INFORMATION SYSTEMS FOR PLANNING AND DECISION MAKING

The Strategic and Operational Management of Human Resources, Finance, Manufacturing and Marketing Through Information

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To
Sandy Kallman
and
Françoise Reinharth

Foreword

Sun Tzu, a Chinese general who wrote one of the great books on war about 2500 years ago, stated that victory usually goes to the side with the best information.[1] Sun Tzu wanted good information about the enemy, his own forces, his allies, neutrals, the general political framework of the conflict, terrain, weather, and all the other factors that could affect the outcome of conflict. He was also at pains to deny information to his adversaries or to provide them with inaccurate or misleading information. Sun Tzu was a highly successful general. His work is revered by modern military and intelligence managers. His writing on information (and disinformation) forms one of the basic texts of the Russian KGB.

The information needs of modern corporate organizations are not much different. You must know about your market, your competitors, your capabilities, your suppliers, distribution channels, government activities and intentions, political and social trends, changes in technology, and a host of other factors that affect your success. If you have the information and use it well you and your organization are likely to succeed while competitors fail.

This is a book about information and the information systems used to gather, process and present the information you have. It covers the information you need to do your job, where and how you get it, how you organize it, and what you do with it. It is a practical book, for use by managers and staff at all levels of the organization, and covers the special information needs of each functional area: Human Resources, Finance, Manufacturing and Marketing.

Since most large organizations use computers, the management of information by computers is covered in some detail. At present these systems have intriguing names such as Management Information Systems (MIS) or Decision Support Systems (DSS). These acronyms are labels for the current fads of modern management. New systems with new acronyms are on the way such as Artificial Intelligence (AI) and Videotex. This book tells you about them and what to do about them. Remember that people were running organizations long before there were computers. They also needed information to manage their organizations and they needed information systems—however casual they may have been—to organize their information.

Computers are useful tools if properly used. They are not themselves an answer to your problems. In fact, if your basic systems are not well designed and well managed, computers will only make your problems worse. The basic rule is, *If you cannot do it by hand, you cannot do it with a computer.* Computers are fast. If you incorporate

[1] *Ping-fa* "The Art of War"

them into poor systems, your vital information will become a jumbled mess with appalling swiftness.

In practice the main advantage of computers has been to force organizations to improve their systems. Once a company spends the money for computer hardware, then faces the stunning costs of the software, operations, and maintenance, it ceases to be possible to ignore the basic systems. The systems could have been improved without the computer. But without that outlay of cash nothing would have been done. This book guides the functional or general manager through the systems development process to provide an adequate return for this computer expense.

The basic purpose of this book is to insure you get the right information, in a timely manner and at a reasonable cost. The authors, who have extensive business and computer backgrounds, bring a wealth of experience to this guide for management. They know how to write. Their planning book* has been well received, and they are frequent contributors to *Planning Review,* the journal of the North American Society for Corporate Planning.** They have supplemented their own views with those of other experts and with actual examples from real companies such as Prudential Insurance Company of America, Cannon Mills and Ogden Corporation.

Read this book carefully. Think how the material can be applied to your organization. Design your systems. Get them working. Then get your computer to make your systems work faster and—with a little luck—more profitably.

MALCOM W. PENNINGTON
Senior Editor, *Planning Review*
President, The Marketing & Planning Group, Inc.

* Leon Reinherth, H. Jack Shapiro, and Ernest Kallman, *The Practice of Planning: Strategic, Administrative, and Operational* (New York: Van Nostrand and Reinhold, 1981).

** For more information on the North American Society for Corporate Planning or *Planning Review* contact the society at P.O. Box 1288, 300 Arcade Square, Dayton, OH 45402 or telephone (513) 223-4948.

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Preface

WHY SHOULD YOU READ THIS BOOK?

You already know the value of information. You are successful in your trade or profession. You probably have a computer in your organization and may even have a personal computer at home. But you also know that things are changing rapidly and in no place are they changing more rapidly than the area of information management and use. In some areas there is more information than you need, and in others there is not enough. The environment both in and outside the organization is becoming increasingly dynamic and complex. There are so many areas that need automation that you do not have enough resources to serve them all. And it is hard to set the priorities for the resources you do have. If you're not a data processing professional, you really don't understand what the technicians are doing and perhaps don't even trust them! If you are a data processing professional you are sure you are misunderstood and are angry with those it is your job to serve.

WHY DID WE WRITE THIS BOOK?

We are convinced that knowledge is the key to understanding; and that knowledge of information is the key to allowing a manager to plan better, to make better decisions and to maintain control of the functions he or she is managing. Knowledge of information means understanding the importance of information to the organization, recognizing the relationship of information to organization structure, knowing how to manage information and being able to deal with the information technicians. Specifically it means choosing the right information to support each corporate function. Individual managerial performance and ultimate corporate success require a manager to deal successfully with information. But most managers have not been trained in this essential skill. They need assistance in managing their information resource.

WHAT DOES THIS BOOK DO?

The books cuts through the jargon and explains to the manager key information systems concepts in clear, understandable terms. The reader will achieve an understanding of how to deal effectively with information as a resource and with the data processing or information systems professional whose responsibility is providing information support to the organization. In addition, the book contains dozens of actual corporate reports to illustrate the kinds of information managers use at both the

strategic and operational levels in the areas of finance, human resources, manufacturing and marketing.

HOW DO YOU USE THIS BOOK?

Chapters are sequenced to build knowledge and confidence in the reader with little prior experience with information systems. More knowledgeable readers can access specific chapters immediately. For example, the knowledgeable information systems specialist can skim chapters 1, 2, 8 and 9, using them for reference and refreshers. On the other hand, this kind of individual will want to examine chapters 3 through 7 carefully as they provide the details of each functional area and its strategic and operational perspective. Likewise, managers familiar with a particular functional area, for instance, personnel, may want to skim the text portion of the human resources chapter but then pay particular attention to the actual reports and outputs from industry. Similarly they will be able to make good use of the information systems (IS) chapters to enable them to deal effectively with IS professionals. Those new to a particular functional area will benefit not only from the outputs provided but from the chapter text which has sections on the description of the function, management information requirements and sources of data.

The information systems chapters are supported by annotated reference lists to encourage further reading in specialized areas. Those four chapters also contain reprints of pertinent articles from the current literature which amplify significant points in the chapter. In addition an appendix contains general articles dealing with areas complementary to the purposes of this book: information systems job descriptions, preparing a request for a hardware or software proposal, dealing with vendors and the pros and cons of a distributed processing system.

The functional chapters have, in addition to the sample outputs, short article reprints, sample procedure manuals, some full article reprints and other documentation to explain fully the areas being discussed.

HOW IS THIS BOOK ORGANIZED?

There are nine chapters. The first chapter describes the interrelationship between the planning function and the information processing function, and how critical the successful performance of one is to the other. The role of information in the organization is described in detail showing how each organizational level has unique information needs. The kind of planning performed at each level is also reviewed and a connection is made between a level's information needs, the planning performed at that level and the kinds of decisionmaking required. The various kinds of decisions are described (structured, semistructured and unstructured) and the implications of these types for information processing and computers are explained. Finally, the pattern that an organization follows in moving towards a totally computerized information/decisionmaking system is detailed, including the pitfalls and processes common to this evolution.

Chapter 2 describes the steps to be taken in the developing of any information system. The system development plan is then linked to the corporate plan through a

discussion of the planning process and the factors than inhibit corporate planning. The need for top management involvement, communication and control in both processes are emphasized. The structure and function of the information systems department is outlined and the role of that department in the organization defined. The concepts of Data Base Management Systems (DBMS), Distributed Data Processing (DDP) and Office Automation (OA) are included as examples of the opportunities that imaginative information systems managers have for servicing the firm. Lastly there is a discussion of the project control and information analysis aids available to the manager of the systems development project. Among the topics discussed are the structured approaches to information analysis, design and control.

The strategic decision perspective is provided in chapter 3. This includes an analysis of the strategic decisionmaking environment and the sources of information external to the organization. Decision Support Systems (DSS) are defined, their functions and components explained and a number of DSS applications described. DSS implementation problems are also discussed. The outputs presented include an IBM ten-year marketing perspective, a Human Resource Model from Prudential Insurance Company of America, a financial model from Management Decision Systems, Inc., and an example of a DSS financial model from Ferox Microsystems Incorporated, as well as some brief articles on the threat of too much information and how to use a computer to create a long-range plan.

A preface to the next four chapters describes the professional and trade associations available to the professional manager and encourages their use as a source of current information. The format of these four chapters is similar in that each describes a functional area, management's information requirements in that area, the sources of this data, sample information system outputs and an evaluation of those outputs. Chapter 4 deals with the Sales-Marketing Information System. The key outputs are actual reports from Cannon Mills Inc. Chapter 5 deals with Manufacturing and describes the opportunities being offered by robotics, computer automated design (CAD) and computer automated manufacturing (CAM). The outputs are primarily those of Standard Motor Products, Inc. Chapter 6 is the Personnel or Human Resources chapter. One objective of this chapter is to describe the expansion of the personnel function to include all aspects of the firm's human resources. The outputs and procedures are primarily from The Prudential Insurance Company. Chapter 7, the final functional chapter, handles the financial area. For this section the Ogden Corporation provided many of the reports and forms shown, as well as outputs from Ferox Microsystems Incorporated and Mini-Computer Systems, Inc.

Chapter 8 picks up the information systems theme by examining the decisions that have to be made in the procurement of computer hardware and the complicated process of deciding whether to make or buy computer software. The different kinds of software are explained and the skills required for a programming staff are described. The steps in the software purchase decision are listed and fully explained. In the hardware area the potential for microcomputers in the business environment is examined and the differences between these and the larger computers are weighed in terms of performance, availability and support.

But the current state of the art is not the final word in computer development. The future is the theme of Chapter 9. Demands for information will increase and the tech-

nology to provide it will improve. But there will be problems and challenges that will have to be faced by the manager of the future. The problems/challenges lie in the areas of data communications, home information retrieval systems, software personnel availability, hardware advancements, changes in hardware distribution and service offerings, and the kinds of applications developed. The chapter concludes with some suggestions on how to meet these challenges.

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LEON REINHARTH, Ph.D.

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E.K.
L.R.

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