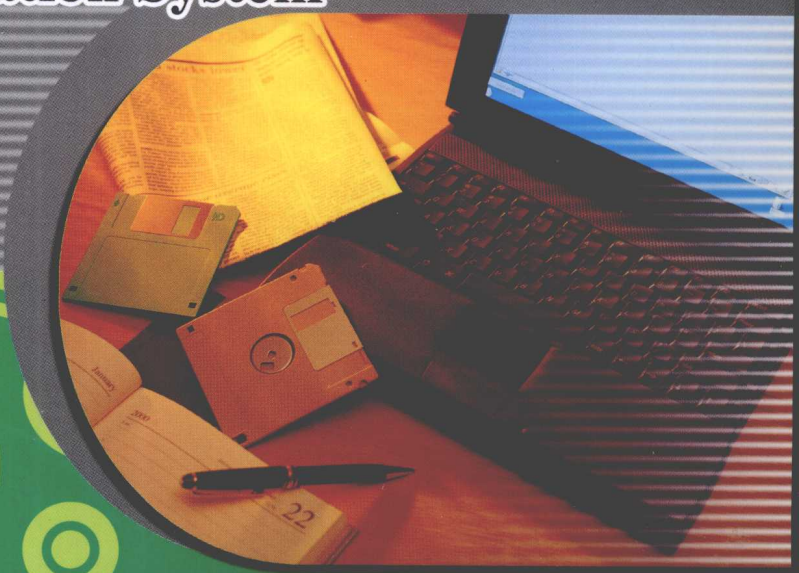
现代工程专业英语系列

新编管理信息系统专业英语

English Course for Management Information System

主编◎宋　艳　张永春　兰小亭



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内容简介

本书作为管理信息系统的英语读物，重点在于介绍基本概念和理念，因此，全书分为四部分依次叙述了信息时代的基本概念、信息系统与管理的概况；计算机硬件、计算机软件、数据存储与处理、数据库、数据仓库、数据挖掘、通信与网络、因特网、内部网与外部网等信息技术；管理信息系统、决策支持系统、电子商务等信息系统应用及管理信息系统的开发；管理新系统、社会与个人的关系。

本书既可以作为管理信息系统相关领域专业技术人员、高级管理人员的参考用书，也可以作为高等院校电子商务或相关专业的专业英语阅读教材，或者相关企业的培训教材。

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前言
PREFACE

这是一个信息的时代，是一个知识就是力量的时代。与以往任何时候相比，全球商务更加关注信息，将其视为关键资源。信息时代改变了人们看待组织中信息技术和管理信息系统的视角。

本书写给那些对于信息技术和管理信息系统感兴趣的人们，无论您是从事信息管理与应用的技术人员或企业管理者，还是主修计算机、信息管理等相关专业的大学生。通过阅读本书，您可以较为全面地了解管理信息系统相关的专业知识和专业术语，有助于您从事信息管理、筹划企业信息化建设或进行科技阅读与写作。此外，本书还提供了练习和思考题，因此可以作为管理信息系统或相关专业的专业英语阅读教材。

本书内容分为四部分：

单元1至单元4。阐述了信息时代的基本概念，信息系统与管理的概况。

单元5至单元12。探讨了信息技术，主要包括计算机硬件，计算机软件，数据存储与处理，数据库，数据仓库，数据挖掘，通信与网络，因特网，内部网与外部网。

单元13至单元16。信息系统应用部分，主要包括管理信息系统，决策支持系统，电子商务，管理信息系统的发展。

单元17至单元18。讨论管理新系统、社会与个人的关系。

参与本书编写的有：宋艳，哈尔滨工程大学副教授，完成了第4,5,6,8,9,15单元的编写；张永春，哈尔滨工程大学助理研究员，完成了第1,2,3,7,11,12,13单元的编写；兰小亭，首都师范大学讲师，完成了第10,14,16单元的编写；梁刚健，哈尔滨工程大学工程师，完成了第17单元的编写；宋君，长春住房公积金管理中心榆树管理部职员，完成了第18单元的编写；陈莹，哈尔滨工程大学教师，完成了本书语法检查与校对。

非常荣幸在过去的一年中与一些才能出众的人合作，他们都盼望着这本书能够尽早出版。向那些幕后的支持者致以我们最深的和最衷心的敬意！在这里尤其要提到的是：袁菲，本书编写的发起者。

编　者

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Part One Organizational Foundations of Information Systems

Unit 1

Information Age

Preview

Nowadays, we are merged in a competitive and powerful Information Age. It differs from Ice Age, and also differs from Neolithic period. In this unit, we will firstly introduce that we are living in an Information Age. Then, we will discuss pressures and responses that the Information Age brings about organizations. Finally, the impacts of Information Age are examined.

Outline

We are living in an Information Age
Business in the Information Age: Pressures and Responses
The impact of Information Age on society and ourselves

Learning objectives

You can briefly browse the history of information sending.
You will know the pressures that the Information Age brings about business and how organizations respond to these pressures.
You will read the impacts of Information Age on society and individuals.

1 We are living in an information age

From the beginning of human history, information traveled only as fast as a ship could sail, or a horse could run, or a person could walk.

People experimented with some ways to send information:

Some people tried using birds to carry messages. Then they found it was not a safe way to send or receive information.

A better method finally arrived with the invention of the faster telegraph. It provided information about everything. Governments, companies and individuals used the telegraph to send information.

2nd November 1920, radio station K-D-K-A in Pittsburgh, Pennsylvania, broadcasted the first radio program. Within a few short years, news and other information could be heard anywhere a radio broadcast could reach.

After World War Ⅱ, there came a new invention—television. Most of the television programs were designed to entertain people. There were movies, music programs and game programs. Furthermore, television also broadcasted news and other important information such as world events. It broadcasted some education programs too. The number of radio and television stations around the world increased. It became harder for a dictator to control information.

But today, information travels faster than lightning does. We have much more ways to touch various kinds of information now. Getting first-hand information is no longer the privilege of some very important persons. We have never attached so much importance to the information before because we take it for granted that the useful information is precious and beneficial. Popularity of the internet, strong power and wide extension of the press, fast speed of globalization and also advanced **Information Technology** (**IT**), are all contributed to the advent and thriving of **Information Age**.

2 Business in the Information Age: pressures and responses

We are in the Information Age, where fortunes spring from innovative ideas and the clever use is information. Companies in the Information Age must compete in a challenging marketplace, which is complex, global, hyper-competitive, customer focused and changes rapidly. They must rapidly react to problems and opportunities coming from this modern business environment.

The pace and magnitude of change affecting organizations continues to accelerate, causing increased uncertainty in company operations and strategies. Therefore, companies must operate under increased pressures in order to produce more with fewer resources.

1 Pressures

The business environment in the Information Age brings many pressures to companies. Organizations may respond reactively to existent pressure, or proactively to anticipated pressure. Company responses are typically facilitated by information technology, which in a broad sense is a collection of the individual technology components that are typically organized into computer-based Information Systems (IS).

- **Globalization competition for trade and for labor**

Look around your room. How many products do you think are wholly domestic? It might

surprise you that many of them are "foreign". Business today is global business. Even if you own a small firm and have wholly domestic suppliers and customers, you probably still have some sort of foreign competition.

In global economy, trade is much less constrained by **traditional barriers** such as borders, language, currency or politics. Goods and services are produced profitably as dictated by competitive advantages that any nation might hold. Advanced telecommunications networks helped facilitate the creation of global economy. Recently, a particularly influential force for globalization has been the Internet, and the electronic telecommunications network connects computers around the world. Regional agreements such as the European Union (EU), and the World Trade Organization (WTO) also contribute to increase world trade through reduction of trade barriers.

Labor cost differs widely among countries. While the hourly industrial wage rate is over $15 in some Western developed countries, it is only $1 to $2 in many developing countries.

In addition, companies in developed countries usually pay more for fringe benefits and environmental protection. Therefore, they have more difficulties to compete in labor-intensive industries compared with developing countries. As a result, companies are moving their manufacturing facilities to countries with low labor costs. Such a global strategy requires extensive communications, especially under the condition of multi-language and under several cultural, ethical, and legal conditions. The complexity of the communication system may greatly hinder global competition unless it is properly supported by IT.

Global competition is especially intensified when governments are involved with the use of subsidies, tax policies, import/export regulations and incentives. Rapid and inexpensive communication and transportation modes did and even will increase the magnitude of international trade.

- **Need for real-time operations**

Companies in the Information Age no longer have the luxury of "information float", which is the period when a business event occurs and information captured about that event reaches the necessary decision makers. High-performance telecommunications technologies can reduce this time lag to near zero. Similarly, these same technologies permit financial transaction to be nearly instantaneous. For many businesses, slow, paper-based, mail-based transactions and processes are a thing of the past. Now, as electronic payment transfers and documentation of transactions, orders occur instantly.

- **Changing workplace**

The workplace, particularly in developed countries, is changing rapidly and becoming more diversified. Nowadays, more and more females, single parents, minorities, and physically challenged people work at all kinds of positions. More employees than ever before prefer to defer retirement. IT is easing the integration of these various employees into the traditional workplace. In addition, as more organizations become transnational, managerial complexity accompanies more growing cultural complexity.

- **Customer orientation**

Customer sophistication and expectations increase as customers become more knowledgeable

about the availability and quality of products and services. They are also more knowledgeable about competing products. These expectations reflect the need for organizations demonstrate a customer orientation.

Customers are demanding ever-more detailed information about products and services. They want immediately to know what features are available, what warranties they will receive, what financing is available, and so on. Companies must be able to deliver information quickly to satisfy their customers, if not, they will risk losing them. Advances in the use of the Internet and electronic commerce bring customers information about thousands of products, including cost and quality comparisons.

Customers also want customized products with high quality and low price. Information technology enables vendors to respond through mass customization. Customers will find that information technology, when used effectively, can tip the balance of power decidedly in their favor.

- **Technological innovation and obsolescence**

Pressures of producing goods and services efficiently make organizations to look for technological breakthroughs that will give them an advantage over their competitors. Technology is playing an increased role in both manufacturing and service organizations. New and improved technologies such as computer-integrated manufacturing enable organizations to produce superior products, to customize products more easily, and to quickly alter manufacturing processes as the market dictates.

However, continuing innovation with computer technologies means faster obsolescence of products, shorter life cycles, and increasing quality standards. In addition, advances in information technology allow customers to be aware of innovations and force companies to respond more quickly or face the risk of losing market share. So, organizations get the pressure of increasing customer expectations and an increasing ability to respond rapidly about improving products and services. Obviously, this cycle benefits consumers. For many organizations the result is quicker product obsolescence, shorter product life cycles, and higher costs for investment in new technologies.

- **Information overload**

The Internet and other telecommunications networks increase the amount of information available to organizations and individuals. The amounts of information available on the Internet expand more than twofold every year, and most of them are free. The information and knowledge generated and stored inside organizations are also increasing exponentially. Managers are risk of "analysis paralysis"—bombarded with so much potentially useful information that they feel compelled to consider vast amount of it before taking action. But of course, only some of the information is truly relevant. Therefore, the accessibility, navigation, and management of information necessary for managerial decision making is becoming critical.

2 Organizational Responses

Organizations respond in many ways to the business pressures of competition in the

Information Age. Many of their responses are facilitated or enhanced by information technologies.

- **Information systems**

Organizations seek to implement information systems that will significantly impact the organizations with operational, managerial and strategic advantages in meeting organization objectives, enabling them to increase their market share. There are many types of information systems, such as transaction processing systems, office automation systems, management information systems, decision support systems, geography information systems, and executive information systems. Some of them will be introduced in this book.

- **Customer focus and service**

The increased power of customers and stiff competition in many industries and markets force organizations to adopt a customer-focused approach. In other words, they must pay more attention to what their customers prefer.

- **Continuous improvement efforts**

In response to business pressures, many firms make continuous efforts to improve their productivity and quality. There are many methods to put it into practice, such as **just-in-time** (**JIT**) to reduce costs, **total quality management** (**TQM**) to improve quality, and so on.

3 The impact of Information Age on society and ourselves

On one hand, Information Age brings about society and ourselves many opportunities, such as improving people's life, offering more career opportunities, but on the other hand, it also has more disadvantages such as computer crime. We will discuss the impact of Information Age on society and ourselves with more details in Unit 17 and Unit 18.

Key Terms and Notes

Information Age	In this unit, Information Age refers to the age that information is used widely and efficiently.
Information Technology (IT)	In a broad sense, it is a collection of the individual technology components that typically organized into computer-based information systems.
Traditional barriers	Trade barriers such as borders, language, currency, or politics.
Customer orientation	Companies should produce goods and services that their customers want.
Technological innovation	Technological breakthroughs that will give one company an advantage over their competitors.
Technological obsolescence	Technological outdating that can meet the needs of

customers.

Just-in-time (JIT)	JIT attempts to reduce costs and improve work flow by scheduling materials and parts so arrive at a workstation exactly when they are needed.
Total quality management (TQM)	TQM is a corporate-wide organized effort to improve quality wherever and whenever possible.

Questions

1. Describe the historical development of information sending briefly.
2. What pressures on businesses do you suffer from in the Information Age? Give an example.
3. In your opinion, how should organizations respond to the pressures discussed in this unit?
4. Give some examples to illustrate some traditional barriers.
5. Is the Information Age good or bad to you?

Unit 2

Introduction to Information Systems

Preview

Information systems have become crucial to the functioning of modern organizations and businesses. Firms are using information technology to gain competitive advantages over their rivals. In fact, many basic business processes are now being redesigned to take advantage of the productivity increases that are available through the use of information systems.

In this unit, we will firstly introduce the concept of information system. Then its infrastructure will be discussed and the types of information systems are followed. Finally, the competitive advantages of information systems will be examined briefly.

Outline

What is an information system
The parts of an information system
The types of information systems
Capabilities of information systems

Learning objectives

Explain the concept of information systems.
Introduce structures of an information system.
Discuss some types of information systems.
Show some functions of information systems.

1 What is an Information system?

An **Information system** (**IS**) can be defined technically as a set of interrelated components that collect, process, store, and distribute information to support decision-making and control in an organization. Besides decision-making, coordination and control, information systems may also help

managers and workers analyze problems, visualize complex subjects and create new products.

Our interest in this book is in formal, organizational **computer-based information systems.** Formal systems rest on accepted and fixed definitions of data and procedures for collecting, storing, processing, disseminating and using these data. The formal systems covered in this book are planned in a **structured way**.

2 The parts of an information system

There are six parts of all information systems: **inputs**, **processing**, **data files**, **outputs**, **personnel** and **hardware.** All systems, including information systems and computer systems, have inputs, processes and outputs. Processes transform inputs (data) to outputs (management information) and it can be subdivided into **computer programs** and **procedures**. Computer programs are executed by computer hardware, and procedures by people. For example, sometimes data must be collected and checked manually before they are input to the information system. An information system also contains data files, which can be either computer-based or manual.

3 The types of information systems

Because there are different interests, specialties, and levels in an organization, there are different kinds of systems. There isn't any single system can provide all the information an organization needs. The organization is divided into strategic, management, knowledge and operational levels, and then further divided into functional areas such as sales and marketing, manufacturing, finance, accounting, and human resources. In this section, five main types of information systems, as illustrated in table 2.1, that serve different organizational levels will be introduced.

Table 2.1 Types of MIS

Types of information systems	The organizational levels that IS serve
Transaction Processing Systems (TPS)	Operational-Level
Office Automation Systems (OAS)	Knowledge-Level
Management Information Systems (MIS)	Management-Level
Decision Support Systems (DSS)	Management-Level
Executive Information Systems (EIS)	Strategic-Level

1 Transaction Processing Systems (TPS)

Transaction Processing Systems (TPS) are the basic business systems that serve the operational level of the organization. A few examples are ticket reservation systems, order-entry systems, check-processing systems, account payable systems, accounts receivable systems, and payroll systems. All of these systems help a company to conduct its operations and keep track of its activities. There are two fundamental types of TPS, **On-line Transaction Processing Systems** and **Batch Transaction Processing Systems.**

2 Office Automation Systems (OAS)

Office Automation Systems can create, store, modify, display, and communicate business correspondence, where in written, verbal or video form.

The prevalence of microcomputers in the office, along with a veritable explosion in new communication, computer, and storage products, are changing ways that offices conduct their business. At first, computer systems were used just for stand-alone word processing. However, as time went by, computers were connected by network. This connection allowed people not only to share word processing files but also to send messages to others. For example, through **electronic mail systems**, office workers can send message each other; in voice systems, workers are allowed to leave voice message for others; with video systems, people could communicate face-to-face without traveling.

3 Management Information Systems (MIS)

A management information system is a formalized computer information system that can integrate data from various sources to provide the information necessary for management decision making. Such MIS are conceptually a level above transaction processing applications. They are not concerned with day-to-day operations, but rather concerned with the management of activities that do support operations. Take the ticket reservations as an example. A TPS is used to take orders and print tickets. An MIS is used to measure and report the performance of each of the agents who sell tickets. Such an MIS keeps track of the number and amount of each agent's sales, and it regularly produces reports about agent effectiveness. In unit 13 we will discuss MIS in detail.

4 Decision Support Systems (DSS)

Decision support systems are interactive, computer-based facilities for assisting human decision-making and serving the management level of the organization. DSS differ from TPS and MIS because they do not always support an ongoing process. DSS are designed to facilitate the solutions of problems less structured than those of TPS and MIS. Therefore, the DSS must be less structured; flexibility and adaptability are essential.

Consider the need for DSS in a setting where ticket reservations are made. As what we discussed before, TPS are used to support operations; MIS are used to facilitate the management of operations. A

DSS would be used to study unstructured, possibly one-of-a-kind problems or opportunities.

We will discuss DSS in detail in unit 14.

5 Executive Information Systems (EIS)

An executive information system, also known as an executive support system (ESS), is a tool designed to support the informational needs of top executives.

EIS provide rapid access to timely information and direct access to management reports. They are easily connected with online information services and e-mail. EIS may include modules for analysis support, communications, office automation, and intelligence.

4 Capabilities of information systems

In order to compete successfully in the modern business environment, organizations expect their information systems to have many powerful capabilities. Information systems must be able to do something as follows.

1 Provide fast and transaction processing

Every event that occurs in a business is called a transaction. Transaction includes the sale of a unit of goods, a paycheck issued, a bank deposit, a course grade registered, and so on. Clearly, organizations can produce millions of transactions every day. Each transaction generates data. These data must be captured accurately and quickly through transaction information systems.

2 Provide large-capacity, fast-access storage

Information systems must provide both enormous storage for corporate data and fast access to these data.

3 Provide fast communications

Networks enable organizations employees and computers to communicate almost instantly around the world. High-transmission-capacity networks, such as the internet, make fast communications possible. In addition, they allow data, voice, images, documents, and full-motion video to be transmitted simultaneously. Networks also provide nearly instantaneous access to information for decision makers, thereby reducing information float.

4 Reduce information overload

Information systems can provide managers much information. For example, the larger amount of information available on the internet can drown managers and make them unable to make decisions efficiently and effectively.

5 Span boundaries

Information systems span boundaries in the organizations as well as between organizations along the entire supply chain. Inside the organization, such boundary spanning facilitates decision-making across functional areas, business process reengineering, and communications. Along the supply chain, boundary spanning facilitates shorter cycle times for product delivery, reduces inventory, and increases customer satisfaction.

6 Provide support for decision-making

Decision support systems help decision makers across an organization and at all levels of the organization. Executive information systems, for example, support executive decision-making.

7 Provide a competitive weapon

In the past, information systems were viewed primarily as an expense. Today, information systems are regarded as a profit center and are expected to give the organization an advantage over its competitors. Today, information systems are being linked across entire supply chains to give competitive advantage to networked organizations.

Key Terms and Notes

Information systems	An information system (IS) is a formalized computer information system that can collect, store, process, and report data from various sources to provide the information necessary for management decision-making.
Computer-based information systems	They are systems that rely on computer hardware and software technology to process and disseminate information.
Structured way	It means that a formal information system operates in conformity with predefined rules that are relatively fixed and not easily changed.
Inputs	The capture or collection of raw data from within the organization or from processing in an information system.
Processing	The conversion, manipulation, and analysis of raw input into a form that is more meaningful to humans.
Data files	They store the data from input or output.
Outputs	The distribution of processed information to the people or activities where it will be used.
Personnel	The people who work with the information systems or use its output.