



# 信息管理与信息系统专业英语

ENGLISH IN INFORMATION MANAGEMENT AND  
INFORMATION SYSTEM

主编 李 敏

哈尔滨工业大学出版社

## 内 容 提 要

本书通过对管理信息系统各领域知识的介绍,使学生能够了解和掌握该学科常用的专业英语词汇,为阅读英文文献和资料打下坚实基础。书中内容主要包括管理信息系统的简介,信息系统的分析与设计,电子商务简介,信息技术与网络经济,决策支持系统,信息技术等方面的相关知识,最后附一篇发表在国际刊物上的英文论文的样本。

本书既可作为信息管理与信息系统专业的英语课教材,也可提供给从事本专业的科研、教学及应用人员使用。

## 图书在版编目(CIP)数据

信息管理与信息系统专业英语/李敏主编. —哈尔滨:  
哈尔滨工业大学出版社, 2006.2

ISBN 7 - 5603 - 2245 - X

I. 信… II. 李… III. ①信息管理-英语-高等学校-教材 ②管理信息系统-英语-高等学校-教材  
IV. H31

中国版本图书馆 CIP 数据核字(2006)第 000431 号

责任编辑 田 秋

封面设计 卞秉利

出版发行 哈尔滨工业大学出版社

社 址 哈尔滨市南岗区复华四道街 10 号 邮编 150006

传 真 0451 - 86414749

网 址 <http://hitpress.hit.edu.cn>

印 刷 哈尔滨工业大学印刷厂

开 本 880mm×1230mm 1/32 印张 6.625 字数 191 千字

版 次 2006 年 2 月第 1 版 2006 年 2 月第 1 次印刷

印 数 1~4 000 册

定 价 13.00 元

---

(如因印装质量问题影响阅读,我社负责调换)

## 前 言

---

目前,信息技术正在迅速发展并被广泛地利用,信息管理与信息系统专业应运而生。如何才能跟上信息技术发展与应用的最前沿水平,如何迅速地掌握与利用信息技术的最新成果为加速现代化进程服务已经成为不容忽视的问题。由于在今后相当长的一段时间内,美、英等发达国家在该技术领域仍将处于领先的地位,大量的最新研究成果和新产品都以英文公布于世,因此,每个从事信息管理与信息系统的教学、科研、工程技术及经营管理人员都必须具有一定的信息专业英语水平。为了满足信息专业人员以及相关专业技术人员学习的需要,我们编写了《信息管理与信息系统专业英语》一书。

本书内容有较宽的知识面,既有基本理论,又有技术实现;既有专业基础内容,又有较高层次的专业前沿内容,还有与信息专业相关的技术内容。本书分为7章,第1章介绍管理信息系统,第2章为信息系统的分析与设计,第3章为电子商务,第4章为网络经济,第5章为决策知识系统,第6章为信息技术,第7章为论文范例。

本书由李敏、李恩临、王华兵、金雪松、孔蕾蕾编写,李敏主编,张晓岚主审。书中的内容参考了大量的英文文献,为了有利于教学和阅读理解,主要章节给出了专业词汇及疑难句注释。

由于编者水平有限,书中难免会存在一些缺点和不足之处,敬请读者提出宝贵意见,在此谨表谢意。

编 者

2006.1

# CONTENTS

---

## 1 Introduction to MIS

- 1.1 Management Information System ..... (1)
- 1.2 Information and Information Entropy ..... (13)
- 1.3 The Basics of Cryptography ..... (20)
- 1.4 An Example for MIS: CIMIS Overview ..... (26)

## 2 Information Systems Analysis and Design

- 2.1 Competencies ..... (32)
- 2.2 Systems Development Life Cycle(SDLC) ..... (38)
- 2.3 The First Phase: Conduct a Preliminary Investigation ..... (45)
- 2.4 The Second Phase: Do a Detailed Analysis of the System ..... (49)
- 2.5 The Third Phase: Design the System ..... (57)
- 2.6 The Fourth Phase: Develop/Acquire the System ..... (63)
- 2.7 The Fifth Phase: Implement the System ..... (65)
- 2.8 The Sixth Phase: Maintain the System ..... (69)
- 2.9 A Look to the future ..... (70)

## 3 Electronic Commerce

- 3.1 Electronic Commerce and the Networked Economy ..... (72)
- 3.2 Electronic Commerce strategies ..... (79)
- 3.3 Electronic Commerce Technology ..... (84)
- 3.4 Electronic Commerce Payment Systems ..... (89)

## 4 Networked Economy

- 4.1 Economic Issues in the Networked Economy ..... (97)

ii *English in Information Management and Information System*

4.2	Elements of the Networked Economy .....	(101)
4.3	Ethical Issues in the Networked Economy .....	(106)
4.4	Social Cornerstones of the Networked Economy .....	(110)
4.5	The Impact of Computer Networks on Business .....	(115)
<b>5</b>	<b>Decision Support System</b>	
5.1	A Brief History of Decision Support Systems .....	(124)
5.2	Introduction to Decision Support System .....	(134)
5.3	Decision Theory .....	(143)
5.4	Decision Making .....	(149)
5.5	Data Warehouses and Decision Support Systems .....	(157)
<b>6</b>	<b>Information Technology</b>	
6.1	Database Management Systems(DBMS) and Management Information System(MIS) .....	(165)
6.2	Relational Model .....	(168)
6.3	Relational Database System Architecture .....	(171)
6.4	Physical Database Design .....	(175)
6.5	Advantages and Costs of the Database Approach .....	(178)
6.6	Data Warehouse .....	(181)
6.7	Data Mining .....	(185)
<b>7</b>	<b>Sample Paper</b>	
	Globalization and Telecommunication .....	(189)
	<b>References</b> .....	(203)

## **Introduction to MIS**

---

### **1.1 Management Information System**

Management Information Systems (MIS), are information systems, typically computer based, that are used within an organization<sup>1</sup>. WordNet described an information system as “a system consisting of the network of all communication channels used within an organization”.

An information system consists of all the components that collect, manipulate, and disseminate data or information. It usually includes hardware, software, people, communication systems such as telephone lines, network cables, and the data itself. The activities involved include inputting data, processing of data into information, storage of data and information, and the production of outputs such as management reports<sup>2</sup>.

As an area of study it is commonly referred to as information technology management. The study of information systems is usually a commerce and business administration discipline, and frequently involves software engineering, but also distinguishes itself by concentrating on the integration of computer systems with the aims of the organization<sup>3</sup>. The

area of study should not be confused with Computer Science which is more theoretical and mathematical in nature or with Computer Engineering which is more engineering.

In business, information systems support business processes and operations, support decision making, and support competitive strategies.

### **The functional support role**

The business processes and operations support function is the most basic. It involves collecting, recording, storing, and basic processing of data. Information systems support business processes and operations by the following ways.

1) Recording and storing sales data, purchase data, investment data, payroll data and other accounting records.

2) Processing these accounting records into income statements, balance sheets, ledgers, management reports, and other forms of financial information.

3) Recording and storing inventory data, work in process data, equipment repair and maintenance data, supply chain data, and other production/operations records.

4) Processing these operations records into production schedules, production controllers, inventory systems, and production monitoring systems.

5) Recording and storing personnel data, salary data, employment histories, and other human resources records.

6) Processing these human resources records into employee expense reports, and performance based reports.

7) Recording and storing market data, customer profiles, customer purchase histories, marketing research data, advertising data, and other marketing records.

8) Processing these marketing records into advertising elasticity

reports, marketing plans, and sales activity reports.

9) Recording and storing business intelligence data, competitor analysis data, industry data, corporate objectives, and other strategic management records.

10) Processing these strategic management records into industry trends reports, market share reports, mission statements, and portfolio models.

11) Use of all the above to implement, control, and monitor plans, strategies, tactics, new products, new business models or new business ventures.

### **The decision support role**

The business decision making support function goes one step further. It is an integral part of making decisions. It allows users to ask "What if..." questions: What if we increase the price by 5%? What if we increase price by 10%? What if we decrease price by 5%? What if we increase price by 10% now, then decrease it by 5% in three months? It also allows users to deal with contingencies : If inflation increases by 5% (instead of 2% as we are assuming), what do we do? What do we do if we are faced with a strike or a new competitive threat?

The most basic and most versatile business decision making tool is the spreadsheet, but spreadsheets are not user friendly. More sophisticated programs often seamlessly incorporate statistical decision making tools like sensitivity analysis, Monte Carlo analysis, risk analysis, breakeven analysis and Bayesian analysis. If, for example, you are using the information system to decide about a new product introduction, the program should incorporate tools like logic analysis, conjoint analysis, contribution margin analysis, multi-dimensional scaling, multi-factor analysis, factor analysis, cluster analysis, discriminant analysis, Quality Function Deployment, preference regressions, and preference-rank



translations.

### **The strategic support role**

As the strategic support role, information systems can support a company's competitive positioning. One distinguishes here three levels of analysis.

(1) The supports of help in the piloting of the chain of internal value. They are the most recent, the most pragmatic and are within the reach of the manager. They are the solutions of reductions of costs and management of the performance. One indicates them under the name of "Business Workflow Analysis" (BWA) or of "Business Management Systems Peer To Peer(p2p)". Tools networks, they assure the control of the piloting of the set of the functions of the company, the mastery in real time of the costs of dysfunctions cause distances from accounts, evaluation and reporting of accounting results articulated in the evaluation and in the reporting of results quality.

(2) All successful companies have one (or two) business functions that they do better than the competition. These are called core competencies. If a company's core competency gives it a long term advantage in the marketplace, it is referred to as a sustainable competitive advantage. For a core competency to become a sustainable competitive advantage it must be difficult to mimic, unique, sustainable, superior to the competition, and applicable to multiple situations. Examples of company characteristics that could constitute a sustainable competitive advantage include: superior product quality, extensive distribution contracts, accumulated brand equity and positive company reputation, low cost production techniques, patents and copyrights, government protected monopoly, and superior employees and management team<sup>4</sup>. The list of potential sustainable competitive advantage characteristics is very long. However there are some commentators that claim that in a fast changing

competitive world, none of these advantages can be sustained in the long run. They claim that the only truly sustainable competitive advantage is to build an organization that is so alert and so agile that it will always be able to find an advantage, no matter what changes occur.

(3) Information systems often support and occasionally constitute these competitive advantages. The rapid speed of change has made access to timely and current information critical in a competitive environment. Information systems, like business environmental scanning systems, support almost all sustainable competitive advantages. Occasionally, the information system itself is the competitive advantage. One of out-standing examples is Wal-Mart. They used an extranet to integrate their whole supply chain. This use of information systems helped Wal-Mart to reduce their cost substantially and gave Sam Walton a competitive advantage for two decades. Another good example is Dell Computer. They used the Internet to market custom assembled PCs. Michael Dell is still benefiting from this low cost promotion and distribution technique. Other examples are eBay, Amazon com, Federal Express, and Business Workflow Analysis Oberon etc.

### **The performance monitoring role**

MIS are not just statistics and data analysis. They have to be used as a MBO/ Management by objectives tool. They help:

- (1) to establish relevant and measurable objectives;
- (2) to monitor results and performances (reach ratios);

(3) to send alerts, in some cases daily, to managers at each level of the organization, on all deviations between results and reestablished objectives and budgets.

### **MIS as a barrier to entry**

An important strategic advantage is "barriers to entry". There are

numerous ways that a company, that has invested in information technology, can lever this investment to create, grow, or maintain barriers to entry.

(1) Leverage IT investment that supports their core competency. Successful firms tend to have one or two core competencies that they can do better than their competitors. It may be anything from new product development to customer service. Information technology is often an important input into this core competency. This IT investment in a company's core competency can be a significant barrier to entry.

(2) Leverage IT investment in supply chain networks. Firms that are a part of an integrated supply chain system have established relationships of trust with suppliers. This usually ensures quicker deliver times, problem free delivery and an assured supply. It can also entail price discounts and other preferential treatment. The inability of new entrants to get onto a supply chain/inventory management system can be a major barrier to entry.

(3) Leverage IT investment in distribution channel management. As with supplier networks, investment in distribution channel management systems can ensure quicker delivery times, problem free delivery, and preferential treatments. The investment in this technology, and the experience gained in learning how to use it, can be an important barrier to entry. When the distribution channel management system is exclusive, it may give you some control over access to the retailers involved.

(4) Leverage IT investment in brand equity. Often firms have invested large sums of money in brand advertising. This is facilitated by investment in marketing information systems and customer relationship management system. An indomitable brand name is a formidable barrier to entry.

(5) Leverage IT investment in production processes one. Information systems have become a necessity in managing large production runs.

Automated systems are the most cost efficient way of organizing large-scale production processes. These firms can more easily obtain economies of scale in promotion, purchasing, and production; economies of scope in distribution and promotion; reduced overhead allocation per unit; and shorter break-even times. This absolute cost advantage can be an important barrier to entry.

(6) Leverage IT investment in production processes two. Investment in IT allows a company flexibility in their overall output level. Michael Porter claims that economies of scale are a barrier to entry, aside from the absolute cost advantages they provide. The reason is a company producing at a point on the long-run average cost curve where economies of scale exist has the potential to obtain cost savings in the future, and this potential is a barrier to entry.

(7) Leverage learning curve advantages from experience with IT. As a company gains experience using IT systems, they become familiar with a set of best practices that are more or less known to other firms in the industry. Firms outside the industry are generally not familiar with the industry specific aspects of using these systems. New entrants will be at a disadvantage unless they can redefine the industries best practices and leapfrog existing firms.

(8) Leverage IT investment in mass customization production processes. IT controlled production technology can facilitate collaborative, adaptive, transparent, or cosmetic customization. This flexibility can increase margins, increase customer satisfaction, and be a significant barrier to entry.

(9) Leverage IT investment in computer-aided design (usually abbreviated as CAD). CAD systems facilitate the speedy development and introduction of new products. This can create proprietary product differences. Product differentiation can be a barrier to entry. Because proprietary product differences can be used to create incompatibilities

between competing products (as every computer user knows). These incompatibilities increase consumers' switching costs. High customer switching costs is a very valuable barrier to entry.

(10) Leverage IT investment in E-commerce. Company web sites can be personalized to each customer's interests, expectations, and commercial needs. They can also be used to create a sense of community. Both of these tend to increase customer loyalty. Customer loyalty is an important barrier to entry.

(11) Leverage IT investment in stability. Technologically sophisticated firms with multiple electronic points of contact with customers, suppliers, and others appear to be more stable. This monumental appearance of stability can be a barrier to entry. This is particularly true in financial services.

(12) The simple facts that IT investment requires funds make it a barrier to entry. Anything that increases capital requirements is a barrier to entry.

## **Historical development**

The role of business information systems has changed and expanded over the last four decades.

In the incipient decade (1950s and 1960s), "electronic data processing systems" could be afforded by only the largest organizations. They were used to record and store book keeping data such as journal entries, specialized journals, and ledger accounts. This was strictly an operations support role.

By the 1960s "management information systems" were used to generate a limited range of predefined reports, including income statements (they were called P & L's back then), balance sheets and sales reports. They were trying to perform a decision-making support role, but they were not up to the task.

By the 1970s "decision support systems" were introduced. They were interactive in the sense that they allowed the user to choose between numerous options and configurations. Not only was the user allowed to customize outputs, they also could configure the programs to their specific needs. There was a cost though. As part of your mainframe leasing agreement, you typically had to pay to have an IBM system developer permanently on site.

The main development in the 1980s was the introduction of distributed computing. Instead of having one large mainframe computer for the entire enterprise, numerous PCs were spread around the organization. This meant that instead of submitting a job to the computer department for batch processing and waiting for the experts to perform the procedure, each user had their own computer that they could customize for their own purposes.

As people became comfortable with their new skills, they discovered all the things their system was capable of. Computers, instead of creating a paperless society, as was expected, produced mountains of paper, most of it valueless. Mounds of reports were generated just because it was possible to do so. This information overload was mitigated somewhat in the 1980s with the introduction of "executive information systems". They streamlined the process, giving the executive exactly what they wanted, and only what they wanted.

The 1980s also saw the first commercial application of artificial intelligence techniques in the form of "expert systems". These programs could give advice within a very limited subject area. The promise of decision making support, first attempted in management information systems back in the 1960s, had step-by-step, come to fruition.

The 1990s saw the introduction of "strategic information systems". This was largely because of developments in the subject of strategic management by scholars like M. Porter, T. Peters, J. Reise,

C. Markides, and J. Barney in the 1980s. Competitive advantage became a hot management topic and software developers were happy to provide the tools.

The role of business information systems had now expanded to include strategic support. The latest step was the commercialization of the Internet, and the growth of intranets and extranets at the turn of the century.

### **Future developments**

In 2000s, it is likely that M. Hammer's reengineering principles will be incorporated further into business information systems. Hammer said that rather than organizing a firm into functional specialties (like production, accounting, marketing, etc.) and looking at the tasks that each function performs, we should be looking at complete processes from materials acquisition, to production, to marketing and distribution. The firm should be re-engineered into a series of processes. More and more software will utilize this approach. Ultimately there will be a fully integrated business information system in which all types of business information are seamlessly moved throughout the firm.

In his book *Agenda*, he expanded the idea to include suppliers and distributors. The whole supply chain, from raw materials to final customer, should be seen as a single process. This is not unlike M. Porters theory of a "value chain" proposed two decades earlier. The difference is that Hammer provides implementation procedures and these can be better translated into software algorithms that will drive extranets. More and more, business information systems will take on the roll of value chain support, rather than company support. The model of software tool representing this new tendency is the platform of suites " Business management systems Peer To Peer " also called " business workflow management " or still "Oberon BWA".

In the future, a time could come when these systems are moved from extranets to the Internet. Customers will become a fully integrated participant in the value chain and will have the same information system access as manufacturers, suppliers, distributors, or facilitators.

### Words and Expressions

**Management Information Systems** 管理信息系统

**network** 网络

**communication channels** 通信渠道

**manipulate** 操作, 使用(机器等)

**disseminate** 散布

**hardware** 硬件

**software** 软件

**commerce** 商业

**administration** 管理

**strategies** 策略, 战略

**inventory** 详细目录, 存货, 财产清册, 总量

**customer profile** 客户档案

**contingency** 偶然性, 意外事故, 附带事件

**inflation** 胀大, 夸张, 通货膨胀, (物价)暴涨

**logic analysis** 逻辑分析

**Business Workflow Analysis** 商业流程分析

**dysfunction** 功能紊乱

**sustainable** 可以忍受的

**mimic** 模仿的

**monopoly** 垄断, 垄断者, 专利权, 专利事业

**commentators** 评论员, 讲解员

**extranet** 外网

**leverage** 杠杆作用

**entail** 使必需, 使蒙受, 使承担, 遗传给



**preferential** 优先的, 特惠的

**facilitated** 使容易, 使便利, 推动, 帮助, 促进

**indomitable** 不屈服的, 不屈不挠的

**formidable** 强大的, 令人敬畏的, 可怕的, 艰难的

**flexibility** 弹性, 适应性, 机动性, 挠性

**leapfrog** 交互跃进

**computer-aided design** 计算机辅助设计

**proprietary** 所有的, 私人拥有的

**incipient** 初始的

**ledger accounts** 分类账账户, 总账, 分户账

**decision support systems** 决策支持体系

**configurations** 构造, 结构, 配置, 外形

**decentralize** 分散

**mitigated** 减轻

**streamline** 流线型的

**artificial intelligence** 人工智能

**expert systems** 专家系统

**strategic information systems** 策略信息体系

**materials acquisition** 素材获取

## Notes

1. Management Information systems (MIS), are information systems, typically computer based, that are used within an organization.

分析: 动词短语“typically computer based”和“that”引导的非限定性定语从句用于修饰“information systems”。

译文: 管理信息系统通常是基于计算机技术, 供某组织内部使用的一种信息系统。

2. The activities involved include inputting data, processing of data into information, storage of data and information, and the production of outputs such as management reports.

分析: 多个动词短语并列做宾语。注意“activities”的本意是“活跃, 活动”。