

电子商务概论

Introduction to E-commerce

覃 征
李顺东
韩 毅
董金春
阎礼祥
覃 君



清华大学出版社



Springer

覃征
李顺东
韩毅
董金春
阎礼祥
覃君

电子商务概论

Introduction to E-commerce



清华大学出版社
北京



Springer

内 容 简 介

本书是根据目前专业特点编写的文理兼顾的电子商务专业教材。全书分为基础、技术、管理、实践、应用五大部分。基础部分介绍了电子商务的基础理论,技术部分重点介绍了技术支撑平台、支付策略与技术、安全技术;管理部分介绍了电子商务与法律、税收、网络企业管理;实践部分阐述了电子商务体系结构与系统设计、门户网站设计与实现、计算机系统集成与电子商务;应用部分侧重于介绍电子商务与国际贸易、网络应用心理学、电子商务案例分析。

本教材凝聚了作者团队多年的相关研究项目的研究成果与实践经验。本教材适于理工科与管理学科的相关专业(电子商务、电子信息、计算机科学与技术、软件工程、信息系统与信息管理、工商管理)选用,也可供公务员、企业管理、信息技术人员参考使用。

版权所有,侵权必究。侵权举报电话:010-62782989 13701121933

图书在版编目(CIP)数据

电子商务概论/覃征,李顺东,韩毅,董金春,阎礼祥,覃君编著. —北京:清华大学出版社, 2009.2

ISBN 978-7-302-16323-7

I. 电… II. ①覃… ②李… ③韩… ④董… ⑤阎… ⑥覃… III. 电子商务—概论—英文 IV. F713.36

中国版本图书馆 CIP 数据核字(2008)第 034218 号

责任编辑:丁 岭

责任校对:刘玉霞

责任印制:孟凡玉

出版发行:清华大学出版社

地 址:北京清华大学学研大厦 A 座

<http://www.tup.com.cn>

邮 编:100084

社 总 机:010-62770175

邮 购:010-62786544

投稿与读者服务:010-62776969, c-service@tup.tsinghua.edu.cn

质 量 反 馈:010-62772015, zhiliang@tup.tsinghua.edu.cn

印 装 者:北京雅昌彩色印刷有限公司

经 销:全国新华书店

开 本:153×235 印 张:33.5 字 数:752 千字

版 次:2009 年 2 月第 1 版 印 次:2009 年 2 月第 1 次印刷

印 数:1~1500

定 价:99.00 元

本书如存在文字不清、漏印、缺页、倒页、脱页等印装质量问题,请与清华大学出版社出版部联系调换。联系电话:010-62770177 转 3103 产品编号:024027-01

Preface

E-commerce is a subject which researches how to use electronic and information technology to promote the traditional business process to change profoundly. The subject is still at its infant age and is fast developing. Its theoretical system is still being constructed and perfected. Under such circumstance, this book tries to choose the contents that are fixed, and closely related with E-commerce as the subject system of E-commerce. The architecture of E-commerce is as follows (Fig. 0.1).

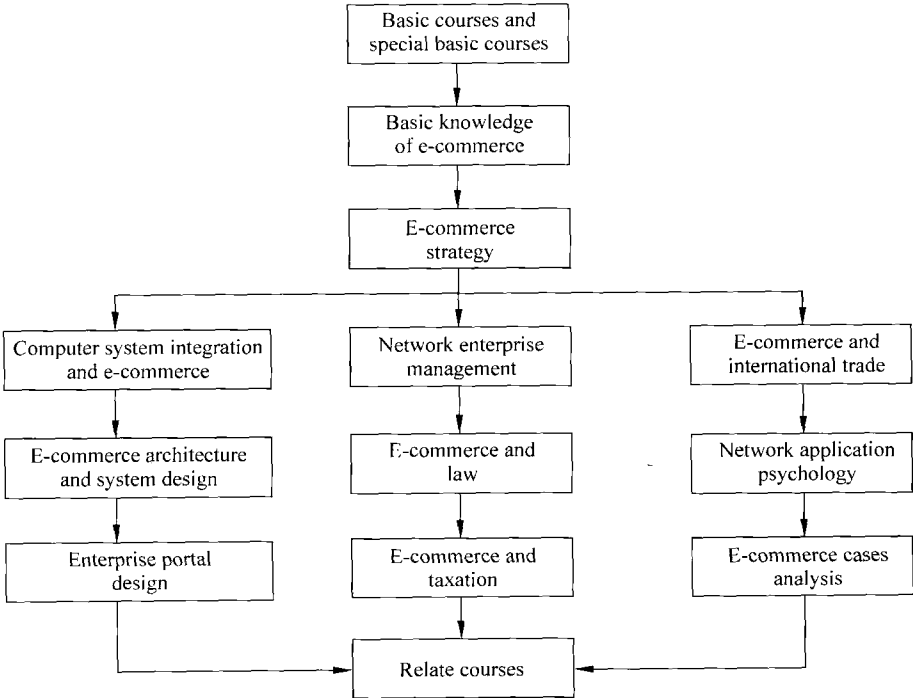


Figure 0.1

Prerequisite courses of E-commerce include some basic courses such as *Advanced Mathematics*, *Discrete Mathematics*, etc.; and some specialized courses such as *Computer Networks*, *Programming*, *Operating System*, *Database Management System*, *Management Engineering*, etc. With all these courses, one can study the subjects such as *Guide to Electronic Commerce*, *Introduction to Electronic Commerce*, *Electronic Commerce Strategies*, etc. The students with different study purposes and requirements can choose different courses respectively: the students majoring in electronic information, whose main goal of learning E-commerce is to design and implement E-commerce systems, can choose the courses such as *Computer System Integration and E-commerce*, *Systematic Structure and System Design of E-commerce and Enterprise Portal Website Design* etc to learn; the administrators aiming at enterprise administration should choose the courses such as *E-Commerce and Law*, *E-commerce and Tax Revenue*, *Network Business Administration* etc. to learn; while the students that take the E-commerce applications as their target should learn *E-commerce and International Trade*, *Network Application Psychology*, *E-commerce Case Study* etc. The knowledge they learn from these courses together with related knowledge can help them can help them to achieve their goal of learning E-commerce.

There are narrow-sense E-commerce concept and wide-sense E-commerce concept which is also called as e-business. E-commerce researches how to use electronic and information technology to promote the traditional business process to change profoundly, while e-business researches how to use electronic and information technology to promote various social activities of human-beings to deeply change. E-commerce originated from EDI in the 1960's, and its concept formed in the 1990's. E-business originated even earlier, but its concept formed in about 2000. This book focuses on E-commerce, and the interrelationship of its main contents is illustrated as in Fig. 0.2.

This book assumes that most of the readers have no related experience or knowledge of E-commerce, so some basic knowledge of E-commerce will be introduced in chapter 1. E-commerce security plays an important role and is one of the crucial factors that affect the development of E-commerce. E-commerce security follows the basic knowledge. After having learnt former two chapters, readers with different goals can choose different contents to study according to their own goal. The students that want to master E-commerce technologies and want to use these technologies to establish E-commerce websites can go along the mainstream in the figure ignoring the branches at two sides. The students that are majoring in business administration can choose the left side branch to learn, while the students that focus on E-commerce applications should choose the right side branch to learn.

The first edition of this book, is chosen as textbook by universities such as Tsinghua University, Xi'an Jiaotong University, Beijing Normal University etc., and has established a good reputation among the teachers and students of these universities. It was republished for several times. Since the first edition was sent

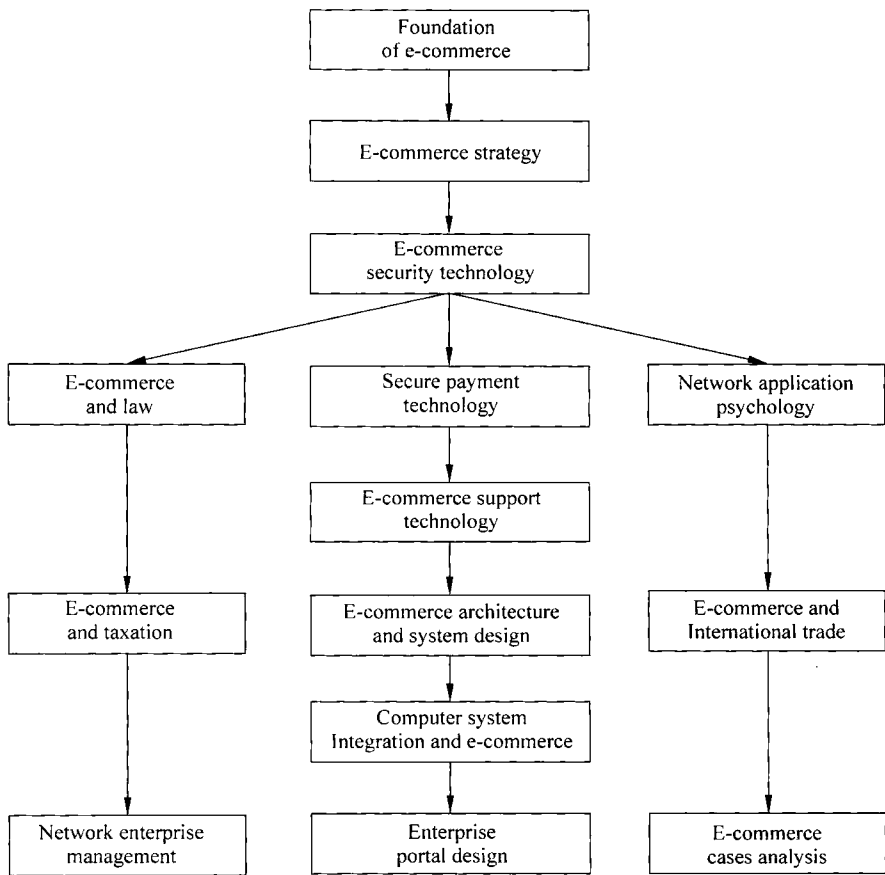


Figure 0.2

to press, E-commerce technologies have been rapidly developing, and the authors have been deepening their understanding of E-commerce. Some valuable feedbacks are also obtained from the teachers and students. To promptly reflect the technology development, our new understanding of E-commerce, taking into account of valuable feedback information, we greatly modify and update the content of the first edition forming the second edition. This edition consists of five parts which are basis, technology, management, practice and applications.

The first part includes two chapters. The first chapter largely expands and updates the corresponding content of the first edition, and adds the introduction to mobile E-commerce. The first chapter is a sketch of this book, which provides the readers a complete picture of E-commerce. In the second part, introduction to fundamental technologies that are related to E-commerce security is added, and in order to enhance the requirements of E-commerce security, E-commerce security technologies are also added. Part three adds the E-commerce tax revenue

administration and the brief introduction of *The Electronic Signature Law of PRC*. The *network application psychology* is added in part five. Meanwhile, most contents of the first edition are updated so that they can reflect the development of E-commerce technologies.

The content of this book is chosen and organized by Professor Qin Zheng. Qin Zheng, Li Shundong, Han Yi write some parts of this book respectively. Yan Lixiang and Dong Jinchun read the manuscript and propose some valuable suggestions. Qin Jun reads the manuscript and polishes the text. Li Shundong finishes the total book.

This book can be used either as a textbook or reference book for four-year and three-year college students that are specialized in E-commerce, electronic information, information management and business administration, and postgraduates. The whole book can be used for teaching postgraduates. Some chapters with an asterisk can be excluded for four-year college students and some with two asterisks can also be excluded for three-year college students. Any opinions from readers about this book are appreciated.

The authors

Contents

Part 1 Fundamentals

- 1 Fundamentals of E-commerce3**
 - 1.1 The Origin and Development of E-commerce4
 - 1.1.1 The Origin and Development of E-commerce4
 - 1.1.2 The Definitions of E-commerce7
 - 1.1.3 E-commerce in China9
 - 1.2 Influence of Related Basic Sciences on E-commerce14
 - 1.2.1 Influence of Mathematics on E-commerce15
 - 1.2.2 The Impact of Computer Science Upon the E-commerce20
 - 1.2.3 Impact of Communications Science upon the E-commerce21
 - 1.2.4 The Impact of Management Science upon E-commerce23
 - 1.3 Categories of the E-commerce24
 - 1.3.1 B2B25
 - 1.3.2 B2C27
 - 1.3.3 B2G30
 - 1.3.4 G2G32
 - 1.3.5 C2C36
 - 1.4 The Constitution of the E-commerce39
 - 1.4.1 Portal of the Network39
 - 1.4.2 Customer Relationship Management42
 - 1.4.3 Supply Chain Management45
 - 1.4.4 Logistic Management48
 - 1.4.5 Decision Support51
 - 1.5 Supporting Environments for E-commerce55
 - 1.5.1 Technical Environment55
 - 1.5.2 Legal Environment57
 - 1.5.3 Credit Environment59
 - 1.5.4 Financial Environment62
 - 1.6 M-commerce65
 - 1.6.1 The Origin of M-commerce65
 - 1.6.2 M-commerce Components67
 - 1.6.3 The Development of M-commerce69
 - 1.6.4 The Application of M-commerce71
 - 1.7 Summary73
 - References74

Part 2 Technology

2	E-commerce Supporting Technologies	79
2.1	E-commerce Fundamental Technology.....	80
2.1.1	Web Technology.....	80
2.1.2	HTML.....	81
2.1.3	XML.....	81
2.1.4	Java.....	83
2.2	Computer Communication Technology.....	85
2.2.1	TCP/IP Protocols.....	85
2.2.2	HTTP Communication Protocol.....	86
2.2.3	EDI Communication Protocol.....	88
2.2.4	WAP Communication Protocol.....	91
2.2.5	WLAN Protocol.....	94
2.2.6	Bluetooth Protocol.....	98
2.3	Information Processing Technologies in E-commerce.....	102
2.3.1	Global Positioning System (GPS).....	102
2.3.2	Geographical Information System (GIS).....	105
2.3.3	Decision Supporting System (DSS).....	106
2.3.4	Group Decision Supporting System (GDSS).....	109
2.3.5	Intelligent Decision Supporting System (IDSS).....	111
2.4	Summary.....	112
	References.....	113
3	Payment Technologies for E-commerce	115
3.1	Online Bank.....	116
3.1.1	The Development of Online Banks.....	116
3.1.2	The Function of Online Bank.....	119
3.1.3	Online Banking Technologies.....	120
3.2	E-payment Tools.....	123
3.2.1	E-payment System.....	123
3.2.2	Intelligent Card.....	124
3.2.3	E-check.....	126
3.2.4	E-wallet.....	127
3.2.5	E-cash.....	130
3.3	Summary.....	132
	References.....	132
4	Security Technologies in E-commerce	135
4.1	Introduction to Security Problems in E-commerce.....	135
4.2	Reliability of E-commerce System.....	137
4.3	Data Encryption Technology.....	139

4.3.1	Symmetric Encryption System.....	140
4.3.2	Public Key Encryption Algorithm	142
4.3.3	Mixed Encryption Technology	143
4.4	Digital Signature	144
4.4.1	Sign the Document with Public Key Algorithm	144
4.4.2	Signature with One-way Hash Function and Public Key System	145
4.5	Authentication Technology	146
4.5.1	Digital Authentication Technology	146
4.5.2	Biological Verification Technology.....	147
4.6	Firewall Technology	150
4.6.1	Introduction to Firewall	150
4.6.2	Functions of the Firewall	151
4.6.3	Categories of Firewall.....	153
4.7	Intrusion Detection Technology	155
4.7.1	Introduction to Intrusion Detection	155
4.7.2	Intrusion Detection Method	157
4.8	Secure Payment Technology.....	159
4.8.1	SSL Protocol	159
4.8.2	SET Protocol.....	163
4.9	Summary	166
	References.....	166

Part 3 Management

5	E-commerce and the Law	171
5.1	Legal Problems in E-contract.....	172
5.2	Legal Problems in E-banks	176
5.3	The legal Problems in the Electronic Fund Transfer.....	179
5.4	The Intellectual Property Protection in the E-commerce	180
5.4.1	Legal Problems Brought forth by Domain Names.....	180
5.4.2	The Coordination of the Conflicts Between Domain Names and Intellectual Property	183
5.4.3	WIPO's Coordination About the Conflicts Between Domain Names and Intellectual Property	185
5.4.4	Copyright Issues in E-commerce	186
5.5	Legal Problems of E-commerce Security.....	188
5.5.1	Security Problems in E-commerce.....	188
5.5.2	Legal Systems Concerning the E-commerce Security	189
5.5.3	Legal Responsibilities for the Violation of E-commerce Security Laws.....	191
5.6	Consumer Rights Protection in E-commerce	191
5.6.1	Impacts of E-commerce on Consumers	191

5.6.2	E-commerce and Consumer Privacy Protection.....	193
5.7	Legal Liability in E-commerce	195
5.7.1	Civil Liability in E-commerce	195
5.7.2	Administrative Liability in E-commerce.....	199
5.7.3	Criminal Responsibility in E-commerce	201
5.8	Brief Introduction to the “Electronic Signature Law of the PRC”	203
5.9	Summary	205
	References	205
6	E-commerce and Tax	207
6.1	An Outline of Tax in E-commerce	208
6.2	Features of E-commerce Tax	210
6.3	Problems in E-commerce Tax	211
6.4	E-commerce and Tax Administration	218
6.5	Strategies in E-commerce Taxation	220
6.6	Summary	227
	References	227
7	Network Enterprise Management.....	228
7.1	Overview of Network Enterprises.....	229
7.1.1	Background and Basic Characteristics of Network Enterprises.....	229
7.1.2	Knowledge Management	230
7.1.3	Virtual Enterprise.....	237
7.2	Supply Chain Management of Network Enterprises.....	240
7.2.1	Overview of Supply Chain Management.....	240
7.2.2	Construction of Supply Chain Management	241
7.2.3	Cooperation Management of Supply Chain	243
7.3	Logistics Management of Network Enterprise.....	245
7.3.1	Logistics Management Overview	245
7.3.2	Environmental Logistics	250
7.3.3	The Third Party Logistics	255
7.4	Human Resources Management of Network Enterprise	260
7.4.1	Overview of Human Resources Management.....	260
7.4.2	Realization of Human Resources Management	263
7.5	Summary	267
	References.....	267

Part 4 Practice

8	E-commerce Architecture and System Design	271
8.1	E-commerce Architecture	272
8.1.1	Infrastructure	272

8.1.2	Data Flow of Infrastructure	273
8.1.3	Process Control of Infrastructure	275
8.1.4	Optimizing Method of Infrastructure	279
8.1.5	Event Process Control of Infrastructure	282
8.2	E-commerce Security System	284
8.3	E-commerce Payment System.....	288
8.3.1	E-commerce and Online Payment.....	288
8.3.2	Data Flow and Process Control of Payment System	289
8.4	Architecture and Design Method of E-commerce Application System Software.....	294
8.4.1	Architecture of E-commerce Application System Software	294
8.4.2	Design Method of Application E-commerce System.....	298
8.5	Summary	301
	References.....	301

9	Portal Site Design of Virtual Enterprise	304
9.1	E-commerce and Portal Site	305
9.1.1	Concept of Portal Site	305
9.1.2	Meaning of Portal Site	305
9.2	Online Virtual Shop	306
9.2.1	Virtual Shop Mode.....	306
9.2.2	Virtual Shop Design.....	307
9.2.3	Implementation of Virtual Shop.....	308
9.3	Design Method of Product Catalog	309
9.3.1	Product Information Storage	309
9.3.2	Product Information Inquiry Function	311
9.4	Design of Online Shopping Cart	312
9.4.1	Online Shopping Cart and Implementation Technology.....	312
9.4.2	Database of Online Shopping Cart and Actual Implementation Policy	313
9.5	Processing of Electronic Order	316
9.5.1	Processing Flow of Order	316
9.5.2	Gathering the Payment Online	319
9.6	Search and Inquiry of Website	321
9.6.1	Application of Advanced SQL.....	321
9.6.2	Optimizing Database Inquiry	324
9.7	Customer Service in E-commerce Time	326
9.7.1	Component Technology and Build Method of Call Center	326
9.7.2	Application of Electronic Mail List	328
9.8	Release Technology of Web Database.....	330
9.9	Summary	333
	References.....	333

10	Computer System Integration and E-commerce	336
10.1	Overview of System Integration.....	337
10.1.1	Production and Development of System Integration	337
10.1.2	Principle of System Integration	339
10.2	Hardware System Integration of E-commerce.....	340
10.2.1	Integration of Server	340
10.2.2	Integration of Communication Network.....	346
10.3	Integration of E-commerce Application System Software	352
10.3.1	Integration Mode of E-commerce Application System Software	352
10.3.2	Integration of Protocols.....	360
10.3.3	Application System Software Environment Integration	364
10.4	Summary.....	370
	References	370

Part 5 E-commerce Application

11	E-commerce and International Trade.....	375
11.1	E-commerce and International Trade	376
11.1.1	The International Trade Calls for the Emergence of E-commerce	376
11.1.2	E-commerce Promotes the Development of the International Trade.....	380
11.1.3	E-commerce Brings about Changes to the International Trade.....	382
11.2	Applying E-commerce to International Trade	383
11.2.1	Using E-commerce Technology to Obtain Commercial Information	384
11.2.2	Using E-commerce in the Business Negotiation.....	385
11.2.3	Application in the Technology and Service Trade.....	387
11.3	E-commerce and International Trade Network Marketing	389
11.3.1	The Foundation of Internet Marketing.....	390
11.3.2	Network Marketing Tool	391
11.3.3	Network Marketing Technology.....	396
11.4	Designing an International Trade E-commerce System	399
11.4.1	The International Trade Business Analysis	399
11.4.2	Frame of international Trade E-commerce System	402
11.4.3	International Trade E-commerce System Design	404
11.4.4	EDI-based International Trade E-commerce System.....	405
11.5	Summary.....	407
	References	408

12	Network Application Psychology	409
12.1	Introduction to Network Application Psychology	410
12.1.1	Appearance of Network Application Psychology	413
12.1.2	Research Content of Network Application psychology	414
12.1.3	Significance of Network Application psychology	416
12.2	Network Interaction Psychology	420
12.2.1	Network Interaction	420
12.2.2	The Appearance and Analysis of Network Interaction Psychology	427
12.2.3	The Effect of Network Interaction Psychology	432
12.3	Network Application Psychology	437
12.3.1	Psychology Characteristic of Network Application	437
12.3.2	Analysis on Psychology Characteristic of Network Application	440
12.4	Network Management Psychology	446
12.4.1	General Psychology of Network Management	446
12.4.2	Behavior Psychology of Network Management	451
12.5	Summary	453
	References	454
13	E-commerce Case Analysis	458
13.1	Methods of E-commerce Analysis	459
13.1.1	Methods of the Evaluation and Analysis of E-commerce Websites	459
13.1.2	Method of E-commerce Case analysis	467
13.2	Case Study	471
13.2.1	Case Study of China's Agricultural Products E-commerce	471
13.2.2	Case Analysis of E-commerce Supply Chain Management	475
13.2.3	Case Analysis of E-commerce in Commodities Circulation Areas	481
13.2.4	Case Study of E-commerce in the Financial Industry	493
13.2.5	Case Analysis of E-commerce in Petrochemical Industry	509
13.3	Summary	515
	References	515

Part 1 Fundamentals

1 Fundamentals of E-commerce

Zheng Qin^① Li Shundong^② Han Yi^① Dong Jinchun^③
Yan Lixiang^① Qin Jun^④

^① School of Software, Tsinghua University, Beijing 100084, China

^② School of Computer Science, Shaanxi Normal University, Xi'an 710062, China

^③ Panda Electronics Group Co., Ltd. Nanjing 210002, China

^④ School of Information Management and Engineering, Shanghai University of Finance and Economics, Shanghai 200433, China

Abstract E-commerce is the core technology of knowledge economy. Developing e-commerce is an inevitable choice for Chinese economy to enter into the world market, participate in and ultimately penetrate the global market, and bring about a great rejuvenation of the Chinese nation. We must grasp this business opportunity and further extend its strength by consciously studying, applying and developing e-commerce; allowing e-commerce to serve better in society's economic development. Before we can start developing e-commerce, we have to understand the background, the basic principle and the evolution and development history of e-commerce. This enables us to have a thoughtful understanding on this new technology, hence, helping to predict the trend of e-commerce in the near future. This chapter introduces some basic knowledge regarding to e-commerce, which includes, the needs of society, development of e-commerce, basic e-commerce concepts, and couples of other information which closely related to the development of e-commerce.

Key Words e-commerce, m-commerce, electronic data interchange (EDI), Internet, business to business (B2B), business to consumer (B2C), business to governments (B2G), consumers to consumers (C2C), governments to governments (G2G), international trade.

This chapter is an outline of e-commerce, which contains the origin and development of e-commerce, the impact of relevant disciplines on e-commerce, the basic concepts, the platforms, fundamental patterns and the major compositions of e-commerce.