Management Information Systems

Solving Business Problems with Information Technology

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Preface

A TALE OF TWO CAREERS

Jack Lewis had it made. Or so he thought. A number of well-timed promotions at his Midwest publishing firm, W.C. Green, Inc., had landed him comfortably in the role of marketing director of the educational book division. Unlike many of his colleagues, Jack tried to keep up with the latest changes in information technology. He entered data into spreadsheets to create color graphs for budgets and expenses. His reports were created with professionally designed word processing templates. The dark mahogany desk, the 180-degree view of the duck pond, and the $30,000 of computer hardware and software in his office were testament to his success. Then it happened. A competitor developed an information system that used advanced technology to deliver custom books to students on demand over the Internet. Caught without a competitive marketing strategy, sales at W.C. Green dropped dramatically. Driving home after losing his job, Jack still could not figure out what went wrong.

Julie Nilar just wouldn't quit. She too had a marketing degree like Jack, but decided not to pursue a traditional career right out of college. A nationally ranked bicycle racer, on graduating she chose to develop her cycling skills in international competition, maybe to be chosen for the U.S. Women's Olympic Road Team in the year 2000. To pay the bills she got a part-time job as a marketing representative for Rolling Thunder bicycles, a small Colorado mail order service providing custom-made bicycles to a national customer base. As international competition kept Julie away for long periods, she always took her laptop with her to keep in touch with the office. No stranger to information technology, one project she developed during these long absences was a powerful database application which kept track of Rolling Thunder's suppliers, customers, and their orders. This application became a powerful tool for Rolling Thunder and one which led to greatly increased productivity for the company.

INTRODUCTION

The next few years promise to bring exciting changes to managers. Increased competition forces organizations to cut costs and operate with fewer managers. The growth of small businesses encourages entrepreneurs to run their own businesses and consulting firms. Continued change in Information Technology (IT) is encouraging even more changes to business and society. IT changes such as continual performance improvements, expanded storage capacity, expanded capabilities of software, and the Internet affect all aspects of management.

The exponential growth of the Internet is exceeding all forecasts. The Internet holds the potential to revolutionize virtually all aspects of business. Consumers are presented with more choices and more data. Companies have more ways to track customer actions and preferences. Investors have instant access to data around the world. Managers have more ways to communicate and share ideas.

Changing IT presents two challenges: learning to use it, and finding new opportunities to improve management. Most students have taken a hands-on course that teaches them how to use a computer. Many expect the introductory MIS course to be more of the same—hands-on computer usage tied to specific needs. However, there

are more complex and interesting problems to be solved. Managers need to apply their knowledge of IT tools to solve management problems and find new opportunities to improve their organizations. Hence, the focus of this book is to investigate the more complex question: How can we use IT to improve our jobs as managers?

ORGANIZATION

The text is organized into four parts to explore answers to the question of how information technology can improve management. (I) Information technology is used to improve business transactions and operations. (II) IT is fundamental in the communication and integration of data across an organization. (III) IT plays a crucial role in building models, analyzing situations and making decisions. (IV) How information systems are developed and organized.

ORGANIZATION

Chapter 1 (Introduction) examines the changing nature of IT, business and society. These changes highlight the need for business managers to understand how IT can be used to improve decisions, jobs, and the entire organization.

To begin, Part 1, Chapter 2 (Personal Productivity) presents a review of hardware and software that shows how managers use IT for personal tasks. Instead of simply describing technology and defining terms, the chapter focuses on advantages, disadvantages, and appropriate uses of the various hardware and software tools.

Chapter 3 (Solving Problems) discusses how to analyze and solve business problems, emphasizing the systems approach to give students experience with the subjective side of managing IT. The chapter also introduces students to business object-oriented design.

Chapter 4 (Operations and Transactions) emphasizes the importance of transaction processing systems. It presents common problems and demonstrates how IT is used to collect, process, and store quality data.

Most systems rely on databases for transaction processing, so Chapter 5 (Database Management) concludes this section. It includes hands-on applications that illustrate the use and management of databases, focusing on the importance of managers' understanding of database queries. The appendix illustrates the basic techniques of data normalization.

Part 2 covers a crucial component of MIS that is often ignored or treated lightly in other texts: communication and integration of information. Today's managers work in teams and rely on information systems to capture, transmit, and analyze information from diverse locations and in various formats.

Chapter 6 (Networks and Telecommunications) focuses on the various choices, relative merits, and costs of networks and telecommunications systems, as well as how computers can be physically connected to share data. A separate appendix explains the technical details in more depth.

Chapter 7 (Integration of Information) shows that businesses can make substantial gains through using technology to integrate the data across the company. Integration and technology can change the way business operates and improve decision-making. The chapter also discusses the challenge of combining various forms of data (text, images, sound and video) into information a manager can use.

Part 3 focuses on making decisions. It emphasizes the importance of models in management. Beginning with basic uses of models, the part examines the various IT tools available to help managers examine various aspects of making decisions.

Chapter 8 (Models and Decision Support) introduces models and highlights their importance in making tactical level decisions. The chapter discusses the common uses of models in making decisions. It concludes by examining enterprise-wide models and the use of enterprise information systems to examine problems across the entire organization.

Chapter 9 (Decisions in Business Areas) integrates MIS with courses in other disciplines by examining common problems in accounting, marketing, finance, human resource management, production, and design. The basic problems are described along with the appropriate model. A hands-on version of the problem is developed using common IT tools. The application exercises encourage students to explore the models and tools in more depth. A technical appendix reviews the basic financial ratios and computations used to analyze companies. Students are encouraged to analyze the financial aspects of the cases in each chapter.

Chapter 10 (Complex Decisions and Artificial Intelligence) emphasizes the issues and problems involved in more complex decisions, decisions that involve more complex analysis, greater accuracy, or faster responses. The text then shows how basic AI techniques, including Expert Systems, can be used by managers to reach better decisions.

Chapter 11 (Strategic Analysis) examines difficult decisions—unstructured problems involving strategy. The chapter focuses on common problems in strategy (utilizing Porter's five-forces model), and explores the ways in which IT is used to help organizations gain a competitive advantage.

Part 4 discusses how information systems are designed and created. Again, the focus is on the role of managers in the development process.

Chapter 12 (Systems Development) examines basic issues in developing and implementing systems. The text emphasizes the role played by managers in helping

design new systems. It examines the various development methodologies in terms of their strengths and weaknesses so managers can help determine which method should be used to develop systems they need. The chapter also emphasizes the increasing role of end-user participation in all of the development methodologies.

Chapter 13 (Organizing Information System Resources) examines the various methods of organizing MIS resources. It focuses on the fundamental issues of centralization and decentralization. By emphasizing the strengths and weaknesses of various IT organizational schemes, managers can learn to solve organization problems and can determine how to align MIS to fit their needs.

Chapter 14 (Information Management and Society) examines the ways in which IT is changing society. It also encourages managers to think about the effects of their choices on various members of society. Basic issues include privacy, security, and ethical issues in IT related to managers, programmers, and organizations. Common methods used to provide information security are also presented.

PEDAGOGY

The organization of the text is based on two features. First, each chapter emphasizes the goal of the text: applying information technology to improve management and organizations. Second, the text is organized so that it begins with concepts familiar to the students and builds on them.

Each chapter is organized in a common format: (1) the introduction which ties to the goal and raises questions specific to that chapter; (2) the main discussion which emphasizes the application of technology and the strengths and weaknesses of various approaches; and (3) the application of the technology in various real-world organizations with end-of-chapter cases.

Each chapter contains several sections to assist in understanding the material and in applying it to solve problems and analyze business problems:

- **What you will learn in this chapter.** A series of questions that highlight the important issues.
- **Lead case.** Illustrates the problems explored in the chapter.
- **Overview.** A brief summary of the chapter's goal and outline.
- **Trends.** A section that presents the major changes, brief history, and trends that affect the topics in the chapter.
- **Reality Bytes.** Brief applications, cases and discussion that emphasize a specific point, highlight international issues, business trends, ethics, or illustrate problems and solutions in the real world.
- **Chapter summary.** A list of the chapter topics.
- **A Manager's View.** A short summary of how the chapter relates to managers and to the overall question of how information technology can improve management.
- **Key Words.** A list of words introduced in that chapter. A full glossary is provided at the end of the text.
- **Review Questions.** Designed as a study guide for students.
- **Exercises.** Problems that apply the knowledge learned in the chapter. Many utilize common application software to illustrate the topics.
- **Additional Reading.** References for more detailed investigation of the topics.

- **Cases.** In-depth discussion of the lead case and several other companies. Each chapter highlights a specific industry and compares different approaches to the problems faced by the firms.
- **Discussion Issue.** A brief dialog between managers to highlight a specific topic. Most emphasize ethical issues. The discussion and related questions form a starting point for class discussions.

CHAPTER	CASE FOCUS: INDUSTRY
1	Fast Food
2	Small Business
3	Railroads
4	Retail Sales
5	Service Firms
6	Distributors and Inventory Management
7	Large-scale Manufacturing
8	Design and Marketing
9	Delivery Companies
10	Customer Service
11	Airlines
12	Government Agencies
13	Financial Institutions
14	Health Care

PRIMARY FEATURES OF THE TEXT

- All of the chapters emphasize the goal of understanding how information technology can be used to improve management. The focus is on understanding benefits and costs of technology and its application.
- The role and importance of *objects* in understanding information technology is emphasized. The object approach is bringing major changes to the application and use of technology. A firm grasp of the concepts makes it easier to use new applications; analyze business situations; and communicate with IT developers. The use and managerial importance of object-oriented technology are highlighted throughout the text.
- An emphasis on the importance of database management systems. Increasingly, managers need to retrieve data and utilize a DBMS to investigate, analyze, and communicate.
- An emphasis on the importance of communication and integration of data. Understanding information technology requires more than knowledge of basic application packages. Students need to use and understand the applications of technologies like OLE, Notes, and the Internet.
- Students increasingly want to know how technology is used to solve problems in their chosen major/functional area. Several current applications, including hands-on exercises are highlighted in Chapter 9. The application can be expanded to even more detail depending on the background of the students.

- In-depth cases that illustrate the use of technology. By focusing each chapter on a specific industry, students can understand and evaluate a variety of approaches. Many cases illustrate companies varying over time, so students can see the changes occurring in business, and understand the evolving role and importance of information technology.
- Rolling Thunder Database. A medium-sized, detailed database application of a small business is available on disk. Specific exercises are highlighted in each chapter. The database contains data and applications suitable for operating a small (fictional) firm. The database also contains data generation routines so instructors can create their own scenarios.

INSTRUCTIONAL SUPPORT

- A test bank with true/false, multiple choice, and short answer questions is available for use with the Irwin electronic test bank software.
- Lecture notes and overheads are available as slide shows in Microsoft PowerPoint format. The slides contain all of the figures along with additional notes. The slides are organized into lectures, and can be rearranged to suit individual preferences.
- Several databases and exercises are available on disk. The instructor can add new data, modify the exercises, or use them to expand on the discussion in the text.
- The Rolling Thunder database application is available in Microsoft Access format (version 2.0 or 7.0 [Windows '95]). It is a self-contained application that illustrates many of the concepts and enables students to examine any facet of operating a small company.
- The Irwin IS Video Library contains 14 10-12 minute videos and is available to adopters of the text.
- An Internet site for direct contact with the authors: http://cis.coba.wku.edu/faculty/post
- An Internet site for contact with the publisher: http://www.Irwin.com

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Brief Contents

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