations today.

To understand and appreciate this course, students need to have completed a large portion of the core business requirements. In most schools this means that this course is taught at the junior or senior level. It is also taught as one of the core courses in the MBA program. Today, in many colleges, this course is preceded by a microcomputer applications course in which students learn to use word processing, spreadsheet, and personal database management system programs. While such a background will be helpful, this text does not assume it.

The Goals

What are our goals? Certainly we want to teach more than keystrokes and microcomputer products. We know we want to educate and not train. But, more specifically, what do we want to do? An example may help to clarify the goals.

Several years ago, I managed a product marketing group for a microcomputer software publisher. At that time, we sold tutorial versions of the

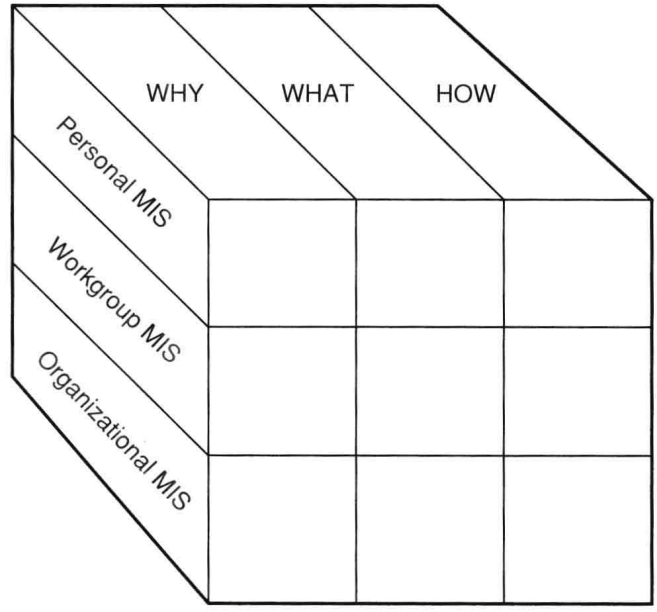
product that we hoped would generate sales for the actual product. During one budget review period, one senior manager challenged the effectiveness of this program.

One product manager developed a proposal for an MIS application that would compare data from tutorial sales against product registration data and compute the number of converted sales. This product manager was not a technical person, but she understood how to develop information from data and effectively challenge the senior manager's skepticism.

Her proposal was approved, and she was able to combine data from several different sources and develop a number of reports that demonstrated the overwhelming effectiveness of the tutorial program. She, by the way, begged and borrowed expertise from a number of technically oriented people to cause her system to be developed.

This sort of confident, proactive information generating behavior is one of the abilities that I hope the students in my MIS class will learn.

To obtain such an ability, students need to understand three major dimensions of MIS applications: ***why*** information systems are needed and the benefits they bring; ***what*** the components of information systems are; and ***how*** information systems are developed. Each of these dimensions pertains to systems at three levels of application: personal MIS, workgroup MIS, and organizational MIS. Thus, specific objectives for the MIS course can be organized as follows:



By the end of the course, I hope my students can describe facts, concepts, ideas, and processes for each of these cells. I also hope that they know—especially in the *how* column—what roles are appropriate for them as future business professionals.

Challenges

There are a number of challenges in attaining these goals. Perhaps the greatest is that the material is difficult for many students to assimilate. The students have little business background or experience, and they know and understand few business systems. They have difficulty appreciating the importance of timely and accurate information, especially when that information only partially satisfies the decision requirements.

The students also struggle to understand the role that organizational dynamics and politics play in the success and failure of all types of business activity, including the development of information systems. Since they have seen few *business* systems, they find it hard to grasp the notion of *information* systems. In the face of all this obscurity, their minds latch onto what they can assimilate—the use of a microcomputer, or the memorization of certain technical terms.

Compounding this situation is the fact that many of their minds are young and have not yet grappled with large, ill-defined problems in which there is a multitude of influencing factors and many, often inconsistent, objectives. They have not yet learned that formulating a question is generally more difficult than answering one. And, though they will find it frustrating, this is one of the courses in which they must begin to grapple with such issues.

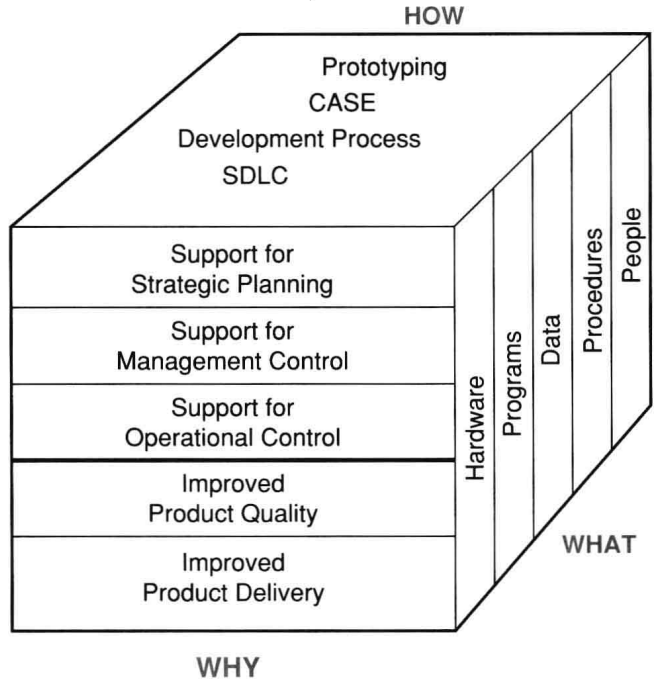
A Two-Part Strategy

My experience in teaching the goals described above in the presence of these challenges is that a two-part strategy is required. First, the course material must be specifically organized to be assimilated by students who have little business experience. Second, students must actively work with the course material through in-class and out-of-class exercises and projects. These assignments should be designed to make the material relevant and interesting. Some of them should involve the computer, but not all of them. Consider each part of this strategy.

Organization. This text is organized into five parts, as follows:

I. Foundations
II. Personal MIS
III. Workgroup MIS
IV. Organizational MIS
V. Decision Support and Expert Systems

The first part lays the foundation. Chapter 1 sets out basic definitions and introduces the notion of systems. Chapter 2 describes fundamental types of MIS. Then Chapters 3 and 4 address the relationship of MIS and organizations and MIS and individuals, respectively. This part (in Chapter 3) also establishes the following framework which is used to structure the rest of the text:



Part II of the text discusses personal MIS. The chapters in this part are structured in accordance with the MIS cube above. Chapter 5 discusses functions of personal MIS (*why*), Chapter 6 discusses the components of personal MIS (*what*), and Chapter 7 discusses the development of personal MIS (*how*). This part concludes with a case development example in Module A.

Parts III and IV are structured similarly, except from a workgroup perspective. Chapter 8 discusses the functions of workgroup MIS, Chapter 9 discusses the components of workgroup MIS, and Chapter 10 discusses the development of workgroup MIS. Module B presents a case illustrating the development of a workgroup MIS.

In Part IV, Chapter 11 discusses the functions of organizational MIS, Chapter 12 describes the components, and Chapter 13 discusses some of the issues involved in developing organizational systems, including strategic systems planning, CASE, and prototyping. Module C illustrates the use of prototypes in the development of an organizational MIS.

Finally, Part V presents two more-advanced topics.
sents decisions support systems, and Chapter 15 discusses knowledge systems, including expert systems. The presentation in both of these chapters follows this same framework.

This organization provides three major benefits to the student:

- First, it is consistent across all types of systems. Students have a framework that they can use at all times for organizing their learning. They know what to expect, and they have a structure to use in reviewing class concepts.
- Second, this organization starts with personal systems—systems that the students can comprehend easily—and spirals through workgroup and organizational systems. Hardware, for example, is discussed three times, at three progressing levels of sophistication.
- Finally, this organization enables students to learn about hardware (or programs, data, procedures, and personnel) in the context of the MIS application in which it is used. For example, LANs are learned not just as a type of computer technology, but more as a technology that is useful for facilitating workgroups activity.

Engaging Active Student Involvement. One of the great dangers in teaching the MIS course is that students become passive recipients of one lecture after another. Students take notes and play those notes back on the exam. Such a process not only leads to little real learning, it is also painfully boring.

To prevent this situation, students need to work with the course material. Accordingly, in-class and out-of-class exercises and projects that give students opportunities to apply the course concepts are critical.
end, each of the chapters concludes with a variety of discussion questions and projects.

In addition, this text is accompanied by a **Project/Casebook** that offers a large number of student activities. Many of these activities are keyed to vignettes and cases introduced in the text; others require application of concepts from the text to new situations. To keep the activities focused, all are directly related to specific learning objectives.

These activities can be accomplished by students working singly or in small groups. They can also be used as the basis for class discussions. Many of the exercises are suitable for a twenty to twenty-five minute in-class activity. Thus, they can be used to make the lecture material more interesting and relevant.

Additionally, the Project/Casebook is accompanied by a data diskette that includes Lotus 1-2-3 worksheets and files of ASCII data suitable for loading into a personal DBMS. These data files accompany the computer-based exercises.

Distinguishing Features

The essence of this text and support package can be summarized by the following specific features:

- **Structured, spiral approach.** The "core" units (II, III, and IV) expand from what's most relevant and easily understood by business students (personal MIS) to workgroup MIS to the most complex systems, organizational MIS. Each of these levels, in turn, is organized into three chapters: goals and applications (*why*), the components (*what*), and the business professional's role in systems development (*how*). This structure is designed to make the MIS course content easier to each and more relevant and interesting to business students.

- **Integrated examples and case studies** based on real events and situations illustrate the environment in which managers work and the information systems issues and opportunities they face. The focus on understanding and applying current concepts and theories to the solution of realistic business problems stimulates student interest and motivation.

- **Current coverage** includes useful and thought-provoking information on executive support systems, workgroups, DSS, expert systems, prototyping, CASE tools, 4GLs, LANs, the uses of information technology for strategic advantage in the functional areas, the management of information systems, database applications, end-user computing, hypertext, and so on.

- **Project-Driven.** In addition to the end-of-chapter projects, a Project/Casebook (with data disk), written by the author, is available and parallels the chapter sequence in the text. This supplement includes three types of projects for each chapter based on: (1) the case study in the text, (2) a second, new case, and (3) dBASE III PLUS and Lotus 1-2-3 applications. The Project/Casebook gives students a wealth of opportunities to apply the textual material. Guidelines for assigning and evaluating each of the projects are included in the Instructor's Guide.
- **A comprehensive *Instructor's Guide*** presents, for each chapter, learning objectives, hints and teaching strategies, detailed lecture notes, answers to end-of-chapter review and discussion questions, suggestions for using the Project/Casebook, and overhead transparency masters.

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Finally, thanks to all the professors who have been so kind and supportive throughout the years. I hope this text helps teach what I have found to be one of the most difficult, yet also the most invigorating and satisfying, courses in our curriculum.

David Kroenke
Mercer Island, Washington

Brief Contents

Detailed Contents

*Each chapter concludes with a Summary, Key Terms, References, Review Questions, Discussion Questions, and Projects.