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工商管理精要系列·影印版

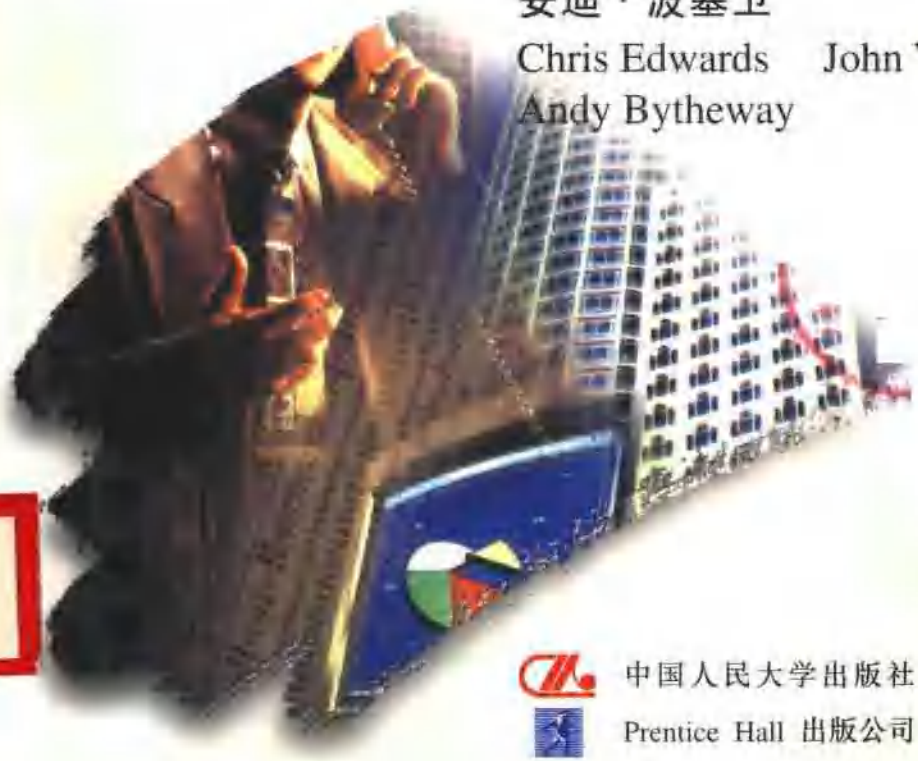
信息系统

（第二版）

INFORMATION SYSTEMS

SECOND EDITION

克里斯·爱德华
约翰·沃德　　著
安迪·波塞卫
Chris Edwards　John Ward
Andy Bytheway



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图书在版编目(CIP)数据

信息系统:(第二版):英文/爱德华(Eduards, Chris)等著·影印版
北京:中国人民大学出版社,1997.12
(工商管理精要系列·影印版/巴克利主编)
书名原文:The Essence of Information Systems(Second edition)

ISBN 7-300-02493-9/F·773
Ⅰ.信…
Ⅱ.爱…
Ⅲ.管理信息系统 英文-影印版
Ⅳ.C931.6

中国版本图书馆 CIP 数据核字(97)第 28267 号
Chris Eduards, John Ward and Andy Bytheway: The Essence of Information Systems(Second edition)
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出 版:中国人民大学出版社
(北京海淀路 157 号 邮码 100080)
Prentice Hall 出版公司
发 行:中国人民大学出版社
经 销:新华书店
印 刷:河北省涿州市星河印刷厂

开本:787×1092 毫米 16 开 印张:13.75 插页 1
1997 年 12 月第 1 版 1997 年 12 月第 1 次印刷
印数:1—5 000

定价:22.00 元
(图书出现印装问题,本社负责调换)

《工商管理精要系列·影印版》

出 版 说 明

《工商管理精要系列·影印版》是中国人民大学出版社和西蒙与舒斯特国际出版公司继《工商管理经典译丛》之后，共同合作出版的一套大型工商管理精品影印丛书。

本丛书由欧洲著名管理学院和管理咨询公司的教授和专家撰写，它将90年代以来国际上工商管理各专业的最新研究成果，分门别类加以精练浓缩，由享誉世界的最大教育图书出版商Prentice Hall出版公司出版。每一本书都给出了该专业学生应掌握的理论框架和知识信息，并对该专业的核心问题和关键理论作了全面而精当的阐述。本丛书虽然篇幅不长，但内容充实，信息量大，语言精练，易于操作且系统性强。因此，自90年代初陆续出版以来，受到欧洲、北美及世界各地管理教育界和工商企业界读者的普遍欢迎，累计发行量已达数百万册，是当今国际工商管理方面最优秀的精品图书之一。

这套影印版的出版发行，旨在推动我国工商管理教育和MBA事业的发展，为广大师生和工商企业界读者，提供一套原汁原味反映国外管理科学研究成果的浓缩精品图书。有助于读者尽快提高专业外语水平，扩大知识面，掌握工商管理各专业的核心理论和管理技巧。

本丛书可作为管理院校的专业外语教材和各类企业的培训教材，对于那些接受短期培训的企业管理者、MBA学生，以及想迅

速了解工商管理各专业核心领域的师生来说，本丛书更是极具价值的藏书和参考资料。

为了能及时反映国际上工商管理的研究成果，中国人民大学出版社今后将与 Prentice Hall 出版公司同步出版本丛书的其他最新内容并更新版本，使中国读者能借助本丛书，跟踪了解国际管理科学发展的最新动态。

1997 年 8 月

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Preface

Since the first edition of this book the general level of interest in information systems and their contribution to business has continued to increase; this book deals with the subject from a *management* and *business* perspective. It focuses on the way in which business strategy is served by information systems, and explains the tools and techniques that will help to ensure that information systems strategies are in line with strategic business needs. In this second edition there is new material on business process redesign, process and information analysis, requirements analysis, outsourcing and trends.

Information systems management is still a young subject, and there are no ground rules that provide an easy, prescriptive understanding of what 'best practice' might be. Technology continues to change rapidly, undermining the ability of technical people to develop a reliable and manageable approach to their work. It also prevents the development of a stable relationship with the IT supply industry. Within the business itself, information systems users continue to develop their level of competency and understanding, and therefore their level of expectation and their ability to articulate needs.

In this situation the only sensible approach is to step back from the particular (which changes from year to year, and even from week to week) and to try and understand the underlying principles which will provide a more enduring understanding of successful information systems management. This is the general approach taken in this book. In it there are no detailed descriptions of 'methodologies', nor of current products and services. Instead we prefer to use some traditional and some new management ideas, to understand the benefits that information systems can provide and the means to achieve them, whatever the particular circumstances might be. We hope that this book will be interesting to a wide audience, especially practising business managers, students of business administration, and

IT product and service suppliers who wish to understand more about the managerial perspective on information systems.

Our thanks are due to many who have made this book possible. Especially to Dawn, Christine, Lisa, Jackie and Pam, who helped with production in different ways, and 'kept shop' while we were totally occupied with the book's content. Also, to all those MBA students and practising managers who have helped us to shape our ideas over the last few years.

Chris Edwards
John Ward
Andy Bytheway
Cranfield School of Management, June 1995

Contents

1

Setting the scene

For some thirty years organizations have been developing computer-based information systems. Before this people, paper, pens, calculators and mechanical punch card machines were the main tools available for data manipulation. These tools and even the early computers were awkward to use and much effort was expended in ensuring they were used efficiently and correctly. However, over the last thirty years the technology has been developing very quickly and hence new problems associated with its use have tended to appear with alarming frequency. It was fruitless to focus upon the potential offered by this developing technology until the technical problems of its operation were more or less stabilized. The tasks undertaken by the early computer equipment were those which were the most obvious to identify and the easiest for the computer to improve, such as accounting, invoicing, and other labour intensive data-based office activities of the 1950s and 1960s. This is not meant as a criticism of the early developers of information systems - it would have been disastrous to apply the early computer technology to anything more sophisticated until it was better understood and proven.

A framework for understanding

The structure of this book is based on the separation of certain ideas:

- first, *supply* and *demand* as different viewpoints on the provision of business information systems;
- second, *strategy* and *tactics* as different levels of thinking associated with different timescales.

IS and IT: supply and demand

The vast majority of the issues addressed throughout the 1960s, 1970s and even the early 1980s were issues associated with how to 'supply' information systems to business. As the supply issues have become better understood, and with many of the basic systems of organizations having been automated, attention has turned to more imaginative and fruitful applications of the technology.

This shift of attention has highlighted new issues associated with ascertaining 'demand' for information systems in organizations. No longer are organizations content to focus upon the obvious - they are now searching for new opportunities. The mid-1980s saw the development of several techniques to help analyze an organization's objectives and methods of operation in order to reveal more innovative opportunities based on information systems. This focus on ascertaining demand has not detracted from issues of supply, but rather has broadened the range of matters to be considered. The focus of the late 1980s was upon the importance of determining demand, often driven by the need to use information systems to gain competitive advantage for business, or at least to avoid being disadvantaged.

Supply issues are very much the province of information technology managers and specialists - often the people who have developed with the technology during the 1960s and 1970s. In this book supply issues will be referred to as information technology (IT) issues.

Compare the typical IT person with those that are able to analyze the business using an intimate knowledge of the business process to reveal opportunities. Usually such knowledge is accumulated by management and functional specialists and can be applied by them in deciding what the organization needs in terms of information systems. Ascertaining demand is a management task and the issues concerned will be referred to in this book as information systems (IS) issues.

The phrases IS and IT cannot be assumed to have exclusive and distinctive definitions because some of the issues associated with matching supply and demand overlap. However, some distinction needs to be made between supply and demand issues - Figure 1.1 summarizes the differences.

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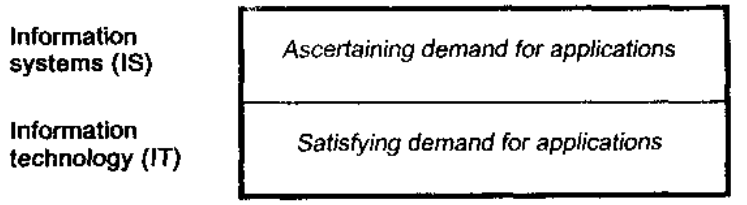

Figure 1.1 The prime issues

Strategy and tactics

Both IS and IT have 'strategic' and 'tactical' components. By strategic we mean those issues of a longer term nature which require to be addressed by senior management relatively infrequently. By tactical we mean those issues of an operational short-term nature which are generally the concern of middle management and specialists. Strategy involves creating a vision of the future and the means and policies which will enable the organization to reach that vision, whereas tactical matters are concerned with applying the rules and creating applications. Clearly these descriptions are very general and more precise definitions will be presented as the book progresses.

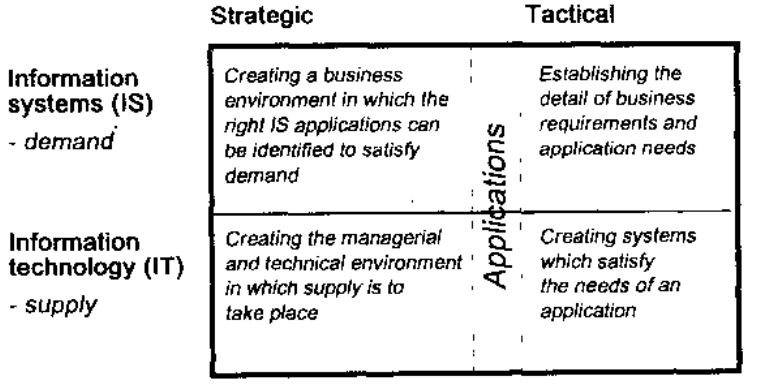

Figure 1.2 Management issues

Figure 1.2 relates the strategic and tactical notions to the earlier discussion of IS and IT. The contents of the four quadrants show the

basic issues of concern to each box. Note that the concept of the 'application' comes between strategic and tactical thinking.

Strategy is concerned with managing *demand*, and optimizing the *benefits* that new applications will provide; tactics are about managing *supply*, and optimizing the *cost* of development and operations. If strategy is managed well but the tactical response is not, nothing will be achieved. If tactics are managed well but strategy is not, then beautiful systems may be delivered, but they will serve no useful business purpose.

Strategic IS

For example, the board members of every large organization need to ensure that the general managers in each business unit consider how applications of information technology can enhance it and underpin its competitive position. This is a strategic IS issue which can be accomplished in a variety of ways, for example by insisting that such matters are dealt with in the business plans submitted to the board members.

Suppose that a key supplier to a large retailer wanted to use EDI (Electronic Data Interchange) as a means of enhancing its relationship with the retailer, and that both parties have agreed to the development of a closer business partnership in all senses: for the managers in charge of buying (in the retailer) and selling (in the supplier) the way in which this is supported by systems is a strategic information systems issue.

Tactical IS

Turning to tactical IS, business unit managers need to ascertain the systems required to operate in their business unit. They must rank their importance to provide priorities for the suppliers of these systems. This can be achieved in a variety of ways by the business, but in practice it is often delegated to consultants.

For the chief buyer in the retailer organization (above), making sure that the detailed application requirements are properly understood is a tactical IS issue, requiring competent and detailed business systems analysis.

Strategic IT

The supply of applications and all of the technology that goes with them can be managed in many ways. For example, it may be possible to supply every person in the organization with a personal computer

and to allow every application to be developed separately; an alternative would be a centralized supply strategy based on a central unit and operating on a centrally located machine.

Continuing the retailer-supplier example, EDI services can be acquired from a third party network operator or they can be arranged through private or public networks. This is one aspect of a wider strategic IT matter concerning the use of third party services. It should therefore be dealt by reference to general rules for the use of third party services across all applications.

Tactical IT

The last of the four boxes concerns tactical IT issues. This box embraces all the detailed issues of acquiring and using a particular application.

If a supplier and retailer are to implement EDI, someone needs to evaluate the impact on existing systems and arrange for changes to be made where necessary, and there needs to be a review and specification of the security requirements for data exchange between the two organizations. This is tactical IT.

Levels of management

We must expect different levels of management to become involved with the different areas of concern:

- ***strategic IS*** is the concern of senior managers, corporate board members and business unit managers;
- ***tactical IS*** is the province of the managers of particular business units and their operational managers;
- ***strategic IT*** is an issue to be addressed jointly by senior management/corporate board members and senior IT managers;
- ***tactical IT*** is an issue to be addressed jointly by IT staff, managers of particular business units and managers working at a functional level within the business unit.

Observation of the real world would suggest that this is not always understood by those concerned and that tasks are often not undertaken by those managers specified. Frequently the IT management is charged with most of these duties but when attempting to discharge them has little success. It is then blamed for systems that do not meet business requirements. Figure 1.3

summarizes the appropriate management to deal with each of the four areas in the general framework.

	Strategic	Tactical
Information systems (IS)	Corporate board members and business unit managers	Business unit managers and functional/operational managers
Information technology (IT)	Corporate board members and senior IT managers	IT staff, business unit managers and functional level management

Figure 1.3 Management concerned

This book considers all four areas, focusing upon the management issues in each box. Technical aspects such as selecting the appropriate programming language for an application (a tactical IT issue) are excluded, as they are not a concern of the intended readership of this book.

The structure and purpose of the book

Chapter 2 is concerned with various ways of classifying IS and IT to demonstrate the breadth of the subject and the types of information system addressed by the book. Chapter 3 raises some of the management issues involved as, historically, the subject has been the province of the technician and without some clarification our focus could cause problems for some readers. Interestingly, many of the problems of the subject are assumed to be technical in origin when in reality they occur because of insufficient or inadequate management activity. The following four chapters (4, 5, 6 and 7) consider the issues of strategic IS, tactical IS, strategic IT and tactical IT respectively. Chapter 8 deals with the support that is needed for successful application development and Chapter 9 discusses organizational issues. Chapter 10 provides some concluding thoughts on current and future directions.

Sequence

This book is not for 'dipping into'. It begins by introducing ideas and a simple vocabulary that is extended as the book progresses. It follows that reading Chapter 8 in isolation would be non-productive - it is necessary to read the preceding chapters first. It would be the delight of the authors to provide definitive answers to all the issues raised but, alas, such answers are not readily available as yet. We are dealing with a very young discipline with a history of scarcely more than thirty years. If the reader is looking for the certainty of the more mature subjects such as accountancy he or she will be disappointed.

Benefits to be gained

The benefits to be gained from studying this book will vary depending upon the focus and organizational level of the reader. However, the benefits outlined below will apply to all the parties involved in the IS/IT process.

- The book will provide an understanding of the framework in which activities of the individual parties should take place. Readers should be able to appreciate where their particular activity is required and also where it is not required: or it could prevent normal managers becoming born-again IT experts!
- Additionally the book will provide an overview of the tools required to ascertain the 'IS demand' for a business and the alternative methods of 'IT supply'.
- Finally, it will assist senior managers in expressing their requirements to more junior staff.

Therefore, we can state very clearly what this book will not do - it will not assist you in understanding the technical issues of computing. For example, if you are not sure of the relative benefits of Ethernet and twisted pair links as means of local area networking at the start, you will still be unsure at the end. Throughout the book we take a *management* perspective.

2

What are information systems?

With a discipline as young as information systems, definitions of what is included and what is excluded are difficult. As a means of portraying boundaries we will describe a day in the life of a marketing executive working for an international games producer.

First the events in the day will be explained and then a number of classifications will be analyzed drawing upon the earlier discussion for examples (see the boxed text below). The description of John's day focuses upon his receipt, despatch and processing of information because this aspect is the focus of this book. However, even if we took a more balanced view of John's day it would still show that information processing is a central feature of the managing in business.

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