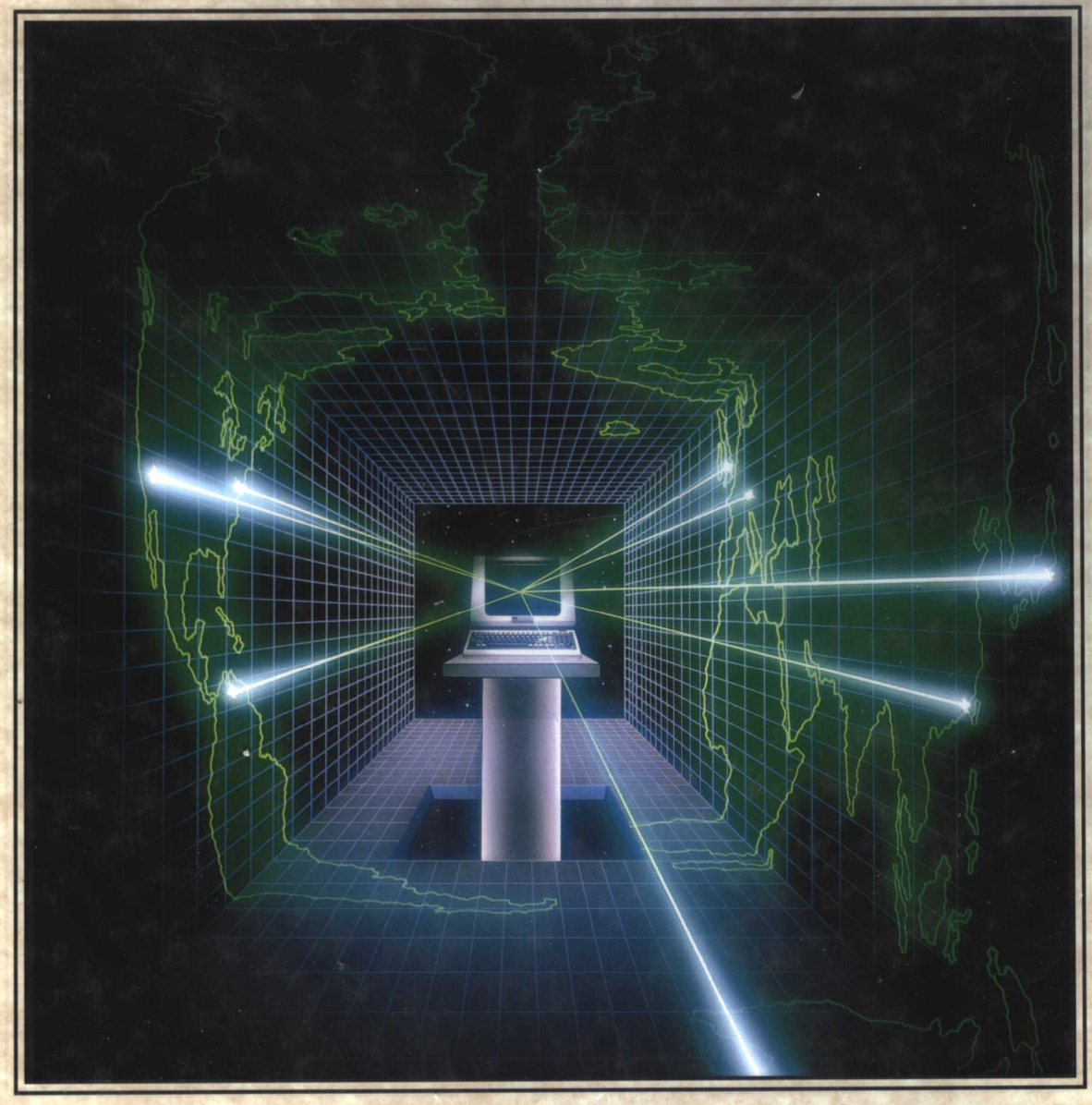
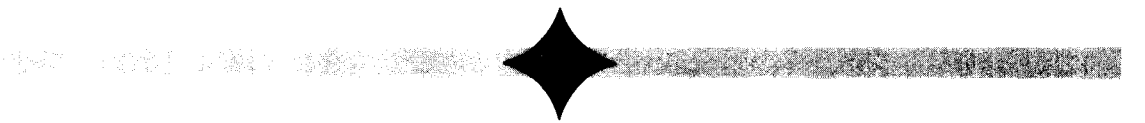
BUSINESS TECHNOLOGY: CAREERS 2000

COMPETITIVE ADVANTAGE
THROUGH INFORMATION TECHNOLOGY

JACK D. CALLON



Competitive Advantage Through Information Technology



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DEDICATION

This book is dedicated to those who must compete in an increasingly complex, dynamic and global business environment. I wish you the best of success in your competitive endeavors and hope that the contents of this book provide the help that is intended.

PREFACE

Successful use of information systems within a business enterprise is often an elusive goal. This book will provide an understanding and appreciation for the use of information technology to successfully manage an enterprise. The competitive role of information systems, which contributes to the overall success of the business through an effective integration of business strategies, information technology and people, is a major focus of the book. Students will gain an understanding and appreciation for the increasing importance of information systems to obtain organizational efficiencies, broaden individual effectiveness and/or gain a competitive advantage.

This book was written to be used in classes that provide a business focus to the use of information systems. The primary courses where this book could be used include Information Technology and Corporate Strategy, Management of MIS, graduate level MIS courses, MBA classes dealing with business strategy and technology, and an undergraduate capstone MIS class.

The book does an excellent job of merging the technical and business training of undergraduate MIS majors. The author has used much of the enclosed material for four MBA MIS classes and two undergraduate classes during the past year.

PREMISE OF THE BOOK

Literally every enterprise, whether private or public, faces unprecedented competitive challenges. The source of these challenges is becoming more global, and the pace of change within the business environment is accelerating.

To respond to these challenges an enterprise needs to develop a necessary and logical vision based on an understanding of the business environment and the strengths and potential of the enterprise. The business vision and its supporting strategies drive the role and use of information systems within the organization.

The compression of time and events has significantly increased information needs for the growing number of people involved in making decisions within an enterprise. Information technology is a major contributor to the growing competitive threats and an enabler of possible responses to these same threats.

For the above reasons the potential role of information systems as a competitive resource has increased.

Innovative use of information technology dictates a systematic approach. It is essential that there be an ongoing working relationship

between those who run a business and the people charged with a responsibility for information systems.

This book emphasizes the importance of establishing and maintaining three distinct perspectives. The first is an understanding of the *business environment* —the industry within which a company competes. The second is a realistic assessment of the *company environment* and its ability to achieve and sustain a competitive advantage. The third, the *use of information systems,* can then be positioned as a competitive resource following the assessment of the business and company environments.

✦✦ KEY TOPICS

- ✦ Challenges: competitive environment, organizational and information technology issues
- ✦ The effects of IT on competition (the way that an enterprise competes)
- ✦ Extended enterprise as a way to compete
- ✦ Competitive analysis methodology and structure
- ✦ Vision, strategy, tactics and business plan
- ✦ Identifying strategic information systems applications
- ✦ The three potential roles of information systems
- ✦ The concept of Roles, Roles and Relationships
- ✦ Information systems as a business within a business
- ✦ The Redefine/Define concept
- ✦ Telecommunications as the delivery vehicle
- ✦ Information systems architectural alternatives
- ✦ Examples of successful organizations
- ✦ A Success Factor Profile
- ✦ Information systems personnel and organizational issues
- ✦ The value of information systems
- ✦ Information systems financial strategies
- ✦ Business and information systems planning
- ✦ TQM and information systems
- ✦ Conclusions on the entire subject of using information systems to compete

✦✦ STUDENT ASSIGNMENTS

The author recommends that a term paper involving a business analysis be assigned, which requires the student to apply the concepts being learned

by evaluating a specific company. The analysis term paper is a challenging assignment, but a number of companies can be evaluated based entirely on public domain, printed material. There is significant printed material available on companies like Charles Schwab, USAA, Federal Express, American Airlines and Wal-Mart. The recommended outline of the paper and a more complete list of companies that can be evaluated based on public domain material is included in the instructor manual. The outline for the paper is also consistent with the three perspectives covered in the book. Section I of the paper addresses the industry, Section II deals with the company and Section III is an analysis of the use of information systems using the structured analysis concepts covered in Chapters 8 to 12.

A class could also be taught using case studies. There are a number of Harvard Business School cases that address the concepts and management issues covered in the book. A third option would be to assign selected exercises at the end of the chapters.

✦✦ INSTRUCTOR SUPPORT

Accompanying this text is a detailed Instructor's Manual, which includes optional course schedules, supplementary readings, lecture suggestions, transparency masters, exam questions, and suggestions for administering the term paper.

✦✦ ORGANIZATION

The book is organized into four sections, preceded by an introductory chapter that introduces the challenges and issues that are addressed in each section. The first three sections correspond to the perspectives needed to understand the impact that the use of information systems has on a business. Section I starts where it must start, with a consideration of the business environment. Section II builds on this by examining important factors that impact the individual company. Then, and only then, does it make sense to look at the role and use of information systems, which is presented in Section III. The final section, Section IV, deals with major information systems management issues.

✦✦ BASIC TERMINOLOGY

The subject of information technology is complicated enough, but the lack of common usage of terms further adds to the confusion. The following

three basic terms are used throughout the book consistent with the definitions provided:

Information technology (IT) is the "pieces and things" that are used to create information systems. It is the mainframes, the personal computers, the disk files, the modems, etc. It is both the hardware and software that is used to implement computer-based systems.

Information systems (IS) include both computers and telecommunications and are the result of a design and implementation process.

The actual design and implementation of information systems are accomplished primarily by the **information systems organization** working closely with the user organizations to define systems requirements. An alternative to this approach would be a joint development effort between the information systems organization and user departments, with the latter playing a more involved role in the technical aspects of the new system. A third approach would be a separate, independent development effort by a user department. There is a difference between information systems and the organization that has a primary responsibility for this organizational resource. This distinction between information systems and the information systems organization has been carefully noted throughout the book.

✦✦ THE INFORMATION TECHNOLOGY SPECTRUM

Ask someone what they think they need to know about information technology to function effectively in the business environment of today. Their response will undoubtedly be an indication of their own personal background and experience. It is important to keep in mind that there are multiple levels of information technology, representing a very broad spectrum. Where a person works and functions within this spectrum will greatly influence the answer to the question regarding a logical focus within a business-oriented class. The multiple levels within this information technology spectrum include:

- **Research**—basic research on physical science and information technologies.
- **Product development**—translating basic research into marketable IT products.
- **Manufacturing**—making the actual products.
- **Marketing**—identifying markets and selling the products.
- **Design and implementation**—obtaining information technology products and creating information systems through an analysis and development process.
- **Use of information technology-based systems**—applying information systems to functions and processes within an organization.

- **Management of the use of information technology-based systems**—addressing the specific information needs of the organization.

Where within the above spectrum should the emphasis of a business-oriented class dealing with information systems be placed? Most people, including the author of this book, conclude that the focus needs to be on the use of information systems and the management of this use. That is exactly what has been emphasized in this book.

ACKNOWLEDGMENTS

A book like this may be prepared by a single author, but it is actually written by many people. It is with difficulty that I attempt to acknowledge all of those who have contributed to the writing of this book, as I am sure that I will overlook some whom I should recognize. People who have assisted fall into three categories: (1) authors of other publications, (2) personal contacts as a source of information and (3) those willing to review specific chapters to validate the contents.

The first category is referenced within the book, but particularly significant are Michael Porter (competitive strategy), Kenichi Ohmae (multinational company role in global competition), Peter Keen (vision process and telecommunications), Peter Drucker (business perspective and Redefine/Define concept), Charles Wiseman (Strategic Option Generator), Marilyn Parker and Robert Benson (IS value and planning structure), David Kearns and David Nadler (Xerox and TQM) and W. Edwards Deming (TQM).

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I would be remiss if I did not thank my students, both graduate and undergraduate, as they have been the ones upon whom the enclosed material has been tested and honed. They are the ones that prove that the material makes sense and that the structured analysis can be a good learning

tool. The paper in the appendix written by Ali Eridiaz as an MBA student is offered as tangible evidence of this contention.

Frank Ruggirello was a positive, steadying influence as my editor, and Peter Keen provided insightful critiques and recommendations as a consulting editor. Jehanne Schweitzer did an excellent job in managing the final production, and Susan Defosset was a pleasure to work with as the final content editor of the book. Her biology training was a good check on whether material was understandable to those not possessing an information systems background.

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