MANAGEMENT INFORMATION SYSTEMS

Concepts, Structure, and Applications

Elias M. Awad

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MANAGEMENT INFORMATION SYSTEMS

Concepts, Structure, and Applications

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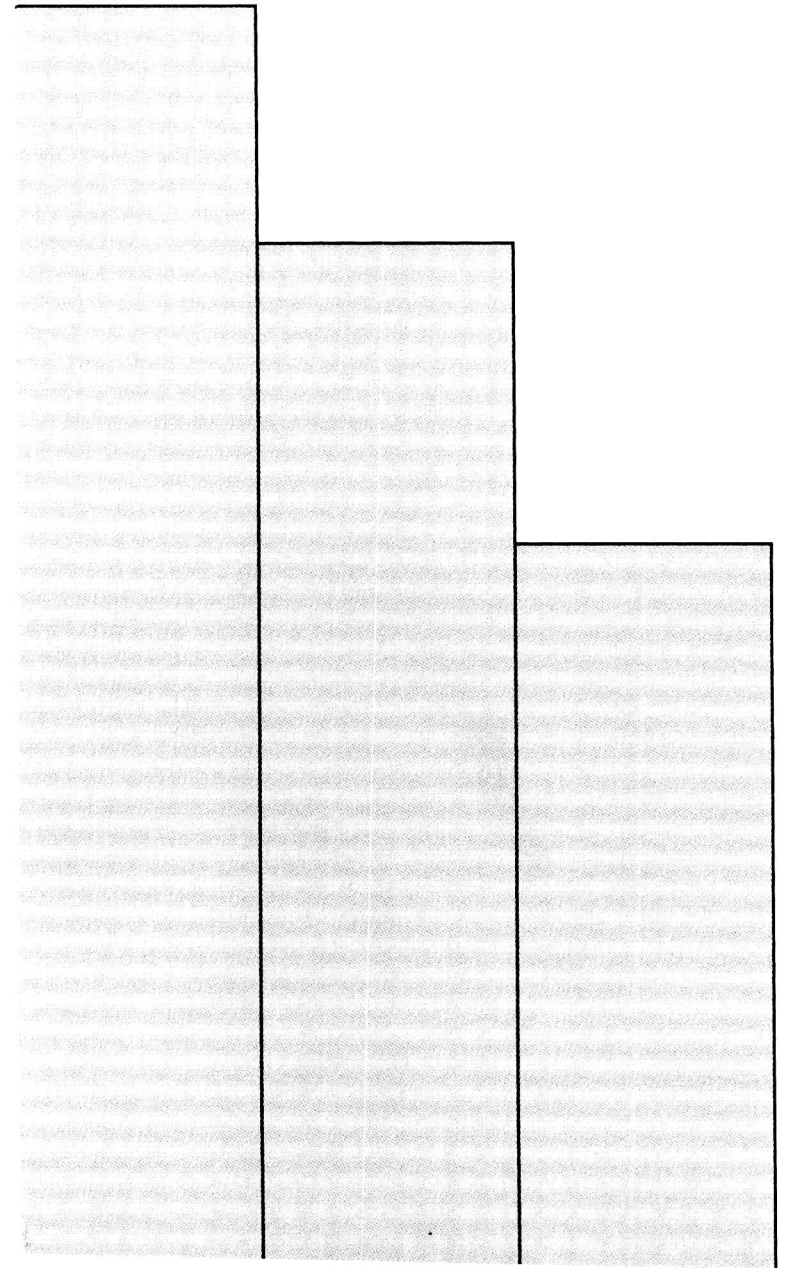

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To the Student

You are already a member of a rapidly growing society committed to the use of information systems for productivity and growth. The computer as a sophisticated tool has become an important part of business and personal lifestyle. Ranging in size from the monstrous "number crunching" supercomputer to the desktop portable, the computer has found its niche in both public and private sectors so successfully that few areas remain untouched by today's highly productive information systems.

Consider the following questions:

- Do you know of a more effective way to provide information for decision making than by computer?
- Can you imagine how easy and convenient it is to use the computer for handling boring and time-consuming computational jobs such as payroll and inventory control?
- How could today's corporations compete without reports such as sales analysis and the graphics that show managers how their firm's performance compares with the competition?

This text will introduce you to the concept of the information system—how it is used in business, why it is used, and how the resulting information can affect you. In your first course in management information systems, you are probably anxious to learn about a number of applications that involve the computer. Based on our experience in teaching this course and the demands of industry, this book covers the following relevant areas:

- The computer's role in business
- What computers can and cannot do
- How computers communicate information to the end user
- The way files and databases are structured for end user computing
- How to analyze and design an information system
- How to manage computer professionals and ensure that company personnel make good use of computers.

It is assumed that you, the reader, are more likely to be a user than a designer of an information system. This book, then, is written with the end user in mind, although two or three chapters briefly treat the technical features of system design. To ensure readability and ease of

learning, every chapter contains many examples and practical applications. Several important learning aids are also included. For example, each chapter opens with a chapter outline to guide your reading and an *At a Glance* capsule that highlights chapter contents. Each chapter ends with the following:

- A *chapter summary* that reviews the main points of the chapter.
- *Key words* to improve your vocabulary in information systems.
- *Review questions* that reinforce your understanding of the key points of the chapter.
- *Minicases* based on real-life business situations that illustrate the concepts covered in the chapter. Questions at the end of the cases ask you to identify the problem and prescribe solutions based on your reading.
- *Selected references* that offer additional sources of knowledge about the subject.

In preparing this book, we have kept in mind that people, not computers, are the final decision makers. Information systems support human decision making. Although the underlying technology continues to provide more "intelligence" to improve the quality of decision making, humans have the final say in the way businesses and society in general must perform.

Before the manuscript found its way into production, it was tested in the classroom over a two-year period, with successive revisions resulting from student feedback and rapid changes in technology. To those students whose suggestions are reflected in the final draft, I am deeply indebted. And since no information systems book is ever complete, future revisions are inevitable. After having gone through this material, you are invited to share your experience, ideas, or thoughts. Please feel free to write to me at the following address:

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To the Instructor

Today's major theme in the human-machine interface is the use of information for competitive advantage. Computer-generated information is both an asset and a weapon that business organizations use to gain competitive advantage in the marketplace. At one time, computers were back-office machines operated by a handful of technicians. In today's information-dependent environment, we find that:

- Computers are mandatory tools for operating a business.
- The right information in the right format available at the right time can make a difference between profit and loss—the success or failure of a business across industries.
- System design and support is now the joint responsibility of management at all levels as well as MIS personnel.
- More and more managers and administrators are becoming computer literate, and systems analysts and designers are gaining a better understanding of the business of the end user. Bridging the formerly enormous gap between users and designers means improved communications and stronger support for information systems in business.
- A surge of telecommunication and networking technology has made it possible for end users to operate applications on their own premises as well as "download" information from the mainframe database directly and economically.
- More and more time is available for the end user to explore creative ways of improving the business as computers take on additional jobs.

New trends, changing technology, and their potential impact on the end user and organizations influenced the writing of this text. Unlike many MIS texts that emphasize heavy-transaction data processing, this volume includes fundamental features of information systems and the state-of-the-art concepts and procedures so vital to management information systems. The following topics are covered:

- End user computing
- MIS planning
- Database concepts and design

- Expert systems and applications
- Managing MIS personnel and career planning
- Decision-making concepts
- How to select hardware and software packages
- Local area networks and telecommunications
- Decision support systems and software
- Analyzing and designing information systems
- Prototyping as a tool
- Fourth-generation languages

Other concepts, topics, and examples illustrate the role of the end user, the use of the personal computer, and the implications of MIS for decision making. Throughout the book, I have tried to keep the material practical, to give examples, and to make concepts easy to understand. Much effort has also been taken to ensure a balance between syntactic and semantic coverage of MIS. This book is neither a "hands-on" nor a theoretical approach to information systems. It draws from established system development concepts and tools to explain how information systems are designed and used in today's organizations. Implementation problems are candidly discussed based on the realities of day-to-day installations. (It is important to point out to the student, for example, that systems can fail not only from faulty design or user resistance to change, but from sheer office politics and lack of top management support.)

This text is designed to be used in one semester or one quarter as a first course in management information systems. No prior programming or data processing background is required, although an understanding of the basics of business or business management is helpful. A summary of hardware and software concepts and developments that normally represent the bulk of a first course in data processing are covered in Chapters 3 and 4, respectively.

This text includes a variety of learning aids:

- A *boxed vignette* at the beginning of each chapter based on a real-life situation that illustrates one or more aspects of the chapter.
- *Tables* and *boxed illustrations* to support concepts or procedures in the chapter.
- A complete *summary* of each chapter.
- *Key words* that are defined in a *glossary* at the end of the book.
- *Review questions*.
- *Application problems* or minicases designed to highlight key issues.
- *Selected references* to provide additional sources of information about the subject matter.

The text is organized around five major areas:

- Two *introductory chapters* that discuss historical developments in MIS, where the field is going, MIS structure classifications, and how MIS is related to decision support and expert systems.

- *Information systems technology* (Chapters 3–7), with special emphasis on how computers work, characteristics of software and how programs are developed, how files and databases are organized, and the concepts of networking and data communications.
- *Decision support and end user computing* (Chapters 8–12), highlighting the procedures behind decision making, the structure and tools of decision systems, the role of end user computing, and the basics and potential of expert systems.
- *Application planning and system development* (Chapters 13–17), beginning with MIS planning and followed by determining the user's information requirements, exploring alternative approaches to hardware and software, and designing and testing the information system.
- *Managerial considerations* (Chapters 18–19), presuming a knowledge of MIS technology, design, and implementation and focusing on how to select, motivate, and manage MIS personnel. Chapter 19 concludes with trends and future directions in management information systems.

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